GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045.

Civil Engineering Department

2015 Pattern

Sr. No.	Course Code	Course Name
		Semester - III
1	201001	Building Technology and Material
2	201002	Mechanics of structure
3	201003	Geotechnical Engineering
4	207001	Engineering Mathematics III
5	201006	Survey
	Bright Andrews	Semester - IV
6	201004	Fluid Mechanics-I
7	201005	APDB
8	201008	Structural Analysis-I
9	207009	Engineering Geology
10	201007	Concrete Technology
		Semester - V
11	301001	Hydrology and Water Resources Engineering
12	301002	Infrastructure Engineering & Construction Techniques
13	301003	Structures Design-I
14	301004	Structural Analysis-II
15	301005	Fluid Mechanics-II
		Semester - VI
16	301007	Advanced Surveying
17	301008	Project Management and Engineering Economics
18	301009	Foundation Engineering
19	301010	Structures Design-II
20	301011	Environmental Engineering I
		Semester - VII 2015 pattern
21	401 001	Environmental Engineering II
22	401002	Transportation Engineering
23	401 003	Structural Design and Drawing-III
24	401004	Elective I [ACT]
25	401 005	Elective II [TQM-MIS]
A PACE		Semester - VIII 2015 pattern
26	401007	Dams and Hydraulics Structure
27	401008	Quantity Surveying, Contract
28	401 009	Elective III (APC)
29	401010	Elective-IV CM -2015 PATTERN





GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045. Civil Engineering Department

2019 Pattern

Sr. No.	Course Code	Course Name
		Semester - III
1	201001	Building Technology and Architectural Planning
2	201002	Mechanics of structure
3	201003	Fluid Mechanics
4	207001	Engineering Mathematics III
5	207009	Engineering Geology
		Semester - IV
6	201008	The state of the s
7	201009	Geotechnical Engineering
8	201009	Survey
9	201010	Concrete Technology
10		Structural Analysis
	201012	Project management
11	201001	Semester - V
12	301001	Hydrology and Water Resources Engineering
13	301002	Water Supply Engineering
14	301003	Design of Steel Structures
15	301004 301005	Engineering Economics and Financial Management
16	301005	Solid Waste Management Seminar
in the second se	301000	The state of the s
17	301012	Waste Water Engineering
18	301013	Design of RC Structures
19	301014	Remote Sensing and GIS
20	301015	ATP
or long		Semester - VII
21	401001	Foundation Engineering
22	401002	Transportation Engineering
23	401003	APC
24	401004	ACT
		Semester - VIII
25	401011	Dams and Hydraulics Structure
		Quantity Surveying, Contract
26	401012	nd Tenders
27	401013	HPE
28	401014	TQM-MIS







GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045.

Civil Engineering Department Academic Year 2018-19

		The second secon			Semest	er III											
Subject	со	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
	201001.1	Identify types of building and basic requirements of building components.	2		2		1	1	1	2	2	2	ı	2	2	1	1
	201001.2	Explain types of masonry, formwork, casting procedure and necessity of underpinning and scaffolding.	2	1	1	2	1	1			2	ě	-	(4)	2		-
Building Fechnology and	201001.3	Elucidate different types of flooring and roofing materials.	2	3	2	3		2	2	-	2	,	1		1	_	-
Materials	201001.4	Describe types of doors, windows, arches and lintel.	2		3	2	3	1	1	1	2	3	1	3	1	3	3
	201001.5	Choose appropriate vertical circulation and protective coatings.	2	2	1	<u> </u>	2	2	3		2		3				
	201001.6	Explain different materials especially eco-friendly materials and safety measures to be adopted at any construction site.	3	2		1	2	3	2		2	1		2		2	2
	207001.1	Solve higher order linear differential equations and apply to civil engineering problems such as bending of beams and whirling of shafts.	3	2		1	1		1	2	•	1		1	1	1	1
	207001.2	Solve system of linear equations using direct and iterative numerical techniques and develop solutions to ordinary differential equations using single step and multistep methods applied to structural systems	2	1	1	2		1	3	•	2		1	2	•	2	2
Engineering thematics - III	207001.3	Apply statistical methods like correlation, regression analysis in analyzing and interpreting experimental data and probability theory applied to construction management	2	2	2	28	2		1	2			3	1	3	1	1
	207001.4	Perform vector differentiation and integration, analyze the vector fields and apply to fluid flow problems.	1	1	•	2	1	2	2		1	3		3	2		
	207001.5	Solve various partial differential equations such as wave equation, one and two dimensional heat flow equations.	3		3		1	A K G	3	1	2	1	2	1.	1	2	

	201006.	Operate and use surveying equipment.	2		1	-					2	2		2		2	2
	201006.2	Apply knowledge of leveling to draw plan or map of the existing permanent features on the ground.	3		2	1	1		1	2	2	1			2	1	1
Surveying	201006.3	Analyze temporary adjustments and check permanent adjustments of the Theodolite.	2	1	1	1	1	ı	2		2	3	2			1	1
	201006.4	Determining reduced level and distance using tacheometry and use of Electronic surveying equipment for measurement.	3	3		2		2		3		1			3		-
	201006.5	Analyze and design of simple curves	2	1				1	3	-	2		1	1	1	3	3
	201006.6	Relating space base positioning systems for construction survey.	2	2	18.0		3	-	1	1	1	1	-	2	•		
	201002.1	Compute different type of stresses in determinate, indeterminate, homogeneous and composite members.	1	<u> </u>	2	1			•				1	1	1	2	2
	201002.2	Develop bending stress and shear stress distribution diagrams across beam secion		1			•	1	1		1	1	1	1	1	2	2
Strength of	201002.3	Determine stresses due to torsion, strain energy under different loading conditions and stresses due to impact loading	2	1		1		1	1	(*)	1	1	1	1	1	2	2
Materials		Explain the concept of principal stresses and stresses due to combined loading	2			•	1		2		1		1	1	2	2	2
	201002.5	Plot loading diagram, Shear Force Diagram (SFD) and Bending Moment Diagram (BMD).		-	1		1	1	2	1	1	1	1	1	1	2	2
	201002.6 A	nalyze axially and eccentrically loaded column		1		1	•	•	1		1.5		1	1	1	2	2



Genba Soporate Mass College of Engo.
25/1/3 Bolowadi. Pano - 411 945

	201003.1	Differentiate the different types of soil and their engineering properties and classify them	3		3	2	1	-	2	1	Ι.	3			2	Ι.	Τ.
	201003.2	Determine the soil properties in laboratory and develop a proficiency in handling experimental data	3	1	2		3	2	1	2	ļ ,		3	<u> </u>	-		-
Geotechnical	201003.3	Understand of the concept of effective stress and its influence on soil behavior.	3	7.	1	2	2		2							2	2
Engineering	201003.4	Develop an understanding of the influence of water flow on the engineering behaviour of soils.	3	2		2		1		2	2	1	2	2	1	2	2
	201003,5	Analyze engineering properties like compaction, permeability, soil shear strength.	3		2	2	2		3	1				1	2	1	1
	201003.6	Compute the lateral thrust and classify soil slopes.	2	1	-		1	2	1			•	2	•			-
	201004.1	Understand Fluid properties and dimensional analysis for solving fluid flow problems	3	2	-		1			1	2	1	1		3	2	2
	201004.2	Apply knowledge to solve fluid static problems	3	2							2	2	3	1	•	1	1
uid Mechanics -	201004.3	Interpret the concept of fluid kinematics and classify types of fluid flow	2	2	1	2	2				2			1	•	•	
I	201004.4	Interpret fluid dynamics and understand the application of Bernoullis Equation	2	2	1	•		2	1	1	1		-	1		2	2
İ	201004.5	Understnd the concept of boundary layer development	2	2		1	3	1	1	2	1	,	-	2	3	1	1
	201004.6	Apply the concept of turbulent flow through pipes and determine the varius losses in pipes	2	2	1	1		1	3	2		-	3	1	-	2	2





					Seme	ster IV											
	201005.1	Implementing principles of architectural planning.	3		2		1	1	1	1	Τ.		1	1	2	Τ.	Τ.
Architectural	201005.2	Analyze the available primary or secondary data and plan different types of structures considering futuristic need of an area.	3	2	2	2	1	1	2		1	2	1	3	2	 	+
Planning and Design of Buildings	201005.3	Improve the status of existing structures by proposing appropriate green measures.	2	1	-	1	2	2	1	1	_			2	1	2	2
	201005.4	Plan effectively various types of buildings according to their utility.	2		2	1	2	2		1	2		1	1	2	2	2
	201005.4	Understand and resolve contemporary issues at multi-dimensional functional levels.	3	2	2		15		2		2	2	3		3		
	201008.1	Evaluate static and kinematic indeterminacy of structures. Determine slope and deflection in determinate beams using double integration method, area moment theorem, conjugate beam method and castigliano's theorem	3	-		1	2	-	-	-	1		1	1	1	2	2
	201008.2	Analyze indeterminate beams and frames using three moment theorem and castigliano's theorem	3	2	1-1	-	* 1	-	1	3			2	2	2	2	2
Structural Analysis - I	201008.3	Analyze determinate and indeterminate trusses using castigliano's theorem	3	2	1		2		2	2	1	3	2	1		-	
	201008.3	Apply influence line diagrams for the analysis of structures under moving load.	3				3	•	8		2	3	-	2	2		
	201008.3	Analyze two and three hinged parabolic and circular arches	2	2	2		•			2	1					2	2
	201008.3	Apply static and kinematic method to find collapse load in indetrminate beams and frames using plastic analysis	2	-	2	1		2	1			-	_	_		2	2



PRINCIPAL

Gentre Supermo Mano College of Engg.

20/1/2, Balanced, Page -411 645

	T																
	207009.1	Explain the basic concepts of engineering geology in terms of rock types and their applications in civil engineering.	3		2	1		2	2		3	1	3	1	Τ	1	T 1
	207009.2	Discuss physical properties and classification of minerals. Describe Structural geology, mountain building activity and plate tectonics theory.	3			1		2	2	1	2		2	2	1		
Engineering	207009.3	Illustrate Geomorphology and historical geology with physiographic divisions of india, principles of stratigraphy and geological time scale.	3	3	1	2		2	2					3	2		
Geology	207009.4	Describe methods of preliminary geological explorations and applications of Remote sensing and GIS in civil engineering.	3		2		2	2	2	3	3	1		1	2	2	2
	207009.5	Assess the Importance of geological nature of the site, precautions and treatments to improve the site conditions for dams, reservoirs, and tunnels.	3	1	2	ı		2	2					1		2	2
	207009.6	Explain geological hazards and importance of ground water and uses of common building stones.	3	1	2	1		2	2	3	3	1	-	1	1	1	1
	201007.1	Understand chemistry, properties, and classification of cement, fly ash, aggregates and admixtures, and hydration of cement in concrete.	2	2		2	-	-	_		3	•		2		1	ı
	201007.2	Prepare and test the fresh concrete	2	-	9	-	-		-		3	í	1	2	1	1	1
Concrete	201007.3	Test hardened concrete with destructive and nondestructive testing instruments	2	-				2	-	2	2			2	2	1	1
Technology	201007.4	Get acquainted to concrete handling equipments and different special concrete types.	3	2			2	2		2	2	•		2	1	1	1
	201007.5	Design concrete mix of desired grade	3	2	2		•	2		3	3	2	2	2	3	1	1
		Predict deteriorations in concrete and repair it with appropriate methods and techniques.	3	2	-			2		×	9	2	2	2		1	1



Gentle Supremo Mans College of Engil-25/1/3 Enlowedi. Puno - 411 045

					Semest	er V											
	301001.1	Estimating missing rainfall data	3	2	1	2	9	-					•		1		
	301001.2	Compute water requirement of crops	2	2		-	-	- 1	-	-	-			-	1	2	2
Hydrology and Water Resourse	301001.3	Recognize various ground water distribution systems	3	2	2	2			2		I	2		2	ı	2	2
Engineering	301001,4	Identify the concepts of hydrographs	3	2	-	-	*	2				*	2		1	2	2
	301001.5	DescribeApply the flood routing techniques to find flood frequency	2	1	-	-	•	2	2					-	1	2	2
	301001.6	Discuss water management, water logging & drainage concepts.	2	(4	•	1	ŧ	2	2	*	2		2	2	1	2	2
	301002.2	Describe the meaning and importance of Infrastructure Engineering	3		1	1	*	2		1	*	2	*	1	1		
	301002.3	Classify railway systems and to select appropriate construction techniques	2	1	÷	9	310	2	•	3	•		•	1	1	1	1
Infrastructure Engineering and	301002.3	Interpret construcion techniques	3		-	-	-	2	-		-			1	1	3	3
Construction Techniques	301002.4	Differentiate tunneling and its construction techniques	3	1		2	-	2		1	٠	1		1	1	2	2
	301002.5	Compare docks and harbours along with their importance	3	1			2	2	2	•			•	1	1		
	301002.6	Appraise various construction equipment's in Civil Engineering	3		3	1	•	2	2			ι		1	1		-

S. MO. S. MO. S. O.
PRINCIPAL

Genba Sapoweo Muso College of Engo.

25/1/3 Salowedi. Puno - 411 045

	301003.1 t	dentify various limit states, load combinations, material properties, ypes of section, safety factors from IS:800-2007. Designing of ension member in steel structures	3		3	1	1	3	٠	3	2	3	1	2	1	1	1
	301003.2	Analyse and design various Compression members in steel Structure.	3	2	3			3	2	3	2	2		2	1	2	2
Structural Design	301003.3	Designing of various column bases in steel Structure.	3		3		*	3	-	3	2	•	2	2	1	2	2
	301003.4	Analyse and design a flexural member and beam to column connections	3	2	3			3	2	3	2	2		2	4	2	2
	301003.5	Designing of Welded plate girder	3		3	2	•	3		3	2		2	2	1	2	2
	301003.6	Analyse and design a Steel Truss and a Gantry Girder	3	3	:#0	1		-	2	3	2	2	•	2	1	-	
	301004.1	Analyse the indetermiant beams and frames by Slope Deflection method	3	3					2	2			1	1	1		-
	301004.2	Construct moment diagrams for indetermiant beams and frames by Moment Distribution method	3	- 20	2	-	2	2	2		2		2	1		1	1
Structural	301004.3	Determine stress resultants in the indetermiant beams and frames by Flexibility method	3	-	1			3	3	12	2			1	1	•	-
Analysis - II	301004.4	Analyse the indetermiant beams and frames by Stiffness method	3	3	1	1	1			1				1			-
	301004.5	Construct BMD in highly indeterminate frames using cantilever and portal frame method. Determine slope and deflection in determinate beams approximately using Finite Difference Method	3	-	3	1		1	2	2	3	1	1	1	3	0.	
	301004.6	Apply basic concepts of finite element method to solve elementary problems	3			3							-	1			-
	301005.	Describe fliud flow around submerged objects and classify the unsteady flow	3	3	3		1	1	1		3	2		2		1	1
	301005.	2 Discuss open channel flow and derive depth energy relationship	3	2		1	3		2	1	2 5	MOZE	2			1	1
94										8 4		1	1		4	A	

Genba Sapanese Mass College of Engl

ř.																	
Fluid Mechanics -	301005.3	Design the most economical channel section, demonstrate hydraulic jump	3	2	2			2			3	2		2	3	1	1
	301005.4	Understand the concept impact of jet, study of centrifugal pumps	3	2		3	2	2	2	2	3		2		3	1	1
	301005.5	Understand, analyse and design various types of Turbines.	2		1			3		-	3		2	2		1	1
	301005.6	Recognize and compute the GVF profiles by various methods	2		3	3	2		2	2	2	2	2	2		1	1
	9			_	Semest	er VI		1,000		<u> </u>							0
	301007.1	Perform Geodetic Survey and understand the GNSS and triangulation survey.	2			-	1					•		2	2		
	301007.2	Explain the concept of hydrographic surveying	3	2	1					1.0			2	•	2		
Adavanced	301007.3	Relate the concept of modern surveying techniques and their applications in various field of Civil Engineering.	3	2	2	3	2	2	2	2	2				2		-
Surveying	301007.4	Solve to adjust geodetic traverse and understand laws of weights	3	2	3	2		-		2		3			2		
	301007.5	Interpret aerial photography data to study terrain.	3	2		2		1	1			3				2	2
	301007.6	Calculate the relative altitudes and distances of different points on ground.	3	2	-		3	-	1		2	3	-	2		2	2
					1					1				1			4

ON THE SAME OF THE

Advi

Genba Separate State Cologo of Engg. 25/1/3 Belowedt. Pune - 411 045

	301008,1	Understand the project planning & scheduling.	3	-	2	1		1	1		*:	3	3				
	301008.2	Implement appropriate resources at right time in project.	3	2	2	141	2	3	2	3		3	3		2		-
Project Management and	301008.3	Examine the Team work and its impact on project progression.	3	2		1	3	1	3	3	3	3	3		2	2	2
Engineering Economics	301008.4	Judge correct alternative in sells and purchase activities by understanding basics of engineering economics	3	-	2	2	3	1	2	2	3	3	3			2	2
	301008.5	Defend Investment and its stages in suggesting resource allocation	2	2	2	(*)	3	1	2	2			3		2	2	-
	301008.6	Summarize types of project appraisal and project reports	2	ŀ	2	2	3	1	2	2		2	3	1		2	2
	301009.1	Complete site investigation program, including types, number, and location of boring	3	2	•	•	3	1	2		2	2		1	1	1	1
	301009.2	Evaluate bearing capacity and settlement for both shallow and deep foundation	3	2	•	2	-	1	2	2	2			1	1	٠	2
Foundation	301009.3	Relate and study drilled piers and caisson.	3	-	(B)	2	3	*	2	2	2			*		2	
Engineering	301009.4	Select appropriate design principles of foundation on black cotton soil	2	•	1	•	3	2	2	2	2	•	-			2	2
	301009.5	Priotize and suggest geosynthetic- reinforced soil structures	2	•	1	•	3	2	2		2		1	3	3	2	1
	301009.6	Adapt effect of earthquake techniques on structures	2		٠	1	3	٠.	2	2	2	•	•	-			



PRINCIPAL
Genbs Separate Mass Callage of Engg.
25/1/3 Balewedi, Pare - 411 045

	301010.1	Compare the design philosophies - WSM, ULM, and LSM	3								1		1				
		Compute the moment of resistance of rectangular / flanged section by WSM and LSM	•	3	3	1	3	٠	1	2	2	1	3	2			
tructural Design - II			3	3	3	3	3	2	3	3	3	3	3	2	1	1	١,
	301010.3	Examine or Select the cross section for slabs, beam, column and foundation conforming to IS 456:2000	3	3	3	3	3	2		3							<u> </u>
	301010.4	Design the G+2 storey residential/commercial/public building conforming to IS 456:2000						-		,	1	•	1	2	•	1	1
	301011.1		3	2	3	2	*	3	-	3	2	1	1	2	1	3	3
	301011.1	To explain the source, control and effect of air and noise pollution	2	3	3		1	3	3	1		1	1	2		-	<u> </u>
	301011.2	To describe the fundamentals of water treatment units and parts of water supply system.	3	2	2			2									<u> </u>
	301011.3	To applicate the second			98.48	048		ź	3	1	¥ = .	1	1	2	2	2	2
Environmental Engineering -I	20.011.5	To explain and design of Water treatment units	3	2	2	-	2	2	3	1			1	2		3	3
	301011.4	To describe the fundamentals of coagulation, flocculation and filtration in water supply system.	3	2		2	2	2	3	1	1		_				_
	301011.5	Describe the Miscellaneous treatment systems for drinking water	2	1	1	,		0000			•	-	1	2	-	3	3
				•		1	*	2	3	1	-	1	1	2	-	-	-
	301011.6	Demonstrate water distribution system, rain water harvesting and PWTP	3	2	1	1	1240	2	3	1	1	1	1	2			_



PRINCIPAL

PRINCIPAL

STATE STATE AND A STATE OF
					Semest	ter VII											
	401001.1	Explain the quality and characteristics of sewage and the concept of stream sanitation.	3	2	2		3	2	2	2			T	Τ.		Τ.	Γ.
	401001.2	Describe the sewage treatment processes with the design of screen chamber, grit chamber, and primary sedimentation tank.	3	2	2	34.1	3	2	2		2	2	2	2		3	3
vironmental	401001.3	Describe and design the secondary treatment units with special emphasis on activated sludge process and trickling filter.	3	2	1	2	3	2	2	2	2	3			2	3	3
ngmeering -II	401001.4	Explain low cost treatment methods with the design of oxidation pond, aerated lagoon.	3	2	2		3	2	2	2	2	3			2	3	3
44	401001.5	Describe anaerobic treatment processes as anaerobic digester, up flow anaerobic sludge blanket and they also able to design septic tank.	3	2	2	2	3	2	2	2	2	33		2		3	3
transportation	401001.6	Explain the characteristics and the treatment process of industrial wastewater of sugar, dairy and distillery industry.	3	2	2	2		2	3	2				2	3		
	401002.1	Interpretition and study of rural road development vision and on- going road development projects.	3	2	2		2	2				3		2			-
	401002.2	Evaluate Gemometric design of highways.	3			2	3	2	•	2	2				2		
Transportation	401002.3	Categorizing road traffic regulation and control devices.	2	2	2	2	3	2		2	2	2	•	2			
Transportation Engineering	401002.4	Experimenting and Validating Pavement materials suiatbility in mix-design.	3	2		2	3	2	2			2					
	401002.5	Design of pavement using IS Code and IRC guidelines.	2		2	2	3	2	2 2 2 2 2 2 2								
	401002.6	Adapting the Modern Trends in Pavement Construction.	3	2	-	2	3	A CO	S. MO.		2	2	-	2	2		_

PRINCIPAL
Genbs Superment Many College of Engg.
30102 Bellevill, Page - 411 045

	401003.1	Compu	te the stresses and losses in PSC Structures	3	3	3			2		2							
	401003.2	Design one wa 1343:2	aing of PSC rectangular and flanged beams with end block, ay and 2 way post tensioned slabs conforming to IS:	3	3	3	3	2	2	2	3	2	3		2	3		
ctural Design	401003.3	Desig	gning of PT flat slab conforming to IS:456-2000, IS: 1343:2012	3	3	3	3		2	2	3	2	3		2	•	2	2
Drawing - III	401003.4	Anal	lysis and design of RCC cantilever T and L shape retaining s conforming to IS 456:2000	3	3	3	3		2	2	3	2		3	2	2	2	2
	401003.5	5 Ana	alyze and Design Liquid Retaining Structures resting on ground aforming to IS:3370-2009	3	3		3			2	3	2	3		2		2	2
	401003	.6 da	rive the equations of motion for free, forced, un-damped and mped vibrations. Estimate the EQ forces by seismic coefficient ethod conforming to IS 1893:2002	3	3	3	3	3	3	3	3	-		3	3	3	3	3
	40100		inderstand the chemistry of cement and its effect on properties of concrete	2		2	-	2	3	2	2	2	2	-	2	•		
	40100	04.2 F	Apply the knowledge of supplementary cementitious materials to produce sustainable concretes	1	-		2		1	2	2	1	2			1.0		
ACT	4010	004.3	Understand the mechanism of working of admixtures and their effect on properties of concrete	2	2	2		-	3	2		2	3	•		•		
Aci	401	1004.4	Evaluate the characteristic properties of fiber reinforced concrete	2	2	2	-	2	2	2	2	2	3		2	2	2	2
	40	1004.5	Understand the durability properties of concrete	1	2	2	2	2	3	2	2		3	ŀ	2	2	2	2
	40	01004.6	Interpret the properties of concrete through advance testing methods	1	2	2	2	3	2	2	2	-	2		2	22		





/																	
	401005.1	Recognise quality & contribution of quality gurus.	3		2			2		2	2		2	T .			T
	401005.2	Relate the functioning and application of TQM & Six Sigma	3		2	2	3	2	2	2	2	-	2	-	2		
Total Quality	401005.3	Implement ISO 9001 principles in preparation of quality manual	3					-		2	2		2		\vdash	2	+
Management	401005.4	Construct & apply management control & certification systems.	2		1	2	1		1	-	2	-	2	1	2		T
	401005.5	Execute TQM Implementation and various Quality Awards	2		-	1	1	1	1	1	2	2	2		1	1	
	401005.6	Justify MIS & its application in construction sector.	3	3		2	3	3				2	2	1	1	1	,
					Semester	r VIII											
	401007.1	Differentiate the types of dams and explain the importance of instrumentation for safety of dams	3	2	-	2			2	1	2	2		1	1	ı	1
	401007.2	Analyze the Stability of gravity dam and describe the Concept of Arch Dam	3	3	2		2	2	2	1	2	2		1	1		
Dams and Hydraulic	401007.3	Design the spillways with appropriate given data and explain the concept of Spillway gates	3	2	2	2	2	2	2	٠,	1	17.	2	1	1		
Structures	401007.4	Explain the types Earthen dam ,failures and Diversion head works.	3	2	-		2	2	3			2		1	1	ī	1
	401007.5	Describe and use of the canal lining and canal structures.	2	•	2	2	2	2	3	2	2	2	2	1	1	1	1
	401007.6	Explain the importance of River training works and CD works.	3	2	: • //		-	-	3	S. MO	E	2	2	1	1	1	1
							•		* Ballening w		0.03037		Senhe V	PRI	NCIP/	11 - 411	i Ex

1																	
	401008.1	Choose the appropriate principles of computations related to quantity surveying.	3	2	1.				T -	2	2	2	2	2	2	2	2
	401008.2	Formulate the detail estimates and bill of quantities for various civil engineering projects.	3		-	3	2	 	-	2	2	2	3	3	2	2	2
Quantity Surveying,	401008.3	Excersize computer software for schedule of rates and specifications	3	2		2	2	2	-	2			3		2	2	2
Contracts and Tenders	401008.4	Analyses the rates and prepare valuation report.	2	-	3	2			-				3	3	-		1 -
	401008.5	Draft tender and work execution processes.	2			2	N#	2	-			2	2	3		-	
	401008.6	Apply the skill to defend a contract by knowing arbitration laws.	3	2		2		2	-				2	3			-
	401009.1	Explore the meteorological aspects, Gaussian model and Emission inventory.	3	2	3	2	•	2	2	1	3	3	•	1	3	3	3
	401009.2	Classify and analyze Air sampling methods.	3	2		2	•	3	2	-	(*)			1			
ir Pollution and	401009.3	Select methods for control and prevention of air pollution.	3	2	2	2	3	2	2	2	3	3	3	1	2	3	3
Control	401009.4	Design of air pollution control equipment's.	2	•	×	2	2	2	2	3		3		ı	2		
	401009.5	Discuss Air Pollution prevention and control Act.	3	2	•	2		3	2	2		2			2	3	3
	401009.6	Explore the Environmental impact assessment and management.	2			2	2	2	3		2	2		2	2		
	401010.1	Appraise the basic concepts of construction management such as types and functions of management, project participants and reporting system	3	2	2	2	2	2	2	2	2 NEE	3	3	2	22	3	3
	401010.2	Evaluate the progress of projects by using WBS breakdown Structure (WBS) and line of balance technique.	3	-	2	2	-	2	3	3/6	2	2	3	2	3	2	2

GERBA SOPRIEDO DOS Cologo el Bigg. 25/1/3 Saleyard. Pero - 411 645

Construction	401010.4	Implement the labour laws and various financial aspects for smooth functioning of project	3	2	2	2	-	2	-	2	-		3	2		1	1
Management	401010.4	Apply the risk management and value analysis models	2	2	2	2	3	-	-	-	3	-	2	3	-	3	3
	401011.5	Apply material management and HR management techniques	2	•		3		3	3	3		3	3	-	3	3	3
	401011.6	Recognize the importance and application of artificial intelligence technique	3	3	3	3	3	3	3	2	3	2	2	-	-	3	3

Asab

Principal
PRINCIPAL
Genba Sopanrao Moze College of Enga
25/1/3 Balewadi, Pune - 411 045





GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045.

Civil Engineering Department

Academic Year 2019-20

			741	PE	Semest	er III	A.S.	4		-		100		100			
Subjec	, 00	Statement	POI	PO2	РО3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2	PSO3
	2010	Identify types of building and basic requirements of building components.	2	-	2		1	1	1	2	2	2	1	2	2	1	1
	20100	Explain types of masonry, formwork, casting procedure and necessity of underpinning and scaffolding.	2	1	1	2	1	1	-	-	2	-	-		2	•	•
Building Technolog		Elucidate different types of flooring and roofing materials.	2	3	2	3	_	2	2	-	2	1	1		1	2	2
		Describe types of doors, windows, arches and lintel.	2		3	2	3	1	1	1	2	3	1	3	1	3	3
Technology and Materials	201001	Choose appropriate vertical circulation and protective coatings.	2	2	1	-	2	2	3	-	2		3	-	-		
	201001	Explain different materials especially eco-friendly materials and safety measures to be adopted at any construction site.	3	2	-	1	2	3	2		2	1	-	2	_	2	2
	207001	Solve higher order linear differential equations and apply to civil engineering problems such as bending of beams and whirling of shafts.	3	2	-	1	1		1	2	-	1	-	1	1	1	1
	207001	Solve system of linear equations using direct and iterative numerical techniques and develop solutions to ordinary differential equations using	2	1	1	2	-	1	3	-	2	-	1	2	-	2	2
ngineering athematics III	207001	Apply statistical methods like correlation, regression analysis in analyzing and interpreting experimental data and probability theory applied to	2	2	2	-	2	-	1	2			3	1	3	1	1
	207001 a	Perform vector differentiation and integration, analyze the vector fields and apply to fluid flow problems.	1	1	-	2	1	G. 9	2	-	1	3	-	3	2		

Adi

PRINCIPAL

Genba Separate Mass College of Engg

	201006	Operate and use surveying equipment.	2		1			-	-		2	2	-	2		2	2
	201006	Apply knowledge of leveling to draw plan or map of the existing permanent features on the ground.	3		2	1	1		1	2	2	1			2	1	1
Surveying	201006	Analyze temporary adjustments and check permanent adjustments of the Theodolite.	2	1	1	1	1	1	2	•	2	3	2			1	1
our cyang	201006	Determining reduced level and distance using tacheometry and use of Electronic surveying equipment for measurement.	3	3		2	-	2		3		1			3		•
	201006	Analyze and design of simple curves	2	1			-	1	3	-	2		1	1	1	3	3
	201006	Relating space base positioning systems for construction survey.	2	2			3	-	1	1	1	1		2		-	-
	201002	Compute different type of stresses in determinate, indeterminate, homogeneous and composite members.	1		2	1	-	-	-	-	-		1	1	1	2	2
	201002	Develop bending stress and shear stress distribution diagrams across beam secion		1			-	1	1		1	1	ı	1	1	2	2
Strength of Materials	201002	Determine stresses due to torsion, strain energy under different loading conditions and stresses due to impact loading	2	1		1		1	1		1	1	1	1	1	2	2
Maichais	201002	Explain the concept of principal stresses and stresses due to combined loading	2			•	1		2		1		1	1	2	2	2
	201002	Plot loading diagram, Shear Force Diagram (SFD) and Bending Moment Diagram (BMD).	-		1		1		2	1	1	1	1	1	1	2	2
	201002	Analyze axially and eccentrically loaded column		1	-	1	-	-	1	-	-	-	1	1	1	2	2



Adi

Genba Saparese Mana College of Engl

	201003	Differentiate the different types of soil and their engineering properties and classify them	3		3	2	1		2	1		3		Τ.		,	T
	201003	Determine the soil properties in laboratory and develop a proficiency in handling experimental data	3	1	2		3	2	1	2		ļ.	3	+		+	2
Geotechnical Engineering	201003	Understand of the concept of effective stress and its influence on soil behavior.	3	-	1	2	2	+	2	-		2	2	2	+	+	+
	201003	Develop an understanding of the influence of water flow on the engineering behaviour of soils.	3	2		2		1	-	2	2	1		1	2	1	+
	201003	Analyze engineering properties like compaction, permeability, soil shear strength.	3		2	2	2		3							+ '	+
	201003	Compute the lateral thrust and classify soil slopes.	2	1	-	-	1	2	,	-	-	•	2	•	-	-	+
	201004	Understand Fluid properties and dimensional analysis for solving fluid flow problems	3	2	-	-	1	-			2	1	1		3	2	2
	201004	Apply knowledge to solve fluid static problems	3	2	-		-	_	_		2	-	3	1	-	1	1
Fluid	201004	Interpret the concept of fluid kinematics and classify types of fluid flow	2	2	1	2	2	_	_		2	2	-	1	•	•	•
Mechanics -	201004	Interpret fluid dynamics and understand the application of Bernoullis Equation	2	2	1	-	-	2	1	1	1	1	-	1		2	2
	201004	Understnd the concept of boundary layer developement	2	2	-	1	3	1	1	2	•	1	1	2	3	1	1
	201004	Apply the concept of turbulent flow through pipes and determine the varius losses in pipes	2	2	1	1	-	1	3	2	1	1	3	2	-	2	2



PRINCIPAL.
Genba Separate Mass Callage of Engg:
25/1/3 Belowed. Pure - 411 845

					Seme	ster IV											
	201005	Implementing principles of architectural planning.	3		2		1	1	1	1	T -		1	1	2	Τ.	Τ.
Architectural		Analyze the available primary or secondary data and plan different types of structures considering futuristic need of an area.	3	2	2	2	1	1	2	-	1	2	1	3	2		-
Planning and Design of Buildings	201005	Improve the status of existing structures by proposing appropriate green measures.	2	1		1	2	2	1	1				2	1	2	2
	201005	Plan effectively various types of buildings according to their utility.	2	-	2	1	2	2	-	1	2		1	1	2	2	2
	201005	Understand and resolve contemporary issues at multi-dimensional functional levels.	3	2	2		-	-	2		2	2	3		3	1	1
	201008	Evaluate static and kinematic indeterminacy of structures. Determine slope and deflection in determinate beams using double integration method, area moment theorem, conjugate beam method and castigliano's theorem	3	-	-	1	2			-	1	-	1	1	1	2	2
	201008	Analyze indeterminate beams and frames using three moment theorem and castigliano's theorem	3	2	-	-			1	3	-	-	2	2	2	2	2
Structural 20		Analyze determinate and indeterminate trusses using castigliano's theorem	3	2	1		2	٠	2	2	1	3	2	1	-	-	-
		Apply influence line diagrams for the analysis of structures under moving load.	3	-	-)	() =	3	•	-	•	2	3	-	2	2	•	
		Analyze two and three hinged parabolic and circular arches	2	2	2	-	-	×-	-	2	1	-	•			2	2
]:	201008 1	Apply static and kinematic method to find collapse oad in indetrminate beams and frames using plastic analysis	2	-	2	1	-	2	1	E CO	-	-	-	-	-	2	2

PRINCIPAL
25/1/3 Belowed. Page - 411 645

		Explain the basic concepts of engineering geology in terms of rock types and their applications in civil engineering.	3		2	1		2	2	_					T	1	_
	207009	Discuss physical properties and classification of minerals. Describe Structural geology, mountain building activity and plate tectonics theory.	3	-	-	1		2	2	1	2	1	3	1		1	1
Engineering		Illustrate Geomorphology and historical geology with physiographic divisions of india,principles of stratigraphy and geological time scale.	3	3	1	2		2	2		2		2	2	1		
Geology	207009	Describe methods of preliminary geological explorations and applications of Remote sensing and GIS in civil engineering.	3		2		2	2	2			-	-	3	2		\vdash
	207009	Assess the Importance of geological nature of the site, precautions and treatment of the	•					2	2	3	3	1	-	1	2	2	2
	207009	Explain geological bazarda and i	3	1	2	1		2	2				•	1		2	2
	207009	ground water and uses of common building stones.	3	1	2	1		2	2	3	3	1		1	1	1	1
	201007	Understand chemistry, properties, and classification of cement, fly ash, aggregates and admixtures, and hydration of cement in concrete.	2	2	-	2		-	-	-	3	-		2		1	
	201007	Prepare and test the fresh concrete	2		-	-	4		-		3	1	1				il®di
Concrete Technology	201007	Test hardened concrete with destructive and nondestructive testing instruments	2	-		-		2	-	2	2	•	1	2	1	1	1
a.	201007	Get acquainted to concrete handling equipments and different special concrete types.	3	2			2	2	_	2			-	2	2	1	1
	201007	Design concrete mix of desired grade	3	2	2		•	2	•	3	3	•	•	2	1	1	1
	201007	Predict deteriorations in concrete and repair it with appropriate methods and techniques.	3	2				- Se . C.	1075	a la	3	2	2	2	3	1	1

EERING

Genha Garante Mass Colons of Bago

	TERROLANIE CONTRACTOR				Semes	ter V											
	301001	Estimating missing rainfall data	3	2	1	2		Ι.		Τ.				T	Τ.	T	Γ-
	301001	Compute water requirement of crops	2	2	-			-			_	-	-	-	1	-	-
Hydrology and Water	301001	Recognize various ground water distribution systems	3	2	2	2		-	2			-		-	1	2	2
Resourse Engineering	301001	Identify the concepts of hydrographs	3	2				2	_			2	2	2	1	2	2
	301001	DescribeApply the flood routing techniques to find flood frequency	2	1		-		2	2		-		-			2	2
	301001	Discuss water management, water logging & drainage concepts.	2	•		1		2	2		2		2	2	1	2	2
	301002	Describe the meaning and importance of Infrastructure Engineering	3		1	1		2	-	1		2		1	1		-
frastructure	301002	Classify railway systems and to select appropriate construction techniques	2	1		•		2		3				1	1	1	1
nfrastructure Engineering	301002	Interpret construcion techniques	3		-	-	-	2	-					1	1	3	3
and Construction Techniques	301002	Differentiate tunneling and its construction techniques	3	1	•	2		2	-	1		1		1	1	2	2
echniques	301002	Compare docks and harbours along with their importance	3	1	•		2	2	2	-				1	1		
Ī	301002	Appraise various construction equipment's in Civil Engineering	3	4	3	1	17. 20 1	2	2		128	1		1	1		



Genba Saparasa Masa Calago at Esco.

	301003	Identify various limit states, load combinations, material properties, types of section, safety factors from IS:800-2007. Designing of tension member in steel structures	3	•	3	1	1	3		3	2	3	1	2	1	1	1
	301003	Analyse and design various Compression members in steel Structure.	3	2	3			3	2	3	2	2		2	1	2	2
Structural Design - I	301003	Designing of various column bases in steel Structure.	3	-	3			3	 	3	2	-	2	2	1	2	2
	301003	Analyse and design a flexural member and beam to column connections	3	2	3		-	3	2	3	2	2	-	2	1	2	2
	301003	Designing of Welded plate girder	3	-	3	2	-	3		3	2	-	2	2	1	2	2
	301003	Analyse and design a Steel Truss and a Gantry Girder	3	3		1	-		2	3	2	2	-	2	1		
	301004	Analyse the indetermiant beams and frames by Slope Deflection method	3	3	-			-	2	2			1	1	1		-
	301004	Construct moment diagrams for indetermiant beams and frames by Moment Distribution method	3	-	2	(= 0	2	2	2		2		2	1		1	1
	301004	Determine stress resultants in the indetermiant beams and frames by Flexibility method	3	-	1			3	3		2			1	1		
Structural Analysis - II	301004	Analyse the indetermiant beams and frames by Stiffness method	3	3	1	1	1			1				1			
	301004	Construct BMD in highly indeterminate frames using cantilever and portal frame method. Determine slope and deflection in determinate beams approximately using Finite Difference Method	3		3	1	-	1	2	2	3	1	1	1	3	•	
		Apply basic concepts of finite element method to solve elementary problems	3			3	38/19	6.8		-		•	1-	1			-

PRINCIPAL
Genba Separate Mass College of Engg.
25/1/3 Selevand, Pure - 411 646

	301005	Describe fliud flow around submerged objects and classify the unsteady flow	3	3	3	-	1	1	1		3	2		2	Γ.	1	Ι,
	301005	Discuss open channel flow and derive depth energy relationship	3	2	•	1	3		2		3		2	-		1	
Fluid Mechanics -	301005	Design the most economical channel section, demonstrate hydraulic jump	3	2	2		(18)	2		-	3	2		2	3	1	1
II	301005	Understand the concept impact of jet, study of centrifugal pumps	3	2		3	2	2	2	2	3	-	2	-	3	1	1
	301005	Understand, analyse and design various types of Turbines.	2		1	-	-	3		S.#.	3		2	2	-	1	1
	301005	Recognize and compute the GVF profiles by various methods	2	-	3	3	2	-	2	2	2	2	2	2		1	1
					Semest	er VI				10-1							L
	301007	Perform Geodetic Survey and understand the GNSS and triangulation survey.	2		-	-	1	-	-	-	-	•		2	2	•	
	301007	Explain the concept of hydrographic surveying	3	2	1	-		-	-	-	-	-	2	-	2	•	-
Adavanced	301007	Relate the concept of modern surveying techniques and their applications in various field of Civil Engineering.	3	2	2	3	2	2	2	2	2	-	-	-	2	-	-
Surveying	301007	Solve to adjust geodetic traverse and understand laws of weights	3	2	3	2	-	-	7	2	-	3	-	-	2		
	301007	Interpret aerial photography data to study terrain.	3	2	-	2	-	1	1	-		3			-	2	2
	301007	Calculate the relative altitudes and distances of different points on ground.	3	2	-	-	3	-	1	•	2	3	-	2	-	2	2



Genba Separate Second S

a serve those College of E

	301008	Understand the project planning & scheduling.	3						1	1	_	T			1		
	301008	Implement appropriate resources at right time in project.	3	2	2	1	2	3	2	3	-	3	3	-	-	-	-
Project Management	301008	Examine the Team work and its impact on project progression.	3	2		1	3	1	3	3	3	3	3	-	2	2	-
and Engineering Economics	301008	Judge correct alternative in sells and purchase activities by understanding basics of engineering economics	3		2	2	3	1	2	2	3	3	3		-	2	2
	301008	Defend Investment and its stages in suggesting resource allocation	2	2	2	-	3	1	2	2			3		2	2	-
	301008	Summarize types of project appraisal and project reports	2	_	2	2	3	1	2	2		2	3	1	-	2	2
	301009	Complete site investigation program,including types,number,and location of boring	3	2	-	-	3	1	2	-	2	2	-	1	1	1	1
	301009	Evaluate bearing capacity and settlement for both shallow and deep foundation	3	2		2	-	1	2	2	2	-	-	1	1	-	2
Foundation	301009	Relate and study drilled piers and caisson.	3	-	J.E	2	3	•	2	2	2		-	-	-	2	
Engineering	301009	Select appropriate design principles of foundation on black cotton soil	2	20	1	•	3	2	2	2	2		•	•		2	2
	301009	Priotize and suggest geosynthetic-reinforced soil structures	2	•	1	•	3	2	2		2		1	3	3	2	1
	301009	Adapt effect of earthquake techniques on structures	2	•		1	3	•	2	2	2		•		•	•	•



Gerbie Supreme Steen Coding of Engl. 26/1/3 Subsected, Puno -411 846

	301010	Compare the design philosophies - WSM, ULM, and LSM	3	3	3	1	3		1	2	2	1	3	2			
Structural	301010	Compute the moment of resistance of rectangular / flanged section by WSM and LSM	3	3	3	3	3	2	3	3	3	3	3	2	1	1	1
Design - II	301010	Examine or Select the cross section for slabs, beam, column and foundation conforming to IS 456:2000	3	3	3	3	3	2	-	3	1		1	2	-	1	1
	301010	Design the G+2 storey residential/commercial/public building conforming to IS 456:2000	3	2	3	2		3		3	2	1	1	2	1	3	3
	301011	To explain the source, control and effect of air and noise pollution	2	3	3		1	3	3	1		1	1	2		-	
	301011	To describe the fundamentals of water treatment units and parts of water supply system.	3	2	2			2	3	1		1	1	2	2	2	2
Environment al	301011	To explain and design of Water treatment units	3	2	2	-	2	2	3	1			i	2		3	3
Engineering - I	301011	To describe the fundamentals of coagulation, flocculation and filtration in water supply system.	3	2		2	2	2	3	1	1	•	1	2		3	3
	301012	Describe the Miscellaneous treatment systems for drinking water	2	1	1	1	•	2	3	1	ě	1	1	2			
	301012	Demonstrate water distribution system, rain water harvesting and PWTP	3	2	1	1	-	2	3	1	1	1	1	2	-	-	



Gentis Supreme Man College of Engo. 25/1/3 Selevendi, Puno - 411 045

					Semeste	r VII											
	401001	Explain the quality and characteristics of sewage and the concept of stream sanitation.	3	2	2	-	3	2	2	2		Ι.	Ι.	2	Τ.	3	Τ.
		Describe the sewage treatment processes with the design of screen chamber, grit chamber, and primary sedimentation tank.	3	2	2	-	3	2	2	-	2	2	2	-	2	3	3
nvironment al		Describe and design the secondary treatment units with special emphasis on activated sludge process and trickling filter.	3	2	1	2	3	2	2	2	2	3	-		2	3	3
ngineering - II	401001	Explain low cost treatment methods with the design of oxidation pond, aerated lagoon.	3	2	2		3	2	2	2	2	3	-	_	2	3	3
	401002	Describe anaerobic treatment processes as anaerobic digester, up flow anaerobic sludge blanket and they also able to design septic tank.	3	2	2	2	3	2	2	2	2	33		2		3	3
	401002	Explain the characteristics and the treatment process of industrial wastewater of sugar,dairy and distillery industry.	3	2	2	2	-	2	3	2	•		-	2	3	-	-
	401002	Interpretition and study of rural road development vision and on-going road development projects.	3	2	2		2	2	٠	-		3		2		_	
	401002	Evaluate Gemometric design of highways.	3			2	3	2	-	2	2						
Transportation	101002	Categorizing road traffic regulation and control devices.	2	2	2	2	3	2	-	2	2	,	•		2	-	•
Engineering	401002	Experimenting and Validating Pavement materials suiatbility in mix-design.	3	2	-	2	3	2	2	-		2	•	2			-
	401003	Desire 6	2	-	2	2	3 5	2	2	2	•	2	-	-		•	-
	401003	Adapting the Modern Trends in Pavement Construction.	3	2		2	3	- 50	-		2	2	•	-	2	•	12m

PRINCIPAL

Genba Separate Mass Cologo of Engg.

25/1/3 Belowedi. Puno - 411 045

11.21 -

	401003	Compute the stresses and losses in PSC Structures	3	3	3			2		Τ.	T	T	Т		_	_	_
	401003	Designing of PSC rectangular and flanged beams with end block, one way and 2 way post tensioned slabs conforming to IS: 1343:2012	3	3	3	3	2	2	2	3	2	3	-	2	3	+	+
	401003	Designing of PT flat slab conforming to IS:456-2000, IS: 1343:2012	3	3	3	3		2	2	3	2	3		-		-	+
Structural Design and Drawing - III	401003	Analysis and design of RCC cantilever T and L shape retaining walls conforming to IS 456:2000	3	3	3	3	-	2	2	3	2	3	3	2	2	2	2
	401004	Analyze and Design Liquid Retaining Structures resting on ground conforming to IS:3370-2009	3	3	-	3	-		2	3	2	3		2		2	2
	401004	Derive the equations of motion for free, forced, un- damped and damped vibrations. Estimate the EQ forces by seismic coefficient method conforming to IS 1893:2002	3	3	3	3	3	3	3	3			3	3	3	3	3
	401004	Understand the chemistry of cement and its effect on properties of concrete	2	-	2	-		3	2	2	2	2	_	2			
	401004	Apply the knowledge of supplementary cementitious materials to produce sustainable concretes	1	-	•	2		1	2	2	1	2			-	-	
ACT	401004	Understand the mechanism of working of admixtures and their effect on properties of concrete	2	2	2	4		3	2		2	3	-	-			-
	401004	Evaluate the characteristic properties of fiber reinforced concrete	2	2	2		2	2	2	2	2	3		2	2	2	2
	401005	Understand the durability properties of concrete	1	2	2	2	2	3	2	2	-	3		2	2	2	2
	401005	Interpret the properties of concrete through advance testing methods	1	2	2	2	¥36.5	MOZ	2	2		2		2	22		_

PRINCIPAL
Genbs Departed Mass College of Engg.
26/1/2 Debased. Page - 4/1 046

	401005 F	decognise quality & contribution of quality gurus.	3	525 177	2			2		2	Ι,	T	Τ.	T	T		Т
	401005	Relate the functioning and application of TQM & Six Sigma	3	•	2	2	3	2	2	2	2	-	2	<u> </u>	-	-	-
tal Quality	401005	implement ISO 9001 principles in preparation of quality manual	3	-	= 0.					2	2	-	2	-	2	-	-
anagement	401005	Construct & apply management control & certification systems.	2		1	2	1		1		2	•	2	<u> </u>	-	2	2
	401006	Execute TQM Implementation and various Quality Awards	2			1	1	1	1	1	2	2	2	1	2	1	1
	401006	Justify MIS & its application in construction sector.	3	3		2	3	3				2	2	1	1	1	1
					Semeste	r VIII											
	401007	Differentiate the types of dams and explain the importance of instrumentation for safety of dams	3	2		2			2	1	2	2		1	1	1	1
						1					- 1			4	1	f (1
	401007	Analyze the Stability of gravity dam and describe the Concept of Arch Dam	3	3	2	-	2	2	2	1	2	2	-	1	1		
Dams and Hydraulic	401007	the Concept of Arch Dam	3	2	2	2	2	2	2	1	2	2	2	1	1		_
	401007	Design the spillways with appropriate given data and explain the concept of Spillway gates														- 1	-
Hydraulic	401007	Design the spillways with appropriate given data and explain the concept of Spillway gates Explain the types Earthen dam ,failures and Diversion head works.	3	2	2	2	2	2	2	-	1	-	2	1	1		1



PRINCIPAL
Genius Superarso Mass College of Bross.
25/1/3 Balawadi, Pano - 411 645

	401008	Choose the appropriate principles of computations related to quantity surveying.	3	2		-	_			2	2	2	2	2	2	2	2
Quantity	401008	Formulate the detail estimates and bill of quantities for various civil engineering projects.	3			3	2	-	-	2	2	2	3	3	2	2	2
curveying, Contracts	401008	Excersize computer software for schedule of rates and specifications	3	2	2	2	2	2		2	-	-	3		2	2	2
nd Tenders	401008	Analyses the rates and prepare valuation report.	2	-	3	2	-	-	-	-	-	-	3	3			
	401009	Draft tender and work execution processes.	2		-	2	-	2	-	2	-	2	2	3	-		-
	401009	Apply the skill to defend a contract by knowing arbitration laws.	3	2	-	2	-	2	-	-	-	-	2	3	-	-	-
	401009	Explore the meteorological aspects, Gaussian model and Emission inventory.	3	2	3	2	-	2	2	1	3	3	-	1	3	3	3
	401009	Classify and analyze Air sampling methods.	3	2	-	2	-	3	2	_	-			1	-	-	
Air Pollutio	40100	Select methods for control and prevention of air pollution.	3	2	2	2	3	2	2	-	3	3	3	1	2	3	3
and Contro	40100	Design of air pollution control equipment's.	2	-		2	2	2	2	3	-	3		1	2		
	40101	0 Discuss Air Pollution prevention and control Act.	3	2	-	2	-	3	2	2	-	2			2	3	3
	40101	Explore the Environmental impact assessment and management.	2		.=0	2	2	2	3		2	2		2	2		



Ashi

Gents Supermo Mass College of Engg. 25/1/3 Belowedi. Pune - 411 045

	401010	Appraise the basic concepts of construction management such as types and functions of management, project participants and reporting system	3	2	2	2	2	2	2	2	2	3	3	2	22	3	T
	1 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Evaluate the progress of projects by using WBS breakdown Structure (WBS) and line of balance	3	<u> </u>	-		-		-	+	+		-	_	-	_	+
Construction		technique.		-	2	2	-	2	3	3	2	2	3	2	3	2	1 :
/anagement	401010	Implement the labour laws and various financial aspects for smooth functioning of project	3	2	2	2	-	2		2			3	2	_	,	+
	401010	Apply the risk management and value analysis models	2	2	2	2	3	-	_	_	3					•	1
	401012	Apply material management and HR management					-			-	3	-	2	3	-	3	3
		techniques	2	-	-	3	-	3	3	3		3	3	-	3	3	3
	401012	Recognize the importance and application of artificial intelligence technique	3	3	3	3	3	3	3	2	3	2	2	-	_	3	

Principal
PRINCIPAL
Genba Sopanrao Moze College of Enga.
25/13, Balewadi, Pune - 411 045



GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045.

Civil Engineering Department

Name of		and the second of the second o	Semest		197		100					115	100		100 V 100		B-12
Course	Course Code	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
	201001.1	Identify types of building and basic requirements of building components.	1	3		-	-			-		-	-			1	1
	201001.2	Make use of Architectural Principles and Building byelaws for building construction		2			-	3		3		-		-	1	1	
Building Technology and	201001.3	Plan effectively various types of Residential Building forms according to their utility, functions with reference to National Building Code.	1	2	2		-	•	3	3	•	3		•	1	1	-
Architectural Planning	201001.4	Plan effectively various types of Public Buildings according to their utility functions with reference to National Building Code	1	2	2			•	3	3	-	3				1	
	201001.5	Make use of Principles of Planning in Town Planning, Different Villages and Safety aspects	(8)	-	-			3	-	-	-						
	201001.6	Understand different services and safety aspects	7.00	-	_	(2)	-	3		-	-			-	-	-	
1	201002.1	Understand concept of stress-strain and determine different types of stress, strain in determinate, indeterminate homogeneous and composite structures.	1	1	•	2	1	-	1/2:	-	-	176		1	1	1	2
	201002.2	Calculate shear force and bending moment in determinate beams for different loading conditions and illustrate shear force and bending moment diagram.	1		1	•	-	-	1	1	-	1	1	1	1	1	2
Mechanics of structure	201002.3	Explain the concept of shear and bending stresses in beams and demonstrate shear and bending stress distribution diagram.	1	2	1		1	-	1	1		1	1	1	1	1	2
	201002.3	Use theory of torsion to determine the stresses in circular shaft and understand concept of Principal stresses and strains.	1	2	×		•	1	•	2	•	1		1	1	2	2
	201002.3	Analyze axially loaded and eccentrically loaded column.	1	•		1		1	-	2	1	1	1	1	1	1	2
	201002.3	Determine the slopes and deflection of determinate beams and trusses.	1	(-)	1		1	*		1		-		1	1	1	2

PRINCIPAL

Genba Separate Maze College of Engu.

25/1/3 Balewadi. Pune - 411-945

	201003.1	buoyancy & floatesting, measurement of fluid pressure	, 3	1.		T	T	T	T		T			T -	_		
		Understand the constant of	,	1	2	2	1	1	1	-	1	-	2	1	1	1	
	201003.2	problems of fluid flow	2	2	1	1	1	1	1	1	2	1	1				1
Fluid Mechanics	201003.3	Understand the concept of Dimensional analysis using Buckingham's π theorem, Similarity & Model Laws and boundary layer theory and apply it for solving practical problems of fluid flow	2	2	1	2	1					'	1	1	1	1	1
	201003.4	Understand the concent of land					1	2	1	1	1	1	1	2	1	1	1
	201003,4	losses and analyze pipe network using Hardy Cross and minor	2	2	1	-	2	1	1	2	1	1	3	1	,	1	Ι.
	201003.4	and depth-Energy relationships in open channel flow and make	2	2	-	1	1	1	-								
	201003.4	Understand the concept of gradually varied flow in open channel and fluid flow around	2	2	1				3	2	1	1	1	2	1	1	1
	207009.1	Explain about the basic concepts of engineering geology, various rocks, and minerals both inlab and on the fields and		2	1	1	1	1	1	1	-	-	1	1	1	1	1
	20.003.1	constructions	2	2	1	2	2	2	2	1	-	-	-		3	1	1
	207009.2	Exploring the importance of mass wasting processes and various tectonic processes that hampers the design of civil engineering projects and its implications on environment and	2	1	1	3	2	2	1	3	1	-	-	-	3	1	1
ngineering	207009.3	Recognize effect of plate tectonics, structural geology and their significance and utility in civil engineering activities	2	1	2	2	3	1	2	1			_	_	3	1	1
Geology	207009.4	Incorporate the various methods of survey, to evaluate and interpret geological nature of therocks present at the foundations of the dams, percolation tanks, tunnels and to infer site alignment/ level free from geological defects/	2	1	1	2	3	1	1	2	1	•		-	1	3	1
	207009.4	Assess the Importance of geological nature of the site, precautions and treatments to improve the site conditions for dams, reservoirs, and tunnels	2	-	1	2	3	1	2	1	•	•	-	-	1	3	1
	207009.4	Explain geological hazards and importance of ground water and uses of common building stones.	2	-	1	2	3	1	3	1	*	-	-		3	1	



PRINCIPAL

Superviso Moza College of Engg.

25/1/3 Relevandi, Purio - 411 646

	207001.1	Solve Higher order linear differential equations and its applications to modeling and analyzing Civil engineering problems such as bending of beams, whirling of shafts and	2	2	1	2	2	2	2	1			T		3	Ι.	Ι.
Engineering Mathematics	207001.2	Solve System of linear equations using direct & iterative numerical techniques and develop solutions for ordinary differential equations using single step & multistep methods applied to hydraulics, geotechnics and structural systems. (BT-3)	2	1	1	3	2	2	1	3	1	-			3	1	1
m	207001.3	Apply Statistical methods like correlation, regression and probability theory in data analysis and predictions in civil engineering.	2	1	2	2	3	1	2	1		-			3	1	1
	207001.4	Perform Vector differentiation &integration, analyze the vector fields and apply to fluid flow problems.	2	1	1	2	3	1	1	2	1	-	-		1	3	1
	207001.4	Solve Partial differential equations such as wave equation, one and two dimensional heat flow equations.	2		1	2	3	1	2	1		-	•		1	3	1
			Semest	er IV													
	201008.1	Identify and classify the soil based on the index properties and its formation process.	2	3	-	3		1	2		-	3	-		1	-	1
	201008.2	Explain permeability and seepage analysis of soil by construction of flow net.	3	2	3	-	-	-	2		•	3	-		1		1
Geotechnical	201008.3	Illustrate the effect of compaction on soil and understand the basics of stress distribution.	3	2	3	•	•	1	3	-	•	3	-		1		1
Engineering	201008.4	Express shear strength of soil and its measurement under various drainage conditions.	3	3		2	٠	-	2		3.00	3	2.90	•	1		1
	201008.4	Evaluate the earth pressure due to backfill on retaining structures by using different theories.	3	2	•	•	-		2	-	-	-	12		1	-	1
	201008.4	Analysis of stability of slopes for different types of soils.	3	2	3	-	5 4)	-	3	-	-	3	-	-	1		1





PRINCIPAL Supple Superate More College of Engli 20172 Relevand, Pune - 411-045

	201009.1	Define and Explain basics of plane surveying and differentiate the instruments used for it.	3	I	Τ.	Ι.		1.		T	Ι,	T		Τ.	Τ.	T	T
	201009.2	F	3	1		+-	1	Ħ.	-	-	3	-	<u> </u> -	2	3	•	-
Survey	201009.3	Describe different methods of surveying and find relative positions of points on the surface of earth	3	2		+-	3	-	-	-	2	-	-	-	-	•	<u> </u> -
	201009.3	Execute curve setting for civil engineering projects such as roads, railways etc.	3	2	2	-	-			-	2	-	-	-	2	•	1
	201009.3	Articulate advancements in surveying such as space-based positioning systems.	3	-	 -	2	3		-		2	•	-	-	2	•	1
	201009.3	Differentiate map and aerial photographs, also interpret aerial photographs	3	1		-	3				3	(1. 1)	-	-	1	•	1
	201010.1	Understand chemistry, properties, and classification of cement, fly ash, aggregates and admixtures, and hydration of cement in	2	2	-	-	-		_		3	-	•	2	_	•	1
	201010.2	Develop the skills to Prepare and test the fresh concrete	2	2		_	-	_		1	3	-		•	1	2	3
Concrete	201010.3	Recognize hardened concrete with destructive and nondestructive testing instruments	2		-	2	-			_	2	-	1	1	1	2	2
Technology	201010.4	Design concrete mix of desired grade.	2		u.		-	1	_	_	3		3.5	•	1	2	1
	201010.4	Explain the skill of concrete handling equipment's and understand different special concrete types.	3	3	3	-		-	-		3				2	2	2
	201010.4	Discuss deteriorations in concrete and repair it with appropriate methods and techniques.	3	2	-	-	-			8-	-			•	1	1	1
	201012.1	Describe project life cycle and the domains of Project ManagementDescribe project life cycle and the domains of	3	3	2	2	2	2	1	1	1	1	2	•	2	2	1
	201012.2	Explain networking methods and their applications in planning and management	3	3	3	1	1	1	1	1	1	1	2	1	1	1	2
Project	201012.3	Categorize the materials as per their annual usage and also Calculate production rate of construction equipment	3	3	3	2	2	1	1	1	1	1	2	2	1	1	1
nanagement	201012.4	Demonstrates resource allocation techniques and apply it for manpower planning.	2	3	2	1	1	1	2	2	1	1	2	1	2	1	1
	201012.4	Understand economical terms and different laws associated with project management	3	3	2	TOA	72 C	1	2	1	1	1	1	2	1	1	1
	201012.4	Apply the methods of project selection and recommend the best economical project	3	2	2 4	1	1	18	_	2	1	2	1	1	1	1	1

- Lund

PRINCIPAL

Sciences More College of Esqu.

Suma - 411 045

	201011	Understand the basis															
	201011.1	Understand the basic concept of static and kinematic indeterminacy and analysis of Indeterminate beam	1	2	1	2	2	2	1	1	1	1	2	1	Τ.	T.	\top
	201011.2	Analyze redundant trusses and able to perform approximate analysis of multi-story multi-bay frames	2	3	3	1	1	1	1	1	+ -	-	+	+	+	+	+
Structural	201011.3	Implement application of the slope deflection method to beams and portal frames.	3	3	3	2	2	1	1	+	1	1	2	2	2	1	
Analysis	201011.3	Analyze beams and portal frames using moment distribution method.	2	3	2	1	1	1	+	1	1	1	2	1	1	1	- 2
	201011.3	Determine response of beams and portal frames using structure approach of stiffness matrix method	3	3	2	1	2	1	2	2	1	1	2	2	2	2	1
Neg -	201011.3	Apply the concepts of plastic analysis in the analysis of steel structures.	3	2	2	1	1	1	1	2	1	2	1	1	3	1	3
			Semes	ster V	10.00				N				1	1.	1.	I	1
	301001.1	Estimating missing rainfall data	3	2	1	2	Γ.	1.						Ι.	1	Ι.	Τ.
	301001.2	Compute water requirement of crops	2	2	-		-	-		-					1	2	2
Hydrology and Water	301001.3	Recognize various ground water distribution systems	3	2	2	2			2		1	2		2	1	2	2
Resourse Engineering	301001.4	Identify the concepts of hydrographs	3	2			-	2		-			2		1	2	2
	301001.5	DescribeApply the flood routing techniques to find flood frequency	2	1	-	-	-	2	2						1	2	2
	301001.6	Discuss water management, water logging & drainage concepts.	2		-	1		2	2		2		2	2	1	2	2
	301002.2	Describe the meaning and importance of Infrastructure Engineering	3	-	1	1		2	-	1	2	2		1	1		-
	301002.3	Classify railway systems and to select appropriate construction techniques	2	1	-		•	2	-	3				1	1	1	1
Infrastructure Engineering	301002.3	Interpret construcion techniques	3		(a)			2	-				-	1	1	3	3
and Construction Fechniques	301002.4	Differentiate tunneling and its construction techniques	3	1	Spirit V	OZE	ak.	2	-	1	-	1		1	1	2	2
			182	. 1	4	-9	1	10 1				-	\neg			-	
	301002.5	Compare docks and harbours along with their importance	3	1 0	00	Sept.	2	0.5	2	-	-	-		1	1	-	•

PRINCIPAL
Personal Pure - 411 446

	301003.1	Identify various limit states, load combinations, material properties, types of section, safety factors from IS:800-2007. Designing of tension member in steel structures	3	-	3	1	1	3		3	2	3	1	2	1	1	1
	301003.2	Analyse and design various Compression members in steel Structure.	3	2	3	-	-	3	2	3	2	2	+-	2	1	2	2
Structural Design - I	301003.3	Designing of various column bases in steel Structure.	3	-	3		-	3	-	3	2	-	2	2	1	2	2
	301003.4	Analyse and design a flexural member and beam to column connections	3	2	3		_	3	2	3	2	2	-	2	<u> </u>	2	2
	301003.5	Designing of Welded plate girder	3	-	3	2	-	3		3	2	-	2	2	1	2	2
	301003.6	Analyse and design a Steel Truss and a Gantry Girder	3	3	-	1	-	-	2	3	2	2	-	2	,		
	301004.1	Analyse the indetermiant beams and frames by Slope Deflection method	3	3	-	-		-	2	2	_		1	1	1		-
	301004.2	Construct moment diagrams for indetermiant beams and frames by Moment Distribution method	3	-	2	-	2	2	2		2	_	2	1			-
	301004.3	Determine stress resultants in the indetermiant beams and frames by Flexibility method	3		1		-	3	3		2		-	1	1	1	1
Structural Analysis - II	301004.4	Analyse the indetermiant beams and frames by Stiffness method	3	3	1	1	1		_	1	-			1	1	•	-
	301004.5	Construct BMD in highly indeterminate frames using cantilever and portal frame method. Determine slope and deflection in determinate beams approximately using Finite Difference Method	3	-	3	1		1	2	2	3	1	1	1	3		
	301004.6	Apply basic concepts of finite element method to solve elementary problems	3	-	-	3	-	-	-				_	1			
	301005.1	Describe fliud flow around submerged objects and classify the unsteady flow	3	3	3	-	1	1	1	-	3	2	-	2			-
	301005.2	Discuss open channel flow and derive depth energy relationship	3	2	-	1	3		2		3	-	2		\exists	1	1
Fluid	301005.3	Design the most economical channel section, demonstrate hydraulic jump	3	2	.200	Carrie Carrie	-	2	_		3	2	_	2	3	+	1
Mechanics - II	301005.4	Understand the concept impact of jet, study of centrifugal pumps	3	2	2	36	2	2	2	2	3	_	2	-	3	1	1
	301005.5	Understand, analyse and design various types of Turbines.	2	-	高生	-)	-	3		-	3	_	2	2		1	1
	301005.6	Recognize and compute the GVF profiles by various methods	2	200	33 M	3	2		2	2	2	2	2	2		1	1

PRINCIPAL

Dennis Superior Mana-College of EngliParior College of English Colle

			Sem	nester V	T												
	301007.	Perform Geodetic Survey and understand the GNSS and triangulation survey.	2	-			- 1			1.	Τ.	Τ.	Τ.	T	2	2	T
	301007.2	explain the concept of hydrographic surveying	3	2	1	1.	. -	1	+	+-	1.	+-	2	+	+	+	+
Adavanced Surveying	301007.3	applications in various field of Civil Engineering	3	2	2	3	2	1 2	2	2	2	+-	-	+	+	+	+
Surveying	301007.4		3	2	3	2	+	+-	+-	2		3	-	+	+	+	+
	301007.5	Interpret aerial photography data to study terrain.	3	2	-	2	-	1	1	-	-		-	+	2	-	-
	301007.6	Calculate the relative altitudes and distances of different points on ground.	3	2	-	+	3	<u> </u>	1	-	2	3	-	-	+	2	+
	301008.1	Understand the project planning & scheduling.	3	1 -	2	1	+-	1	1	-	_	3	-	2	-	2	2
D	301008.2	Implement appropriate resources at right time in project.	3	2	2	-	2	3	2	3	-	3	3	-	•	+-	+-
Project Management and	301008.3	Examine the Team work and its impact on project progression.	3	2	-	1	3	1	3	3	3	3	3	•	2	-	-
Engineering Economics	301008.4	Judge correct alternative in sells and purchase activities by understanding basics of engineering economics	3	-	2	2	3	1	2	2	3	3	3	•	2	2	2
	301008.5	Defend Investment and its stages in suggesting resource allocation	2	2	2		3	1	2	2			3	•	-	2	2
	301008.6	Summarize types of project appraisal and project reports	2		2	2	3	1	2	2	-	2			2	2	-
	301009.1	Complete site investigation program,including types,number,and location of boring	3	2	-		3	1	2	-	2	2	3	1	•	2	2
	301009.2	Evaluate bearing capacity and settlement for both shallow and deep foundation	3	2	-	2		1	2	2	2	-	\dashv	1	1	1	1
oundation	301009.3	Relate and study drilled piers and caisson.	3	-		2	3	-	2	+	2	-	-	1	1	-	2
ngineering	301009.4	Select appropriate design principles of foundation on black cotton soil	2	-200	G18. A	102	3	2	2		2	-	+	-	-	2	•
	301009.5	Priotize and suggest geosynthetic- reinforced soil structures	2	1	1 1	-	3	2	2		2	+	1	-	-	2	2
	301009.6	Adapt effect of earthquake techniques on structures	2	13.	- 5	1	3				2		+	3	3	2	1

PRINCIPAL

Superroo More College of Engg.

25/1/2 Relevand, Pure - 411 646

	301010.1	Compare the design philosophies - WSM, ULM, and LSM	3	3	3	1	3	T	Τ.	1			Т	Т			Т	_
Structural	301010.2	Compute the moment of resistance of rectangular / flanged section by WSM and LSM	3	3	3	3	3	+	3	+		+	1	3	2	•	-	+
Design - II	301010.3	Examine or Select the cross section for slabs, beam, column and foundation conforming to IS 456:2000	3	3	3	3	3	2	-	3	3	+	+	3	2	1	1	\vdash
	301010.4	Design the G+2 storey residential/commercial/public building conforming to IS 456:2000	3	2	3	2	-	3	+	3	2	-	+	+	2 2	1	1	
	301011.1	To explain the source, control and effect of air and noise pollution	2	3	3	-	1	3	3	1	-	1	+	+	2 2	-	3	3
	301011.2	To describe the fundamentals of water treatment units and parts of water supply system.	3	2	2	١.		2	3	1	1.	1	+	+	2	2	2	2
Environmenta Engineering -	301011.3	To explain and design of Water treatment units	3	2	2	-	2	2	3	1	<u> </u>	+	+	+	+	+	3	3
I	301011.4	To describe the fundamentals of coagulation, flocculation and filtration in water supply system.	3	2	-	2	2	2	3	1	1	١.	1	2	+	+	3	3
	301011.5	Describe the Miscellaneous treatment systems for drinking water	2	1	1	1	_	2	3	1	-	1	1	2	+	_	-	3
	301011.6	Demonstrate water distribution system, rain water harvesting and PWTP	3	2	1	1	-	2	3	1	1	1	1	2	+			-
	1 with		Semeste	r VII	7													1015/2
	401001.1	Explain the quality and characteristics of sewage and the concept of stream sanitation.	3	2	2	-	3	2	2	2	•		Ι.	2	Τ.	T	3 T	3
	401001.2	Describe the sewage treatment processes with the design of screen chamber, grit chamber, and primary sedimentation tank.	3	2	2	-	3	2	2	-	2	2	2		2	+	+	3
Environmenta	401001.3	Describe and design the secondary treatment units with special emphasis on activated sludge process and trickling filter.	3	2	1	2	3	2	2	2	2	3		-	2	3		3
		Explain low cost treatment methods with the design of	3	2	2		3	2	2	2	2	3	-		2	3	1	3
	401001.4	oxidation pond, aerated lagoon.	-								_					-		
Engineering -	401001.5		3	2	2	2	3	2	2	2	2	33	-	2	-	3		

PRINCIPAL
PRINCIPAL
Results Superviso More College of Engli20173 Behaved Pure - 411 446

-	401002.1	Interpretition and study of rural road development vision and going road development projects.	on-	T			_	_										
1	401002.2	Evaluate Gemometric design of highways.	3	1	2	2	-	2	2	-		-	3			2	T	-
Transportation	401002.3	Categorizing road traffic regulation and control devices.	3	1			2	3	2	•	2	2		Τ.	\top	+	2	_
Engineering	401002.4	Experimenting and Validating Pavement materials suiatbility in mix-design.	2	2		2 2	2	3	2	-	2	2	2	1.	1 2	+	+	+
	401002.5	Design of pavement using IS Code and IRC guidelines.	3	2	1	2		3	2	2	-	ı.	2	1-	+-	+	+	-
	401002.6		2		2	2	3		2	2	2	2	2	-	1-	2	+	+
	401003.1	Adapting the Modern Trends in Pavement Construction.	3	2		2	3		-	-		2	2	-	2	2	+	+
	401003.2	Compute the stresses and losses in PSC Structures Designing of PSC rectangular and flanged beams with end block, one way and 2 way post terminates.	3	3	3			1	2		2			-	-	+	+	+
Structural	401003.3	block, one way and 2 way post tensioned slabs conforming to Designing of PT flat slab conforming to IS:456-2000, IS:	3	3	3	3	2	2		2	3	2	3	_	2	3	-	+
Design and Drawing - III	401003.4		3	3	3	3	-	2		2 :	3	2	3				+	+
		Analysis and design of RCC cantilever T and L shape retaining walls conforming to IS 456:2000	3	3	3	3		2	+	2 3	-	2	-		2	•	2	2
	401003.5	Analyze and Design Liquid Retaining Structures resting on ground conforming to IS:3370-2009	3	3	-	3			1 2	+	-			3	2	2	2	2
	401003.6	Derive the equations of motion for free, forced, un-damped and damped vibrations. Estimate the EQ forces by seismic	3	3	3	3	3	3	3	+	+	+	3	-	2		2	2
	401004.1	Understand the chemistry of cement and its effect on properties of concrete	2		2		70			+	+	+		3	3	3	3	3
	401004.2	Apply the knowledge of supplementary cementitious materials to produce sustainable	1			2	2.5	3	2	2	+	1	2	-	2	•	•	•
ACT	401004.3	Understand the mechanism of working of admixtures and their effect on properties of	2	2	2		-	1	2	2	1	12	2	•	-	•	-	-
	401004.4	Evaluate the characteristic properties of fiber reinforced concrete	2	2	2	-	-	3	2	-	2	3		-	-	-	-	
	401004.5	Understand the durability properties of concrete	1	2	2	-	2	2	2	2	2	3		•	2	2	2	2
ACT 401	401004.6	Interpret the properties of concrete through advance testing methods			-	2	2	3	2	2	-	3	-		2	2	2	2
			1300	2 6	S. M.C.	2	3	2	2	2	-	2			2 :	22	- 1	



	401005.1	Recognise quality & contribution of quality gurus.		1	_	_	_	_									
	401005.2		3	-	2			2		2	2	-	2	-			
-		Relate the functioning and application of TQM & Six Sigma	3	-	2	2	3	2	2	2	2	1.	2	-	+	+	+
Total Quality Management	401005.3	Implement ISO 9001 principles in preparation of quality manual	3	1.	1		-	-	+		-	+	-	+-	2	+-	\perp
- gentent	401005.4	Construct & apply management control & certification systems.	2	-	1	2	1	-	 	2	2	-	2	-		2	-
	401005.5	Execute TQM Implementation and various Quality Awards	2	+-	 	1	1	١.	1	-	2	-	2	1	2	_	_
	401005.6	Justify MIS & its application in construction sector.	3	3	-	2	3	3	1	1	2	2	2		1	1	1
			Comment	Y/m			3	3				2	2	1	1	1	1
	40100= 4	Differentiate the types of decrease	Semest	er vIII	1 48												
	401007.1	Differentiate the types of dams and explain the importance of instrumentation for safety of dams	3	2	-	2	-	-	2	1	2	2	-	1	1	1	1
	401007.2	Analyze the Stability of gravity dam and describe the Concept of Arch Dam	3	3	2	147	2	2	2	1	2	2	1		-	•	-
Dams and Hydraulic	401007.3	Design the spillways with appropriate given data and explain the concept of Spillway gates	3	2	2	2	2	2	2	_	1		-	1	1		
Structures	401007.4	Explain the types Earthen dam ,failures and Diversion head works.	3	2	-	-	2	2	3	-	-	-	2	1	1	-	•
	401007.5	Describe and use of the canal lining and canal structures.	2	-	2	2	2	2	3	2	2	2	-	1	1	1	1
	401007.6	Explain the importance of River training works and CD works.	3	2	-	-	-	-	3	-	2	2	2	1	1	1	1
	401008.1	Choose the appropriate principles of computations related to quantity surveying.	3	2	-	-	-	+	_	2	2	2	2	1	1	1	1
	401008.2	Formulate the detail estimates and bill of quantities for various civil engineering projects.	3	-	-	3	2	-	_	2	2	2	3	3	2	2	2
Quantity Surveying,	401008.3	Excersize computer software for schedule of rates and specifications	3	2	-	2	2	2	_	2	-	-	3	3	2	2	2
Contracts and Tenders	401008.4	Analyses the rates and prepare valuation report.	2	-	3	2 5.	S. 60		_		-		3	3	2	2	2
	401008.5	Draft tender and work execution processes.	2	-	- /	1		2		-	+	2	2	3	-	-	•
	401008.6	Apply the skill to defend a contract by knowing arbitration laws.	3	2	- (1	PART S	2	100	_	-	-		-	-	+	•
					-	SAIN		38					2 LINE			-	-

PRINCIPAL

Genba Supervo More Cologo of Engo

Genba Supervo More Cologo of Engo

	401009.1	Explore the meteorological aspects, Gaussian model and Emission inventory.	_	_	_												
	401009.2	Classify and analyze Air sampling methods.	3	2	3	2	-	2	2	1	3	3		1	3	3	
Air Pollution	401009.3		3	2	-	2		3	2		-		-	1	ļ .	,	3
and Control	401009.4	Select methods for control and prevention of air pollution.	3	2	2	2	3	2	2		3	3	3	1	2	3	3
F	401009.5	Design of air pollution control equipment's.	2	-	-	2	2	2	2	3		3		1	2		3
-		Discuss Air Pollution prevention and control Act.	3	2		2	-	3	2	2		2			2	,	
	401009.6	Explore the Environmental impact assessment and management.	2	-	-	2	2	2	3		2	2		_		3	3
	401010.1	Appraise the basic concepts of construction management such as types and functions of management, project participants and reporting system	3	2	2	2	2	2	2	2	2	3	3	2	2 22	3	3
	401010.2	Evaluate the progress of projects by using WBS breakdown Structure (WBS) and line of balance technique.	3		2	2	_	2	3	3	2	2	3	2	AARD		
Construction Management	401010.4	Implement the labour laws and various financial aspects for smooth functioning of project	3	2	2	2	_	2		2	_	2	3	2	3	2	2
	401010.4	Apply the risk management and value analysis models	2	2	2	2	3	-		-	3	_	2	3	-	,	1
	401011.5	Apply material management and HR management techniques	2	-	-	3	-	3	3	3	-	3	3		3	3	3
	401011.6	Recognize the importance and application of artificial intelligence technique	3	3	3	3	3	3	3	2	3	2	2			3	3



Principal
PRINCIPAL
Senba Sepantage Moze College et Care
26/1/3, Baleviztik Pulter 411 DAS



GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045,

Civil Engineering Department

Course Code	Name of Course	1	Semest	er III												
201001	Building Technology and Architectural Planning	PO1	PO2	PO3	PO4	PO5	P06	P07	PO8	P09	PO10	PO11	PO12	PSO1	PSO2	PSO
201001.1															1002	150
201001.2	Identify types of building and basic requirements of building components.	1	3		8.00		-	-								
201001.2	Make use of Architectural Principles and Building byelaws for building construction		2	-			3					•	-	•	1	1
201001.3	Plan effectively various types of Residential Building forms according to their utility, functions with reference to National Building Code.	1	2	2	•		-	3	3		3			1	1	-
201001.4	Plan effectively various types of Public Buildings according to their utility functions with reference to National Building Code	1	2	2				3	3		3					-
201001.4	Make use of Principles of Planning in Town Planning, Different Villages and Safety aspects						-							•	1	
201001.4	Understand different services and safety aspects					•	3	•	•	•	•			٠		
201002	Mechanics of structure				•	•	3	•	•	•	٠	•	٠	**		
01002.1	Understand concept of stress-strain and determine different types of stress, strain in determinate, indeterminate homogeneous and composite structures.	1	1		2	1		-					1	1	1	2
01002.2	Calculate shear force and bending moment in determinate beams for different loading conditions and illustrate shear force and bending moment diagram.	1		1			•	1	1		1	1	1	1	1	2
01002.3	Explain the concept of shear and bending stresses in beams and demonstrate shear and bending stress distribution diagram.	1	2	1	٠	1	•	1	1	(*)	1	1	1	1	1	2
01002.3	Jse theory of torsion to determine the stresses in circular shaft and understand concept frincipal stresses and strains.	1	2	-		•	ı	•	2	-	1		1	1	2	-
1002.3 A	nalyze axially loaded and eccentrically loaded column.	CIR	EERI	VG VG	1		1	((4)	2	1	1	1	1	1	1	
002.3 De	etermine the slopes and deflection of determinate beams and trusses.	3		1	1	1							+	-	-	+

PRINCIPAL
Graphs Superviso Moss College of Engo
25/1/2 Relevands Pures - 411 646

	Engineering Mathematics III					T	T	T	1			_				_
207001.1	Solve Higher order linear differential equations and its applications to modeling and analyzing Civil engineering problems such as bending of beams, whirling of shafts and mass spring systems.	3	2				-			1	1		1		.	1
207001.2	Solve System of linear equations using direct & iterative numerical techniques and develop solutions for ordinary differential equations using single step & multistep methods applied to hydraulics, geotechnics and structural systems. (BT-3)	3	2							1	1		1			
207001.3	Apply Statistical methods like correlation, regression and probability theory in data analysis and predictions in civil engineering.	3	3						_	1	-		 	-		-
207001.4	Perform Vector differentiation & integration, analyze the vector fields and apply to fluid flow problems.	3	3				-				1		1	-	-	-
207001.4	Solve Partial differential equations such as wave equation, one and two dimensional heat flow equations.	3	2						-	1	1		1		-	
201008	Geotechnical Engineering	¥ -	Semes	er IV	(See 10-8					D. P.C.			920			
201008.1	Identify and classify the soil based on the index properties and its formation process.	2														
201008.2	Explain permeability and seepage analysis of soil by construction of flow net.	3	3		3	•	1	2	•	(#E	3	-	-	1	•	1
201008.3	Illustrate the effect of compaction on soil and understand the basics of stress distribution.	3	2	3		-	1	3	•	-	3	-		1		1
201008,4	Express shear strength of soil and its measurement under various drainage conditions.	3	3		2		-		-		3	•		1		1
201008.4	Evaluate the earth pressure due to backfill on retaining structures by using different	3	2		2	-	-	2	1.5	7.00	3	-	•	1		1
201008.4	Analysis of stability of slopes for different types of soils.	-		-	-	•	*	2	**	*	-		-	1	(40)	1
201009	Survey	3	2	3	•		-	3	-	-	3			1		1
01009.1	Define and Explain basics of plane surveying and differentiate the instruments used for	3	-											-		- 1
	Express proficiency in handling surveying equipment and analyze the surveying data	3	1		-	1	•	•	•	3	•		2	3		
01009.2	from this equipment.		1. 1.77		20	•	10 = 0	-	-	2	•	3.53	*	-		-
01009.2	from this equipment. Describe different methods of surveying and find relative positions of points on the surface of earth	3	2	-	×	3	922			-						
01009.3	Describe different methods of surveying and find relative positions of points on the surface of earth	3	1000		-	3	•	li x		2	(a)	12		2		1
01009 <u>.3</u> 01009 <u>.3</u>	Describe different methods of surveying and find relative positions of points on the	-	2	2	- 2	3	•	•	•	2 2 2	•	•	•	2	•	1

Lung

PRINCIPAL

Supple Superree More College of Engl.

2012 Released Pure - 411 446

20101	Concrete Technology					T	T	1	_					-,-		
201010.	Understand chemistry, properties, and classification of cement, fly ash, aggregates and admixtures, and hydration of cement in concrete.	2	2		+	-	+	-	-		-	-	+		-	-
201010.	2 Develop the skills to Prepare and test the fresh concrete	2	+.	-	-		-	-		3	1.			1	2	3
201010.		- 01	2		+ -	-	.	-	1	3	.	1	1	1	2	2
201010.		2		+-	2		-			2	•			1	2	1
201010.4	Explain the skill of concrete handling equipment's and understand different special concrete types.	3	3	3	+-	·	1			3			-	2	2	2
201010.4	Discuss deteriorations in concrete and repair it with appropriate methods and techniques	+	-	+	-	μ.	·	•		3				1	1	1
201011	Structural Analysis	. 3	2	+	-			-	•	-		•	-	2	2	1
201011.1	Understand the basic concept of static and kinematic indeterminacy and analysis of Indeterminate beam	1	2	1	2	2	2	1	1	1	1	2	1	1	3	
201011.2	Analyze redundant trusses and able to perform approximate analysis of multi-story multi- bay frames	2	3	3	1	1	1	1	1	1	1	2	2	2	1	1
201011.3	Implement application of the slope deflection method to beams and portal frames.	3	3	3	2	2	1	1	1	1						
201011.3	Analyze beams and portal frames using moment distribution method.	2	3	2	1	1	1	2	2	1	1	2	1	1	1	2
201011.3	Determine response of beams and portal frames using structure approach of stiffness matrix method	3	3	2	1	2	1	2	1	1	1	1	2	3	1	3
201011,3	Apply the concepts of plastic analysis in the analysis of steel structures.	3	2	2	1	1	1	1	2	1	2	1	1	-	-	
201012	Project management										-	•	-	1	1	1
201012,1	Describe project life cycle and the domains of Project ManagementDescribe project life cycle and the domains of Project Management	3	3	2	2	2	2	1	1	1	1	2	1	1	1	2
201012.2	Explain networking methods and their applications in planning and management	3	3	3	1	1	1	1	1	1	1	2	2	1	1	
01012.3	Categorize the materials as per their annual usage and also Calculate production rate of construction equipment	3	3	3	2	2	1	1	1	1	1	2	1	2	1	1
01012.4	Demonstrates resource allocation techniques and apply it for manpower planning.	2	3	2	1	1	1	2	2	1	1	2	2	1	1	
01012.4	Understand economical terms and different laws associated with project management	3	3	2		2	1	2	1	1	1	1	2	1	2	1
01012.4	Apply the methods of project selection and recommend the best economical project	3	2	12 C	MLLEG	61	,	1	2	,	2	,	1		1	



PRINCIPAL

Decision Supervisor Mosts College of Engg.

25/1/3 Released. Pures - 411 646

Course Code	Name of Course	1	Semest													
301001		POI	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
301001	Hydrology and Water Resources Engineering												7.55.75.55.5			
361001.1	Understand government organizations, apply & analyze precipitation & its abstractions.	3	2		2		1									
301001.2	Understand, apply & analyze runoff, runoff hydrographs and gauging of streams	3	2		2		•	1	26	•	31.	•	1	1	2	2
301001.3	Understand, apply & analyze floods, hydrologic routing & Q-GIS software in hydrology.	2	2		2	2			•	•	•	•	1	1	2	2
301001.4	Understand, apply & analyze reservoir planning, capacity of reservoir & reservoir economics	3	2	2	2		•	1	-	-	-	•	1	1	2	2
301001.5	Understand water logging & water management, apply & analyze ground water hydrology	2	2					-	•	•	-	•	1		2	2
301001,6	Understand irrigation, piped distribution network and canal revenue, apply and analyze crop water requirement.	2	2		-		1	-	•	•	-	15%	1	1	2	2
301002	Water Supply Engineering	255				-		-	-		-	•	1	1	2	2
301002.1	To make students understand importance of water infrastructure with respect to needs of various users	3	2	1	1		1	,					,			
301002.2	To discuss and demonstrate the principles of water treatment plant and layout.	3	2	1					7811	-					2	2
	To inculcate and impart design principles and working of WTP components	3	2	3	2	1	1	2	-	-	2	•	1	•	2	2
	To interpret need of contemporary issues in water treatment.	3	2	1	2	2	1	2	-	-	2	-	1	•	2	2
301002.5	Design elevated service reservoir capacity and understand the rainwater harvesting	3	2	2	2	2	1	2		-	2	•	1	•	2	2
3010026	Understand the requirement of water treatment plant for infrastructure and Government scheme	1	1	1	1	1	1	2	1		2		1	1	2	1
301003	Design of Steel Structures										-		•	1	-	- 1
8	Demonstrate knowledge of steel structure types, steel code provisions, and the design of m appropriate steel section subjected to tensile force.	3		3	-	-			3				-	2	2	2
W	Establish the suitable steel section for compression load and design built-up columns with lacing and battening.	3	3	3		,	-		3	-					3	3
to	Design an eccentrically loaded column for evaluating section strength and column bases of check axial load and uniaxial bending.	3	-	3		-	-		3				-	_	3	3
w	sing rolled steel section, design a laterally restrained and unrestrained beam with and ithout a flange plate.	3		3			-	-	3						3	3
1003.5 A	nalyze industrial trusses for dead, live, and wind loads, and design gantry girders for oving loads.	3	2	3		3	•	-	3	3					3	3
1003.6 Ut	nderstand the function of welded plate girder components while designing a welded atte girder cross section, including stiffeners and connections.	3	3	3	-	EO	LEGE	Q.	3	3	-			-	3	3
	Actions and commences.				0 110	1	PUNE 4	10		2		•			3 \(\times \)	

Ralewadi *

PRINCIPAL
Secola Superviso Mass College of Ex
25/12 Belevised, Puns - 411 446

301004	Engineering Economics and Financial Management	T	1	_		1	T	Т	T	T	Т	_	T	_	Т	T
301004.1	Understand basics of construction economics.	-	-	-	-	+	-	+	-	+	-	-	-	-	-	-
301004.2	Develop an understanding of financial management in civil engineering projects.	2	1	-	+-	+-	1	•	1	<u> </u>	1.	3	+	2	3	1
301004.3	Propere and analyze the contract account.	2	2		-		1	-	1	-		3		3	2	1
301004.4	Decide on right source of fund for construction projects.	2	2	+:			1		1			3	•	1	3	3
301004.5	Understand working capital and its estimation for civil engineering projects.	2	2	١.		-	1	-	1		•	3	•	3	2	1
201004 5	1 (A)	2	2	<u> </u>	0.00	1(*)	1		1	-	-	3		3	1	2
301004.6	Illustrate the importance of tax planning & understand role of financial regulatory bodies	3	2		-		1		1	-		3		3	2	1
301005 d	Elective I (ACT) 2019 PATTERN															
301005 d.1	Understand the chemistry of cement and its effect on properties of concrete	3	2	1	1	1	1	3	1	1	1	3	3	1	1	1
301005 d.2	Apply the knowledge of supplementary cementitious materials to produce sustainable concretes	3	1	1	1	2	1	2	1	1	1	3	2	2	1	1
301005 d.3	Understand the mechanism of working of admixtures and their effect on properties of concrete	3	1	2	1	1	1	3	1	1	1	2	3	1	2	1
301005 d.4	Evaluate the characteristic properties of fiber reinforced concrete	3	1	2	1	3	1	2	1	1	1	2	2	2	1	1
301005 d.5	Understand the durability properties of concrete	3	1	2	1	3	1	3	1	1	1	3	3	1	1	2
301005 d.6	Interpret the properties of concrete through advance testing methods	3	1	2	1	2	1	2	1	1	1	2	2	1	2	1
301005c	Elective I (CM) 2019 PATTERN															
301005c.1	To understand the overview of construction sector.		1	•	-	2	1	1		2	3	3	1	2	1	2
301005c.2	Illustrate construction scheduling, work study and work measurement.	-			-	1			1	2	3	3	1	3	2	2
301005c3	Acquaint various labor laws and financial aspects of construction projects.	-		-		1	2		2	1	1	2	1	2	2	1
301005c.4	Explain elements of risk management and value engineering.	1		1	1		1		3	1				2	2	1
301005c.5	State material and human resource management techniques in construction.	-	-	-		2		1	ı	2	2	3	1	2	2	3
301005c.6	o understand basics of artificial intelligence techniques in civil engineering.		.	. 1		3										2



acrit

PRINCIPAL
Superres Mass College of Engl.
25/1/2 Salvered. Puno - 411 046

301012	Waste Water Engineering		Sem	ster VI	W											
301012.					T	T	T		T	_	_		1			VIII -
301012.	Design preliminary and primary unit operations in waste water treatment plant Understand these areas of the same and characterization of wastewater, natural	2	2	1	1	1	1	3	-	-	1	-	-			
301012.3	Understand theory and mechanism of aerobic biological treatment system and to design activated sludge process	2	2	2	2	2	1	3	-	+	1	1	1	1	3	3
301012.4		3	3	3	2	1	1	3		-	ŀ	1	1	1	3	3
	Online stand and design suspended and attached growth wastewater treatment system	2	2	2	1			-	-		1	1	1	1	3	3
301012.5				-	1	1	1	3	•	•	1	1	1	1	3	3
301012.6	Compare various sludge management systems and explain the potential of recycle and reuse of wastewater treatment	1	1	1	1	1	1	3	-	-	1	1	1	1	3	3
301013	Design of RC Structures	1	1	1	1	-	1	3			1	1	1	_	3	3
301013.1	Apply relevant IS provisions to														•	3
301013.2	Recognize mode of failure or new LCM	3	•	•		ı.	1	•	•				1		,	
301013.3	doubly rectangular, and flanged sections. Design and detailing of rectangular one way and two-way slab with different boundary Conditions.	3	2	3	•		1		3	2			2		2	
301013.4	Design and detailing of dog legged and open well staircase.	3	3	3	: * (I	3	•	3	2	2		2			3
301013.5	Design and detailing of singly/doubly rectangular/flanged beams for flexure, shear, bond	3	3	3	•	1	3	-	3	2	2		2			
301013.6	Design and detailing of short columns subjected to axial load, uni-axial/bi-axial bending and their footings.	3	3	3		1	3	•	3	2	2		2			3
301014	Remote Sensing and GIS	-				1	3	-	3	2	2	70	2	-	12	3
301014.1	Articulate fundamentals and principles of RS techniques.	3	3	1	2	3	2	2			3		2			
301014.2	Demonstrate the knowledge of remote sensing and sensor characteristics.	3	2	2		3	2	2	-		-	-	1	3	•	-
01014.3	Distinguish working of various spaces-based positioning systems.	3	1	3	3	3	2	2					1	3		
01014.4	Analyze the RS data and image processing to utilize in civil engineering.	3	3	3	3	3	2	2	-		3		2		3	-
01014.5	Explain fundamentals and applications of RS and GIS.	3	1	2	2	3	3	2	-		2		1	2		1
01014.6	Acquire skills of data processing and its applications using GIS.	3	3	2		2	2	2			2		3	2		3

PRINCEPAL.
Gacha Superroo More College of Engl.
25/12, Released, Page - 411-846

3010	115e Elective II - ATP																
30101	Se.I Apply the principles of architectural planning and architectural composition. Se.2 Apply In-1.						T	T		1					_		
30101	Se.2 Apply landscaping for improving quality of life.		1	2	1	2	1 2		2	2	2	+	_		_		
30101			2	3	3	1	2	+	1 ;	-	-	-	1 :	2 1	2	1	1
	Understand the town planning and various schemes for town development.		2	3			+	-	-	2 3	-	-	1 2	2	1	1	2
301015			4	-	3	2	2	'	2	2	1	1	1 2	1	2	1	1
301015	Understand and demonstrate planning strategy with reference to different acts,	ems.	2	3	2	1	2	1	2	2	1	1	2	2	1	1	2
301015		1	3	3	2	1	2	1	2	2	1	1	Τ.		+	+	
	representation and to develop the area for betterment	3		2	-		-	+	-	-			1	2	1	2	1
301015	Elective II - SWM	-	+	+	2	1	1	1	1	2	1	2	1	1	3	1	3
301015f.	To understand problems of solid waste, estimate and characterize the solid waste and apply the knowledge of laws for municipal solid waste management for handling of MSW.	3	-	+	1	•		-	-	-		-					
301015£	To understand government initiatives for management of solid waste, to apply the	2	+	+	+	2	2	2	2	2	1	1	1	1	1	1	1
301015£3	To understand processing of callid	+		1	3	1	1	1	1	1	1	2	1	2	ı	1	1
120000000000000000000000000000000000000	waste recycling.	1	2	3	3	2	1	1	1	1	1	1		1			
301015f.4	To understand working of waste to energy system and to design of bio-methnation and incineration system.	2	3	2		1	2	2	2	-		-	-	1	1	1	2
301015f.5	To design & manage construction and operations of landfill facilities and management of legacy solid waste.	3	3	2	+	2	1	1		1	2	1	2	1	1	1	1
301015f.6	To understand management and legal requirements of special waste and reuse, recycle and material recovery from solid waste.	3	2	2	+	1	1	1	1	1	1	1	1	1	2	1	1
			Semest	ter VII				-		1	1	1	1	1	1	1	1
Course Code	Name of Course	PO1	PO2	POS	3 P	04	PO5	PO6	PO7								_
401 001	Environmental Engineering II(sem 1)			-	-	+	-	100	10/	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
401 001.1	study sanitation infrastructure, quantification and characterization of wastewater, natural purification of stream	2	2	1	1		_	1	3								
402 001.2	Design preliminary and primary unit operations in waste water treatment plant	2	2	2	2		-	-		•	•	1	1	1	1	1	ı
103 001 2	Understand theory and mechanism of aerobic biological treatment system and to design activated sludge process	3	3	3	2		1	1	3	•	•	1	1	1	1	1	1
04 001.4	Inderstand and design suspended and attached growth wastewater treatment system	2	2	2	2	-	1	1	3	•	-	1	1	1	1	1	1
05 001.5	xplain and apply concept of contaminant removal by anaerobic, tertiary and emerging astewater treatment system	1	1	100	-	OLL	100	1	3		-	1	1	ı	1	1	1
6 001.6	ompare various sludge management systems and explain the potential of recycle and use of wastewater treatment	1	1	12	2	-	10	i	3			1	1	1	1	1	1
			To the second	100/		A.	1 43	4.3	2	-	0.0	1	1	1	1	1	1

Gamba Superroo Man Callege of Engo. 25/1/2 Baloned, Puno - 411 045

401002	Transportation Engineering															
401002.1																
401002.1	Understand principles and practices of transportation planning.	1	2	1	2	2	2	2	2	2	1	2	1	1	-	1
401002.2	Demonstrate knowledge of traffic studies, analysis and their interpretation.	2		3	7			187		100					1	1
401002.3	Design Geometric Elements of road pavement.	100	+ -		1	1	1	1	1	1	1	1	2	1	1	3
401002.4	Evaluate properties of highway materials as a part of road pavement	1	1	3	1	1	2	2	1	1	1	1	1	2	3	1
401002.5	Appraise different types of pavements and their design	2	2	2	1	2	1	1	1	1	1	1	2	1	1	1
401002.6		1	1	2	1	2	1	2	2	1	1	1	2	3	2	1
401 003	Understand the fundamentals of Bridge Engineering and Railway Engineering	3	2	2	1	1	1	1	2	1	2	1	1	3	1	3
401 003	Structural Design and Drawing-III															
402 003.1	Students will be able to understand the different types of materials used in Prestressed structures and calculate losses in prestress members	3	2			-	2	3		3		2			1	
103 003.2	Students will be able to design prestressed slab and girders	3	3			2	3	-	3	(#E)	3	3	120		2	3
03 003.3	Students will be able to design prestressed flat slab	3	3			2	3		3	_	3	3			2	
104 003.4	Students will be able to design retaining wall with different types of embankments	3	3		196	3	3		3		3	3				3
104 003.5	Students will be able to understand codal provisions and design flexible and rigid water tank	3	3		200	3	3		3		3		•	59.9%	2	3
105 003,6	Students will be able to calculate earthquake forces	3	2		-				3	3.50		3	•	•	1	2
401004	Elective I [ACT] -Advanced Concrete Technology									-	•		•	•	2	-
401004.1	Undedestand the types of cement & able to select the proportion of concrete to achieve quality control and quality assurance	2	2	1	1	1	1	3	1	1	1	2	1	2	1	1
401004.2	Undedestand the different types of concrete and their different application	2	3	1	1	1	1	1	1	1	1	1			0 18	
401004.3	Design of different high strength concrete and light weight concrete also perform non destructive testing methods	3	2	1	1	1	1	1	1	2	1	1	1	2	1	1
401004.4	Understand the basic concept, m/cal properties of different FRP concrete	3	3	1	1	1	1	1	2	1	1	1	2			-
401004.5	Able to check the properties of concrete in fresh and hardened state	3	3	1	1	1	1	1	2	1	1		2	1	1	1
401004.6	Understand the properties and specification of Ferrocement in industry as well as precast construction	3	3,500	E CO	MLFG	190	1	1	2	1	3	3	1	1	1	1

rolly

State Superviso Man College of Eagle 25/1/2 Returned, Puro - 411 645

401 005	Elective II [TQM-MIS]					T	T		1	1	1					_	
401005.1	Students will be able to interpret importance of Quality and Analyze reasons of poor quality										1						
1-1000.1	quality and Analyze reasons of poor	2					- 1		١.	١.		1.	2	1	2	1 -	1
401005.2	Students will be able to analyse causes of defects on construction site and to demonstra applications of six sigma as qualitative tool	te 3	1		-	+	3			ļ .	1	1.	2	1	2	2	'
401005,3	Students will be able to identify checklist for various construction activities .	3	1	+	+,		+		-	2	1	2	2	1	2	-	<u></u>
401005.4		3	1	+		-	-				1	2	2	1	2		1
401005.5	Students will be able to understand various techniques of TQM Implementation	2	1	Τ.	1.		2					2	2	1	2	-	1
401005.6	Students will be able to understand the concept of MIS and DSS as applied in construction projects	2			1.	3		-	-			-	2	1	2	-	1
190	Care College Ballion College C		Semes	ter VIII													
401007	Dams and Hydraulics Structure							T									
401007.1	Understand types of dams and instrumentation working.	3	1	1	2	2		2	2	1	1	1	1	1	1	1	1
401007.2	Execute stability analysis of Gravity Dam.	3	3	3	1	1		ı	1	1	1	1	1	1	1	1	1
401007.3	Understand types of spillways & Design of Ogee spillway.	3	3	3	2	1	,	ı	1	1	1	1	1	1	1	1	1
401007.4	Illustrate the failures and analyze stability of earthen dam.	3	3	2	1	1	1		2	1	1	1	1	1	1	1	1
401007,5	Design Canals and understand the canal structures.	3	3	2	1	1	1		2	1	1	1	1	1	1	1	1
401007.6	Analysis of the Diversion headwork and Cross Drainage work .	3	2	2	1	I	1		1	1	1	1	1	1	1	1	1
401008	Quantity Surveying, Contract nd Tenders																
401008.1	Understand the concept of estimates and prepare approximate estimates for various civil engineering works.	3	3	1	2	2	2		2	1	1	1	1	ı	1	1	1
401008.2	Prepare a detailed estimate of various items of work by different methods and calculate the quantity of steel from the bar bending schedule.	3	3	3	1	1	1		1	1	1	1	1	1	1	1	1
401008.3	Apply concepts of specification to draft a brief specification, a detailed specification, and a detailed rate analysis report	3	3	3	2	1	1		1	1	1	1	1	1	1	1	1
01008.4	Evaluate the valuation of property on the basis of its present condition, specifications, and market trend.	3	3	2	LEICC	LAKE	1		2	1	1	1	1	1	1	1	1
01008.5	Describe the tendering process, and prepare tender documents.	3	3	23	A)	1	1		2	1	1	1	1	1	1	1	1
01008.6	Describe construction contracts, and aspects of Arbitration and prepare the bill	3	2	2	1	51	1 in	2	1	1	1	1		-	-	-	

PRINCIPAL

Print Stewarms Stope Codege of Frant

401 009	Elective III (APC)		_													
401 009.1	Students will able to understand the effect of meteorological aspects & camp; parameters,															
200	Send aspects & Samp; parameters,	3	2		-	-	1	3			١.	1 .	1	1	2	
401 009,2	Students will be aware of different methods of sampling for air pollutants, air pollutants including minimum stack height	3	2	2		١.	1	3	1.		1.	1.	1	1	2	+
401 009.3	Students to understand and identify sources, methods of measurement and control various indoor air pollution	3	2		2		1	3	-	-	1.	1.	1	+-	2	+
401 009.4	Students to understand how to control air pollution, process modifications.	3	2		2	2	1	3	-	 	-	+-	1	+-	2	
401 009.5	Students will able to correlate the effect of air pollution on society and measures for mitigation	3	2		1		1	3					1	1	2	
401 009.6	Students will be aware of different national and international legislation related to air pollution & amp Students will able to read, prepare and understand EIA report.	3	2	2	2	1	1	3	2		2		1	1	2	1
401010	Elective-IV CM -2015 PATTERN															
401010.1	To understand the overview of construction sector.	2	2	•	2	2	1	1		2	3	3	1	2	1	2
401010.2	Illustrate construction scheduling, work study and work measurement.	1		1		1			1	2	3	3	1	3	2	2
401010.3	Acquaint various labor laws and financial aspects of construction projects.	1	2	1		1	2	190	2	1	1	2	1	2	2	1
401010.4	Explain elements of risk management and value engineering.	1	2	-	* 1		1		3	1				2	2	1
401010.5	State material and human resource management techniques in construction.	1			1	2		1	1	2	2	3	1	2	2	3
401010.6	To understand basics of artificial intelligence techniques in civil engineering.	1		1		1			1		. 1		1	2	2	2



PRINCIPAL
Principal
PRINCIPAL
Senba Sopanrao Moze College of Engg.
25/1/3 Balewadi, Pune - 411 045



GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045.

Civil Engineering Department Academic Year 2022-23

			Acade				NO THE REAL PROPERTY.									
Course	Name of Course	T		Semes	ter III	Side .									harries and the same of the sa	57
201001	Building Technology and Australia	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
	Building Technology and Architectural Planning															
201001.1		1	3		-	-										
201001.2	The state of the s		2				3				-	-	-	-	1	1
201001.3	Plan effectively various types of Residential Building forms according to their utility, functions with reference to National	1	2	2				3	3	-	3	-	-	1	1	•
201001.4	Plan effectively various types of Public Buildings according to their utility functions with reference to National Building Code	1	2	2	-		(m)	3	3		3		-	-	1	_
201001.5	Make use of Principles of Planning in Town Planning, Different Villages and Safety aspects						3				_		-	-	-	_
201001.6	Understand different services and safety aspects		-	-	_	-	3			-		-	-			
201002	Mechanics of structure					-	3	-	-	•	-	-	-	-	-	•
201002.1	Understand concept of stress-strain and determine different types of stress, strain in determinate, indeterminate homogeneous and composite structures.	1	1	-	2	1	-		-	•	-	-	1	1	1	2
201002.2	Calculate shear force and bending moment in determinate beams for different loading conditions and illustrate shear force and bending moment diagram.	1		1		-	-	1	1	-	1	1	1	1	1	2
201002.3	Explain the concept of shear and bending stresses in beams and demonstrate shear and bending stress distribution diagram.	1	2	1	-	1	-	1	1	-	1	1	1	1	1	2
	Use theory of torsion to determine the stresses in circular shaft and understand concept of Principal stresses and strains.	1	2	•			1	-	2		1	+	1	1	2	2
01002.5	Analyze axially loaded and eccentrically loaded column.	1	-	NEER	***		1		2	1	1	1	1	1	1	2
	Determine the slopes and deflection of determinate beams and trusses.	1	4		1				1				1	1	1 :	2

Genha Sopanno Meze Collegs of Engg. 25/1/3 Balewadi, Pune - 411-945

201003	Fluid Mechanics								1	1	1		_			
201003.1		3	1	2	2	-	+,	+		-	-	-		1		1
201003.2	Continuity equation and guild	2	+	1	+-	+	1	+	-	1		2	1	1	1	
201002 -	dunamics with reference to Modified Bernoulli's equation and Understand the concept of Dimensional analysis using Buckingham's π theorem, Similarity & Model Laws and boundary layer theorems.		2	1	1	1	1	1	1	2	1	1	1	1	1	1
201003.3	Understand the concept of laminor and the lami	2	2	1	2	1	2	1	1	1	1	1	2	1	1	1
201003.4	losses and analysis application to determine major and minor	2	2	1	-	2	1	1	2	1	1	3	1	1	1	<u> </u>
201003.5	and depth-Energy relationships in open channel flow and make	2	2	-	1	1	1	3	2	1	1	1	2	1		+
201003.6	channel and fluid flow in open	2	2	1	1	1	1	1	1			1	1	1	1	1
207009	Engineering Geology											•	•		1	1
207009.1	Explain about the basic concepts of engineering geology, various rocks, and minerals both inlab and on the fields and their inherent characteristics and their uses in civil engineering.	2	2	1	2	2	2	2	1	-	-			3		_
207009.2	Exploring the importance of mass wasting processes and	2	1	1	3	2	2	1	3	1	_	-		3		
07009.3	Recognize effect of plate tectonics, structural geology and their significance and utility in civil engineering activities	2	1	2	2	3	1	2	1			-		3	,	
07009.4	Incorporate the various methods of survey, to evaluate and interpret geological nature of therocks present at the foundations of the dams, percelation tanks, tunnels and to infer	2	1	1	2	3	1	1	2	1			-	1	3	1
07000 5	Assess the Importance of geological nature of the site, precautions and treatments to improve the site conditions for dams, reservoirs, and tuppels	2	-	1	2	3	1	2	1		-			1	3	1
	Explain geological hazards and importance of ground water and uses of common building stones.	2		1	2	3	1	3	1	-				3	1	



PRINCIPAL
Gendra Supanno Mozo College of Engg.
38/1/3 Belowedi, Pune - 411-045

207001	Engineering Mathematics III			T	-	1										
207001.1		-				ì										
207001.2	Solve System of linear and the sub-irling of shafts and	3	2	-	s=1	-	-	-	-	1	1	1.			-	_
207001.3	Apply Statistical methods like sten & multisten methods	3	2			-		-		1	1	1.	1	+	-	
	engineering and predictions in civil	3	3		-				1.	1	1.		+	+	+	-
207001.4	Perform Vector differentiation & integration, analyze the vector fields and apply to fluid flow problems.	3	3	1.	1.	1				-	'	+-	1	+	_	-
207001.5	LOUIS AND	3	2				-	-	-	1	1	-	1	-		-
	The state of the s	=0.01		200							1		1 '	1	-	1
2 345	Geotechnical Engineering			Semes	ter IV			-363	111221	PSEC -		8,000	1		1	
201008	Geotechnical Engineering	100		Semes	ter IV										1	
201008 201008.1	Geotechnical Engineering Identify and classify the soil based on the index properties and its formation process.	2	3	Semes	ter IV	-	1	2	_	22				Server Salve	<u> </u>	I
201008.1	Identify and classify the soil based on the index properties at	2	3 2				1	2	-		3	-		1		1
201008.1	Identify and classify the soil based on the index properties and its formation process. Explain permeability and seepage analysis of soil by			•		-	1 - 1	2 2 3		-	3	-	-	1		
201008.1 201008.2 201008.3	Identify and classify the soil based on the index properties and its formation process. Explain permeability and seepage analysis of soil by construction of flow net. Illustrate the effect of compaction on soil and understand the	3	2	3			1 - 1	2			3 3 3	-		1 1	-	1 1
201008.1 201008.2 201008.3 201008.4	Identify and classify the soil based on the index properties and its formation process. Explain permeability and seepage analysis of soil by construction of flow net. Illustrate the effect of compaction on soil and understand the basics of stress distribution. Express shear strength of soil and its measurement under	3	2	3	3		1 - 1	3		-	3	-	-	1 1 1		



TEMY

Processing volume cu

PRINCIPAL

Genba Sapenne More College of Brice.

26/1/3 Submod. Pane - 411 646

201009	Survey					T		_	1		_	_		_		
201009.1	Define and Explain basics of plane surveying and differentiate the instruments used for it.	3	-				-	-			1					
201009.2	Express proficiency in handling surveying equipment and analyze the surveying data from this equipment.	3	1			-	•	-		3	-		2	3		
201009.3	Describe different methods of surveying and find relative positions of points on the surface of earth	3	2	-	ļ.	1	•	-		2	•	•	-		-	-
201009.4	Execute curve setting for civil engineering projects such as roads, railways etc.	3	2	2		3	-	•		2	-		-	2	-	1
201009,5	Articulate advancements in surveying such as space-based positioning systems.	3	-		2	3	-	(** /)	Ė	2	•	•	•	2	•	1
201009.6	Differentiate map and aerial photographs, also interpret aerial photographs	3	1		-	3	-		-	3	-		2	1	•	1
201010	Concrete Technology										-380.		-	_		1
201010.1	Understand chemistry, properties, and classification of cement, fly ash, aggregates and admixtures, and hydration of cement in	2	2			-	-	-	-	3	-			1	2	3
201010.2	Develop the skills to Prepare and test the fresh concrete	2	2			•	-		1	3		1	1	1	2	2
201010.3	Recognize hardened concrete with destructive and nondestructive testing instruments	2	•		2	•		•		2	8.5	-		1	2	1
201010.4	Design concrete mix of desired grade.	2				-	1	•		3				2	2	2
201010.5	Explain the skill of concrete handling equipment's and understand different special concrete types.	3	3	3	•		: * :			3		-	-	1	1	1
201010.6	Discuss deteriorations in concrete and repair it with appropriate methods and techniques.	3	2	-	-	ŀ					-	-	-	2	2	1



PRINCIPAL
PRINCIPAL
Bathwardi, Puna - 411-845

201011	Structural Analysis									_	_					
201011.1	Understand the basic concept of static and kinematic indeterminacy and analysis of Indeterminate beam	1	2	-	2	2	-	-	-							
201011.2	Analyze redundant trusses and able to perform	2	3	3	1	1	2	1	1	1	1	2	1	1	3	1
201011.3	Implement application of the slope deflection methods.	3	3	3	2	2	1	1	1	1	1	2	2	2	1	1
201011.4	Analyze beams and portal frames using moment distribution method.	2	3	2	1	1	1	2	1	1	1	2	1	1	1	2
201011.5	Determine response of beams and portal frames using structure approach of stiffness matrix method	3	3	2	1	2	1	2	2	1	1	2	2	2	2	1
201011.6	Apply the concepts of plastic analysis in the analysis of steel	3	2	2	1	1	1	1	2	1	2	1	2	3	1	3
201012	Project management			25.71					-	·	-	•			-	1
201012.1	Describe project life cycle and the domains of Project ManagementDescribe project life cycle and the domains of Project Management	3	3	2	2	2	2	1	1	1	1	2	1	1	1	2
201012.2	Explain networking methods and their applications in planning and management	3	3	3	1	1	1	1	1	1	1	2	2	1	1	1
201012.3	Categorize the materials as per their annual usage and also Calculate production rate of construction equipment	3	3	3	2	2	1	1	1	1	1	2	1	2	1	1
	Demonstrates resource allocation techniques and apply it for manpower planning.	2	3	2	1	1	1	2	2	1	1	2	2	1	1	1
	Understand economical terms and different laws associated with project management	3	3	2	1	2	1	2	1	1	1	1	2	1	2	1
	Apply the methods of project selection and recommend the best economical project	3	2	2	1	1	1	1	2	1	2	1	1	1	1	1

(mai) Disaster



TRUY

PRINCIPAL

Genba Supanneo Moze College of Engo
25/1/3 Balewardi. Pune - 411-945

Course	all the second			Semest	er V											
Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSOI	PSO2	PSO
301001	Hydrology and Water Resources Engineering														1302	130.
301001.1	Understand government	3	2		2		1				-	-	1	1	2	2
301001.2	Understand, apply & analyze runoff, runoff hydrographs and gauging of streams	3	2		2		•	1			-	-	1	1	2	2
301001.3	Understand, apply & analyze floods, hydrologic routing & Q-GIS software in hydrology.	2	2		2	2	120	ı			-		1	1	2	2
301001.4	Understand, apply & analyze reservoir planning, capacity of reservoir & reservoir economics	3	2	2	2					-		-	1		2	2
301001.5	Understand water logging & water management, apply & analyze ground water hydrology	2	2			×	1				-		1	1	2	2
301001.6	Understand irrigation, piped distribution network and canal revenue, apply and analyze crop water requirement.	2	2		*		•		•	NG.		•	1	1	2	2
301002	Water Supply Engineering				te.											
	To make students understand importance of water infrastructure with respect to needs of various users	3	2	1	1	×	1	1	•	-	1	13.0	1		2	2
	To discuss and demonstrate the principles of water treatment plant and layout.	3	2	1	2	1	1	2	٠		2	•	1		2	2
	To inculcate and impart design principles and working of WTP components	3	2	3	2	1	1	2	•	•	2	٠	1		2	2
01002.4	To interpret need of contemporary issues in water treatment.	3	2	1	2	2	1	2	1941	-	2	-	1	-	2	:
r	Design elevated service reservoir capacity and understand the ainwater harvesting	3	2	2	2	2	1	2	•	٠	2		1		2	
U	Inderstand the requirement of water treatment plant for infrastructure and Government scheme	1	1	1	1	1	1	2	1		2	-	1	1	1	

PUNE-45

PRINCIPAL
Soparuso Moze College of Engo
25/173, Belowadi, Pune - 411 045

Disaster

301003	Design of Steel Structures Demonstrate knowledge of steel structure types, steel code provisions, and the design of or any									Г						
301003.1	subjected to tensile force.	3	10-03	3					3		-					
301003.2	Establish the suitable steel section for compression load and design built-up columns with lacing and battening. Design an eccentrically loaded column for evaluating section strength and column bases to check the section.	3	3	3					3			-		2	2	2
301003.3		3		3	-	-		-	3			4		-	3	3
301003.4	Using rolled steel section, design a laterally restrained and unrestrained beam with and without a flange plate.	3		3					3	-				•	3	3
301003.5	Analyze industrial trusses for dead, live, and wind loads, and design gantry girders for moving loads. Understand the function of welded plate girder components while design and the function of welded plate girder components.	3	2	3		3		•	3	3			-	-	3	3
	while designing a welded plate girder components while designing a welded plate girder cross section, including stiffeners and connections.	3	3	3	-				3	3			-	-	3	3
301004	Engineering Economics and Financial Management														3	,
301004.1	Understand basics of construction economics.	2	1			-	1	-	1		-	3	-	2	3	1
301004.2	Develop an understanding of financial management in civil engineering projects.	2	2	•	-	-	1	-	1		٠	3		3	2	1
301004.3	Prepare and analyze the contract account.	2	2	•	•	-	1	•	1	X.	•	3		1	3	3
301004.4	Decide on right source of fund for construction projects.	2	2	-	-	•	1	-	1		•	3	-	3	2	1
301004.5	Understand working capital and its estimation for civil engineering projects.	2	2	-	-		1	•	1	•	•	3		3	1	2
	Illustrate the importance of tax planning & understand role of financial regulatory bodies	3	2			•	1		1			3	•	3	2	1



PRINCIPAL

Genba Superviso Mozo College of Englishing Superviso Mozo College of Englishing Supervisor Mozo College of Englishing Supervisor Sup

301005 d	Elective I (ACT) 2019 PATTERN											T		T	T -	Т
301005	Understand the chemister of	3	2	1	1	1	+	+					-	-		_
301005 d.2	properties of concrete Apply the knowledge of supplementary cementitious materials to produce sustainable concretes	7505	-	!	1	1	1	3	1	1	1	3	3	1	1	1
301005	Understand the mechanism of working of admixtures and their effect on properties of	3	1	1	1	2	1	2	1	1	1	3	2	2	1	1
d.3	concrete	3	1	2	1	1	1	3	1	1	1	2	3	1	2	
301005 d.4	Evaluate the characteristic properties of fiber reinforced concrete	3	1	2	1	3	1	2			1	2		<u> </u>		+
301005 d.5	Understand the durability properties of concrete	3	1	2	1	3	1	3		1	1	0000	2	2	1	1
301005 d.6	Interpret the properties of concrete through advance testing methods	3	1	2	1	2	1	2	1	1	1	2	2	1	2	1
301005c	Elective I (CM) 2019 PATTERN											NES .				-
301005c.1	To understand the overview of construction sector.	-	1	•	-	2	1	1		2	3	3	,	2	1	_
301005c.2	Illustrate construction scheduling, work study and work measurement.	-			-	1			1	2	3	3	•	3		2
301005c.3	Acquaint various labor laws and financial aspects of construction projects.		_	2	-	1	2		2	1	1	2	1	2	2	2
	Explain elements of risk management and value engineering.	1	-	1	1		1	-	3	1	•	-		2	2	
	State material and human resource management techniques in construction.	-	-			2		1	1	2	2	3	1	2	2	3
	To understand basics of artificial intelligence techniques in civil engineering.		-			3	-	-	-					2	2	2



PRINCIPAL

PRINCIPAL

Superree More College of Engg.

26/4/3, Balewardi, Pune - 411-046

				Semes	ter VI											
301012	Waste Water Engineering															
301012.1	study sanitation infrastructure, quantification and characterization of wastewater, natural purification of stream	2	2	1	1	1	1	3			1	1	1	1	3	3
301012.2	Design preliminary and primary unit accept	2	2	2	2	2	1	3	-	-	1	1	1	1	3	3
301012.3	Understand theory and mechanism of aerobic biological treatment system and to design activated sludge process	3	3	3	2	1	1	3	-		1	1	1	1	3	3
301012.4	Understand and design suspended and attached growth wastewater treatment system	2	2	2	1	1	1	3		-	1	1	1	1	3	3
301012.5	Explain and apply concept of contaminant removal by anaerobic, tertiary and emerging wastewater treatment system	1	1	1	1	1	1	3		•	1	1	1	1	3	3
301012.6	Compare various sludge management systems and explain the potential of recycle and reuse of wastewater treatment	1	1	1	1	-	1	3	23#5	•	1	1	1	1	3	3
301013	Design of RC Structures Apply relevant IS provisions to ensure safety and serviceability of structures, understand the design philosophies and behavior	3			_	e ^r	1						1		1	
301013.1	of materials: steel and concrete.	- 5					7/8/	0	0.21		102	175/1		7		
301013.2	Recognize mode of failure as per LSM and evaluate moment of resistance for singly, doubly rectangular, and flanged sections.	3	2	3	•	-	1	-	3	2) ne	•	2	•	2	
301013.3	Design and detailing of rectangular one way and two-way slab with different boundary Conditions.	3	3	3	-	1	3	-	3	2	2		2	-	•	3
301013.4	Design and detailing of dog legged and open well staircase.	3	3	3		1	3	-	3	2	2		2	-		3
301013.5	Design and detailing of singly/doubly rectangular/flanged beams for flexure, shear, bond and torsion.	3	3	3		1	3	-	3	2	2		2	-		
301013.6	Design and detailing of short columns subjected to axial load, uni-axial/bi-axial bending and their footings.	3	3	3	-	1	3	-	3	2	2		2	-	-	



PRINCIPAL PRINCIPAL SUPPLIANT SUPPLI

301014	Remote Sensing and GIS															
301014.1	Articulate fundamentals and principles of RS techniques.	3	3	1	2	3	2	2	-	-	3		2			1
	Demonstrate the knowledge of remote sensing and sensor characteristics.	3	2	2	-	3	2	2	74.	-		-	1	3	-	
301014.3	Distinguish working of various spaces-based positioning systems.	3	1	3	3	3	2	2		-		-	1	3	1	1
301014.4	Analyze the RS data and image processing to utilize in civil engineering.	3	3	3	3	3	2	2			3	•	2	•	3	
301014.5	Explain fundamentals and applications of RS and GIS.	3	1	2	2	3	3	2	•		2	-	1	2	-	1
301014.6	Acquire skills of data processing and its applications using GIS.	3	3	2	-	2	2	2			2		3	2	-	3
301015e	Elective II - ATP															
301015e.1	Apply the principles of architectural planning and architectural composition.	1	2	1	2	2	2	2	2	2	1	2	1	2	1	1
301015e.2	Apply landscaping for improving quality of life.	2	3	3	1	2	1	2	2	1	1	2	2	1	1	2
301015e.3	Understand the town planning and various schemes for town development.	2	3	3	2	2	1	2	2	1	1	2	1	2	1	1
301015e.4	Understand the need of civic surveys for DP proposal and Traffic transportation systems.	2	3	2	1	2	1	2	2	1	1	2	2	1	1	2
301015c.5	Understand and demonstrate planning strategy with reference to different acts, guidelines, norms.	3	3	2	1	2	1	2	2	1	1	1	2	1	2	1
	Appraise the existing condition and to develop the area for betterment	3	2	2	1	1.	1	1	2	1	2	1	1	3	1	3





PRINCIPAL

Curida Soperino Moza Collega el Engu25/1/3 Belaviadi, Puna - 411 646

	Elective II - SWM To understand problems of solid waste, estimate and characterize the solid waste and control of the solid waste, as the solid waste and the solid waste waste waste which waste and the solid waste and the solid waste waste waste waste.									Ι		Т		1	1	_
3010131.1	for municipal solid waste management for handling of MSW.	3	1	1	2	2	2	2	2	1	 	 			-	_
301015f.2	To understand government initiatives for management of solid waste, to apply the knowledge of mathematics, science, and engineering for effective solid waste collectionsystems, for waste collection route optimization and its economics.	2	3	3	1	1	1	1	1	1	2	1	2	1	1	1
	To understand processing of solid waste, material recovery facility and to design composting systems, maintain and operate composting process for effective organic waste recycling.	1	2	3	2	1	1	1	1	1	1	1	1	1	1	2
301015 <u>f.</u> 4	To understand working of waste to energy system and to design of bio-methnation and incineration system.	2	3	2	1	2	2	2								
- 1	To design & manage construction and operations of landfill facilities and management of legacy solid waste. To understand management and legal requirements of special waste and reuse, recycle and material responses.	3	3	2	2	I	1	2	1	2	1	2	1	1	1	1
01015f.6	waste and reuse, recycle and material recovery from solid waste.	3	2	2	1	1	1	,	•	-	1	1	1	2	1	1

Course				Semest	er VII											
Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSOI	PSO2	BSO
401 001	Environmental Engineering II(sem 1)													1001	1302	rso.
401 001.1	study sanitation infrastructure, quantification and characterization of wastewater, natural purification of stream	2	2	1	1		1	3	_		,					
	Design preliminary and primary unit operations in waste water treatment plant	2	2	2	2	2	1	3	-		*		1	1	1	1
103 001.3	Understand theory and mechanism of aerobic biological treatment system and to design activated sludge process	3	3	3	2	1	1	3			1	1	1	1	1	1
	Understand and design suspended and attached growth wastewater treatment system	2	2	2	2	1	1	3		-	1	1	1	1	1	1
05 001.5	Explain and apply concept of contaminant removal by anaerobic, tertiary and emerging wastewater treatment system	1	1	1	2	1	1	3			1	1	1	1	1	1
06 001.6	Compare various sludge management systems and explain the potential of recycle and reuse of wastewater treatment	1	1	1	2	1	1	ZEC	ALEG	€ OF		1	1	1	1	rada S

Temy

PRINCIPAL

25/1/2 Relevadi, Pune - 411-046

401002	Transportation Engineering					T				T		Т—	_	_		
401002.1	Understand principles and practices of transportation planning.	1	2	1	2	2	2	2	2	2	-	-			_	_
401002.2	Demonstrate knowledge of traffic studies, analysis and their interpretation.	2	1	3	1	1	1	1	1	1	1	2	1	1	1	1
401002.3	Design Geometric Elements of road pavement.	1	1	3	1	1	2	2	1	1		-	2	1	1	3
	Evaluate properties of highway materials as a part of road pavement	2	2	2	1	2	1	1	1	1	1	1	2	2	3	1
401002.5	Appraise different types of pavements and their design	1	1	2	1	2	1	2	2	1	1	1	2	3	2	1
	Understand the fundamentals of Bridge Engineering and Railway Engineering	3	2	2	1	1	1	1	2	1	2	1	1	3	1	3
401 003	Structural Design and Drawing-III Students will be able to understand the different types of						,									
	materials used in Prestressed structures and calculate losses in prestress members	3	2	20			2	3		3		2	•		1	
103 003.2	Students will be able to design prestressed slab and girders	3	3		•	2	3		3		3	3			2	3
103 003.3	Students will be able to design prestressed flat slab	3	3	*	•	2	3	•	3		3	3			2	3
104 003.4	Students will be able to design retaining wall with different types of embankments	3	3	-	•	3	3	÷	3	•	3	3	1 5 (1		2	3
04 003.5	Students will be able to understand codal provisions and design flexible and rigid water tank	3	3	-	-	3	3	•	3	•	3	3			1	2
105 003 6	Students will be able to calculate earthquake forces	3	2	-	-	-			3		-	-			2	-





401004	Elective I IACTI A			_												
401004. 1	Elective I [ACT] -Advanced Concrete Technology Undedestand the types of cement & able to select the proportion of concrete to achieve quality control and quality assurance								T			T		Т	_	_
	Thanky control and quality	2	2	1	1	1	+			+	+			\perp		
01004.2	Undedestand the different types of concrete and their different application	2	3	1	+	+ '	1	3	1	1	1	2	1	2	1	1
	Design of different 1:		,	1	1	1	1	1	1	1	1	1	1	1	1	1
	Understand at a second methods	3	2	1	1	1	1	1	1	2	1	1	1	2	1	+
		3	3	1	1	1	1	1	2	1			Ŀ	-	1	1
401004.5	Able to check the properties of concrete in fresh and hardened state	3	3	1	-			<u> </u>	2	1	1	1	2	1	1	1
401004.6	Understand the properties and specification of Ferrocement in industry as well as precast construction		-	+	1	1	1	1	2	1	1	3	1	1	1	1
	industry as well as precast construction	3	3	1	1	1	1	1	2	1	3	1	1	1	1	1
401 005	Elective II [TQM-MIS] (sem1)														-	H.
401005.1	Students will be able to interpret importance of Quality and Analyze reasons of poor quality Students will be able to analyse causes of defects on construction site and to demonstrate the construction of the construction site and to demonstrate the construction of t	2	1		1					1		2	1			
401005.2	construction site and to demonstrate applications of six sigma as qualitative tool	3	1		1	3						2756	1	2	-	1
401005.3	Students will be able to identify checklist for various construction activities .	3	1	120		9556			-	1	•	2	1	2	2	1
			•		1	*	•	•	2	1	2	2	1	2		1
	Students will be able to evaluate cost of quality	3	1		1	•	•			1	2	2	1	2		,
401005.5	Students will be able to understand various techniques of TQM Implementation	2	1	i.		2	-				2	2	,			
401005.6	Students will be able to understand the concept of MIS and DSS as applied in construction projects	2		_		3				-		2	-	2	•	1





401007	Dams and Hydraulics Structure		T	Seme	ster VIII		T-	_								
	Understand types of dams and instrumentation working.	3	+.	+	+											
401007.2	Execute stability analysis of Gravity Dam.	-	1	1	2	2	2	2	1	1	1	1	1	1	1	1
		3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
401007.4	Understand types of spillways & Design of Ogee spillway.	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1
	Illustrate the failures and analyze stability of earthen dam.	3	3	2	1	1	1	2	1	ı	1	1	1	1	1	1
	Design Canals and understand the canal structures. Analysis of the Diversion headwork and Cross Drainage work	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
401007.6	Quantity Surveying, Contract	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1
401008	nd lenders															
401008.1	tor various civil engineering works.	3	3	1	2	2	2	2	1	1	1	1	1	1	1	1
401008.2	Prepare a detailed estimate of various items of work by different methods and calculate the quantity of steel from the bar bending schedule.	3	3	3	1	-1	1	1	1	1	1	1	1	1	1	1
401008.3	Apply concepts of specification to draft a brief specification, a detailed specification, and a detailed rate analysis report	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1
101008.4	Evaluate the valuation of property on the basis of its present condition, specifications, and market trend.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
01008.5	Describe the tendering process, and prepare tender documents.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
	Describe construction contracts, and aspects of Arbitration and prepare the bill	3	2	2	1	1	1	1	1	1	1	1		1	1	1



PRINCIPAL
PURDE Superree Moze College of Empl.
25/1/2 Belanted, Purse - 411 446

जुग सहस्य को

101 009	Elective III (APC)				\top				_								
01 009.1	Students will able to understand the effect of meteorological aspects & amp; parameters,	3	2	+												1	
	Students will be aware of different methods of sampling for air pollutants, air pollutants including minimum stack height		+	-		\perp	_	1	3	-	-	.	.] .		1	1	2
	Students to	,	2	2	1			1	3		-	-	-	1	1	1 2	1
01 007.5	l various indoor air pollution	3	2	-	2	-	1		3	-			1.	1	1.	1 2	+
401 009.4	Students to understand how to control air pollution, process modifications.	3	2	-	2	2	1	1	3	-			<u> </u>	1	-	-	+
401 00 9.5	Students will able to correlate the effect of air pollution on society and measures for mitigation Students will be aware of different national and international legislation related to air pollution force.	3	2		1	-	1	3		-	-			1	-	2	1
	legislation related to air pollution & amp Students will able to read, prepare and understand EIA report.	3	2	2	2	1	1	3	1:	2	-	2	-	1	1	2	1
401010	THE PROPERTY OF THE PARTY OF TH									\top							
401010.		2	2		2	2	1	1	† -	1		3	3	1	2	1	2
401010	Illustrate construction scheduling, work study and work measurement.	1		1		1	(4)	-	1	2		3	3	1	3	2	2
401010	Acquaint various labor laws and financial aspects of construction projects.	1	2	1	-	1	2		2	1		1	2	1	2	2	1
401010	Explain elements of risk management and value engineering.	1	2		-	(1	1		3	1	1		+		2	2	1
401010	State material and human resource management techniques in construction.	1	-	-	1	2	-	1	1	2	1	2	3	1	2	2	3
401010	To understand basics of artificial intelligence techniques in civil engineering.	1	-	1	-	1	-	•	1	Τ.					2	2	2







"EMPOWERMENT THROUGH TECHNOLOGICAL EXCELLENCE" GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

S. No. 25/1/3, Balewadi, Pune – 411 045

(Approved by AICTE and Govt. of Maharashtra, Affiliated to Savitribai Phule Pune University)

DTE Code - EN6144 University Affiliation ID - PU/PN/ENGG/138/1999 Ph: 020-27390500 Website: www.gsmozecoe.org Email: gsmoze@yahoo.co.in

Founder President: Shri Rambhau Moze

Criteria 2.6.2 CO PO Mapping Information Technology 2015

Sr. No.	Course Code	Information Technology 2015 pattern Course Name
		Semester - III
1	214441	Discrete Structures
2	214442	Computer Organization & Architecture
3	214443	Digital Electronics and Logic Design
4	214444	Fundamentals of Data Structures
5	214445	Problem Solving and Object Oriented programming
		Semester - IV
6	207003	Engineering MathematicsIII
7	214450	Computer Graphics
8	214451	Processor Architecture
9	214452	Data Structures & Files
10	214453	
		Foundations of Communication and Computer Network Semester - V
11	314441	是一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个
12	314442	Theory of Computation
13	314443	Database Management Systems
14	314444	Software Engineering & Project Management
15	314445	Operating System
		Human-Computer Interaction
16	314450	Semester - VI
17	314451	Computer Network Technology Systems Programming
18	314452	Design and Analysis of Algorithms
19	314453	Cloud Computing
20	314454	Data Science & Big Data Analytics
		Semester - VII
21	414453	Information and Cyber Security
22	414454	Machine Learning and Applications
22		Software Design
23	414455	and Modeling
24	414456E	Elective-I Business Analytics and Intelligence
	414457C	Elective-II Software Testing and Quality Assurance
		Semester - VIII
25	414462	Distributed Computing System
26	414463	Ubiquitous Computing * !penales
27	414464C	Elective III Multimedia Rechniques
28	414465D	Elective IV Social Media Analytics

Genba Sopanrao Moze College of Engg. 25/1/3, Balewadi, PUNE-411 045



"EMPOWERMENT THROUGH TECHNOLOGICAL EXCELLENCE" GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

S. No. 25/1/3, Balewadi, Pune – 411 045

(Approved by AICTE and Govt. of Maharashtra, Affiliated to Savitribai Phule Pune University)

DTE Code - EN6144 University Affiliation ID - PU/PN/ENGG/138/1999

Ph: 020-27390500 Website: www.gsmozecoe.org Email: gsmoze@yahoo.co.in

Founder President: Shri Rambhau Moze

Criteria 2.6.2 CO PO Mapping Information Technology 2010

Sr. No.	Course Code	Course Name
		Semester - III
1 .	214441	Discrete Mathematics
2	214442	Computer Organization and Logic Design
3	214443	Data Structures and Algorithms
4	214444	Object Oriented Programming
5	214445	Basics of Computer Network
		Semester - IV
6	207003	Engineering MathematicsIII
7	214451	Processor Architecture
8	214452	Database Management System
9	214453	Computer Graphics
10	214454	Software Engineering
		Semester - V
11	314441	Theory of Computation
12	314442	Operating Systems
13	314443	Machine Learning
14	314444	Human Computer Interaction
15	314445	Elective-I Internet of Things
		Semester - VI
16	314451	Computer Networks& Security
17	314452	Data Science and Big Data Analytics
18	314453	Web Application Development
19	314454	Elective-II Cloud Computing
		Semester - VII
20	414441	Information and Storage Retrieval
21		Software Project Management
22		Deep Learning
23		Elective III Mobile Computing
24		Elective IV Wireless Communications
		Semester - VIII
25	414450	Distributed Systems
26		Elective V Social Computing
27	414452	Constant Computing

PRINCIPAL Genba Sopanrao Moze College of Engg. 25/1/3, Balewadi, PUNE-411 045

Academic Year-2018-19 2.6.2 CO-PO Mapping Matrix Semester III

Course Code	Name of Course	_	emest												
214441	Discrete Structures	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
214441.1	Formulate, apply formal proof techniques and solve the problems with logical reasoning.	3	2	3	2	2	-	2		2	1	-	1	2	-
214441.2	Analyze and evaluate the combinatorial problems by using probability theory.	3	2	2	2	2	-	2	-	2	1	-	1	2	-
214441.3	Apply the concepts of graph theory to devise mathematical models.	3	3	3	2	2	-	2	-	1	1	-	1	2	-
	Analyze types of relations and functions to provide solution to computational problems.	2	2	2	-	_	-	-	-	1	1	-	1	2	-
214441.5	Identify techniques of number theory and its application.	2	2	1	-										
214441.6	Identify fundamental algebraic structures.	2	2	3	1	2	-	1	-	2	1	-	1	1	-
214442						2.7					-				
	Computer Organization & Architecture	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	Solve problems based on computer arithmetic.	3	3	-		2	1	_	-	-	-	-	-	1	1
	Explain processor structure & its functions.	3	3	3		1	1	-	-	-	-			3	1
214442.3	Obtain knowledge about micro-programming of a processor.	3	3	. 3	-	1	1	_		_	-		-	3	1
214442.4	Understand concepts related to memory & IO organization.	3	2 .	-	-	2	3	-			-		-	-	1
214442.5	Understand CPU instruction characteristics	3	2	-	-	2	2	-	_		-			-	1
214442.6	Understand enhancement features of CPU	3	2	-	-	2	2	-		-	-		-	1	1
214443	Digital Electronics and Logic Design										SAUGED TO				
	Spectacle an awareness and apply knowledge of number systems,	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
214443.1	codes, Boolean algebra and use necessary A.C, D.C Loading characteristics as well as functioning while designing with logic gates.	3	3	2	3	-	3	-	-	i -	-	-		1	-
214443.2	Use logic function representation for simplification with K-Maps and analyze as well as design Combinational logic circuits using SSI & MSI chips.	1	3	3	3	-	3	-	- 1		-	-	-	2	-
t	Analyze Sequential circuits like Flip-Flops (Truth Table, Excitation table), their conversion & design the applications.	2	1	2	3	-	3	-	-		-	-	-	2	-
214443.4	Design algorithms based on techniques like hrute-force	2	3	3	3	+	3		-						
214443.5 L	Jse VHDL programming technique	3	3	2	3		3					-	•	1	2
214443.6	different modeling styles for any digital circuits	1	3	3	3		3	-	-		-	Je co	-	1 1	1
	different modeling styles for any digital climits								Gen	ba Sopa	PRIN nrao Me	CIPAL Dze Coll	ege of E		-

25/1/3, Balewadi, PUNE-411 045

214444	Fundamentals of Data Structures	PO1	PO2	PO3	PO4	PO5	F J	DO.	DOG	1 200	T= -				
214444.1	Apply appropriate constructs of C language, coding standards for application development.	2	3	2	3	-	3	PO7	PO8	PO9	PO10	PO11	PO12		PSO
214444.2	Use dynamic memory allocation concepts and file handling in various application developments.	1	2	3	2		2	_	_	_	_			1	-
214444.3	Perform basic analysis of algorithms with respect to time and space complexity	2	1	2	3	-	3	_	-	-	-		_	1	-
214444.4	Select appropriate searching and/or sorting techniques in the application development	2	3	3	2	-	3	-	_			_	_		1
214444.5	Select and use appropriate data structures for problem solving and programming	3	3	2	3	-	2	-	_	_	-	-	_		1
214444.6	Use algorithmic foundations for solving problems and programming	1	3	2	3	-	3	-	-	-	-	-	_	1	-
214445	P. II.														
214445	Problem Solving and Object Oriented programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	DCO1	DCCC
214445.1	Develop algorithms for solving problems by using modular programming concepts	3	3	3	2	2	3	3	-	-	2	-	2	1	PSO2
214445.2	Abstract data and entities from the problem domain, build object models and design software solutions using object-oriented principles and strategies	2	3	2	3	2	3	3	1	-	2	-	2	1	1
214445.3	Discover, explore and apply tools and best practices in object- oriented programming.	3	3	3	3	2 ,	3	3	1	. 2 - 2	2	-	2	1	1
214445.4	Develop programs that appropriately utilize key object-oriented concepts	3	2	3	3	2	3	3	1	_	2	-	2	1	1
			\dashv					_							
214445.5	Apply appropriate Virtual Functions and Templates to provide object-oriented solutions	3	3	2	3	2	2	2	-	-	2	- "	-	1	1
214445.5 214445.6	Apply appropriate Virtual Functions and Templates to provide object-oriented solutions Use of files for persistent data storage for real world	3	3	2	3	2	2	3		-	2	-	-	1	1

207003	Engineering Mathematica III	Semester IV														
207003	Engineering Mathematics III	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
207003 .1	Solve higher order line and control equation using appropriate techniques for modeling and the control electrical circuits.	1	2	1	2			-	-	-	_	-	-	1	-	
207003 .2	Solve problems related to Fourier Parsform, Z-Transform and applications to Senal and Image processing.	1	1	2	2	-	-	-	-	1	-	-	_	1	_	
207002 2	Apply statistical and thous like correlation, regression analysis and probability theory for analysis and probability the probability theory for analysis and probability theo	2	1	1	2	-	1	-	_		PRINC		- of Fr	2	_	

Genba Sopanrao Moze College of Erigg. 25/1/3, Balewadi, PUNE-411 045

207003 .4	Perform vector differentiation and integration to ar ze the	Τ,		Τ,	Τ.	T	\Box		T		T	1	Т	T	
207003 .5	vector fields and apply to compute line, surface and volume contour integration of complex functions required in Image	1	2	2	1	1 -	-	-	-	-	-	-	-	1	-
207003.5	processing, Digital filters and Computer graphics.	1	2	1	2	-	-	-	-	_	-		-	2	_
										1					
214450	Computer Graphics	PO1	PO	Doo	-										
214450 .1	Apply mathematics and logic to develop Computer programs for elementary graphic operations	3	PO2	PO3	PO4	PO5 2	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
214450 .2	Explain and employ techniques of geometrical transforms to produce, position and manipulate objects in 2 dimensional and 3-dimensional space respectively.	2	3	3	3	2	2	2	2	2	2	2	-	-	-
214450 .3	Describe mapping from a world coordinates to device coordinates, clipping, and projections in order to produce 3D images on 2D output device.	3	3	3	2	2	2	2	2	2	1	1	. <u>.</u> .	-	-
214450 .4	design, development and testing of 2D, 3D modeling applications.	2	3	2	2	1	2	2	2	1	1	_	2	-	1
214450 .5	Apply the concepts of rendering, shading, animation	2	3	1	2	1	2	1	2	1	1		2	-	-
214450 .6	Apply the concepts of CURVES AND FRACTALS	1	2	2	2	1	1		1540 1000						
			-	-		. <u> </u>			-	, O.F.	1	-	2	-	-
214451	Processor Architecture	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO1
214451 .1	Learn architectural details of 80386 microprocessor	3	1	2	2	3	2	2	2	-	-	-	2	-	-
214451 .2	Understand memory management and multitasking of 80386 microprocessor	2	2	3	-	2	2	-	_	-	_		_	_	
214451 .3	Understanding se protection, interrupts and exceptions.	1	1	3	-	2	0	_	_	- 1	-	_			
214451 .4	Understand architecture and memory organization of	1	1	3	_	2	0	-		-					-
	30 ATTRETOCOUTTONER ATT		-	0 1		- 1		2 32					- 1	-	- 1
214451 .5	Explain times and interpretation of 8051 microcontroller and its interfacing with the design of 8051 microcontroller.	1	2	2	-	-	-	-	-	-	-	-		-	

PRINCIPAL

214452	Data Structures & Files	PO1	PO2	PO3	PO4	PO5	D4	DO7	DO0	l noo	l noss	laarr	1	1	
214452 .1	Analyze algorithms and to determine algorithm correctness and	3	3	3	3	103	3	FO/	PO8	PO9	POIO	PO11	PO12		PSO2
214452 .2	Understand different advanced abstract data type (ADT) and data structures and their implementations.	2	2	3	3	-	3	-	-	-		-	-	-	-
214452 .3	Understand different algorithm design techniques (brute - force, divide and conquer, greedy,	3	1	2	3	-	3	_	_	_	_	_	_		2
214452 .4	Apply and implement learned algorithm design techniques and data structures to solve problems.	3	3	3	3	_	3	<u>.</u>	-, 1	-	-	-	-	1	-
214452 .5	Apply and implement concept of trees.	3	3	2	3		_		0.00						1
214452 .6	Apply and implement file organization	2	3	2	3	-	3	-			-	•	-	1	-
		-	3		3		3	-		-	-	-	-	1	-
214453	Foundations of Communication and Computer Network	PO1	PO2	PO3	PO4	DO.	DO.	70-							
214452 .1	Understand data/signal transmission over communication media	3	2	2	-	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
214452 .2	Recognize usage of various modulation techniques in communication	1	3	2	_	1	1				-	-	2	-	-
214452 .3	Analyzo various spread and the	1	1	2	_	3		1			-	-	1	-	-
214452 .4	Analyze various spread spectrum and multiplexing techniques Use concepts of data communication to solve various related problems	1	3	3	-	1	_	-				-	2	1	-
214452.5	Understand error correction and detection techniques.	1													
214452 .6	Acquaint with transmission media and their standards	1	1	1		2	3	-	-	-	-	-	3	-	
	The standards	-	-	2	-	1	1		2	arms too			3		

Semester V

Course Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	DO7	DOG	DOO	DOIL	l no 44	I		
314441	Theory of Computation	101	102	103	104	105	PU6	PO/	PO8	PO9	PO10	PO11	PO12	PSO1	PSO
314441.1	To construct finite state machines to solve problems in computing	3	2	2	1	1	-	-	-	-	-	_	_	2	2
314441.2	To write mathematical expressions for the formal languages	2	2	2	2	3	_							_	<u> </u>
314441.3	To apply well defined rules for syntax verification.	2	3	2	1	3	-				-	-		2	2
314441.4	To construct and analyze Push Down, Post and Turing Machine for formal languages.	3	3	3	1	1	-	-	-	-	_	-	-		2
	To express the Coder tanding of the decidability and decidability problem.	3	2	1	1	2	-	-	_	-	-	_	-	2	1
314441.6	To express the understanding of computational complexity.	3	3	3	1					* 6.1	rotal)	N ·	-		
	* Bale					şî		G	enba So	PRI	NCIPAL Moze Co	5	Engg.	2	1
	STATE ON INC. * SOME OF THE OWNER OW			a	- 1	3		G	Control of the Control		Moze Co adi, PUI		1.7.7		

Database Management Systems	PO1	DO	DOS	I DO 4	T 20-	T= ^\						14		
		_		PO4		P	PO7		PO9	PO10	PO11	PO12	PSO1	1 PSO2
To analyze database models & entity relationship models.		_		-	-	-	-	-	-		10-1	2	3	1
To design and implement a database schema for a given problem-		-	1	-	-	-	-	1	-	-	-	2	3	2
To populate and guery a database using SQL DML/DDL common to	-						1 1			2 1 14	e 10 15		3	
Do Programming in PL/SQL including stored procedures, stored functions, cursors and packages.	2	-	-	-	2	-	-	1	-	-	-	2	3	-
To appreciate the impact of analytics and big data on the information industry and the external	3	-	-	-	1	-	-	1	-	-	-	2	3	1
Software Engineering & Project Management	DO1	DOS		1										+
g and open management	POI	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
To identify unique features of various software application domains and classify software applications.	3	3	1	2	2	1	•	-	-	-	-	1	1	1
development	3	3	2	1	-	-			1	2	_	1		1
process and distinguish agile process	3	2	3	1	2	1		1	1	1	1	-		1
To analyze software requirements by applying various modeling techniques.	2	3		1		1	1	2	1	-	-		1	1
To list and classify CASE tools and discuss recent trends and research in software engineering	2	2	2	1	1	1	1	2	1	1	-	1	-	1
To understand IT project management through life cycle of the project and future trends in IT Project Management.	2	1	1	1	2	1	1	1	1	-	-	1	-	
Operating Systems	DO1	DOO	DOS	701				- 4.					4	
	3	PO2	2	PO4	PO5 2	PO6 1	PO7 -	PO8 1	PO9 -	PO10 -	PO11	PO12	PSO1	PSO2
To understand the concept of a process and thread	_			-									1	1
To apply the cons of process/thread scheduling		-		- 4	1	-	-	1	-	-	1	-	2	1
To apply the concept of process synchronization, mutual exclusion	-	3	1	2	-	2	-	2	-	-	1	-		
To paid the concept of I/O management and File system	2	1	2		_									-
described the arious memory management techniques.		-	-	-		2	-		-	-	1	-	1	
S. S. PUNE AS ENGINE	3		3 22			e Br		5	RINCI	AL	1 cof Engl	-	1	1
	To populate and query a database using SQL DML/DDL commands. Do Programming in PL/SQL including stored procedures, stored functions, cursors and packages. To appreciate the impact of analytics and big data on the information industry and the external Software Engineering & Project Management To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project Management. Operating Systems Fundamental understanding of the role of Operating Systems. To understand the concept of a process and thread. To apply the cons of process/thread scheduling. To apply the concept of process synchronization, mutual exclusion and the deadlock To apply the concept of I/O management and File system.	To define basic functions of DBMS & RDBMS To analyze database models & entity relationship models. To design and implement a database schema for a given problemdomain To populate and query a database using SQL DML/DDL commands. Do Programming in PL/SQL including stored procedures, stored functions, cursors and packages. To appreciate the impact of analytics and big data on the information industry and the external Software Engineering & Project Management PO1 To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project Management. Operating Systems PO1 Fundamental understanding of the role of Operating Systems. To understand the concept of a process and thread. 3 To apply the cons of process/thread scheduling. To apply the concept of process synchronization, mutual exclusion and the deadlock To apply the concept of I/O management and File system. 2 Labeled on the process and the concept of I/O management techniques.	To define basic functions of DBMS & RDBMS To analyze database models & entity relationship models. To design and implement a database schema for a given problemdomain To populate and query a database using SQL DML/DDL commands. Do Programming in PL/SQL including stored procedures, stored functions, cursors and packages. To appreciate the impact of analytics and big data on the information industry and the external Software Engineering & Project Management PO1 PO2 To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project Management. Operating Systems PO1 PO2 Fundamental understanding of the role of Operating Systems. To understand the concept of a process and thread. To apply the cons of process/thread scheduling. To apply the consept of process synchronization, mutual exclusion and the deadlock To apply the concept of I/O management and File system. 2 1 **To apply the concept of I/O management techniques. 3	To define basic functions of DBMS & RDBMS 3 2 3 To analyze database models & entity relationship models. 2 1 2 To design and implement a database schema for a given problemdomain To populate and query a database using SQL DML/DDL commands. 2 Do Programming in PL/SQL including stored procedures, stored functions, cursors and packages. To appreciate the impact of analytics and big data on the information industry and the external Software Engineering & Project Management PO1 PO2 PO3 To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project Management. Operating Systems Fundamental understanding of the role of Operating Systems. To understand the concept of a process and thread. 3 - 3 To apply the cons of process/thread scheduling. To apply the cons of process/thread scheduling. To apply the consept of I/O management and File system. 2 1 2 2 2 2 2 3 3 - 3 3 - 4 3 - 5 3 - 6 3 1 - 7 3	To define basic functions of DBMS & RDBMS To analyze database models & entity relationship models. To design and implement a database schema for a given problemdomain To populate and query a database using SQL DML/DDL commands. Do Programming in PL/SQL including stored procedures, stored functions, cursors and packages. To appreciate the impact of analytics and big data on the information industry and the external Software Engineering & Project Management POI PO2 PO3 PO4 To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project Management. Operating Systems POI PO2 PO3 PO4 Fundamental understanding of the role of Operating Systems. To apply the cons of process/thread scheduling. To apply the conse of process synchronization, mutual exclusion and the deadlock To apply the conse of i/O management and File system. 2 1 2 2	To define basic functions of DBMS & RDBMS To analyze database models & entity relationship models. To analyze database models & entity relationship models. To design and implement a database schema for a given problemdomain To populate and query a database using SQL DML/DDL commands. To appreciate the impact of analytics and big data on the information industry and the external Software Engineering & Project Management PO1 PO2 PO3 PO4 PO5 To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To idenstify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project Management. Doperating Systems PO1 PO2 PO3 PO4 PO5 To understand the concept of a process and thread. To apply the cons of process/thread scheduling. To apply the cons of process/thread scheduling. To apply the concept of process synchronization, mutual exclusion and the deadlock To apply the concept of I/O management and File system. 2 1 2 2 2 2 1 2 2 1 3 2 3 3 3 3 3 3 3 3	To define basic functions of DBMS & RDBMS 3 2 3 - 1 To analyze database models & entity relationship models. 7 To design and implement a database schema for a given problemdomain 7 Do populate and query a database using SQL DML/DDL commands. 8 To populate and query a database using SQL DML/DDL commands. 9 To populate and query a database using SQL DML/DDL commands. 10 Programming in PL/SQL including stored procedures, stored functions, cursors and packages. 10 appreciate the impact of analytics and big data on the information industry and the external 10 appreciate the impact of analytics and big data on the information industry and the external 11 Software Engineering & Project Management 12 PO1 PO2 PO3 PO4 PO5 PO6 13 3 1 2 2 1 14 To identify unique features of various software application domains and classify software applications. 15 C choose and apply appropriate lifecycle model of software development 16 describe principles of agile development, discuss the SCRUM process and distinguish agile process 17 O analyze software requirements by applying various modeling techniques. 18 To ilst and classify CASE tools and discuss recent trends and research in software engineering requirement through life cycle of the project and future trends in IT Project Management. 19 PO2 PO3 PO4 PO5 PO6 PO6 PO7	To define basic functions of DBMS & RDBMS 3 2 3 3 - 1 1 - 7 To analyze database models & entity relationship models. 2 1 2 - 2 - 2 7 To design and implement a database schema for a given problemdomain To populate and query a database using SQL DML/DDL commands. To populate and query a database using SQL DML/DDL commands. To populate and query a database using SQL DML/DDL commands. Do Programming in PL/SQL including stored procedures, stored functions, cursors and packages. To appreciate the impact of analytics and big data on the information industry and the external Software Engineering & Project Management POI PO2 PO3 PO4 PO5 PO6 PO7 To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project Management. Operating Systems PO1 PO2 PO3 PO4 PO5 PO6 PO7 Fundamental understanding of the role of Operating Systems. To understand the concept of a process and thread. 3 - 3 - 1 1 1 1 1 1 1	To define basic functions of DBMS & RDBMS To analyze database models & entity relationship models. To analyze database models & entity relationship models. To design and implement a database schema for a given problem-domain To populate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To apopulate and query a database using SQL DML/DDL commands. To describe principle and query a database using SQL DML/DDL commands. To describe principle attribution and paper and	To design and implement a database schema for a given problem	To define basic functions of DBMS & RDBMS 3	To design and implement a database schema for a given problem-	To define basic functions of DBMS & RDBMS 3 3 3 1 1 2 1 1 1 1 1 1 1	To define basic functions of DBMS & RDBMS 3 2 3 - 1 - 1 - 1 - 1 - 1 2 3 3 1 2 3 - 1 - 1 - 1 - 1 - 1 2 - 2 3 3 3 3 3 3 3 3 3

25/1/3, Balewadi, PUNE等基本型型

314445	Human Computer Interaction		125-125												
		PO1	PO2	PO3	PO4	PO5	P	PO7	PO8	POO	PO10	DO11	DO12	DCO1	DCCC
314445.1	To explain importance of HCI study and principles of user-centred design (UCD) approach.	2	2	1	- D	-	-	-	-	-	2	-	1	2	2
314445.2	Develop understanding of human factors in HCI design.	3	3	2	2	1									
214445.2	Develop understanding of models, paradigms, and context of	-	-	- 4		1	12 7 0	-	-	-	2	-	2	1	2
314445.3	interactions.	3	3	3	1	1	-		•	: <u>.</u>	2	-	2	1	1
314445.4	Design effective user-interfacesfollowing a structured and organized UCD process.	3	3	2	2	1		-	-	-	2	<u>-</u>	2	1	2
	Evaluate usability of a user-interface design.					97								i e u	
	Apply consists and disci-interface design.	3	3	2	2	1	-	-	·		2		2	1	2
317743.0	Apply cognitive models for predicting human-computer-	2	2	_	-									1	2
								-		-	2	-	1	1	1

Semester VI

314450	Computer Networks& Security		emest	er VI											
011100		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO
314450 .1	To know Responsibilities, services offered and protocol used at each layer of network.	3	-	2	1	2	2	-	-	-	-	-	-	PSUI	PSC
314450 .2	To understand different addressing techniques used in network.	3	2	1	2	2	-	-	-	-	-	-	-	1	-
314450 .3	To know the difference between different types of network.	3	3	2										2	
314450 .4	To know the different wireless technologies and IEEE standards.	3	3	2	2	2	2	-	-	-	-	-	-	-	-
314450 .5	To use and apply the standards and protocols learned, for application development.	2	1	2	-	2	2		-	-	-	-	-	-	-
314450 .6	To understand and explore recent trends in network domain.	3	-		-	1	1	-	-	-	-	-		1	-
314451	Systems Programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	DOG	Poo	2010				
314451.1	creates novel solutions for language processing applications.	3	2	3	104	103	P 00	PO/	PO8	PO9	PO10	PO11	PO12	PSO ₁	PSO2
314451.2	To design and implement assemblers and macro processors.	2	1		-		. · -				-	-		1	1
314451.3	To use tool LEX for generation of Lexical Analyzer.	1	1	3		2	-	-	•	-	-	-		-	2
314451.4	To use YACC tool for generation of syntax analyzer.	1	1	3		2	-		-	-		-	-		-
314451.5	To generate output for all the phases of compiler.	1	2	3	-	2	-		-	-	-			-	-
314451.6	To apply code optimization in the compilation process.	1	2	2				-		-	-	-		-	-
							-			-		-	-	-	
314452	Design and Analysis of Algorithms	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	To calculate computational complexity using asymptotic notations of the little particular and th	3		•	-	2	•	•	-	-	الآام	-	-	1	FSU2
10	algorithms. Conquer as well as Greedy approach to design	3	-	-		3		-		PRIN	TPAL			1	
314452.	To practice principle of optimality.	3		3	2			Gon	a Sona	nrae Me	ze Colle	ge of En	igg.	-	2

To illustrate different problems using Backtracking.	т —									,		1000	No.	
To compare different methods of Branch and Bound strategy.	 -	-	2	-	3	4	-	- 3	-	-	-	-	1	
To explore the concept of P, NP, NP-complete, NP-Hard and parallel algorithms.	-	-	3	-	- 4	-	•	-	-	-	-		1	-
Cloud Computing	DO1	DOS	DOS	70.1						2 ()			-	-
To understand the need of Cloud based solutions.	PO1	PO2	PO3	PO4	PO5	PO6		PO8	PO9	PO10	PO11	PO12	PSO1	PSO
To understand Security Mechanisms and issues in various Cloud Applications	3	3	1	-	1	1	1	-	-	-	-	-	1	1
To explore effective techniques to program Cloud Systems.	3	-	4								*		4	_
Computing.	3	3	1		1	1	1		-	-	-	-	1	1
To find challenges in cloud computing and delve into it to effective solutions.	3	3	1	-	1	1	1	-	-	-	-	-	1	1
To understand emerging trends in cloud computing.	3	-	_									•	1	1
g g same in ground computing.	3	3	1	-	_1	1	1		_		-	-	1	1
Data Science and Big Data Analytics	PO1	DOS	DO2	704	70-							(9		
Understand Big Data primitives.	3	PO2	PO3	PO4	PO5		PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO ₂
Learn and apply different mathematical models for Big Data.	2			-		2	1	-	-		-	-	-	-
Demonstrate Big Data learning skills by developing industry or research applications.	2	-	-	-	-	2	1	1	-	-	-	-	1	1
Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets.	-	1	1		-	2	2	-	1	-	-	-	2 :	2
Understand, apply and analyze needs, challenges and techniques for big data visualization.		1	-	-	1	2	2	-	1	-	-	-	2	1
Learn different programming platforms for his data at a second		-	-						75 (20)					
										ogramming platforms for hig data analytics	g data visualization. - 1 - - 1 2 2 - 1 - - 2 Ogramming platforms for big data analytics 1 - - 1 - 2 1 1 1 2			

Semester VII

Course Code	Name of Course	PO1	PO2	DO3	DO4	PO5	DOC	DOS	DOG	200	I =			2.00	
414453	Information and Cyber Security	101	102	103	FU4	PU5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	Students shall be able to understand what are the common	1												1 1 1	
414453.1	threats face today	3		3	-	_	1	-		-	_	-	1	in_ a	
414453.2	is the foundational theory behind information security	1	3		2						_				
1.1	I William all the basic principles and techniques when designing a						-			3	2		1	1	-
414453.3	secure system [m]	2	2	1		2	-	-	1	2	1	1	2	- 10	-
414453.4	Now today's attacks and defenses work in practice	-	-0				2	1		1				Tare to 1	
414453.5	to w to assess threats for their significance	2	1				2			1	Clon		1	1	-
	protections and limitations provided by today's	3	1			1	2	-	-	1			1	-	
414453.6	technology	-	1	1		2	1	Conh	-	rao Moi	Calles	e of En	18. 1	1	-
					To a star			-Genb	Sopan 11/3. Ba	lewadi,	PUNE-	11 045			

414454	Machine Learning and Applications	PO1	PO2	PO3	PO4	PO5	PU	T DOS	700	1	1		т		
414454.1	model the learning primitives	3	-		-		-		PO8	PO9	PO10	PO11	PO12	PSO1	PSC
414454.2	build the learning model.	3	3	3	2	2	2	2	1	1	1	1	1	1	1
414454.3	tackle real world problems in the domain of Data Mining and Big Data Analytics, Information Retrieval, Computer vision, Linguistics and Bioinformatics.	3	3	3	2	1	1	1	1	1	1	1	1	1	1
414454.4	Illustrate the regaration and generalization machine learning algorithms.	3	3	2	1	1	1	2	1	1	1	1	1	1	1
414454.5	Apply fundamental concepts of ANN.	3	-					9.7					50		
414454.6	Identify different unsupervised learning algorithms for the related real-world problems.	3	2	2	1	1	1	1	1	1	1	1	1	1	1
414455	Software Design and Modeling	PO1	PO2	PO3	PO4	PO5	PO6	DO.	200						
414455.1	Understand object oriented methodologies, basics of Unified Modeling Language (UML)	3	2	3		2	-	PO7	PO8	PO9	PO10 2	PO11	PO12	PSO1	PSC
414455.2	Understand analysis process, use case modeling, domain/class modeling	3	2	2	2	2	-	2	-	2	2	2	_	2	1
414455.3	Understand interaction and behavior modeling.	3	3	3	2	2	-	2		1	-	1		-	1
414455.4	Understand design process and business, access and view layer class design	2	2	2	-	-		-	-	1	-	•	-	_	
414455.5	Get started on study of GRASP principles and GoF design patterns.	2	2	1	-	-	-	=	-	-	-	-	-	-	2
114455.6	Get started on study of architectural design principles and guidelines in the various type of application development.	2	2	3	1	2	-	1	-	2	-	2	4 -	-	-
14456E	Elective-I Business Analytics and Intelligence	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	DSO.
14456E.1	Comprehend the Information Systems and development approaches of Intelligent Systems.	3	-	3		-	1	-	-	-	-	-	1	-	-
14456E.2	systems	1	3		2	-	-	_	-	3	2		1	1	
14456E.3	Propose the Framework for business intelligence	2	2	1		2									
14456E.4	et acquainted with the Theories, techniques, and considerations to capturing organizational intelligence.	-	-	-	-	-	2	1	2	. 1.1	1	1	1	1	-
14456E.5	A light business strategy	3	1	2	_	1	-	b	RINCIP	104					. T iers
14456E.6	Apply the techniques for implementing business intelligence systems.		1	1		2 6	2 Senba S	opanra	o Moze	College UNE-41	of Enga	-	1	1	-

414457C	Elective-II Software Testing and Quality Assu. ace	PO1	PO2	PO3	PO4	PO5	PGo	PO7	PO8	PO9	PO1	0 PO11	PO12	PSO	PSO
414457.1	Test the software by applying testing techniques to deliver a product free from bugs.	3		3	3	3	-	-	-	2	-	-	1012	3	2
414457.2	Investigate the scenario and to select the proper testing technique.	2	3	2	2	3	-	-			-			1	-
414457.3	Explore the test automation concepts and tools and estimation of cost, schedule based on standard metrics.	3		3	3	3	_	_	_				-	3	2
414457.4	Understand how to detect, classify, prevent and remove	2										-	3	2	3
414457.5	Choose appropriate quality assurance models and develop quality.	2	2	3	3	3	-	-	-	-	2	-	-	2	-
414457.6	Ability to conduct formal inspections, record and evaluate results of inspections.	3	2	2	2	2	_	-				ļ- <u>-</u>	-	-	2
														3	-
		Son	neste	- \/!!!				لــــا							
	Distributed Co. 11 C	361	ileste	VIII		3 2									
414462	Distributed Computing System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	DSO1	DECO
	To learn the principles, architectures and programming models used in distributed systems.							0 10			1010		1012	1301	PSUZ
414462.1		3	3	1		1	1	1	-	-	-	-	-	1	1
414462.2	To understand the fundamentals and knowledge of the Middleware of distributed systems	3	3	1	-	1	1	1	-		-		_	1	1
414462.3	To gain knowledge of working components and fault tolerance of distributed systems.	3	3	1	-	1	1	1	· - ·	-	-			1	1
414462.4	To understand the significance of agreement, fault tolerance and recovery protocols in Distributed Systems.	3	3	1	-	1	1	1	-	-	-	_	-	1	
114462.5	To make students aware about distributed and multimedia file systems and web systems.	3	3	1	-	1	1	1	-		_	-		1	1
414462.6	Create an awareness of Emerging trends in distributed computing.	3	3	1	- A	1	1	1	-	-		-	-	1	1
414463	Ubiquitous Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	DCO1	DCCA
14403.1	Demonstrate the knowledge of design of Ubicomp and its	2	2		2	-	-	-	-				-	1	-
14463.2	Explain smart devices and services used Ubicomp.	2	3	2	3	-	-	-	-	PRIN	LIPAE				
14463.3	time application esign.	3	2	3	3			Gen	ba Sopa			lege of	ngg.		1

	Use the concept of HCI to understand the design		Т —	т —	_	T	1	1 1							ā
414463.4	automation applications.	3	2	3	3	-	-	-	-	-	-	_	-	1	-
414463.5	Classify Ubicomp privacy and explain the challenges associated with Ubicomp privacy.	3	3	3	3	-	-	-	-	-	-	_	-	1	_
414463.6	Get the knowledge of ubiquitous and service oriented networks along with Ubicomp management.	1	3		3	•	-	-		-	•	-	-	1	-
414464C	Elective III Multimedia Techniques	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO
414464c .1	To create own file formats for specific application.	3	3	1	-	1	1	1	_	-				1	
414464c .2	To do some projects based on current trends in multimedia.	3	3	1	-	1	1	1		_					1
414464c .3	To use open sources for authoring tool for animation.	3	3	-										1	1
414464c .4	TUnderstand some research areas of current multimedia techniques.	3	3	1	-	1	1	1	-	-	-	-	-	1	1
414464c .5	To use open sources for authoring tool for presentations	-									•	-		1	1
414464c .6	Become acquainted with some advanced topics in	3	3	1	-	1	1	1 1	•		-	-	-	1	1
						-						-	-	1	1
414465D	Elective IV Social Media Analytics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
414465D .1	Understand the basics of Social Media Analytics	3	3	-	-	3	1								
414465D .2	Explain the significance of Data mining in Social media.	3	3	3			-			-		-		-	
414465D .3	Demonstrate the algorithms used for text mining.	2	3	1	-	-	-		-		-	-	-	-	-
414465D .4	Apply network measures for social media data.	2		_									7 T		-
414465D .5	Explain Behavior Analytics techniques used for social media	2	3	3	2	-	-	-	-	-	-	-	-	1	<u>.</u>
414465D .6	Apply social media analytics for Face book and Twitter kind of applications.	2	2	3	3	3	-	-	1	-	-	-		1	



Academic Year-2019-20 2.6.2 CO-PO Mapping Matrix Semester III

Course Code	Name of Course	ester							\$		-				
214441	Discrete Structures	PO	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	PSO	1 PSO
214441.1	Formulate, apply formal proof techniques and solve the problems with logical reasoning.	3	2	3		2	-	2	+-	2	1	-	1		
214441.2	Analyze and evaluate the combinatorial problems by using probability theory.	3	2	2	2	2	-	2	-	2	1.	-	1	2	1
214441.3	Apply the concepts of graph theory to devise mathematical models.	+-	+	-										-	1
214441.4	Analyze types of relations and functions to provide solution to computational problems.	2	2	2	-	-	-	2	-	1	1	-	1	-	-
214441.5	Identify techniques of number theory and its application.							- 11	100]	-	2
214441.6	Identify fundamental algebraic structures.	2	2	3	1	2	-	1	-	2	1	-	1		-
214442	Computer Organization & Architecture	PO1	PO2	PO3	DO4	200	200								<u> </u>
214442.1	Solve problems based on computer arithmetic.	3	3	PUS	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
214442.2	Explain processor structure & its functions.	3	3	3	-	2	1	•	-	-	-		-	1	1
214442.3	Obtain knowledge about micro-programming of a processor.	3	3	3	-	1	1	<u> </u>	-	-	-	<u> </u>		3	1
214442.4	Understand concepts related to memory & IO organization.	3	2	-	-	2	1	-	 - -	-	-		-	3	
214442.5	Understand CPU instruction characteristics	3	2	+	-	2	3	·	-	<u> </u>		-	-	-	1
214442.6	Understand enhancement features of CPU	3	2	<u>-</u>	-	2	2	 -	 -	-	-	-	-	-	1
214443	Digital Electronics and Logic Design										-	-	<u> </u>	<u> </u>	1
	Spectacle on average de la	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO
21777J.1	Spectacle an awareness and apply knowledge of number systems, codes, Boolean algebra and use necessary A.C, D.C Loading characteristics as well as functioning while designing with logic gates.	3	3	2	3	•	3		•	-	-	-	-	2	-
	Use logic function representation for simplification with K-Maps and analyze as well as design Combinational logic circuits using SSI & MSI chips.	1	3	3	3	-	3	-	-	-	-	-	-	2	-
	Analyze Sequential circuits like Flip-Flops (Truth Table, Excitation table), their conversion & design the applications.	2	1	2	3	-	3	-			_	-	_	2	-
214443.4	Design algorithms based on techniques like brute -force, divide and conquer, greedy, etc.	2	3	3	3	-	3	-		-	_				2
214443.5	Use VHDL programming technique	3										30.0			
	different modeling styles for any digital circuits.	1	3	3	3	-	3	-	-		-	-	-	-	-
214444	Fundamentals of Data Structures	PO1	PO2	PO3	PO4	PO5	PO6	PO7	DC0	DCC	POTO	POLL			
214444.1	Apply apply and the Constructs of C language, coding standards for application development. Use Construction concepts and file handling in various application	2	3	2	3	-	3	- FU/	PO8	PO9	PO10	PO11	rO12	PSO1	PSO2
214444.2	Use dynamic memory allocation concepts and file handling in various application development.									900				-	

214444.3	Perform basic analysis of algorithms with respect to time and space complexity	2	1	2	3	T)	3		Τ.	T	T			Ι,	Τ.
214444.4	Select appropriate searching and/or sorting techniques in the application development	2	3	3	2	+-	3			+-	-	-	<u> </u>	1	1
214444.5		3	3	2	3				+-	ļ -	-	•	-	1	1
214444.6	Select and use appropriate data structures for problem solving and programming Use algorithmic foundations for solving problems and programming	1	3	2	3	 	3	-	ļ -	-	-	-	-	2	-
214445				+-	+ -	+-	3	-	+-	+-	+-		-	1	1
214445	Problem Solving and Object Oriented programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	DO11	DCO:	PCO
214445.1	Develop algorithms for solving problems by using modular programming concepts	3	3	3	2	2	3	3	-	-	2	-	2	1	PSO2
214445.2	Abstract data and entities from the problem domain, build object models and design software solutions using object-oriented principles and strategies	2	3	2	3	2	3	3	1		2	-	2	1	1
214445.3	Discover, explore and apply tools and best practices in object-oriented programming.	3	3	3	3	2	3	3	1	-	2	-	2	1	1
214445.4	Develop programs that appropriately utilize key object-oriented concepts	3	2	3	3	2	3	3	1	+	+-		-		
214445.5	Apply appropriate Virtual Functions and Templates to provide object-oriented solutions	3	3	2	3	2	2	2	-	-	2	-	2	1	1
214445.6	Use of files for persistent data storage for real world application.	3	3	3	3	-								-	
				1 3	1 3	2	2	3	· · ·	•	2	•	-	1	1
207003	Engineering Mathematics III	ester I		T	T					_	-	1			
207003 .1	Solve higher order linear differential equation using appropriate techniques for modeling an analyzing electrical circuits.		PO2	PO3	PO4	PO5	PO6 2	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
207003 .2	Solve problems related to Fourier transform, Z-Transform and applications to Signal and Image processing.	1	2	2	2	-	1	•	-	-	-	-	-	1	1
207003 .3	Apply statistical methods like correlation, regression analysis and probability theory for analysis and prediction of a given data as applied to machine intelligence.	2	1	3	2	-	1		-	-	-	-	-	2	1
207003 .4	Perform vector differentiation and integration to analyze the vector fields and apply to compute line, surface and volume integrals.	3	2	2	1	-	2		1	-	-	-	-	•	1
207003 .5	Analyze conformal mappings, transformations and perform contour integration of complex functions required in Image processing, Digital filters and Computer graphics.	3	2	1	2	-	1	•	8	-		•	-	2	1
214450	Computer Graphics	DO1	200												
214450 .1	Apply mathematics and logic to develop Computer programs for elementary graphic operations	PO1	PO2	PO3	PO4 2	PO5 2	PO6 1	PO7 2	PO8	PO9	PO10 1	PO11 2	PO12	PSO1 2	PSO2
214450 2	Explain enclared peconiques of geometrical transforms to produce, position and man ordate objects in Selmensional and 3-dimensional space respectively.	2	3	3	3	2	2	2	2	2	2	2	-	1	1
	Describe mapping from a world coordinates to device coordinates, clipping, and	E = 1					- 1	ı				- 1	(a 8 b		

214450 .4	design, development and testing of 2D, 3D modeling ap ations.	1 5	т.			_~_		- To							
214450 .5	Apply the concepts of rendering, shading, animation	2	3	2	2	1	2	2	2	1	1	-	2	1	2
214450 .6	Apply the concepts of CURVES AND FRACTALS	2	3	1	2	1	. 2	1	2	1	1	-	2	1	1
214451	Processor Architecture	1	2	2	2	1	1	-	-	-	1	-	2	1	-
214451 .1	Learn architectural details of 80386 microprocessor	PO1	PO2		PO4		PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
214451 .2	Understand memory management and multitasking of 80386 microprocessor	2	2	3	-	2	2	2	2	-	-	•	2	1	1
214451 .3	Understand Privilege protection, interrupts and exceptions.	1	1	+-	-		2	-	<u> </u>	-		-	-	1	-
214451 .4	Understand architecture and memory organization of 8051microcontroller	1	1	3	-	2	-	-	-	-	-	-	-	-	-
214451 .5	Explain timers and interrupts of 8051 microcontroller and its interfacing with I/O devices	1	2	2	-	-	-	-	-	-	-	-	-	1	-
214451 .6	Understand minimum system using 8051 microcontroller.						-	-	-		-	-	-		1
	y san using out interocontroller.	1	2	2	-	-	-	-	-	-	-	-	-		-
214452	Data Structures & Files	-													
214452 1		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
214452 .1	Analyze algorithms and to determine algorithm correctness and time efficiency class.	3	3	- 3	3	-	3	ä	-	-	-	-	-	2	-
	Understand different advanced abstract data type (ADT) and data structures and their implementations.	2	2	3	3	-	3				-	-	-	_	
214452 .3	Understand different algorithm design techniques (brute -force, divide and conquer, greedy etc.) and their implementation	3	1	2	3	-	3	-	-	-	-	_			
214452 .4	Apply and implement learned algorithm design techniques and data structures to solve	3	3	3	3	-	3	-	_	_				2	
214452 .5	Apply and implement concept of trees.	3	3	2	3		3	0							
214452 .6	Apply and implement file organization	2	3	2	3		3			-	-	-		2	·
			500		-								- 1	2	
214453	Foundations of Communication and Computer Network	PO1	PO2	DO2	DO 4	705									
214452.1	Understand data/signal transmission over communication media	3		PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO ₂
214452.2	Recognize usage of various modulation techniques in communication		3	2		1		-	-	-	-	-	2	- 1	-
214452.3	Analyze various spread spectrum and multiplexing techniques	1		2	-	1	1	-	-	-	-	-	1	•	1.0
214452.4	Use concepts of data communication to solve various related problems		1	2	-	3	-	1	-	-	-	-	2	2	-
214452.5	Understand error correction and detection techniques.	1	3	3	-	1	•	- "	-	-	-	-	2	1	-
214452 .6	Acquaint with consmission media and their standards	1	1	1	-	2	3	-	-	•	-	-	3	1	
	NOTE COLLEGE	1		2		1	1	-	2	-	-	-	3	-	

PRINCIPAL

Cour	Name of Course	ester	_	1						7	(1				
314441	Theory of Computation	PO	PO2	PO.	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	PSO	1 PSO
314441.1	To construct finite state machines to solve problems in computing	-										1 -0 - 15	101	1200	1150
314441.2	To write mathematical expressions for the formal languages	3	2	2	1	1	-	-	-		-	-	† <u>-</u>	2	2
314441.3	To apply well defined rules for syntax verification.	2	2	2	2	3			-	-	-		·	2	2
314441.4	To construct and analyze Push Down, Post and Turing Machine for formal languages.	2	3	2	1	3		-	-	T -	-	-	 -	2	1
314441.5	Tro express the understanding of the decidability and decidability problems	3	3	3	1	1		-	-	-	-	-	 -	+	2
314441.6	To express the understanding of computational complexity.	3	2	1	1	2		-	-		-	-	<u> </u>	2	1
	g positional complexity.	3	3	3	1	-	-	-	-	-	-	-	1	2	1
314442	Database Management Systems												<u> </u>	 -	
314442.1	To define basic functions of DBMS & RDBMS	PO1	_	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
314442.2	To analyze database models & entity relationship models.	3	2	3	-	1	-	-	1	-	-	-	2	3	1
314442.3	To design and implement a database schema for a given problem-domain	2	1	2	-	2	-	-	1	2	-		2	3	2
314442.4	To populate and query a database using SQL DML/DDL commands.	2	-	1		-	-	-	1	 -			2	3	
314442.5	Do Programming in PL/SOL including stored and stored an	2	-	-	-	-	-		1	-			2	3	-
314442.6	Do Programming in PL/SQL including stored procedures, stored functions, cursors external ecosystem for analytical and data services.	2	-	-	-	2	-	-	1	T -	-		2	3	├
	and data services.	3	-	-	-	1	-	-	1	—		-	2		-
314443	Software Engineering &Project Management													3	1
	e Engineering & Project Management	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	DO12	DCC1	DOGG
314443.1	To identify unique features of various software application domains and classify software								100	10)	1010	FUIT	PUIZ	PSOI	PSO2
	applications.	3	3	1	2	2	1	-	-	-	_		1	1	1
314443.2	To choose and apply appropriate lifecycle model of software development	-	-	-						2 5			-	-	-
314443.3	To describe principles of agile development, discuss the SCRUM process and distinguish agile	3	3	2	1	-		-	-	1	2	-	1	-	1
311443.3	process model from other process models.														
314443.4	, and the second	3	2	3	1	2	1		1	1	1	1	1	-	1
514443.4	To analyze software requirements by applying various modeling techniques.														
	, applying various modeling techniques.	2	3		1		1	1	2	1	1	_	1	1	_
314443.5	To list and classify CASE tools and discuss records												_	-	
	To list and classify CASE tools and discuss recent trends and research in software engineering	2	2	2	1	1	1	1	2	1	1	_	1	_	
314443.6	To understand IT project management through life cycle of the project and future trends in											-			_1
	IT Project Management.		_		-	-							- 1		20
		2	1	1	1	2	1	1	1	1	-		1	-	-
314444	Operating Systems	704											50.0		
314444.1 F	Fundamental understanding of the role of Operating Systems.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10 1	PO11 F	2012	PSO1	PSO2
314444.2 T	To understand the concept of a process and thread.	3	-	2	-	2	1	-	1	- 1	-	1		1	1
314444.3 T	To apply the cons of process/thread scheduling.	3	•	3	-	1	-	-	1		-	1	-	2	1
200		-	3	2	1	-	1	-	1	-	-	1	-		
314444.4 T	To apply the concept of nocess synchronization, mutual exclusion and the deadlock	-	3	1	2	-	2	-	2	-	-	1	-		
314444.5 T	Consultation and the deadlock							1				0 = 1		1	100
314444.6 T	management and File system. management techniques.	2	1	2	-	2	2	-	-	_ +	- +	1	_+	-	
	With Ciscoling the Various Themory management techniques	3		-				_				1		1	
	i i i i i i i i i i i i i i i i i i i	3 1		-	- 1	1	-	- 1) -	_	1		4 1	
	Turner Computer Interaction	3		-	-	1	-		CIPA		-	1	-	1	1

Genba Sopanrao Moze Coffee of PH 25/1/3, Balewadi, PUNE-411 045

314445.1															
314443.1	To explain importance of HCI study and principles of uses seemed to the control of the control o	2	2	1	T -	TÌ	-	-	T	T	2	-	1	2	2
314445.2	To explain importance of HCI study and principles of user-centred design (UCD) approach. Develop understanding of human factors in HCI design.	+-		_				2.1					1	1	~
	Develop understanding of models, parediams and the second	3	3	2	2	1	-		-	-	2	-	2	1	2
314445.3	Develop understanding of models, paradigms, and context of interactions.	3	3	3	1	1	-	-	-	-	2	100	2	1	1
314445.4	Design effective user-interfacesfollowing a structured and organized UCD process.	3	3	2	2	1	-	-	-	-	2	-	2	1	2
314445.5	Evaluate usability of a user-interface design.	3	+-,-	+	-	 		74.							
314445.6	Apply cognitive models for predicting human-computer-interactions.	2	2	2	2	1		-	-	-	2	-	2	1	2
						 		<u> </u>	-	-	2	-	1	1	1
314450	Computer Networks& Security	ester V	1						-	-					
	- Superior Networks decunity	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSC
314450 .1	To know Responsibilities, services offered and protocol used at each layer of network.	3	-	2	1	2	2	-	-	-	-	-	-	1301	100
14450 .2	To understand different addressing techniques used in network	3	2	1	2	-				-				1	-
14450 .3	To know the difference between different types of network.	_		+	_	2	•	-	-	-	-	-	-	2	-
314450 .4	To know the different wireless technologies and IEEE standards.	3	3	2	1	1	-	-		-	-	-	-	-	-
14450 .5		3	3	2	2	2	2	-	-	-	-	-	-	-	-
	To use and apply the standards and protocols learned, for application development.	2	1	2	-	2	2	-	-	-	-	-	-		
14450 .6	To understand and explore recent trends in network domain.	3	-	-	-	1	1	-	-	-	-		-	1	-
314451	Systems Programming								1					-	-
14451.1	language processing applications.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO
14451.2	To design and implement assemblers and macro processors.	3	2	3	-	-	-	-		-	- 1	-	-	1	-
14451.3	To use tool LEX for generation of Lexical Analyzer.	2	1	3	-	2	-	-	-	-	-	-	-	-	2
	To use YACC tool for generation of syntax analyzer.	1	1	3	-	2	-	-	-	_	-	-	-	1	<u> </u>
14451.5	To generate output for all the phases of compiler.	1	1	3	-	2	-	-	-	-	-	-	-	-	1
14451.5														-	
14451.6	To seek and an initial phases of compiler.	1	2	2	-	e -	-	_	1917	-			_		-
314451.6	To apply code optimization in the compilation process.	1	2	2	-	-	-	-	-	-	-		-	2	-
	To apply code optimization in the compilation process.	1	2	2	-	-	-		•	-	-	-	-		-
314452	To apply code optimization in the compilation process. Design and Analysis of Algorithms				-	- - PO5	- - PO6	- - PO7		- - PO9		-	-		- PSO
314452 314452.1	To apply code optimization in the compilation process. Design and Analysis of Algorithms	1	2	2	-	-	- - PO6		•	- - PO9	-	-	-	PSO1	PSO
314452 314452.1 314452.2	To apply code optimization in the compilation process. Design and Analysis of Algorithms To calculate computational complexity using asymptotic notations for various algorithms. To apply Divide & Conquer as well as Greedy approach to design algorithms.	1 PO1	2	2	PO4	PO5		PO7	•	- - PO9	- - PO10	-	-	PSO1	PSO
314452 14452.1 14452.2 14452.3	To apply code optimization in the compilation process. Design and Analysis of Algorithms To calculate computational complexity using asymptotic notations for various algorithms. To apply Divide & Conquer as well as Greedy approach to design algorithms. To practice principle of optimality.	PO1 3	PO2 -	PO3	PO4	PO5		PO7 -	•	PO9	- - PO10	-	-	PSO1	PSO
314452 314452.1 314452.2 314452.3 314452.4	To apply code optimization in the compilation process. Design and Analysis of Algorithms To calculate computational complexity using asymptotic notations for various algorithms. To apply Divide & Conquer as well as Greedy approach to design algorithms. To practice principle of optimality. To illustrate different problems using Backtracking.	PO1 3 3	2	PO3 3	PO4	PO5 2 3	• • • • • • • • • • • • • • • • • • •	PO7 - -	•	PO9	PO10	-	-	PSO1	PSO
314452 314452.1 314452.2 314452.3 314452.4	To apply code optimization in the compilation process. Design and Analysis of Algorithms To calculate computational complexity using asymptotic notations for various algorithms. To apply Divide & Conquer as well as Greedy approach to design algorithms.	1 PO1 3	PO2 -	PO3	- PO4 2	PO5 2 3 - 3		PO7 -	•	PO9	PO10	-	- PO12 -	PSO1	-
314452.1 314452.1 314452.2 314452.3 314452.4 314452.5	To apply code optimization in the compilation process. Design and Analysis of Algorithms To calculate computational complexity using asymptotic notations for various algorithms. To apply Divide & Conquer as well as Greedy approach to design algorithms. To practice principle of optimality. To illustrate different problems using Backtracking. To compare different methods of Branch and Bound strategy.	PO1 3 3 3	PO2 1	PO3 3 2 2	PO4	PO5 2 3	• • • • • • • • • • • • • • • • • • •	PO7 - -	•	PO9	PO10	-	- PO12 -	PSO1	-
314452.1 314452.2 314452.3 314452.4 314452.5 314452.6	To apply code optimization in the compilation process. Design and Analysis of Algorithms To calculate computational complexity using asymptotic notations for various algorithms. To apply Divide & Conquer as well as Greedy approach to design algorithms. To practice principle of optimality. To illustrate different problems using Backtracking. To compare different methods of Branch and Bound strategy.	PO1 3 3 3	PO2 1	PO3 3 2	- PO4 2	PO5 2 3 - 3	• • • • • • • • • • • • • • • • • • •	PO7 - -	•	PO9	PO10	-	- PO12 -	PSO1	-
314452 14452.1 14452.2 14452.3 14452.4 14452.5 14452.6	To apply code optimization in the compilation process. Design and Analysis of Algorithms To calculate computational complexity using asymptotic notations for various algorithms. To apply Divide & Conquer as well as Greedy approach to design algorithms. To practice principle of optimality. To illustrate different problems using Backtracking. To compare different methods of Branch and Bound strategy. Close Compared	PO1 3 3	PO2 1 - 3	PO3 3 2 2 3	PO4 - 2 - 2 -	PO5 2 3 - 3 3 -	2	PO7	PO8		PO10	- - PO11 - - - -	- PO12	PSO1 1 2 - - -	1 1
314452.1 314452.2 314452.3 314452.4 314452.5 314452.6	To apply code optimization in the compilation process. Design and Analysis of Algorithms To calculate computational complexity using asymptotic notations for various algorithms. To apply Divide & Conquer as well as Greedy approach to design algorithms. To practice principle of optimality. To illustrate different problems using Backtracking. To compare different methods of Branch and Bound strategy. Close Comparise To independ the need of Cloud based solutions.	PO1 3 3 3 PO1	PO2 3 - PO2	PO3 3 2 2 3 PO3	PO4 - 2 - 2 -	PO5 2 3 - 3 3 - PO5	- 2 PO6	PO7 PO7	•		PO10	- - PO11 - - - -	- PO12	PSO1 1 2 - - - PSO1	1 - 1 - - PSO2
314452.1 314452.2 314452.3 314452.4 314452.5 314452.6	To apply code optimization in the compilation process. Design and Analysis of Algorithms To calculate computational complexity using asymptotic notations for various algorithms. To apply Divide & Conquer as well as Greedy approach to design algorithms. To practice principle of optimality. To illustrate different problems using Backtracking. To compare different methods of Branch and Bound strategy. Close Comparison Close Comparison To precise the concept of P, NP, NP-complete, NP-Hard and parallel algorithms.	PO1 3 3	PO2 1 - 3	PO3 3 2 2 3	PO4 - 2 - 2 -	PO5 2 3 - 3 3 -	2	PO7	PO8	PO9	PO10	- - PO11 - - - -	- PO12	PSO1 1 2 - - -	- 1
314452 314452.1 314452.2 314452.3 314452.4 314452.5 314452.6	To apply code optimization in the compilation process. Design and Analysis of Algorithms To calculate computational complexity using asymptotic notations for various algorithms. To apply Divide & Conquer as well as Greedy approach to design algorithms. To practice principle of optimality. To illustrate different problems using Backtracking. To compare different methods of Branch and Bound strategy. Close Comparise To independ the need of Cloud based solutions.	PO1 3 3 3 PO1	PO2 3 - PO2	PO3 3 2 2 3 PO3	PO4 - 2 - 2 -	PO5 2 3 - 3 3 - PO5	- 2 PO6	PO7 1	PO8	- - - - - PO9	PO10	- - PO11 - - - -	- PO12	PSO1 1 2 - - - PSO1	1 - 1 - - PSO2

To explore effective techniques to program Cloud Systems.	3	3	1	Т	1 -				·					
To understand current challenges and trade-offs in Cloud Computing.			1		-	1	1	-	-	1 -	-	-	1	1
	3	3	1	-	1	1	1	-	-	<u>-</u>	-	-	1	1
To understand emerging trends in cloud computing.	3	3	1	-	1	1	1	-	-	-	-	-	1	1
Data Science and Big Data Analytics	DO1	DOA	DOG											 -
Understand Big Data primitives.		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		-	-		-	2	1	-	•	-	-	-	-	-
	2	-	-	-		1	-	-	-	-	-	-	-	-
Demonstrate Big Data learning skills by developing industry or research applications.	2		-	-	-	2	1	1	-	-	-		1	1
Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets.	•	1	1	-	-	2	2	-	1	-	-	•	2	2
Understand, apply and analyze needs, challenges and techniques for big data visualization.	-	1	-		1	2	2		1				2	
Learn different programming platforms for big data analytics.		1	-		1								2	1
					1	•	1	-	2	1	1	1	2	
	Data Science and Big Data Analytics Understand Big Data primitives. Learn and apply different mathematical models for Big Data. Demonstrate Big Data learning skills by developing industry or research applications. Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets. Understand, apply and analyze needs, challenges and techniques for big data	To understand current challenges and trade-offs in Cloud Computing. 3 To find challenges in cloud computing and delve into it to effective solutions. To understand emerging trends in cloud computing. 3 Data Science and Big Data Analytics PO1 Understand Big Data primitives. Learn and apply different mathematical models for Big Data. Demonstrate Big Data learning skills by developing industry or research applications. 2 Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets. Understand, apply and analyze needs, challenges and techniques for big data visualization. Learn different programming platforms for big data analytics.	To understand current challenges and trade-offs in Cloud Computing. 3 3 To find challenges in cloud computing and delve into it to effective solutions. To understand emerging trends in cloud computing. 3 3 Data Science and Big Data Analytics PO1 PO2 Understand Big Data primitives. Learn and apply different mathematical models for Big Data. Demonstrate Big Data learning skills by developing industry or research applications. 2 - Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets. Understand, apply and analyze needs, challenges and techniques for big data visualization.	To understand current challenges and trade-offs in Cloud Computing. 3 3 1 To find challenges in cloud computing and delve into it to effective solutions. To understand emerging trends in cloud computing. 3 3 1 Data Science and Big Data Analytics PO1 PO2 PO3 Understand Big Data primitives. Learn and apply different mathematical models for Big Data. Demonstrate Big Data learning skills by developing industry or research applications. Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets. Understand, apply and analyze needs, challenges and techniques for big data visualization. Learn different programming platforms for big data analytics. - 1 -	To understand current challenges and trade-offs in Cloud Computing. 3 3 1 - To find challenges in cloud computing and delve into it to effective solutions. To understand emerging trends in cloud computing. 3 3 1 - Data Science and Big Data Analytics Understand Big Data primitives. Learn and apply different mathematical models for Big Data. Demonstrate Big Data learning skills by developing industry or research applications. Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets. Understand, apply and analyze needs, challenges and techniques for big data visualization. Learn different programming platforms for big data analytics. - 1 -	To understand current challenges and trade-offs in Cloud Computing. 3 3 1 - 1 To find challenges in cloud computing and delve into it to effective solutions. To understand emerging trends in cloud computing. 3 3 1 - 1 Data Science and Big Data Analytics PO1 PO2 PO3 PO4 PO5 Understand Big Data primitives. Learn and apply different mathematical models for Big Data. Demonstrate Big Data learning skills by developing industry or research applications. Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets. Understand, apply and analyze needs, challenges and techniques for big data visualization.	To understand current challenges and trade-offs in Cloud Computing. 3 3 1 - 1 1 To find challenges in cloud computing and delve into it to effective solutions. To understand emerging trends in cloud computing. 3 3 1 - 1 1 Data Science and Big Data Analytics Understand Big Data primitives. Learn and apply different mathematical models for Big Data. Demonstrate Big Data learning skills by developing industry or research applications. Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets. Understand, apply and analyze needs, challenges and techniques for big data visualization.	To understand current challenges and trade-offs in Cloud Computing. 3 3 1 - 1 1 1 To find challenges in cloud computing and delve into it to effective solutions. To understand emerging trends in cloud computing. 3 3 1 - 1 1 1 Data Science and Big Data Analytics Understand Big Data primitives. Learn and apply different mathematical models for Big Data. Demonstrate Big Data learning skills by developing industry or research applications. Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets. Understand, apply and analyze needs, challenges and techniques for big data visualization.	To understand current challenges and trade-offs in Cloud Computing. 3 3 1 - 1 1 1 1 - 1 1 1 1 - 1 1 1 1 1 1	To understand current challenges and trade-offs in Cloud Computing. 3 3 1 - 1 1 1 1 To find challenges in cloud computing and delve into it to effective solutions. To find challenges in cloud computing and delve into it to effective solutions. To understand emerging trends in cloud computing. 3 3 1 - 1 1 1 1 To Industry and Experimental Science and Big Data Analytics PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 Understand Big Data primitives. Learn and apply different mathematical models for Big Data. Demonstrate Big Data learning skills by developing industry or research applications. Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets. Understand, apply and analyze needs, challenges and techniques for big data visualization.	To understand current challenges and trade-offs in Cloud Computing. 3 3 1 - 1 1 1 1	To understand current challenges and trade-offs in Cloud Computing. 3 3 1 - 1 1 1 1	To understand current challenges and trade-offs in Cloud Computing. 3 3 1 - 1 1 1	To understand current challenges and trade-offs in Cloud Computing. 3 3 1 - 1 1 1 1 1 1 To find challenges in cloud computing and delve into it to effective solutions. To understand emerging trends in cloud computing. 3 3 1 - 1 1 1 1 1 1 To find challenges in cloud computing and delve into it to effective solutions. To understand emerging trends in cloud computing. 3 3 1 - 1 1 1 1 1 1 Data Science and Big Data Analytics PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PSO1 Learn and apply different mathematical models for Big Data. Demonstrate Big Data learning skills by developing industry or research applications. 2 2 1 1 1 Analyze and apply each learning model comes from a different algorithmic approach and it will perform differently under different datasets. Judgerstand, apply and analyze needs, challenges and techniques for big data visualization.

Course Code	Name of Course	Ser	nester	VII											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	DCO1	Dec
414453	Information and Cyber Security								100	10)	1010	1011	101	P301	PSC
414453.1	Students shall be able to understand what are the common threats faced today	3	1 1	3			1								
414453.2	What is the foundational theory behind information security	1	3	-	2				-		-	-	1	•	-
414453.3	What are the basic principles and techniques when designing a secure system	2	2	1	-	2	-	-	1	2	1	1	2	-	-
414433.4	How today's attacks and defenses work in practice	-			-	-	2	1	2	1	1		_		
	How to assess threats for their significance	3	1	2	-	1	2	-	-	1	1	•	1	1	-
414433.0	How to gauge the protections and limitations provided by today's technology	-	1	1	-	2	1	-	-	1	-		1	1	<u> </u>
414454	Machine Learning and Applications												-		
414454.1	model the learning primitives	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	PSO1	PSC
	build the learning model:	3	3	1	2	2	2	2	1	1	1	1	1	1	1
717737.3	tackle real world problems in the domain of Data Mining and Big Data Analytics, Information Retrieval, Computer vision, Linguistics and Bioinformatics.	3	3	3	2	1	1	1	1	1	1	1	1	1	1
414454.4	Illustrate the regaration and generalization machine learning algorithms.	3	3	2	1	1	1	2	1	1	1	1	1	1	1
	Apply fundamental concepts of ANN.	3	3	2	1	1	1	2	1	1		1	_		
414454.6 F	dentify different unsupervised learning algorithms for the related real-world problems.	3	2	2	1	1	1	1	1	Pity	1	1	1	1	1
									RINC	PAL					

Understand object oriented methodologies, basics of Unlified Modeling Language (IVILITY) 144455.1 Understand analysis process, use case modeling, domain/class modeling (IVILITY) 1544455.2 Understand danalysis process, use case modeling, domain/class modeling (IVILITY) 15544455.3 Understand disting process and behavior modeling. (IVILITY) 15544455.3 Understand disting process and business, access and view layer class design (IVILITY) 15544455.5 Understand disting process and business, access and view layer class design (IVILITY) 15544455.5 Understand disting process and business, access and view layer class design (IVILITY) 15544455.5 Understand disting process and business, access and view layer class design (IVILITY) 15544455.5 Understand design process and view layer class design (IVILITY) 15544455.5 Understand design process and view layer class design (IVILITY) 15544455.5 Understand design process and view layer class design (IVILITY) 15544455.5 Understand design process and view layer class design (IVILITY) 15544455.5 Understand design process and view layer class design (IVILITY) 15544455.6 Understand on study of architectural design principles and guidelines in the various process of application development. 15545.5 Understand design process and view layer class design (IVILITY) 15545.5 Understand design process and view layer class design (IVILITY) 15545.5 Understand design process and view layer class design (IVILITY) 15545.5 Understand design process and view layer class design (IVILITY) 15545.5 Understand design process and view layer class design (IVILITY) 15545.5 Understand design process and view layer class design (IVILITY) 15545.5 Understand design process and view layer class design (IVILITY) 15545.5 Understand how to development. 15545.6 Understand how to development. 15545.6 Understand how to development. 15545.6 Understand the Information Systems and development approaches of intelligent 15545.6 Understand how to development. 15545.6 Unders	414455	Software Design	Inai	T =	· ·				_							
MAI 14455.2 Understand analysis process, use case modeling, domain/class modeling 3	4144554	Understand object oriented methodologies, basics of Units 1881 1881	PO1	PO2		PO4		PO6	PO7	PO8	PO9	PO10	PO11	PO1	PSO1	PSO2
414455.2 Understand analysis process, use case modeling, domain/class modeling, 414455.3 Understand interaction and behavior modeling. 414455.3 Understand disting process and business, access and view layer class design 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	414455.1	(UML)	3	2	3	,	2	-	2	-	2	2		-		
414455.5 Understand design process and business, access and view layer class design 2 2 2 2 0 0 0 0 0 0	414455.2	Understand analysis process, use case modeling, domain/class modeling	3	2	2		2	-	2	-	2	2	2	-	2	1
414455.6 Set started on study of GRASP principles and God elegin patterns. 414455.6 Get started on study of GRASP principles and God elegin patterns. 414455.6 Get started on study of GRASP principles and God elegin patterns. 414455.6 Get started on study of GRASP principles and God elegin patterns. 414456.6 Elective-I Business Analytics and Intelligence 414456.6 Elective-I Business Analytics and Intelligence 414456.6 Comprehend the Information Systems and development approaches of Intelligent 414456.1 Comprehend the Information Systems and development approaches of Intelligent 414456.2 Elective-I Business Analytics and Intelligence with business processes using information systems 414456.1 Comprehend the Information Systems and development approaches of Intelligent 414456.2 Elective-I Business Analytics and Intelligence with business processes using information systems 414456.2 Elective-I Business Analytics and Intelligence with business intelligence with business strategly. 414456.6 Apply the techniques for implementing business strategly and considerations for capturing 414457.6 Elective-II Software Esting and Quality Assurance 414457.1 Investigate the scenario and to select the proper testing technique. 414457.2 Investigate the scenario and to select the proper testing technique. 414457.3 Investigate the scenario and to select the proper testing technique. 414457.4 Understand how to detect, classify, prevent and remove defects. 414457.6 Choose appropriate quality assurance models and develop quality. 414462.1 Systems 414462.1 Systems 414462.2 Investigate the scenario and to select the proper testing technique. 414462.1 Systems 414462.2 Investigate the scenario and to select the proper testing technique. 414462.1 Systems 414462.2 Investigate the scenario and to select the proper testing technique. 414462.1 Systems 414462.2 Investigate the scenario and to select the proper testing technique. 414462.2 Investigate the scenario and to select the proper testing technique. 414462.1 Syst	414455.3	Understand interaction and behavior modeling													_	1
Activation Act	414455.4	Understand design process and business, access and view layer class design			_	2	2		2	-	1	-	1	-	1	+
## set started on study of architectural design principles and guidelines in the various 2 2 3 1 2	414455.5	Get started on study of GRASP principles and GoE decign patterns			_	-	-	-	-		1	-	-	-	 -	2
14456E Elective-I Business Analytics and Intelligence Poi	A144EE C	Get started on study of architectural design principles and available an			1	-	-	WED.	-		-	-	1.0	-	1	+ -
### 414456. Elective-I Business Analytics and Intelligence	414433.0	type of application development.	2	2	3	1	2	101 -	1	•	2	-	2	-		
4.14456.E. Comprehend the Information Systems and development approaches of intelligent 4.14456.E. Comprehend the Information Systems and development approaches of intelligent 4.14456.E. Porpose the Framework for business intelligence 4.14456.E. Propose the Framework for business intelligence 4.14456.E. Apply the techniques for implementing business strategy. 4.14456.E. Apply the techniques for implementing business intelligence systems. 4.14456.E. Apply the techniques for implementing business intelligence systems. 4.14456.E. Apply the techniques for implementing business intelligence systems. 4.14456.E. Apply the techniques for implementing business intelligence systems. 4.14457.C. Elective-II Software Testing and Quality Assurance 4.14457.1 Test the software by applying testing techniques to deliver a product free from bugs. 4.14457.2 Investigate the scenario and to select the proper testing technique. 4.14457.1 Explore the test automation concepts and tools and estimation of cost, schedule based on standard metrics. 4.14457.3 Understand how to detect, classify, prevent and remove defects. 4.14457.6 Ability to conduct formal inspections, record and evaluate results of inspections. 4.14457.6 Distributed Computing System 4.14462.1 Distributed Computing System 4.14462.2 Systems. 4.14462.3 Systems. 4.14462.4 To understand the fundamentals and knowledge of the Middleware of distributed systems. 4.14462.6 To understand the fundamentals and knowledge of the Middleware of distributed systems. 4.14462.6 To understand the fundamentals and knowledge of the Middleware of distributed systems. 4.14462.6 To make students and each of distributed and multimedia file systems and web systems. 4.14462.6 To make students and each of distributed on multimedia file systems and web systems. 4.14462.6 To a make students and each of distributed computing. 4.14462.6 To a make students and each of distributed computing. 4.14462.6 To a make students and each of distributed computing. 4.14462.6 To a make students and each of distribute		Elective-I Business Analytics and Intelligence	POI	200											-	-
1 3 2 2 2 1 2 2 2 2 2 2		Comprehend the Information Systems and development approaches of Intelligent	_	PO2		PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	PSO1	PSO2
1 1 1 1 1 1 1 1 1 1	414456E.2	Evaluate and rethink business processes using information systems	+		3		-	1		-	-	-	-	1		-
414456.5. Algala business intelligence with the Theories, techniques, and considerations for capturing 414456.5. Algala business intelligence with business strategy. 414456.5. Algala business intelligence systems. 414456.5. Apply the techniques for implementing business intelligence systems. 414457. Apply the techniques for implementing business intelligence systems. 414457. Test the software by applying testing techniques to deliver a product free from bugs. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to select the proper testing technique. 414457. Investigate the scenario and to se		Propose the Framework for business intelligence	_		-	2	-	-	-	-	3	2	-	1	1	-
Apply the techniques for implementing business intelligence systems. 3 1 2 . 1 2 . . 1 1 . . 1 . . 1 . .	414456E.4	Get acquainted with the Theories techniques and considerations for any	2	2	1	-	2		-	1	2	1	1	2	-	-
Apply the techniques for implementing business intelligence systems. - 1 1 - 2 1 - - 1 1 - 1 - 1 1	414456E.5	Align business intelligence with business strategy	-	-	-		-	2	1	2	1	1	-	1	1	-
### 414457. Elective-II Software Testing and Quality Assurance ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing technique to deliver a product free from bugs. ### 144457. Test the software by applying testing technique to deliver a product free from bugs. ### 144457. Test the software by applying testing technique to deliver a product free from bugs. ### 144457. Test the software by applying testing technique to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the software by applying testing techniques to deliver a product free from bugs. ### 144457. Test the softwa	414456E.6	Apply the techniques for implementing business intelligence automates	3		2	-	1	2	-	-	1	1	-	1		-
### Section of the proof of the	2	the systems.	-	1	1	•	2	1	-	-	1	-		1	1	-
414457.1 Test the software by applying testing techniques to deliver a product free from bugs. 414457.2 Investigate the scenario and to select the proper testing technique. 414457.3 Investigate the scenario and to select the proper testing technique. 414457.3 Explore the test automation concepts and tools and estimation of cost, schedule based on standard metrics. 414457.4 Understand how to detect, classify, prevent and remove defects. 414457.5 Choose appropriate quality assurance models and develop quality. 414457.6 Ability to conduct formal inspections, record and evaluate results of inspections. 414457.6 Ability to conduct formal inspections, record and evaluate results of inspections. 52	414457C	Elective-II Software Testing and Quality Assurance	 				- 1									
144457.2 Investigate the scenario and to select the proper testing technique. 144457.2 Investigate the scenario and to select the proper testing technique. 1544457.3 Explore the test automation concepts and tools and estimation of cost, schedule based on standard metrics. 1544457.4 Understand how to detect, classify, prevent and remove defects. 1544457.5 Choose appropriate quality assurance models and develop quality. 15544457.6 Ability to conduct formal inspections, record and evaluate results of inspections. 15575567787878787878787878787878787878787				PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	PSO1	PSO2
Investigate the scenario and to select the proper testing technique. 144457.2 Investigate the scenario and to select the proper testing technique. 2 3 2 2 3	2.2		3	-	3	3	3			-			-	-		
Explore the test automation concepts and tools and estimation of cost, schedule based on standard metrics. 3 - 3 3 3 3 3 2 3 3 3 3 3 4 3 3 2 3 3 3 3 3 4 4 5 3 5 5 5 5 5 5 5 5 5 5 5	414457.2	Investigate the scenario and to select the proper testing technique.	2	3	2		-									
14457.4 Understand how to detect, classify, prevent and remove defects. 3 3 3 3 2 - 2 2 2 - 2 2	4144573	Explore the test automation concepts and tools and estimation of cost, schodule	1				3		-		-	-	•	-	3	2
414457.4 Understand how to detect, classify, prevent and remove defects. 414457.5 Choose appropriate quality assurance models and develop quality. 414457.6 Ability to conduct formal inspections, record and evaluate results of inspections. Semester VIII 414462.1 Distributed Computing System To learn the principles, architectures and programming models used in distributed systems. To gain knowledge of working components and fault tolerance of distributed systems. To gain knowledge of working components and fault tolerance of distributed systems. To understand the sin incance of acceptant, fault tolerance and recovery protocols in Distributed systems. To make students single about distributed and multimedia file systems and web 3 3 1 - 1 1 1 1 1 1 1 414462.5 Systems. To make students single about distributed and multimedia file systems and web 3 3 1 - 1 1 1 1 1 1 1 414462.6 Create an awareness of conerging trends in distributed computing. 3 3 1 - 1 1 1 1 1 1 1 414462.6 Create an awareness of conerging trends in distributed computing.	414457.5	based on standard metrics.	3	-	3	3	3	_	-	_				2		_
Al4457.6 Ability to conduct formal inspections, record and evaluate results of inspections. Al4462 Distributed Computing System POI POZ PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO1 PO1 PO1 PO1 PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO1 PO1	414457.4	Understand how to detect, classify, prevent and remove defeate												٦	-	3
Ability to conduct formal inspections, record and evaluate results of inspections. 3 2 2 2 2 2 3 3 - 3 4	414457.5	Choose appropriate quality assurance models and development.	_				2	-	-	•	-	2	-	-	2	-
Ability to conduct formal inspections, record and evaluate results of inspections. 3 2 2 2 2 2 2 2 2 2	and the second of the		2	2	3	3	3			-	-	-	-	-	-	2
To learn the principles, architectures and programming models used in distributed systems. To understand the fundamentals and knowledge of the Middleware of distributed systems. To gain knowledge of working components and fault tolerance of distributed systems. To understand the significance of agreement, fault tolerance and recovery protocols in Distributed Systems. To make students and eabout distributed and multimedia file systems and web systems. To make students and eabout distributed and multimedia file systems and web systems. To create an awareness of temegring trends in distributed computing. To reate an awareness of temegring trends in distributed computing.	414457.6	Ability to conduct formal inspections, record and evaluate results of inspections.	3	2	2	2	2	-	-	-	•		-	-	3	-
To learn the principles, architectures and programming models used in distributed systems. To understand the fundamentals and knowledge of the Middleware of distributed systems. To gain knowledge of working components and fault tolerance of distributed systems. To understand the significance of agreement, fault tolerance and recovery protocols in Distributed Systems. To make students and e about distributed and multimedia file systems and web systems. To make students and e about distributed and multimedia file systems and web systems. To create an awareness of Emerging treats in distributed computing. To create an awareness of Emerging treats in distributed computing.	414462	Distribute 1 Country Co	Sem	ester \	/III				<u> </u>			لــــــــــــــــــــــــــــــــــــــ				
414462.1 systems. To understand the fundamentals and knowledge of the Middleware of distributed systems To gain knowledge of working components and fault tolerance of distributed systems. To understand the significance of agreement, fault tolerance and recovery protocols in Distributed Systems. To make students and eabout distributed and multimedia file systems and web systems. 3 3 1 - 1		Distributed Computing System To learn the computing System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	POS	POO	PO10	PO11	DO1	DCO1	PCCA
To understand the fundamentals and knowledge of the Middleware of distributed systems To gain knowledge of working components and fault tolerance of distributed systems. To understand the significance of agreement, fault tolerance and recovery protocols in Distributed Systems. To make students and e about distributed and multimedia file systems and web systems. 3 3 1 - 1	111102.1	systems.	3			-				-	-	-	POII			10.
To gain knowledge of working components and fault tolerance of distributed systems. To understand the significance of agreement, fault tolerance and recovery protocols in Distributed Systems. To make students and a bout distributed and multimedia file systems and web systems. To make students and a bout distributed and multimedia file systems and web systems. 3 3 1 - 1	414462.2	To understand the fundamentals and knowledge of the Middleware of distributed	3	3	1		1							+	-	-
To understand the significance of agreement, fault tolerance and recovery protocols in Distributed Systems. To make students and agreement and multimedia file systems and web systems. 3 3 1 - 1							-	1	1	-	- 7	10-	- 1	-	1	1
To make students and are about distributed and multimedia file systems and web 3 3 1 - 1 1 1 1 - 1 1 1 1 1 1 1 1 1 1 1	414462.3	systems.	3	3	1	-	1	1	1		-		-	-	1	1
To make students avage about distributed and multimedia file systems and web 414462.5 systems. 414462.6 Create an awareness of emerging trends in distributed computing. 3 3 1 - 1 1 1 1 PRINCIPAL			3	3	1		1	1	1			_				
414462.6 Create an awareness of emerging trends in distributed computing.	414460 #	To make students aware about distributed and multimedia file systems and web	3	3	1	-	1				- 10					
TO TOWN OF THE PARTY CONTRACT					5-1		_			W	pred	_	- 1	-	1	1
	414402.0	oreste an awareness of the gring trends in distributed computing.	3	3	1	-	1	1	1 PR	INCIP	A				4	

414463	Ubiquitous Computing	T _{DO}				FX									
414463.1	Demonstrate the knowledge of design of Ubicomp and its applications.	PO1	PO2	PO3	PO4	. ,5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	PSO1	DEO
414463.2	Explain smart devices and services used Ubicomp.	2	2	-	2	-	-		-	-	-	-	-	1	FSUZ
414463.3	Describe the significance of actuators and controllers in real time application design.	3	2	3	3	+-	-	-	-	-	-	-	-	=	+
414463.4	Use the concept of HCI to understand the design of automation applications.	3	2	3	3	_	<u> </u>	-	-	-	-	-	-	-	1
414463.5	Classify Ubicomp privacy and explain the challenges associated with Ubicomp privacy		3	3	3	-	-		-	-	•	•	-	1	-
414463.6	Get the knowledge of ubiquitous and service oriented networks along with Ubicomp management.	1	3		3	-					-	-	•	1	-
414464AC	Elective III Multimedia Techniques									•	-	-	-	1	-
414464c .1	To create own file formats for specific application.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	DSO1	PSO2
414464c .2	To do some projects based on current trends in multimedia.	3	3	1	-	1	1	1	-	-	-		101	1	
414464c .3	To use open sources for authoring tool for animation.	3	3	1	-	1	1	1	-		7.0			1	1
414464c .4	TUnderstand some research areas of current multimedia techniques.	3	3	1	-	2	1	1	-	-	_		-	2	1
414464c .5	To use open sources for authoring tool for presentations	3	3	1	-	1	1	1	-	-	-	-		1	1
414464c .6	Become acquainted with some advanced topics in multimedia.	3	3	1	•	1	2	1	-		-	-		1	1
	eavancea topics in maitimedia.	3	3	1	-	1	1	1	-,	-	-			1	1
414464D	Elective IV											-+			
414464D.1	Understand the basics of Social Media Analytics	PO1		PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	PSO1	PSO2
414464D.2	Explain the significance of Data mining in Social media	3	3	-	-	3	•	-	-	-	- 1	-	-	1	1
7174040.5	Demonstrate the algorithms used for text mining.	3	3	3	-	-	-	-	-	-	-	-	-	-	-
414464D.4	Apply network measures for social media data	2	3	1	-		-	-	-	-	-	-	-	-	1
414464D.5	Explain Behavior Analytics techniques used for social media data	2 2	2	2		-	-	-	- 1		-	-	-	2	
414464D.6	Apply social media analytics for Face book and Twitter kind of applications.	2	3	3	2	3		-	-	-	-	-	-	-	1
	witter kind of applications.	2	2	3	3	3	-	-	1	_				2	$\overline{}$



Academic Year-2020-21 2.6.2 CO-PO Mapping Matrix Semester III

		Semest	er III														
	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
	Discrete Mathematics																
214441.1	Formulate, apply formal proof techniques and solve the problems with logical reasoning.	3	2	1	1	1	1		-	-	1	-	2	1	-	-	-
214441.2	Analyze and evaluate the combinatorial problems by using probability theory.	2	3	1	1	1	1	-		-	1	<u> </u>	2	1	-		
	Apply the concepts of graph theory to devise mathematical models.	3	3	2	2	1	1	-	-		2	-	2	1	-	-	-
	Analyze types of relations and functions to provide solution to computational problems.	3	2	1	2	1	1	-	-	-	2	-	2	1	-	-	-
214441.5	Identify techniques of number theory and its application.	2	2	2	2	1	2	-	-		1	-	2	1	-	-	-
214441.6	Identify fundamental algebraic structures.	2	3	2	1	1	1	-	-	-	1	-	2	1	-	-	-
	Computer Organization and Logic Design	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
214442.1	Perform basic binary arithmetic & simplify logic expressions.	3	3	-	-	-	•	-	•			-		•	-	•	-
214442.2	Grasp the operations of logic ICs and Implement combinational logic functions using ICs.	3	3	3	-	-	-			-		1- 1	-	3		-	
	functions using ICs.	3	3	3	-	-	-	-	-	-		-	-	3	-	-	-
214442.4	Elucidate the functions & organization of various blocks of CPU.	3	-	-	-	2	3	-			-	-		-	-	-	-
214442.5	Understand CPU instruction characteristics, enhancement features of CPU	3	-	-	-	2	2	-	-	-	7-	-	-	-	-	-	-
214442.0 1	Describe an assortment of memory types (with their characteristics) used in computer	3	-	-	-	2	2	-	•	-	-	•	-	-	-,	-	-
214443	Data Structures and Algorithms	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
214443.1	Perform basic analysis of algorithms with respect to time and space complexity.	3	3	2	3	-	3	-	-	-	-	-		-	-	-	-
/ 14443./ 1	Select appropriate searching and/or sorting techniques in the application development.	1	3	3	3	•	3	-	-	-			-	-		-	
214443.3	Implement abstract data type (ADT) and data structures for given application.	2	1	2	3	-	3	-	-	-	-	-		-	-	-	
214443.4	Design algorithms based on techniques like brute -force, divide and conquer, greedy, etc.	2	3	3	3		3	-		-	-	-	-	-		-	-
214443.5	Apply implement learned algorithm design techniques and data structures to solve	3	3	2	3	-	. 3	-	-	-	-	-	-	-	-		-
214443.6	Design different hashing functions and use files organizations.	1	3	3	3	-	3	-	-	•	-		-	-	-	-	-
	Object Oriented Programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
	Differentiate various programming paradigms.	3	3	3	2	2	3	2	-	-	2	-	2	1	1	1	
	Destruction to model real-world problems.	3	3	3	3	2	3	3	1	-	2	-	2	1	1	1	-
214444.3	Identify relationship and process cts using inheritance and polymorphism principles. Handle difference by the control of the	3	3	3	3	2	3	3	1	-	- 2	-	2	1	1	1	-
214444.4	Handle different to be a serious and perform generic programming.	3	. 3	3	3	2	3	3	1	-	2	-	2	1	1	1	-
	Use of files for persistent data works for real world application.	3	3	3	3	2	2	2	-	-	2	12	1 8 4 1 0	1	1	1	-
	Apply approprie design patterns provide object-oriented solutions.	3	3	3	3	2	2	2	-	-	2	-	-	1	1	1	-
	Basics of Control of Network	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
214445.1	Understand and explain the consents of communication theory and compare functions of OS	3	2		-	-	•	-	-	PRI	NEIPA	P -	2		-	-	- "

214445.2	Analyze data link layer services, error detection and correction, linear block codes, cyclic codes, framing and flow control protocols.	-	3	-			\sim	_	Γ.				1	П	Γ.		Γ
214445.3	Compare different access techniques, channelization and Ethernet standards.					<u> </u>											
214445.4	Apply the skills of subnetting, supernetting and routing mechanisms.	<u> </u>	-		<u> </u>	3	-	1	-	<u> </u>	<u> </u>		2	-	-	-	-
214445.5	Compare IPv4 and IPv6	•	3	3	-	-	-	-	-	-	-	-	2		-	-	-
214445.6	Understand services and protocols used at transport layer.	<u> </u>	-	-	-	2	3	-	-	-	-	-	3	-	-	-	_
	ased at transport layer.	Semest	or IV	2		<u> </u>	-	-	2	-	_	-	3		<u> </u>	-	-
207003	Engineering Mathematics III			l non	150	T = = =				_		,					
207003 .1	Solve Linear differential equations, essential in modelling and design of computer-based	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO
207003 .2	Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing.	3	3	2	2	-	1	-	-	-			_	-	1	1	1
207003 .3	Apply Statistical methods like correlation& regression analysis and probability theory for data analysis and predictions in machine learning.	2	1	3	1	-	2	-	-		-	-			1	1	
207003 .4	Solve Algebraic &Transcendental equations and System of linear equations using numerical	1	2		1	_	1	-		-					1	1	
207003 .5	Obtain Interpolating polynomials, numerical differentiation and integration,	1	2	2	2	-	1	-	-	-	-	-	-		1	1	1
214451	Processor Architecture	DC:	DO:	B 0 0		7.5								- 7			
	Apprehend architecture and memory organization of PIC 18 microcontroller	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
214451.2	Implement embedded C programming for PIC 18.	2	2	2	2	-	-	-	-	•	-	-	2	-	-	-	-
214451 .3	Use concepts of timers and interrupts of PIC 18.	2	2	2	2	3		-	-	-	-	-	2	-	-	-	-
214451.4	Demonstrate real life applications using PIC 18.	2	2	2	2	-	-	-	-	-	-	-	-		-	-	-
214451.5	Analyze architectural details of ARM processor.	3	3	3	3	3	2	-	-	-	-	-		-	-	-	-
	- 2.2.5 at entirectural details of Artivi processor.	1	1	1	1	-		-	-	-	-	-	2	-	-	-	-
214452	Database Management System	DO1	DOS	200	70.												
	Define fundamental elements of database management systems	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		PSO2	PSO3	PSO4
	Describe the fundamental elements of relational database management systems	3	2	3	<u> </u>	1		-	1	-	-		2	3	1	-	-
214452 .2	and Design EPmodule to represent size to detail database management systems	2	1	2	. •	2	-	-	1	2	-		2	3	2	2	
	and Design ERmodels to represent simple database application scenarios.									•)			113	3			-
214452 .3	Populate relational database and formulate SQL queries on data.	2	-	1	-	-	-		1			-	2	3	-	-	-
214452 .4	Improve the database design by normalization & to incorporate query processing.	2	·	-	-	-	-	-	1	-	•		2	3	-	•	: :-
	Illustrate ACID properties for transaction management & to describe concurrency control protocols.	2	-	-	-	2	-	-	1	-	-	-	2	3	-	-	-
214452 .6	Understand recent trends in database technology.	3	-		-	1	-	-	1		-	-	2	3	1	-	-
214453	Computer Graphics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	DO12	DCO1	DCCC	PSO3	DCC :
	Specify mathematical and logical aspects for developing elementary graphics	3	3	3	2	2	1	2	1	0	1		0	F301	P302	r503	r5U4
214453 .2	Explain and employ techniques of geometrical transforms to produce, position and	3	3	3	2	2	2	0	0	2	2	2	0		-		-
214453 .3	Described and a world coordinates to device coordinates, clipping, and	3	3	3	2	2	2	0	0	0	0	1	0	-	-	-	-
214453	Apply the concepts of rendering, shading, animation, curves and fractals using	2	3	1	2	1	2		2					-			y (=)
214457.5	Develop the companion to understand the concepts related to Virtual reality	2	3	1	2	1	2	1	2	1	1	0	1 1	-	 	-	
2144	Software Enginering									1	1	0	1	-		-	-
2144545	bottware Engineesing	PO1	PO2	PO3	PO4	PO5	PO6				PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
214454	dentify rious software application domains and classify software applications.	2	2	1		-	1			CIPAT		-	1		-	-	
2444									1 1 1 1 1 1 1 1					·			
214454	equirements by applying various modeling techniques.	- 2	2		1	-	Genba		LK154	1	2	Enga	1	-	-	-	-

25/1/3, Balewadi, PUNE-411 045

	Translate the requirement models into design models.	2	2	2	1	2	<u></u>	T -	1	1	1	1	1		Т.
214454 .4		2	2	1 2 2 5	1			1	2	1	1	l :	1	-	1
214454 .5	Apply quality attributes and testing principles in software development life cycle.	1	1	2	1	1	1	1	2	1	1	-	1	-	
214454 .6	Discuss recent trends in Software engineering by using CASE and agile tools.	1	1	1		2	1	1	1	1	-	1	1	-	+ -
		Semest	ter V					•							
Course	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	DO11	DO12	PSO1	Dec
314441	Theory of Computation	1	102	105	104	103	100	10/	100	109	FOIU	POII	PUIZ	PSUI	PSC
314441.1	To construct finite state machines to solve problems in computing	3	2	2	1	1	-	-		-	-	├	 		+
314441.2	To write mathematical expressions for the formal languages	2	2	2	2	3		 -	<u>-</u>	H	-	-	 - -	2	2
314441.3	To apply well defined rules for syntax verification.	2	3	2	1	3		 -	-	- -	÷	-	-	2	1
314441.4	To construct and analyze Push Down, Post and Turing Machine for formal languages.	3	3	3	1	1	-	-		-	-		-	-	2
314441.5	To express the understanding of the decidability and decidability problems.	3	2	1	1	2	-	 	-	-					١.
314441.6	To express the understanding of computational complexity.	3	3	3	1	-	-	-	-	-	-	-	1	2	1
314442	Database Management Systems	DO1	DOS	DOS	201	-									
	To define basic functions of DBMS & RDBMS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11		PSO1	PSC
	To analyze database models & entity relationship models.	3	2	3	<u> </u>	1	-	-	1	-			2	3	1
	To design and implement a database schema for a given problem-domain	2	1	2		2	-	-	1	2			2	3	2
314442.4	To populate and query a database using SQL DML/DDL commands.	2	<u> </u>	1	-	-		-	1	-	-		2	3	-
	Do Programming in PL/SQL including stored procedures, stored functions, cursors	2	<u> </u>	-		-	-	-	1	-	-		2	3	<u> </u> -
	and packages.	2		-		2	-	-	1		-	-	2 '	3	-
	To appreciate the impact of analytics and big data on the information industry and the	3	-	-	-	1	-	-	1	-		-	2		1
314442.6	external ecosystem for analytical and data services.													3	1
		ı	****		ı					1				2000	Line Committee
				40											
314443	Software Engineering & Project Management	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSC
314443.1	To identify unique features of various software application domains and classify software applications.	PO1 3	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO -
314443.1	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development				-					•		PO11 -	1	PSO1	PSO .
314443.1 314443.2 314443.3	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process	3	3	1	2	2	1	-	-	PO9 - 1 1				-	-
314443.1 314443.2 314443.3	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish	3	3	1 2	2	2	1	-		1	2		1	-	-
314443.1 314443.2 314443.3 314443.4	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering	3 3	3 3 2	1 2	2 1 1	2 - 2	1 - 1	-	1	1 1	2	1	1 1 1	-	-
314443.1 314443.2 314443.3 314443.4 314443.5	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software	3 3 3 2	3 2 3	1 2 3 -	2 1 1	2 - 2 -	1 1 1	- 1	1 2	1 1 1	2 1 1	1	1 1 1 1	-	-
314443.1 314443.2 314443.3 314443.4 314443.5 314443.6	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project	3 3 2 2 2	3 3 2 3 2	1 2 3 - 2 1	2 1 1 1 1	2 - 2 - 1 2 2	1 1 1 1	1 1 1	1 2 2 1	1 1 1 1 1	1 1 1	1	1 1 1 1 1 1	-	-
14443.1 14443.2 14443.3 14443.4 14443.5 14443.6	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project	3 3 2 2 2 PO1	3 3 2 3 2	1 2 3 - 2 1 PO3	2 1 1 1	2 - 2 - 1 2 PO5	1 1 1 1 1 PO6	- - 1 1	- 1 2	1 1 1 1	1 1 1	1	1 1 1 1		-
14443.1 14443.2 14443.3 14443.4 14443.5 14443.6	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project	3 3 2 2 2 PO1 3	3 3 2 3 2	1 2 3	2 1 1 1 1	2 - 2 - 1 2 PO5 2	1 1 1 1	1 1 1	1 2 2 1	1 1 1 1 1	1 1 1	1	1 1 1 1 1 1	-	-
314443.1 314443.3 314443.4 314443.5 314444.6 314444.1	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project To apply the project management through life cycle of the project and future trends in IT Project To apply the project management through life cycle of the project and future trends in IT Project	3 3 2 2 2 PO1	3 2 3 2 1 PO2	1 2 3	1 1 1 1 PO4	2 - 2 - 1 2 PO5	1 1 1 1 1 PO6 1	1 1 1	- 1 2 2 1	1 1 1 1 1	1 1 1	1 PO11	1 1 1 1 1 1		PSO
314443.2 314443.3 314443.4 314443.5 3144443.6 314444.1 314444.1	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project To apply the constant of the concept of a process and thread.	3 3 2 2 2 PO1 3	3 2 3 2 1 PO2 -	1 2 3 - 2 1 PO3 2 3 2 2	2 1 1 1 1 1 1 PO4	2 - 2 - 1 2 PO5 2	1 1 1 1 1 PO6 1	- 1 1 1 PO7 -	- 1 2 2 1 PO8 1	1 1 1 1 1 PO9	2 1 1 1 -	- 1 PO11	1 1 1 1 1 1		
314443.1 314443.3 314443.4 314443.5 314444.5 314444.1 314444.1	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project To apply the constant of the concept of a process and thread.	3 3 2 2 2 PO1 3	3 2 3 2 1 PO2	1 2 3	1 1 1 1 PO4	2 - 2 - 1 2 PO5 2	1 1 1 1 1 PO6 1	- 1 1 1 PO7	- 1 2 2 1 PO8 1 1	1 1 1 1 1 PO9	2 1 1 1 -	- 1 PO11 1	1 1 1 1 1 1		
14443.1 14443.2 14443.3 14443.4 14443.5 144443.6 14444.1 14444.1 14444.1 14444.1	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project To apply the consection of a process and thread. To apply the consection process synchronization, mutual exclusion and the deadlock To apply the consection of I/O management and File system.	3 3 2 2 2 PO1 3 3	3 2 3 2 1 PO2 -	1 2 3 - 2 1 PO3 2 3 2 2	2 1 1 1 1 1 1 PO4	2 - 2 - 1 2 PO5 2	1 1 1 1 1 PO6 1	- 1 1 1 PO7	- 1 2 2 1 PO8 1 1 1 1	1 1 1 1 1 PO9	2 1 1 1 - PO10 -	- 1 PO11 1 1 1	1 1 1 1 1 1		PS6
14443.1 14443.2 14443.3 14443.4 14443.5 144443.6 144444.1 144444.1 144444.1	To identify unique features of various software application domains and classify software applications. To choose and apply appropriate lifecycle model of software development To describe principles of agile development, discuss the SCRUM process and distinguish agile process To analyze software requirements by applying various modeling techniques. To list and classify CASE tools and discuss recent trends and research in software engineering To understand IT project management through life cycle of the project and future trends in IT Project To apply the constant of the concept of a process and thread.	3 3 2 2 2 2 PO1 3 3	3 2 3 2 1 PO2 3 3	1 2 3 - 2 1 PO3 2 3 2 1	2 1 1 1 1 1 1 PO4	2 - 2 - 1 2 PO5 2 1	1 1 1 1 1 PO6 1 1 2 2 -	- 1 1 1 1 PO7	- 1 2 2 1 PO8 1 1 1 2	1 1 1 1 1 1 PO9	2 1 1 1 - PO10 -	- 1	1 1 1 1 1 1		PS0 11 1 -

Genba Sopanrao Wioze Conces 3 25/1/3 Palawadi, PUNE-411 045

314445 314445.1	Human Computer Interaction	PO1	PO2	PO3	PO4	PO5	~06	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO
	To explain importance of HCI study and principles of user-centred des (UCD) approach.	2	2	1		-		-	-	-	2		1	2	2
314445.3	Develop understanding of human factors in HCI design.	3	3	2	2	1	-	-	-	-	2	-	2	1	2
314445.4		3	3	3	1	1	-	-	-	-	2	-	2	1	1
	Design effective user-interfacesfollowing a structured and organized UCD process. Evaluate usability of a user-interface design.	3	3	2	2	1	-	-	-	-	2	-	2	1	2
314445.5	Apply cognitive models for a user-interface design.	3	3	2	2	1	-	-	-	-	2	-	2	1	2
31443.0	Apply cognitive models for predicting human-computer-interactions.	2	emeste	- X/T	-	-	-	<u> </u>	-	-	2	-	1	1	1
314450	Computer Networks& Security	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	I DCO
314450 .1		3		2	1.0.	2	2	107	108	109	1010	FOII	FUIZ	PSUI	PSO2
314430.1	To know Responsibilities, services offered and protocol used at each layer of network.			10-	1		e -	-		-	-	-	-	- 10 m	
314450 .2		3	2	1	2	2			- 7		-			1	-
314450 .3	To understand different addressing techniques used in network.					_	•	-	-	•	-	-	-	2	- "
	The state of the types of fictivors.	3	3	2	1	1	-		-	-	-	-		-	-
314450 .4	To know the different wireless technologies and IEEE standards.	3	3	2	2	2	2	-	-	-	-	-	-	-	
314450.5	To use and apply the standards and any time to the standards and any time to the standards and t	2	1	2		2	2								
314450 .6	To use and apply the standards and protocols learned, for application development. To understand and explore recent trends in network domain.	ļ	ļ						•	•	•	<u> </u>	-	1	_
314430.0	To understand and explore recent trends in network domain.	3	-	-	<u> </u>	1	1	·	-	•	-	-	-	1	
314451	Systems Programming														
	for language processing applications.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
314451.2	To design and implement assemblers and macro processors.	3	2	3		-	-	-	-	•	-	-	-	•	-
314451.3	To use tool LEX for generation of Lexical Analyzer.	2	1	3		2	-	-	-			-	-	•	-
	To use YACC tool for generation of textical Analyzer.	1	1	3		2	-	-	-	-	- 5),	-	-	-	-
	To generate output for all the phases of compiler.	1	1	3		2	-	-	•	-	•	-	-	-	-
		1	2				-	-		-	-	-	-	-	-
314431.0	To apply code optimization in the compilation process.	1	2	. 2	-	-		-	-	-	-	-	-	-	-
314452	Design and Analysis of Algorithms	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
314452.1	To calculate computational complexity using asymptotic notations for various algorithms.	3	-	-	-	2	5 T.	-	•	•	_	-			-
314452.2	To apply Divide & Conquer as well as Greedy approach to design algorithms.	3	-	-	-	3	-			-		-	-	-	-
314452.3	To practice principle of optimality.	3	1	3	2	· -	-	_		-	-	-	-	-	-
314452.4	To illustrate different problems using Backtracking.	-	200	2		3	-	- 2	-	_	· _	-	-	-	-
314452.5	To compare different methods of Branch and Bound strategy.	-	3	2	2	- 3	-	-	-		-	-	-	-	-
314452.6	To explore the concept of P, NP, NP-complete, NP-Hard and parallel algorithms.			3	-	-	-	-	. •	-	-	-	-	-	-
314453	Cloud Computing	- no.4	200	200											
	To understand the need of Cloud based solutions.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	To understand Security Mechanisms and issues in various Cloud Applications	3	3	1	-	1	1	1	-		3 · 11	-	•	1	1
314453.3	To explore effective techniques to program Cloud Systems.	3	3	1	-	1	1	1	-	-	-	2 -	-	1	1
	To understand current challenges and trade-offs in Cloud Computing.	3	3	1		1	11	1	-	-	-	-	-	1	1
	20 MOZ Falkenses in cloud computing and delve into it to effective solutions.		3	1	-	1	1	1	-	-	-	-	-	1	1
314457	Tunderstand enterging trends in cloud computing.	3	3	1	-	1	1	1	-		-	-	-	1	1
// */	angerstant writeging trends in cloud computing.	3	3	1	-	1	1	1	-	-	-	-		1	1
	Data Sence and Big Data Analytics	PO1	PO2	DO3	DO4	DO5	DO/	DO7	DOG	DOO	DO10	DC11	DO12	DCC1	DCCC
3144	Understand Big Data Arialytics	3	PO2	PO3	PO4	PO5	PO6	PO7	PO8	109 11 W	PO10	PUII	PO12	PSO1	PSO2
3144	Learn and apply different mathematical models for Big Data.	2		•	•	٠	1	1	00	NCIP		•		-	-

314454.3 Demonstrate Big Data learning skills by developing industry or receased	_			21		-			130 125 000 1000					
- I was a search of the search of the search	2		-	-	-	_2	1	-	-		-	-	1	1
314454.4 Analyze and apply each learning model comes from a different a ithmic	-	1	1	-	-	T 2	2	- 2	1	-	-	-	2	2
314454.5 Understand, apply and analyze needs, challenges and techniques for big data	-	1		-	1	2	2	-	1		i		2	1
314454.6 Learn different programming platforms for big data analytics.	-	1		-	1		1	T -	2	1	1	1	2	+-
	Semest	er VII							1.70					
Course Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	DO#	l noo	Lpon	Inote	I =	T =	1	
414453 Information and Cyber Security	101	102	103	FU4	PUS	PU6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO
414453.1 Students shall be able to understand what are the common threats faced today	3	-	3	-	+-	1	-	-	-	-	-	-		1
414453.2 What is the foundational theory behind information security	1	3	-	2	+:	1	+-	-	+	 -		1		-
414453.3 What are the basic principles and techniques when designing a secure system	2	2	1	-	2	<u> </u>	•	-	3	2		1	1	
414453.4 How today's attacks and defenses work in practice	 - -		-	-	-	-	-	1	2	1	1	2	-	-
414453.5 How to assess threats for their significance	3	1	2	-	-	2	1	2	1	1	-	1	1	-
414453.6 How to gauge the protections and limitations provided by today's technology	-	1	1	-	1	2	-	ļ <u>-</u>	1	1	-	1	-	<u> </u>
		+		-	2	1	-	<u> </u>	1	-	-	1	1	<u> -</u>
414454 Machine Learning and Applications	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	DO11	PO12	DOOL	1200
414454.1 model the learning primitives	3	1	1	2	2	2	2	1	1	1				
414454.2 build the learning model.	3	3	3	1	1	1	1	1	1	1	1	1	1	1
414454.3 tackle real world problems in the domain of Data Mining and Big Data Analytics,	3	3	3	2	1	1	1	1	1	1	1	1	1	1
414454.4 Illustrate the regaration and generalization machine learning algorithms.	3	3	2	1	1	1	2	1	1		1	1	1	1
414454.5 Apply fundamental concepts of ANN.	3	3	2	1	1	1	2		_	1	1	1	1	1
414454.6 Identify different unsupervised learning algorithms for the related real-world	3	2	2	1	1	1	1	1	1	1	1	1	1	1
	 	-		1	 		-	1	1	1	1	1	1	1
414455 Software Design	PO1	PO2	PO3	PO4	PO5	DO.	DO5	POO	POO	7040	2011			
414455.1 Understand object oriented methodologies, basics of Unified Modeling Language	3	2	3	2	2	PO6	PO7	PO8	PO9	PO10		PO12	PSO1	PSO2
414455.2 Understand analysis process, use case modeling, domain/class modeling	3	2	2	2	2	i i	2	<u> </u>	2	2	2	•	2	1
414455.3 Understand interaction and behavior modeling.	3	3	3	2	2		2	•	. 2	2	2		-	1
414455.4 Understand design process and business, access and view layer class design	2	2	2	-	-			-	1		1		-	
414455.5 Get started on study of GRASP principles and GoF design patterns.	2	2	1	-			•	-	1		-	-	-	2
Get started on study of architectural designs in the state of the started on study of architectural designs in the started on	2	2	3	1	2		-	-			-	-	-	<u> </u>
414455.6 type of application development.	*		3	1	2	-	1	-1:	2	-	2	-	-	
	-													-
414456E Elective-I Business Analytics and Intelligence	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
414456E.1 Comprehend the Information Systems and development approaches of Intelligent			7				10.	200	102	1010	1011	1012	1501	1302
Systems.	3	-	3	•,000	-	1	-	-	-			1	5 <u>6</u>	-
414456E.2 Evaluate and rethink business processes using information systems	1	3		2	-		-	_	3	2		1	1	-
414456E.3 Propose the Framework for business intelligence	- 2	2	1		2	-	_	1	2	1	1	2		H :-
Get acquainted with the Theories techniques and annidesting from the								-	-		-			
414456E.4 Organizational intelligence.	-	-	-		-	2	1	2	1	1		1	.1	
414456E.5 Align business intelligence with business strategy.														
414456E 6 Apply the techniques for implementing land in the control of the contro	3	1	2	-	1	2	-		1	1		1		-
414456E.6 Apply the techniques for implementing business intelligence systems.	-	1	1	-	2	1	•		1		-	1	1	-
414457C Software Testing and Quality Assurance	PO1	PO2	PO2	DO4	DO5	DO.	DO5	DOG	700	2010	2011	2012	2001	
414457C Software Testing and Quality Assurance 414457 September 2019 September 20	3	102	PO3 3	PO4 3	PO5	PO6	PO7	PO8	PO9	PO10	PUII	PUIZ	PSO1	
414471,2 Investigate the senario and to select the proper testing technique.	2	3	2	2	3		-	•	2		-	•	3	2
	-	3	- 4	- 4	3			-		-	-	-	3	2
Expere the test automation concepts and tools and estimation of cost, schedule based on standard metrics.	3		3	3	3	_	_		_		_	3	2	3
bases on standard metrics. 414.3.4 Understand low to detect, classify, prevent and remove defects.			V=1X					1031	5500			ا	•	,
414 19 4 Understand how to detect, classify, prevent and remove defects.	2	3	3	3	2	-		-		LLEW	·		2	
* OHE CUMP TO THE								D	RINCI	PAL	7.11		-	

Genba Sopanrao Moze College of Engg. 25/1/3, Balewadi College 411 945

							_ `								
414457.6	Ability to conduct formal inspections, record and evaluate results or inspections.	3	2	2	2	2	-	-	٠.		-	-	-	3	
	5	emeste	er VIII				*			l.,				<u> </u>	1
414462	Distributed Computing System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	TPSO2
414462.1	To learn the principles, architectures and programming models used in distributed systems.	3	3	1		1	1	1	-	-	-		-	1	1
414462.2	To understand the fundamentals and knowledge of the Middleware of distributed systems	3	3	1	-	1	1	1	-	-	-			1	1
414462.3	To gain knowledge of working components and fault tolerance of distributed systems.	3	3	1	-	1	1	1	-	-	-			1	1
414462.4	To understand the significance of agreement, fault tolerance and recovery protocols in Distributed Systems.	3	3	1	-	1	1	1	-				-	1	1
414462.5	To make students aware about distributed and multimedia file systems and web systems.	3	3	1		1	1	1	-	-			-	1	1
414462.6	Create an awareness of Emerging trends in distributed computing.	3	3	1	-	1	1	1	-	-	-	-	-	1	1
11.1160															
414463	Ubiquitous Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
414463.1	Demonstrate the knowledge of design of Ubicomp and its applications.	2	2	-	2	-		-	-	-	-	-	-	,-	-
414463.2	Explain smart devices and services used Ubicomp.	2	3	2	3	-	-	-	-	-	-	-	-	-	-
414463.3	Describe the significance of actuators and controllers in real time application	. 3	2	3	3	-	•		•		-	-	-	-	
414463.4	Use the concept of HCI to understand the design of automation applications. 5	3	2	3	3	-	•	-	•	•				-	
414463.5	Classify Ubicomp privacy and explain the challenges associated with Ubicomp privacy.	3	3	3	3	-	-	-	•	-	-		-	-	-
	Get the knowledge of ubiquitous and service oriented networks along with Ubicomp management.	1	3	-	3	-	-		8-	-	•		-		-
414464AC	Elective III Multimedia Techniques	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
414464c .1	To create own file formats for specific application.	3	3	1	-	1	1	1	-	-	-	-	-	1	1
414464c.2	To do some projects based on current trends in multimedia.	3	3	1	<u>=</u>	1	1	1	-		-	-	-	1	1
414464c .3	To use open sources for authoring tool for animation.	3	3	1	-	2	1	1		-	-	-	-	2	1
414464c .4	TUnderstand some research areas of current multimedia techniques.	3	3	1		1	1	1	-		-	-		1	1
	To use open sources for authoring tool for presentations	3	3	1		1	2	1	-	-	-	-	-	1	1
414464c .6	Become acquainted with some advanced topics in multimedia.	3	3	1	-	1	1	1	•	-	-	·	-	1	1
	Elective IV	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	Understand the basics of Social Media Analytics	3	3		•	3	_		•	-	-	-	-	-	
	Explain the significance of Data mining in Social media.	3	3	3	-	-			•	-	-	-	-		
414464D.3	Demonstrate the algorithms used for text mining.	2	3	1	-	-	-		-		-	-	-	-	•
414464D.4	Apply network messages and media data. Explain Behavior Analytics for social media data Apply social media analytics for second and Twitter kind of applications.	2	2	2	•	-	-			-	7	-	-	-	-
MANACADE	In the part of the Market Lillians and the second s												1		
414464D.5	Explain Benavior Anguares regardants used for social media data	2 2	2	3	3	3	-	-	•	•	•	-	•	<u> </u>	-

414457.5 Choose appropriate quality assurance models and develop quality

Academic Year-2021-22 2.6.2 CO-PO Mapping Matrix Semester III

C	N CC		Seme	ster III													
Course	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
214441	Discrete Mathematics										1010	1011	1012	1501	1502	1303	1304
214441.1	Formulate, apply formal proof techniques and solve the problems with logical reasoning.	3	2	1	1	1	1	-	-	-	1		2		-	-	-
214441.2	Analyze and evaluate the combinatorial problems by using probability theory.	2	3	1	1	1	1	-	-	-	1		2	1	-	 	<u> </u>
214441.3	Apply the concepts of graph theory to devise mathematical models.	3	3	2	2	1	1	-	-		2		2	1		_	-
214441.4	Analyze types of relations and functions to provide solution to computational problems.	3	2	1	2	1	1	-	-	-	2		2	1	-		
214441.5	Identify techniques of number theory and its application.	2	2	2	2	1	2		<u> </u>			 -		1			
214441.6	Identify fundamental algebraic structures.	2	3	2	1	1				-	1		2	1	-	-	-
							1	-	-		1		2	1	-	-	-
214442	Computer Organization and Logic Design	PO1	PO2	PO3	PO4	PO5	PO6	DO7	DOG	DOG	DOIG	7011	2010				ļ
214442.1	Perform basic binary arithmetic & simplify logic expressions.	3	3	103	104	PU5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
	functions using ICs.	3	3	3		<u> </u>	-		-	-	-	-	-	-	-	-	-
214442.3	sequential logic functions using ICs.	3	3	3		-	-	<u> </u>	-	-			-	3	-	-	-
214442.4	Elucidate the functions & organization of various blocks of CPU.	3	-	-		2			-	-	-	-	-	3	-	-	L .
214442.5	CPU	3				2	3		-	-	-	-	-	-	-	-	-
214442.6	Describe an assortment of memory types (with their	3	-			2	2	-	-	-	-	-	-	-	-	-	-
214442																	
214443	Data Structures and Algorithms	PO1	PO2	PO3	PO4	PO5	PO6	DO7	DO	DOO	DO10	DO11	DO10	DCO1	DCCC	P000	2001
214443.1	Perform basic analysis of algorithms with respect to time and space complexity.	PO1 3	PO2	PO3	PO4 3	PO5	PO6	PO7	PO8	PO9	PO10 -	PO11	PO12	PSO1	PSO2	PSO3	PSO4
214443.1	Perform basic analysis of algorithms with respect to time and							PO7 -	PO8		PO10 -	PO11 -	PO12 -	PSO1	PSO2	PSO3	PSO4
214443.1 214443.2 214443.3	Perform basic analysis of algorithms with respect to time and space complexity. Select appropriate searching and/or sorting techniques in the	3	3	2	3	-	3	PO7 -	- -	•	PO10 - -	PO11 - -	PO12 - -	PSO1	PSO2	PSO3	PSO4 - -
214443.1 214443.2 214443.3	Perform basic analysis of algorithms with respect to time and space complexity. Select appropriate searching and/or sorting techniques in the application development. Implement abstract data type (ADT) and data structures for given	3	3	3	3	-	3		-	•		PO11 - -	- - -	PSO1			
214443.1 214443.2 214443.3 214443.4	Perform basic analysis of algorithms with respect to time and space complexity. Select appropriate searching and/or sorting techniques in the application development. Implement abstract data type (ADT) and data structures for given application. Design algorithms based on techniques like brute -force, divide	3 1 2	3 3 1	2 3 2	3 3	-	3 3 3	PO7	-	•		PO11	-	PSO1		PSO3	
214443.1 214443.2 214443.3 214443.4 214443.5	Perform basic analysis of algorithms with respect to time and space complexity. Select appropriate searching and/or sorting techniques in the application development. Implement abstract data type (ADT) and data structures for given application. Design algorithms based on techniques like brute -force, divide and conquer, greedy, etc. Apply implement learned algorithm design techniques and data	3 1 2 2	3 3 1 3	2 3 2 3	3 3 3	-	3 3 3	PO7	-	•					-		-
214443.1 214443.2 214443.3 214443.4 214443.5 214443.6	Perform basic analysis of algorithms with respect to time and space complexity. Select appropriate searching and/or sorting techniques in the application development. Implement abstract data type (ADT) and data structures for given application. Design algorithms based on techniques like brute -force, divide and conquer, greedy, etc. Apply implement learned algorithm design techniques and data structures to solve Design different hashing functions and use files organizations.	3 1 2 2 3 1	3 3 1 3 3	2 3 2 3	3 3 3 3 3		3 3 3 3 3		-	•		-	-	-	-	-	-
214443.1 214443.2 214443.3 214443.4 214443.5 214443.6	Perform basic analysis of algorithms with respect to time and space complexity. Select appropriate searching and/or sorting techniques in the application development. Implement abstract data type (ADT) and data structures for given application. Design algorithms based on techniques like brute -force, divide and conquer, greedy, etc. Apply implement learned algorithm design techniques and data structures to solve Design different hashing functions and use files organizations.	3 1 2 2 3 1 PO1	3 1 3 3 3 PO2	2 3 2 3 2 3 PO3	3 3 3 3 3 PO4	PO5	3 3 3 3 3 PO6	PO7	-	•		-	PO12		PSO2	PSO3	-
214443.1 214443.2 214443.3 214443.4 214443.5 214443.6	Perform basic analysis of algorithms with respect to time and space complexity. Select appropriate searching and/or sorting techniques in the application development. Implement abstract data type (ADT) and data structures for given application. Design algorithms based on techniques like brute -force, divide and conquer, greedy, etc. Apply implement learned algorithm design techniques and data structures to solve Design different hashing functions and use files organizations.	3 1 2 2 3 1 PO1 3	3 1 3 3 3 3 PO2 3	2 3 2 3 PO3 3	3 3 3 3 3 PO4 2	PO5 2	3 3 3 3 3 PO6 3	PO7 2	PO8 -	•	PO10 2	PO11	PO12 2	PSO1	PSO2 1	PSO3	PSO4 -
214443.1 214443.2 214443.3 214443.4 214443.5 214443.6	Perform basic analysis of algorithms with respect to time and space complexity. Select appropriate searching and/or sorting techniques in the application development. Implement abstract data type (ADT) and data structures for given application. Design algorithms based on techniques like brute -force, divide and conquer, greedy, etc. Apply implement learned algorithm design techniques and data structures to solve Design different hashing functions and use files organizations.	3 1 2 2 3 1 PO1	3 1 3 3 3 PO2	2 3 2 3 2 3 PO3	3 3 3 3 3 PO4 2 3	PO5 2 2 2	3 3 3 3 3 PO6 3 3	- - - PO7 2 3 3	PO8 - 1	PO9	PO10 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	- P011	PO12 2 2 2 2 2		PSO2 1 1	PSO3 1 1 1	-
214443.1 214443.2 214443.3 214443.4 214443.5 2144443.6 214444.1 214444.2 214444.3	Perform basic analysis of algorithms with respect to time and space complexity. Select appropriate searching and/or sorting techniques in the application development. Implement abstract data type (ADT) and data structures for given application. Design algorithms based on techniques like brute -force, divide and conquer, greedy, etc. Apply implement learned algorithm design techniques and data structures to solve Design different hashing functions and use files organizations.	3 1 2 2 3 1 PO1 3 3 3	3 1 3 3 3 PO2 3 3	2 3 2 3 2 3 PO3 3 3	3 3 3 3 3 PO4 2	PO5 2	3 3 3 3 3 PO6 3	- - - PO7 2 3 3	PO8 - 1 1	PO9	PO10 2	PO11	PO12 2 2 2 7 0 of F	PSO1 1 1 1 1 ngg.	PSO2 1	PSO3	

25/1/3, Balewadi, PUNE-411 045

214444.5	Use of files for persistent data storage for real world applica:	3	3	3	2	2		$-\sim$									
214444.6	Apply appropriate design patterns to provide object-oriented solutions.	3	3	3	3	2	2	2		-	2	-		1	1	1	-
	Basics of Computer Network	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	DCO2	PCOA	700
214445.1	Understand and explain the concepts of communication theory	3	2	-			100	10,	100	109	1010	FUII	PUIZ	PSUI	PSO2	PSO3	PSO4
214445.2	Analyze data link layer services, error detection and correction,	T :	3							-	-	-	2	-	•	•	-
214445.3	Compare different access techniques, channelization and				-	-		-	-	-	-	-	1	•	-	-	-
214445.4	Apply the skills of subnetting, supernetting and routing	 	-		-	3		1	-	•	-	-	2	-	-	-	-
214445.5	: Compare IPv4 and IPv6	<u> </u>	3	3			•	-	-	-	-	-	2	-		-	-
214445.6	Understand services and protocols used at transport layer.	 	-	-	-	2	3	-	-	-		-	3	-	-	-	-
	protocols used at transport layer.		-	2	-		-	-	2			_	3	-			

Semester IV

		seme	ster IV													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	DCO1	DCO2	DCO2	Treco
design of computer-based	1	2	1	1	-	-	-	-	-	-	-	-	-	PSU2	-	PSO4
Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing.	1	1	2	1	-	-		-		-	-	-	-	-	-	1
learning.	2	1	1	1	-	-	-	-	-	-	=	-	-			1
equations using numerical	1	2	2	1	-		-	-		-	-	-	-	-	-	1
Obtain Interpolating polynomials, numerical differentiation and integration, numerical	1	2	1	2	-		-	-	-		-	-	-	-		1
Droggessa Aughita at																
					PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
Implement architecture and memory organization of PIC 18					1-	-	-	-	-	-	•	2	-	-	-	-
Use concerts of times and interest of PIC 18.					3	-	•	-	-		•	2	10		•	-
Demonstrate real life and interrupts of PIC 18.						-		-	-	-	-	-		-	•	-
A polygo orbito struct details CAPA (3	3	3	2	-		-	-	-	-	-	-	-	-
Analyze architectural details of ARM processor.	1	1	1	- 1		-	-	-	•	-		2	-	-		-
Database Wantagement System	DO1	PO2	DO2	DO4	DO5	DO(DO#	DOO	DOG	7010						
Some fundaments of database management systems	3	2	3	-	1	-	-	1	PO9 -	PO10 -	PO11 -	PO12 2	PSO1 3	PSO2	PSO3	PSO4
ma agement systems and Design ERmodels to represent simple	2	1	2	8	2	-		1	2	-	-	2	3	2	2	-
59											•					
-	Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing. Apply Statistical methods like correlation& regression analysis and probability theory for data analysis and predictions in machine learning. Solve Algebraic & Transcendental equations and System of linear equations using numerical Obtain Interpolating polynomials, numerical differentiation and integration, numerical Processor Architecture Apprehend architecture and memory organization of PIC 18 Implement embedded C programming for PIC 18. Use concepts of timers and interrupts of PIC 18. Demonstrate real life applications using PIC 18. Analyze architectural details of ARM processor. Database Volume teacher the memory of database management systems Describe the fundamental elements of relational database management systems and Design ERmodels to represent simple	Solve Linear differential equations, essential in modelling and design of computer-based Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing. Apply Statistical methods like correlation& regression analysis and probability theory for data analysis and predictions in machine learning. Solve Algebraic &Transcendental equations and System of linear equations using numerical Obtain Interpolating polynomials, numerical differentiation and integration, numerical Processor Architecture Apprehend architecture and memory organization of PIC 18 Implement embedded C programming for PIC 18. Use concepts of timers and interrupts of PIC 18. Demonstrate real life applications using PIC 18. Demonstrate real life applications using PIC 18. Database Montreport System PO1 Solve Linear differential equations, essential in modelling and design of computer-based 1 2	Engineering Mathematics III Solve Linear differential equations, essential in modelling and design of computer-based Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing. Apply Statistical methods like correlation& regression analysis and probability theory for data analysis and predictions in machine learning. Solve Algebraic & Transcendental equations and System of linear equations using numerical Obtain Interpolating polynomials, numerical differentiation and integration, numerical Processor Architecture Apprehend architecture and memory organization of PIC 18 Apprehend architecture and memory organization of PIC 18. Use concepts of timers and interrupts of PIC 18. Demonstrate real life applications using PIC 18. Datages Montree and System PO1 PO2 PO3 Analyze architectural details of ARM processor. 1 1 1 Datages Montree and System PO1 PO2 PO3 Analyze architectural details of ARM processor. 2 1 2 Demonstrate fundamental elements of relational database PO1 PO2 PO3 Analyze architectural details of PIC 18. Datagement system PO1 PO2 PO3	Engineering Mathematics III Solve Linear differential equations, essential in modelling and design of computer-based Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing. Apply Statistical methods like correlation& regression analysis and probability theory for data analysis and predictions in machine learning. Solve Algebraic & Transcendental equations and System of linear equations using numerical Obtain Interpolating polynomials, numerical differentiation and integration, numerical Processor Architecture Apprehend architecture and memory organization of PIC 18 Apprehend architecture and memory organization of PIC 18. Use concepts of timers and interrupts of PIC 18. Demonstrate real life applications using PIC 18. Damonstrate real life applications using PIC 18. Damonstrate real life applications using PIC 18. Datages Nontreport System PO1 PO2 PO3 PO4 PO3 PO4 PO4 PO5 PO3 PO4 PO5	Engineering Mathematics III Solve Linear differential equations, essential in modelling and design of computer-based Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing. Apply Statistical methods like correlation& regression analysis and probability theory for data analysis and predictions in machine learning. Solve Algebraic & Transcendental equations and System of linear equations using numerical Obtain Interpolating polynomials, numerical differentiation and integration, numerical Processor Architecture Processor Architecture Processor Architecture and memory organization of PIC 18 Apprehend architecture and memory organization of PIC 18. Use concepts of timers and interrupts of PIC 18. Demonstrate real life applications using PIC 18. Demonstrate real life applications using PIC 18. Demonstrate real life applications using PIC 18. Database Nonvernent System PO1 PO2 PO3 PO4 PO5 Database Nonvernent System PO1 PO2 PO3 PO4 PO5 Apprehend architectural details of ARM processor. Database Nonvernent System PO1 PO2 PO3 PO4 PO5 Database Nonvernent System PO1 PO2 PO3 PO4 PO5 Database fundamental elements of relational database 2 1 2 - 2 Describe transform and its modelling and database and its modelling and its applications using PIC represent simple	POI POZ PO3 PO4 PO5 PO6 PO6 PO7	Engineering Mathematics III Solve Linear differential equations, essential in modelling and design of computer-based Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing. Apply Statistical methods like correlation& regression analysis and probability theory for data analysis and predictions in machine learning. Solve Algebraic &Transcendental equations and System of linear equations using numerical Obtain Interpolating polynomials, numerical differentiation and integration, numerical Processor Architecture Processor Architecture and memory organization of PIC 18 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Solve Algebraic & Transcendental equations and System of linear equations using numerical polynomials, numerical differentiation and integration, numerical 1	POI POZ PO3 PO4 PO5 PO6 PO7 PO8 PO9 Solve Linear differential equations, essential in modelling and design of computer-based 1	Engineering Mathematics III Solve Linear differential equations, essential in modelling and design of computer-based Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing. Apply Statistical methods like correlation& regression analysis and probability theory for data analysis and predictions in machine learning. Solve Algebraic & Transcendental equations and System of linear equations using numerical Obtain Interpolating polynomials, numerical differentiation and integration, numerical 1 2 1 2 1 2	Engineering Mathematics III Solve Linear differential equations, essential in modelling and design of computer-based Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing. Apply Statistical methods like correlation& regression analysis and probability theory for data analysis and predictions in machine learning. Solve Algebraic & Transcendental equations and System of linear equations using numerical Obtain Interpolating polynomials, numerical differentiation and integration, numerical 1 2 1 2 1 2	Engineering Mathematics III Solve Linear differential equations, essential in modelling and design of computer-based 1 2 1 1	Engineering Mathematics III Solve Linear differential equations, essential in modelling and design of computer-based Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing. Apply statistical methods like correlation& regression analysis and probability theory for data analysis and predictions in machine learning. Solve Algebraic & Transcendental equations and System of linear equations using numerical Obtain Interpolating polynomials, numerical differentiation and integration, numerical 1 2 1 2 1 2 2	Ingineering Mathematics III Solve Linear differential equations, essential in modelling and design of computer-based 1 2 1 1	Ingineering Mathematics III Solve Linear differential equations, essential in modelling and design of computer-based 1 2 1 1	

Genba Sopanrao Moze College of Engg.

25/1/3, Balewadi, PUNE-411 045

214452 .4	Improve the database design by normalization & to incorpor query processing.	2	-	-	g .=.	-	-	-	1	-	-		2	3			
214452 .5	Illustrate ACID properties for transaction management & to describe concurrency control protocols.	2		-	-	2	-	-	1	-			2	3			-
214452 .6	Understand recent trends in database technology.	3	-	-	-	1	-	-	1	-	-		. 2	3	1		-
214453	Computer Graphics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	DO0	DOG	DO10	200					
214453 .1	Specify mathematical and logical aspects for developing elementary graphics operations like scan conversion of points, lines and circle and apply it for problem solving.	3	3	3	2	2	1	2	PO8	PO9 0	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
214453 .2	Explain and employ techniques of geometrical transforms to produce, position and manipulate objects in 2 dimensional and 3-dimensional space respectively.	3	3	3	2	2	2	0	0	2	2	2	0	-	-	-	-
214453 .3	Describe mapping from a world coordinates to device coordinates, clipping, and projections in order to produce 3D images on 2D output device.	3	3	3	2	2	2	0	0	0	0	1	0	-	-	-	-
214453 .4	Apply the concepts of rendering, shading, animation, curves and fractals using computer graphics tools in design, development and testing of 2D, 3D modeling applications.	2	3	1	2	1	2	1	2	1	1	0	1	-	-	-	-
214453 .5	Develop the competency to understand the concepts related to Virtual reality	2	3	1	2	1	2	1	2	1	1	0	1	-	-		
214454	Software Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
214454 .1	Identify various software application domains and classify software applications.	2	2	1	-	-	1	-	-	-	-	-	1	-	-	-	-
214454 .2	Analyze software requirements by applying various modeling techniques.	2	2		1	-	•			1	2		1	-	-		-
214454 .3	Translate the requirement models into design models.	2	2	2	1	2	-		1	1	1	1	1				
	Apply planning and estimation to any project.	2	2		1		1	1	2	1	1	-	1	-	-		
214454 .5	Apply quality attributes and testing principles in software development life cycle.	1	1	2	1	1	1	1	2	1	1	-	1	-		-	-
	Diameter di C C																
214454 .6	Discuss recent trends in Software engineering by using CASE and agile tools.	1	1	1		2	1	1	1	1	-	-	1	-	-		n -
214454 .6		1	1 Semes			2	1	1	1	1	-	-	1	-	•	•	•

	T FHA		Jeine	stel A													
Course	Name of Course LNG/N	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
314441	Theory of Computation			1,000							7 0 10	1011	1012	1501	1002	1505	1504
314441.1	Construct inite automata and its variants to solve computing problems:	3	2	2		-	-	-	-	-	-		-	2	2	3	-
314441.2	Write regular expressions for the regular languages and finite automate	-		2	2	3	-	-	•	S	-	-	-	2	2	1	-
314441.3	Identify type of grammar, design and simplify Context Free Grammar.	-	3	2	1	3	-	-	-	PRĪ	NCIPA	3	-	2	1	-	-

14443	LUST USSUUM AUDERNAIS ACCRITECTURE SON TRAMOUNARY AT LAT	3	3	4 1				1	_			loze Co			1	1	1
14445 D	Elective-I Interest of Frings Discussfundamentals, architecture and framework of IoT.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PORM	CHAL	PO12	PSO1	PSO2	PSO3	PSO
	Elective-I Internet of Brings		Semes	ter VI							. ~	1004		58			
314444.6	Apply committee and dels for partiting human-computer-interactions.	2	2				-	-	-		2	-	1	1	1	1	-
314444.5	Evaluate usability of a user-brettace design.	3	3	2	2	1	-	-	-	-	2		2		2	2	-
314444.4	Design effectives are interested lowing a structured and organized by process.	3	3	2	2	1	-		-		2		2	1	2	2	-
314444.3	Develop understanding of models, paradigms, and context of interactions.	3	3	3	1	1	-	-	-		2	•	. 2	1	1	1	
314444.2	Develop understanding of human factors in HCl design.	3	3	2	2	1	-	-	-	-	2	•	- 2	1	2	2	
	Explain importance of HCIstudy and principles of user-centered design (UCD) approach.	2	2	1	-		•	•	•	. •	2		1	2	2	2	
	Human Computer Interaction	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PS
		3			1	1	1	1	1	1	1	1	1	1	1	1	
314443.6	real-world problems. Apply fundamental concepts of ANN.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1	
314443.5	Identify different unsupervised learning algorithms for the related		3	2	1							1	1	1	1	1	
314443.4	Illustrate the tree-based and probabilistic machine learning algorithms.	3	3	2	1	1	1	2	1	1	1						H
314443.3	Compare different types of classification models and their relevant application.	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	-
314443.2	Differentiate various regression techniques and evaluate their performance.	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	\vdash
314443.1	Apply basic concepts of machine learning and different types of machine learning algorithms.	3	1	1	2	2	2	2	1	1	1	1	1	1	1	1	
314443	Machine Learning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PS
		1	1		-	-	-	-	-	-	<u> </u>	-	2	-	2	-	I
314442.6	Make use of concept of I/O management and File system. Understand Importance of System software	1	1	-	-	-	-	-	-	•	-	-	2 -	-	2	-	1
314442.4	Implement the concepts of various memory management techniques.	1	1	-	- i	-	-	-	-	•	-	-	2	-	2		
314442.3	exclusion and the deadlock.	1	1	-	-	-	-		-	-	-	-	2	-	2	-	
314442.2	Apply the concepts of process and thread scheduling. Illustrate the concept of process synchronization, mutual	1	1		-		-	-	-	-	-		2	 -	2	-	+
314442.1 314442.2	Explain the role of Modern Operating Systems.	1		-	-	-		-	-	-	-	-	2	1301	2	PSO3	P
314442	Operating Systems	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO2	Ļ
314441.6	Understand decidable and undecidable problems, analyze complexity classes.	3	3	3	•	-	-	-	-	-,	-	-	1	2	1	-	
314441.5	Design and analyze Turing machines for formal languages.	3	2	-	-	3	-	-	-	-	-		+	2	1	2	+
314441.4	Construct Pushdown Automata machine for the Context Fre Language.	3	3	3	-		-	-	-	-		-	-		2		T

314445 D 3	2 Select suitable sensors and actuators for real time scenarios 3 challenges	3	- 3	1	-	1	1	:	-	1-	-		Τ.	1	1	1	T
314445 D.4	4 applications.	3	3	1	-	1	1	1	-	-	-	+-	 -	1	1	1	+
314445 D.5	Understand the cloud interfacing technologies.	3	3	1	-	1	1	1	-	-	-	-	 -	1	1	1	+
314445 D.6	Design and Implement realtime IoT applications.	3	3	1	-	1	1	1	-	-	-	 -	+-	1	1	1	_
	a besign and implement realtime for applications.	3	3	1	-	1	1	1	-		-	-	<u> </u>	1	1	1	+
314451	Computer Networks& Security	DO1	-													-	+
314451.1	Explain Responsibilities, services offered and protocol used at	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PS
314451.2	Apply concepts of wireless network and different	1	3	-	-	1	-	1	1	-		-	1	-	-	2	+-
314451.3	Recognize the Adhoc Network's MAC layer, routing protocol and	1	1			1	-	-	1	-	-	-	1	-		2	+
314451.4	Implement the principal concepts of network security and	1	2	-	-	1	-	-	1	-		-	1	-		2	
314451.5	Apply basic cryptographic techniques in application development.	1	3	<u> </u>	1	-	1	-	3	-	-	-	1	-	-	2	1
314451.6	Gain a good comprehension of the landscape of cyber security	1	3	-	1	-	1	-	3	-	1 -	-	1	-	-	2	
	i the landscape of cyber security	1	3	-	1	-	1	-	3	-	-	-	1		-	2	\top
314452	Data Science and Big Data Analytics	PO1	PO2	DO2	704	70-											T
314452.1	Understand Big Data primitives.	3	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PS
314452.2	Learn and apply different mathematical models for Big Data.	2	-	-	-	-	2	1	-	-	-			-	-	2	
314452.3	Demonstrate Big Data learning skills by developing industry or	2	 -	•	-	-	1	-	-	-	-	-		-		2	
314452.4	Analyze and apply each learning model comes from a different		1	-		-	2	1	1	-	•	-	-	1	1	2	
314452.5	Understand, apply and analyze needs, challenges and techniques	-	1	1	-		2	2	-	1	-	-		2	2	1	
314452.6	Learn different programming platforms for big data analytics.	-	1			1	2	2	-	1	-	-	-	2	1	-	
	g patronnis for ong data analytics.		1	-	-	1	-	1	-	2	1	1	1	2	•	-	
314453	Web Application Development	PO1	PO2	PO3	PO4	DO5	DO.	705									
	Bootstrap.	3	1	1		PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PS
314453.2	Demonstrate the use of web scripting languages.	3	3	3	2	2	2	2	1	1	1	1	1	1	1	. 1	-
314453.3	Develop web application with Front End & Back End Technologies.	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	
314453.4	Develop web application with Front End & Back End	3	3	2	1	1 1	1	1	1	1	1	1	1	1	1	1	-
314453.5	Deploy web application on cloud using AWS.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1	-
	Elective-II Cloud Computing	PO1	PO2	PO3	PO4	PO5	1 PO6	2	1	1	1	1	1	1	1	1	-
314454C.1	To provide students with the fundamentals and essentials of	3	3	1	104	1		PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PS
314454C.2	To learn basics of virtualization and its importance	3	3	1		1	1	1			-	-	-	1	1	11	1
314454C.3	To provide students a sound foundation of the cloud computing	3	3	1		1	1	1		•	•	•	• .	1	1	1	1
314454C.4	To enable students exploring some important cloud computing	3	3	1	-	1	1	1			-	-	-	1	1	1	1
314454C.5	To understand cloud storage technologies and relevant file	3	3	1	-	1	1	1	\dashv			-	-	1	1	1	_ 1
14454C.6	To be exposed to Ubiquitous Cloud and Internet of Things	3	3	1		1	1	1		-	-	- 1	-	1	1	1	1
								1			-			1	1	1	1
Course	Name of Court E		Semes														
	Information and Cher Security	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSC
	Comp ehend the Information Systems and development approaches of intelligency stems.	3	. •	3	-	-	1	-	-	-	-	-	1		_	•	_
14453.2	Evaluate and rethink boss processes using information	1	3	-	2	-	-	-		3	PRINC	per	1	1	-	-	
14453.3	Propose the Reserve for business intelligence	2	2	1		2			1	2	rkindi	PAL	-				
					Commence of the Co							100		100		1	

	Get acquainted with the Theories, techniques, and considerations	г				1											
414453.4	for capturing	-	. =	-	-	-	2	1	2	1	1	-	1	1	-		
414453.5	B. Later Business Strategy.	3	1	2	 -	1	2	-	—	1	1	-	1	-	-	-	
414453.6	Apply the techniques for implementing business intelligence systems.	-	1	1	-	2	1	-	-	1	-	-	1	1	-	-	-
414454	Machine Learning and Applications	PO1	PO2	PO3	PO4	DO.	704										
	Apply basic concepts of machine learning and different types of	FOI	FUZ	PUS	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO
414454.1	machine learning algorithms.	3	1	1	2	2	2	2	1	1	1	1	1	1	1	1	-
414454.2		3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	
414454.3	Compare different types of classification models and their relevant application.	3	3	. 3	2	1	1	1	1	1	1	1	1	1	1	1	+-
414454.4	Illustrate the tree-based and probabilistic machine learning algorithms.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1	
	Identify different unsupervised learning algorithms for the related							-									
414454.5	real-world problems.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1	
414454.6	Apply fundamental concepts of ANN.	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	+-
414455	Software Design	704								1					1 -		
	Understand object oriented methodologies, basics of Unified	PO1 3	PO2 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
414455.1	Modeling Language (UML)	, ,		3	2	2	-	2	-	2	2	2	-	2	1	-	-
414455.2	Understand analysis process, use case modeling, domain/class modeling	3	2	2	2	2	-	2	-	2	2	2	=	-		_	-
414455.3	Understand interaction and behavior modeling.	3	3	3	2	2	-	2	-	1		1	1.0		1		-
414455.4	Understand design process and business, access and view layer class design	2	2	2	•	-	•	-	-	1	-		-	-	2	•	-
414455.5	Get started on study of GRASP principles and GoF design patterns.	2	2	1	-		-	-	-	-		-		•	-		-
414455.6	Get started on study of architectural design principles and guidelines in the various type of application development.	2	2	3	1	2	•	1	-	2	•	2	•		•	•	-
414456E	Elective-I Business Analytics and Intelligence	PO1	PO2	DO2	DO 4	DO#	DO.	70-									
414456E.1	Comprehend the Information Systems and development approaches of Intelligent	3	-	PO3	PO4 -	PO5	PO6	PO7 -	PO8	PO9	PO10 -	PO11	PO12	PSO1	PSO2	PSO3	PSO4
414456E.2	Evaluate and rethink business processes using information systems	1	3	-	2	-		-		3	2	-	1	1	_		
414456E.3	Propose the framework business intelligence	2	2	1		2	_	-	1	2							
414456E.4	Get acquained with the factries, techniques, and considerations for capting	-		-	-	-	2	1	2	1	1	<u>1</u> -	1	1	-	-	-
	Align queriess in eligence with business strategy.	3	1	2		1	2			1	1	11	1				
414456E.6	Apply the achieves for more menting business intelligence systems		1	1		2	1	-	-	1	PRIN	55 15 15 5	1	1	-		-
	3.9								Gent	a Sopa	nrao M	ze Col	ege of	Engg.			

		T	T		т —			^									
414457C	Elective-II Software Testing and Quality Assurance	PO1	PO2	PO3	PO4	PO5	PO6	DOT-	noc	DOG	no.					10.0	
414457.1	Test the software by applying testing techniques to deliver a product free from bugs.	3	102	3	3	3	-	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
414457.2	Investigate the scenario and to select the proper testing technique.	2	3	2	2	3		•	_	-	-	-		3	2		-
414457.3	Explore the test automation concepts and tools and estimation of cost, schedule based on standard metrics.	3		3	3	3	-				-		3	2	3	3	-
414457.4	Understand how to detect, classify, prevent and remove defects.	2	3	3	3	2	-	-		-	2	_		2			-
414457.5	Choose appropriate quality assurance models and develop quality.	2	2	3	3	3	_	-	-	_					2	2	<u> </u>
414457.6	Ability to conduct formal inspections, record and evaluate results of inspections.	3	2	2	2	2	-	-	-	_		-	_	3	2		-
			Semes	tor VIII		<u> </u>	ــــــــــــــــــــــــــــــــــــــ				l		<u> </u>				
414462	Distributed Computing System	PO1	PO2	PO3	PO4	PO5	PO6	no.	DOG	700	T		-				
	To learn the principles, architectures and programming models used in distributed systems.	3	3	1	-	1	1	PO7	PO8	PO9 -	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
414462.2	To understand the fundamentals and knowledge of the Middleware of distributed systems	3	3	1	-	1	1	1	-	-	_		_	1	1	1	1
	To gain knowledge of working components and fault tolerance of distributed systems.	3	3	1	-	1	1	1	-	-		_	_	1	1	1	1
414462.4	To understand the significance of agreement, fault tolerance and recovery protocols in Distributed Systems.	3	3	1	-	1	1	1	-	-	-		-	1	1	1	1
	To make students aware about distributed and multimedia file systems and web systems.	3	3	1	- 1	1	1	1	-		-	-	_	1	1	1	1
	Create an awareness of Emerging trends in distributed computing.	3	3	1	-	1	1	1	•	-		_	-	1	1	1	1
414463	Ubiquitous Computing																
121100	Colquitous Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
414463.1	Demonstrate the knowledge of design of Ubicomp and its applications.	2	2	-	2	-	-	-	-	-			-	-	_	-	
414463.2	Explain smart devices and services used Ubicomp.	2	3	2	3	-	-	-									
414463.3	Describe the significance of actuators and controllers in real time application design.	3	2	3	3	-	-	-	-	-	-		-				-
414463.4	Use the controller has been application design of automation applications.	3	2	3	3	-	-	-	-	-	-	-	-		-	-	-
414463.5	Classify mp privacy and capain the challenges associated with Ub (64) privacy.	3	3	3	3	-	-,	-	-		-	-	- 1		-		
414463.6	Get the Representation and service oriented networks along with the comp management.	1	3	-	3	-	-		Din	CIPAL	2	-	-	-	-	-	-
	0 3 4 0					() K	Cont	- 60			logo of	Enga					
							gent	a Sopal	Hau ivi	ATE CO	lege of	1166					

414464A	Elective III Internet of Things (IoT)	PO1	PO2	PO3	PO4	PO5	PO6	PC	PO8	PO9	DO10	DO11	DOIS	7001	T =		
414464A .1	To Explain what is internet of things.	3	3	1	-	1 1	1	1 -	FU ₀	PU9	PO10	POII	PO12	PSO1	PSO2	PSO3	PSO4
414464A .2	To Explain architecture and design of IoT	3	3	1		1	1	1	•	-	-	-	-	1	1	1	1
414464A .3	To Describe the objects connected in IoT.	3	3	1		1	1	1	-	-	-	-	•	1	1	1	1
414464A .4	To Understand the underlying Technologies	3	3	1	-	1	1	1	•	-	•	-	-	1	1	1	1
414464A .5	To Understand the platforms in IoT.	3	3	1	-	1	1	1	-		-	-	-	1	1	1	1
414464A .6	To Understand cloud interface to IoT.	3	2	1	<u> </u>	1	1	1	-	-	• .	-	-	1	1	1	1
		-	3	1	-	1	1	1	-	-	-	-	-	1	1	1	1
414464D	Elective IV	PO1	PO2	DO2	DO 4												
414464D.1	Understand the basics of Social Media Analytics	3	3	PO3	PO4	PO5 3	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
	Explain the significance of Data mining in Social media.	3	2	2	-		•	•	-	•	-	-	-	-	-		
414464D.3	Demonstrate the algorithms used for text mining.	2	2	3	-	-	-	-	-	-	-	-			-	-	-
	Apply network measures for social media data.	2	3	1	•	•	-		-	-	-		- 1	-	-		
		2	2	2	-		-	-	- 1	-	-	-	-	-			
414464D.5	Explain Behavior Analytics techniques used for social media data	2	3	3	2	3			-								•
414464D.6	Apply social media analytics for Face book and Twitter kind of	2	2	3	2	-,-								-	-	-	•



Academic Year-2022-23 2.6.2 CO-PO Mapping Matrix

Course	Name of Course	Sem	ester	lli													
214441	Discrete Mathematics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	DO10	DOOL	T		
214441.1	Formulate, apply formal proof techniques and solve the problems with							1	100	103	FOIU	PO11	PO12	PSO1	PSO2	PSO3	PSO4
214441.1	logical reasoning.	3	2	1	1	1	1				1						_
214441.2	Analyze and evaluate the combinatorial problems by using probability theory.	2	3	1	1	1	1	-	-	-	1	-	2	1	-	-	-
214441.3	Apply the concepts of graph theory to devise mathematical models.							-	-	-	1	-	2		-	-	
	Analyze types of rolations and for the	3	3	2	2	1	1	-		-	2		-	1			
214441.4	Analyze types of relations and functions to provide solution to computational problems.	3	2	1	2	1	1	-			2	-	2	1	•	-	
214441.5	Identify techniques of number theory and its application.	2	2									-	2	1		-	-
214441.6	Identify fundamental algebraic structures.	2	3	2	2	1	2	-	-	-	1		2	1	-	-	-
214442	Community						1		-	•	1	-	2	_1	-	-	-
214442.1	Computer Organization and Logic Design					-+											
214442.1	Perform basic binary arithmetic & simplify logic expressions.	3	3	_	_												
	Grasp the operations of logic ICs and Implement combinational logic functions using ICs.	3	3	3			-		-	-	-	-		-	-		-
214442.3	sequential logic functions using ICs.	-								-	-	-	-	3	-	-	-
214442.4	Elucidate the functions & organization of various blocks of CPU.	3	3	3	-	-	-	-	-	-	-	-	- 1	3	-	-	
214442.5			-	-		2	3	-+	-	-	-	-	-	-	-	-	-
	Understand CPU instruction characteristics, enhancement features of CPU	3	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-
	Describe an assortment of memory types (with their characteristics) used in computer systems and basic principle of interfacing input, output devices.	3	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-
214443	Data Structures and Algorithms																
2144424	Perform basic analysis of algorithms with respect to time and space													3 1	-+		
	complexity.	3	3	2	3	-	3	-	-	-	_	-	_	_			
	Select appropriate searching and/or sorting techniques in the application development.	1	3	3	3	-	3	-				-			-	-	
214443.3	Implement abstract data type (ADT) and data structures for given application.	2	1	2	3		3			\dashv	-		$\dot{+}$	-	-	-+	-
214443.4	Design algorithms based on techniques like brute -force, divide and conquer, greedy, etc.	2	3	3	3				-	-	-		-	-	-	-	-
214443.5	Apply implement learned algorithm design techniques and data		_	+		-	3	-	-	-		-	•		-	-	
214443.6 E	Design different hashing functions and use file organizations	3	3	2	3		3	-	-	-	-		-	-	-		-
214444	S. Sumethis	1	3	3	3	-	3	-	-	-	RINCH		-	-	-	-	-
214444 C	Diject Oriented Programming Differentiate various programming paradignation Destruction to model real-world problems 393110				-												
214444.1 D	offerentiate various programming paradigno	3	3	3	2	, +	-				ao Moz						
214444.2 a	nd Destruction to model real-world problems	3	3	3				2		1/3, Ba	lewadi,	PUNE-4	£1 045	1	1	1	-
	202000						3	3	1	-	2	-	2	1	1	1	-

214444.3	Identify relationship among objects using inheritance and 'ymorphism principles.	-			Ι	_	_	_	_	1	_		х 2)) 	
	principles.	3	3	3	3	2	3	1 3	1	-	2	_	2	1	1	1	
214444.5	Handle different types of exceptions and perform generic programming.	3	3	3	3	-							e Tapa		*	1	-
	To be of files for persistent data storage for real world application	3	3	2	1 3	2	3	3	1	-	2	-	2	1	1	1	-
214444.6	Apply appropriate design patterns to provide object-oriented solutions.	3	3	3	3	2	2	2	-	-	2	-	-	1	1	1	_
			-	3	3	2	2	2		-	2	-	-	1	1	1	
214445	Basics of Computer Network															-	
214445.1	Understand and explain the concepts of communication theory and					-											-
	Compare functions of OSI and TCP/IP model.	3	2	-	-	-	-	_	_	_		- 41					
214445.2	Analyze data link layer services, error detection and correction, linear block codes, cyclic codes, framing and flow control protocols.		3	_	-							-	2	-	. ·	-	-
214445.3	Compare different access techniques, channelization and Ethernet			D 9.				•	-	-	-	-	1	-	-	-	-
214445.3	standards.	-	-	_		3		1									
214445.4	Apply the skills of subnetting, supernetting and routing mechanisms.							1	-	-	-	-	2	-	-	-	-
	s, passessing and routing mechanisms.	_	3	3	-	_	_										
	Compare IPv4 and IPv6									-	-	-	2	-		-	-
214445.6	Understand services and protocols used at transport layer.		-	-	•	2	3		-	-	-	-	3				
	, seed at transport layer.	- 1	-	2	-	-	_ 1	232	2				<u> </u>			-	-

207003	Engineering Mathematics III	Sem	ester I\	/													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	DO10	PO11	DO15	T			
207003 .1	Solve Linear differential equations, essential in modelling and design of computer-based systems.							-	108	FO9	PO10	POII	PO12	PSO1	PSO2	PSO3	+
207003 .2	Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing.	1	2	11	1						·	1	-	-	-	-	-
207003 3	Apply Statistical methods like correlation& regression analysis and	1	1	2	1			-	-	-				-	-		
	probability theory for data analysis and predictions in machine learning	2	1	1	1	-	-	-	-	-	-	-	-			-	
207003 .4	Solve Algebraic &Transcendental equations and System of linear equations using numerical																_
207002 5	Obtain Interpolating polynomials, numerical differentiation and	1	2	2	1			•	-	-	-	-	-	-	-	1-	
207003 .5	integration, numerical	1	2	1	2	-	-	-		-	-	-	_	-	-		
214451	Processor Architecture															-	
								22									
	Apprehend architecture and memory organization of PIC 18	2	2	2	2	- 1	_										
	Implement embedded C programming for PIC 18.	2	2	2	2	3		-		-		-	2		-		
	Use concepts of timers and interrupts of PIC 18.	2	2	2	2	-					-	-	2	-		-	
214451 .4	Demonstrate real life applications using PIC 18.	3	3	3	3	-	2			-	-	-	-	-	-		
	Analyze architectural details of ARM processor.	1	1	1	1	3	2		-	-		-		-	-	_	
214452	Database Management System		-	-	1		•	-	-	-	-	-	2	· -	-	-	-
214452 .1	Define fundamental elements of database management systems					121								-			
17732 .2	Pescape the fundamental elements of relational database	3	2	3	-	1			1	-	-	-	2	3	1		-
214452 .3	Populate Pational database and formulate SQL queries on data.	2	1	2		2	- -		M 1	2			2	3	2	-	-
		2	-	1	-	-			W				2	3		2	
	5.9 × 800	T	8				P	RINC	THE -				2	3	-	- 1	

214452 .4	Improve the database design by normalization & to incorrate query processing.	2			-	-	-)	1		-T	-	- 2	İ	T :-	T	_
214452 .5	Illustrate ACID properties for transaction management & to describe concurrency control protocols.	2	-	-	+-	2	_	-	1					3	-	-	\perp
214452 .6	Understand recent trends in database technology.								_				- 2	3	-	-	
	a chao in database technology.	3	-	<u> </u>	-	1	-	-	1			_	- 2	3	1	-	+
214453	Computer Graphics										+-		+-	+	+	 	+
214453 .1	Specify mathematical and logical aspects for developing claments	1									-	-	+	├─	+	—	+
	Explain and employ techniques of geometrical transforms to produce,	3	3	3	2	2	1	2	1		1	1	+	 	-		+
	space respectively.	3	3	3	2	2	2	-	-	2	2	2	-		+	-	
.1133.3	Describe mapping from a world coordinates to device coordinates, clipping, and projections in order to produce 3D images on 2D output device.	3	3	3	2	2	2	-	-	-	-	1	_	_			-
	Apply the concepts of rendering, shading, animation, curves and fractals using computer graphics tools in design, development and testing of 2D, 3D modeling applications.	2	3	1	2	1	2	1	2	1	1	_	1	_	-		_
14453 .5	Develop the competency to understand the concepts related to Virtual reality	2	3	1	2	1	2	1	2	1	1		1				-
214454	Software Engineering																-
14454 1	Identify various software application domains and classify software																_
	applications.	2	2	1		-	1										_
	Analyze software requirements by applying various modeling techniques.	2	2		1	-	\exists	\exists		-	-	-	1	-	-	-	_
14454 .3	Translate the requirement models into design models.					\rightarrow			-	1	2		1		-	-	i
14774.4	Apply planning and estimation to any project.	2	2	2	1	2	-	-	1	1	1	1	1	-		+	-
14454 .5 A	Apply quality attributes and testing principles in software development	2	2		1	1-	1	1	2	1	1		1				-
	Discuss recent trends in Software engineering by using CASE and agile	1	1	2	1	1	1	1	2	1	1	- 1	1				_
14454 .6 t	tools.	1	1	1	-	2	1	1	1	1	-	_	1	-	1		-

Course	Name of Course	Sem	ester \	/													
	Theory of Computation	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO
	Construct finite automata and its variants to solve computing problems.		2	2		-	-	- ,	_	_				,	2	2	-
314441.2	Write guid expression for the regular languages and finite automata.	-	-	2	2	3		-		-	-	-	-	2	2	3	-
14441.3	Identify types of grammar simplify Context Free Grammar.	-	3	2	1	3		-	.510	-	-		_	2	1	1	
14441.4	Construct Rushdown Automata machine for the Context Free Language.	3	3	3		Genha	Sono	PRIN	CIPAL Oze Col	-		_	_	-	2		

314441.5	Design and analyze Turing machines for formal languages.	3	2	- 00	-	3	-)-	1	_			-	2	1	2	
314441.6	Understand decidable and undecidable problems, analyze complexity classes.	3	3	3	-	-	-	-	-	-	-	-	1	2	1	-	
314442	Operating Systems		0.0			- 14											10 . 10
314442.1	Explain the role of Modern Operating Systems.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
314442.2	Apply the concepts of process and thread scheduling.	1	-	-	-	-	-	i		-	-		2	-	2	-	-
314442.3	Illustrate the concept of process synchronization, mutual exclusion and the deadlock.	1	1	-	-	-	-	J.	-	-	-	-	2	-	2	-	-
314442.4	Implement the concepts of various memory management techniques.	1	1		+-	-		-									
314442.5	Make use of concept of I/O management and File system.	1	1		<u> </u>	-	-			•			2	-	2	-	-
314442.6	Understand Importance of System software	1	1	-	-	-	-	-		-	-	-	2	-	2	-	-
314443	Machine Learning																-
011110	5	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO ₂	PSO3	PSO4
314443.1	Apply basic concepts of machine learning and different types of machine learning algorithms.	3	1	1	2	2	2	2	1	1	1	1	1	1	1	1	
314443.2	Differentiate various regression techniques and evaluate their	3	3	3	1	1	1	1	1	1	4	_					
314443.3	Compare different types of classification models and their relevant application.	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	-
314443.4	Illustrate the tree-based and probabilistic machine learning algorithms.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1	-
314443.5	Identify different unsupervised learning algorithms for the related realworld problems.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1	4
314443.6	Apply fundamental concepts of ANN.	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	
							10.0	_			-	-			-		_
314444	Human Computer Interaction	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
314444.1	Explain importance of HClstudy and principles of user-centered design (UCD) approach.	2	2	1		-	-	-	•	-	2	-	1	2	2	2	-
314444.2	Develop understanding of human factors in HCI design.	3	3	2	2	1	-	_	_	-	2		2	1	2	2	
314444.3	Develop understanding of models, paradigms, and context of interactions.	3	3	3	1	1	- 2-			-	2	-	2	1	1	1	-
314444.4	Design effective user-interfacesfollowing a structured and organized UCD process.	3	3	2	2	1	-	-	-	-	2	-	2	1	2	2	
314444.5	Evaluate usability of a user-interface design.	3	3	2	2	1	-	_			2		2		2	2	
	coule 6 for predicting human-computer-interactions.	2	2			-					2			•		1	

Semester VI

Electro-Linux of Things PO7 PO8 PO9 PO10 PO11 PO12 PSO1 PSO2 PSO3 PSO4

1 PRINCIPAL - - 1 1 1 1 1

1 PRINCIPAL - - 1 1 1 1 1 PO1 PO₂ PO3 PO4 PO5 PO6 PO7 314445 D2 Discussfundaries is, architecture and framework of IoT.

314445 D2 Select suitable sepsors and actuators for real time scenarios 3 1

	Justify the significance of protocol for wireless communication a oT challenges	3	3	1	-	1	1	1		T -	-		-	1	1	1	1
314445 D.4	Understand the Python programming for development of IoT applications.	3	3	1	-	1	1	1		-	-		-	1	1	1	1
314445 D.5	Understand the cloud interfacing technologies.	3	3	1	-	1	1	1	-	 	_	 	+	1	1	1	1
314445 D.6	Design and Implement realtime IoT applications.	3	3	1	T -	1	1	1	-	 -	-	_	+	1	1	1	1
				-				11.11						+-	1	+ -	╁∸
	Computer Networks& Security	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO	PSO3	PSO
314451.1	Explain Responsibilities, services offered and protocol used at	1	3	3 - 0	-	1	-	1	1	-	-	-	1	1501	1502	2	130
01110112	Apply concepts of wireless network and different wirelessstandards.	1	1		-	1	-	-	1	-	-	-	1	-	-	2	<u> </u>
314451.3	Recognize the Adhoc Network's MAC layer, routing protocol and Sensor	1	2	-	-	1	-	1 -	1	-	1 -	-	1	+-	+-	2	
314451.4	Implement the principal concepts of network security and Understand network security threats, security services, and counter measures	1	3		1	-	1		3	-	-	-	1	-	-	2	-
314451.5	Apply basic cryptographic techniques in application development.	1			+_		-	 		<u> </u>							
	Gain a good comprehension of the landscape of cyber security	1	3		1	<u> </u>	1	! -	3	-	-	-	1	-	-	2	-
	a good comprehension of the landscape of cyber security	1	3	-	1	<u> </u>	1	<u> </u>	3	<u> </u>	-	-	1	-		2	-
314452	Data Science and Big Data Analytics	DO1	POS	PO2	PO 4	200	DO.							-		15 3	
	Understand Big Data primitives.	PO1	PO2	PO3	PO4	PO5			PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
	Learn and apply different mathematical models for Big Data.	2		<u> </u>	 -	<u> </u>	2	1	-	-	-	-	ļ <u>-</u>	ļ -	-	2	-
	Demonstrate Big Data learning skills by developing industry or research	2	- -	-	<u> </u>	-	1	 	-	-		-	-	-		2	-
	Analyze and apply each learning model comes from a different	2	<u> </u>		 -	-	2	1	1	-	-	-	-	1	1	2	
314452.4	algorithmic approach and it will perform differently under different datasets.	-	1	1	-		2	2	-	1		-	-	2	2	1	
	Understand, apply and analyze needs, challenges and techniques for big	-	1	 	-	1	2	2	A o	1				-		-	-
314452.6	Learn different programming platforms for big data analytics.	-	1		+	1		1	-	1	-	-	-	2	1	-	-
11	p - 5. e				 -	-	-	-	-	2	1	1	1	2	-	-	-
314453	Web Application Development	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	DCO1	DCCC	PSO3	DCO
314453.1	Develop Static and Dynamic website using technologies like HTML, CSS, Bootstrap.	3	1	1	2	2	2	2	1	1	1	1	1	1	1	1	PSO ₄
314453.2	Demonstrate the use of web scripting languages.	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	
	Develop web application with Front End & Back End Technologies.	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	-
	Develop web application with Front End & Back End Technologies.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1	-
	Deploy web application on cloud using AWS.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1	-
314454 C	Elective Que Computes												100				
314454C.1	Elective of Goden Computing	PO1	PO2	PO3	PO4		PO6	1	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO ₄
2144540.1	To provide students with the fundamentals and essentials of cloud	3	3	1	-	1	1	1	-	-	-	-	-	1	1	1	1
	To vary basics of virtual and its importance	3	3	1	-	1	1	1	-	-	-	-	-	1	1 .	1	1
314454C.3 1	To provide stillents 5 stille foundation of the cloud computing so that they are able to startus and adopting cloud computing services and tools in their real life so parios	3	3	1	-	1	1	1	ne ne	19-	· .	-	-	1	1	1	1

314454C.4	To enable students exploring some important cloud comp ng driven commercial systems and applications	3	3	1	-	1	1	1		-	-	-	1	1	1	1
314454C.5	To understand cloud storage technologies and relevant file systems	3	3	1	-	1	1	1	_	_			1			
314454C.6	To be exposed to Ubiquitous Cloud and Internet of Things	3	3	1	-	1	1	1	-	_	-	 	1	1	1	1

Semester VII

Course	No.	semo	ester v	11													
414441	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	DO10	DO11	DO10	2004	T===		
414441	Information and Storage Retrieval			100	101	103	100	107	108	PU9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO ₄
414441.1	Understand the concept of Information retrieval and to apply clustering in information retrieval.	2	-	3	-	1		-	-	-	-		2	2	2		
414441.2	Use an indexing approach for retrieval of text and multimedia data.	3	3	-	-												
414441.3	Evaluate performance of information retrieval systems.	2	3	3	1	1	-		•		-	1	2	3	3	-	-
414441.4	Apply the concepts of multimedia and distributed information retrieval.	2	3	2	-	1	-	-	-		-	-	2	2	3	•	-
414441.5	Use appropriate tools in analyzing the web information.	2	3												J		
414441.6	Simulate the working of a search engine and recommender system.	2	3	2	-	_			•	-	-	•	-	2	3		-
	Sand and recommender system.		3		-	1		-	•		-	-	2	3	2	-	-
414442	Software Project Management	DO1	200														
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO ₁	PSO2	PSO3	PSO4
414442.1	Apply the practices and methods for successful Software Project Management	-	2	·	-	-	-	-	-	-	2	2	2	2	-	_	-
414442.2	Create Design and Evaluate Project	_	2		_												
414442.3	Analyze Project Schedule and calculate Risk Management with help of tools.	-	2	-		2	-	-	-	-	2	2	2	2	-	-	-
414442.4	Demonstrate different tools used for Project Tracking, Monitoring & Control.	-	2		-	2	-	-	-	-	2	2	2	2	_	-	
414442.5	Identify Staff Selection Process and the issues related to Staff Management.	-	1	•	- ·		-	-	-	-	1	1	1	1	-	-	
414442.6	Discuss and use modern tools for Software Project Management.					2								220		*	

414443	Deep Learning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	POO	DO10	DO11	DO12	DCC1	DCCC	ncoa	l naa i
414443.1	Understanding of dam its safety and behavioral aspects with		102	100	10.	103	100	107	108	109	POIU	PO11	POIZ	PSOI	PSO2	PSO3	PSO4
111113.1	instruments	3	3	1	-	1	1	1		-	-	-	-	1	1	1	1
414443.2	Analysis and design of Gravity Dam with different stability conditions.	3	3	1	<u> </u>	1	1	1									
414443.3	Undertake design and detailing of Ogee Spillway	3	3	1		1	1	1	<u> </u>	-		-	-	1	1	1	1
	Students are patient to wledge of failure aspects of earthen dam					-	1	1	-	-	-	•	-	1	1	1	1
414443.4	and stuck of diversion read vork	3	3	1	-	1	1	1	-			-	_	1	1	1	1
414443.5	Design Canal structuras operatisfying irrigation in nearby area.	3	3	1	_	1	1	1									
414443.6	Suggest types of cross deares work for available site conditions.	3	3	1		1	1	1	-	-	-	-	-	1	1	1	1
				-		-	_ 1			-			-	1	1	1	
414444	Elective II Mobile Compating	PO1	DO2	DO2	DO 4	DOS	DO.	70-									
	Apply bas concease machine learning and different types of	FUI	PO2	PO3	PO4	POS	PO6	PO7	POS	MO9	PO10	PO11	PO12	PSO ₁	PSO2	PSO3	PSO ₄
414444.1	machine learning algorithms.	. 3	1	1	2	2	2	₂ P	RINCIP	Att 1	1	1	1	1	1	1	
						Ge	enba Sc	panra	o Moze	College	of Eng	0					

414444.2	Differentiate various regression techniques and evaluate to performance.	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	S
414444.3	Compare different types of classification models and their relevant application.	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	-
414444.4	Illustrate the tree-based and probabilistic machine learning algorithms.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1	-
414444.5	Identify different unsupervised learning algorithms for the related real-world problems.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1	-
414444.6	Apply fundamental concepts of ANN.	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	-
414445	Elective IV Wireless Communications	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
414445.1	Articulate the fundamental concept of cellular system.	3	2		-	-	-	-		-	-	-		1	1502	1505	1504
414445.2	Analyse the fundamentals of cellular systems.	2	3	_	-	-	l -		-		_	200		1			
414445.3	Illustrate multiple access technique for effective utilization of spectrum.	2	2		-		-	-	-		1	-	-	1	-	-	-
414445.4	Design and analyse the WAP Programming Model in networking environment.	3	2	3	-	2	-	-		=	2	•	-	1	-	-	-
	Learn and understand security issues, challenges and tools in wireless	3	2	2	_	2	_	_	3		3	_	_	1			
414445.5 414445.6	communication.	3				-			_				25	•	-		1

Semester VIII

14 4 4 7 7 0		Seme	ster vi														
414450	Distributed Systems	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
414450.1	To learn the principles, architectures and programming models used in distributed systems.	3	3	1	ī.	1	1	1	-	-	-	-	-	1	1	1	1
414450.2	To understand the fundamentals and knowledge of the Middleware of distributed systems	3	3	1	-	1	1	1	-	-	-	-	-	1	1	1	1
414450.3	To gain knowledge of working components and fault tolerance of distributed systems.	3	3	1	-	1	1	1	-		-	-	- s	1	1	1	1
414450.4	To understand the significance of agreement, fault tolerance and recovery protocols in Distributed Systems.	3	3	1	-	1	1	1	-		-	-	-	1	1	1	1
414450.5	To make students aware about distributed and multimedia file systems and web systems.	3	3	1	-	1	1	1		-	. t	-	-	1	1	1	1
414450.6	Create an awareness of Emerging trends in distributed computing.	3	3	1	-	1	1	1	-	-	-	-		1	1	1	1
													8				
414451	Elective V Social Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
414451.1	Understand basics of Social Media Analytics	3	2	2	3	-	-	-	-	-	-		2	2	-	-	
414451.2	Correlate Network Measures for Social Media Data	3	3	3	2	-	-	5 <u>2</u> U	-		_	-	1	2	-		-
414451.3	Visualize mining in social media data	3	2	3	3	1		-	-	_	1	_	2	1	1		_
414451.4	Discuss the Social Similarities	3	3	2	2	1	-	-		_			2	2	2		
414451.5	Interpret social media behavior	-	-	-	-	-	-	-	-		WW.		-	-	-		-
414451.6	Apply Social Media Computations for Google+	3	3	3	2	2	-	-	-	PRIN	CIPAL	T .	2	2	2	-	-
				- 1				Gen	ba Sopa	nrao N	loze Co	lege of	Engg.	_	_		

25/1/3, Balewadi, PUNE-411 045

Elective VI Blockchain Technology	PO1	PO2	PO3	PO4	PO5	PO6	07	PO8	PO9	PO10	PO11	PO12	DSO1	DSO2	DCO2	DCO4
Understand the concept of cryptography and decentralization.	3	1	-	-	2	-	-	-		-	-	-	-	-	-	
Acquire fundamental knowledge of blockchain with issues associated with it.	3	1	-	-	-	-		-	-	3	<u>- 1005</u>	-	-	_	_	-
Acquire knowledge of Ethereum blockchain platform.	3	1	-	2	2	-	-	-	-	3	2	_		-		<u> </u>
Understand hyper ledger fabric platform.	3	1	3	2	2	1	1	2	-	3	2	1		-	-	<u> </u>
Acquire the knowledge regarding working of tokenization.	3	1	-	2	2		1	2 .	-	3	2	1			-	-
bescribe the applications and risk involved	1_1_	-	1	-	1	1	1	-	1	1	-	1	-	-		-
	Understand the concept of cryptography and decentralization. Acquire fundamental knowledge of blockchain with issues associated with it.	Understand the concept of cryptography and decentralization. Acquire fundamental knowledge of blockchain with issues associated with it. 3 Acquire knowledge of Ethereum blockchain platform. 3 Understand hyper ledger fabric platform. 3 Acquire the knowledge regarding working of tokenization. 3	Understand the concept of cryptography and decentralization. Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. Understand hyper ledger fabric platform. 3 1 Acquire the knowledge regarding working of tokenization. 3 1	Understand the concept of cryptography and decentralization. Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. Understand hyper ledger fabric platform. 3 1 - Understand hyper ledger fabric platform. 3 1 3 Acquire the knowledge regarding working of tokenization. 3 1 -	Understand the concept of cryptography and decentralization. Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. Understand hyper ledger fabric platform. 3 1 - 2 Acquire the knowledge regarding working of tokenization. 3 1 - 2	Understand the concept of cryptography and decentralization. Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. Understand hyper ledger fabric platform. Acquire the knowledge regarding working of tokenization. 3 1 - 2 2 2 2 3 3 1 3 2 2	Understand the concept of cryptography and decentralization. Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. Understand hyper ledger fabric platform. Acquire the knowledge regarding working of tokenization.	Understand the concept of cryptography and decentralization. Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. Understand hyper ledger fabric platform. Acquire the knowledge regarding working of tokenization.	Understand the concept of cryptography and decentralization. Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. Understand hyper ledger fabric platform. Acquire the knowledge regarding working of tokenization.	Understand the concept of cryptography and decentralization. Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. Understand hyper ledger fabric platform. Acquire the knowledge regarding working of tokenization.	Understand the concept of cryptography and decentralization. Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. Understand hyper ledger fabric platform. 3 1 - 2 2 3 3 1 3 2 2 1 1 2 - 3 Acquire the knowledge regarding working of tokenization.	Understand the concept of cryptography and decentralization. 3 1 2	Understand the concept of cryptography and decentralization. 3 1 2 3 Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. 3 1 - 2 2 3 2 Acquire knowledge fabric platform. 3 1 3 2 2 1 1 2 - 3 2 1 Acquire the knowledge regarding working of tokenization.	Understand the concept of cryptography and decentralization. 3 1 2	Understand the concept of cryptography and decentralization. 3 1 2 3 Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. 3 1 - 2 2 3 2 Acquire the knowledge regarding working of tokenization.	Understand the concept of cryptography and decentralization. 3 1 2 3 Acquire fundamental knowledge of blockchain with issues associated with it. Acquire knowledge of Ethereum blockchain platform. 3 1 - 2 2 3 2 Acquire the knowledge regarding working of tokenization. 3 1 - 2 2 1 1 2 - 3 2 1 Acquire the knowledge regarding working of tokenization.



Sr. No.	Course Code	Course Name
		Semester - I
1	310901	Discrete Mathematics and Statistics
2		Data Structures and Algorithms
3		Object Oriented Programming
4		Software Engineering & Project Management
5		Information Systems and Engineering Economics
		Semester - II
1	310912	Database Management System
2	310913	Computer Network
3		Java Programming
4		Operating Systems
5		Elective-I



PRINCHAL
PRINCHAL
Genba Sopanrao Moze College of Enggli

Course Code	Name of Course	P01	PO2	PO3	PO4	P05	P06	P07	PO8	P09	PO10	PO11	PO12	PSO1	PSO2	PSO3
310901	Discrete Mathematics and Statistics															
310901.1	Solve real world problems logically by using set and induction approaches.	3	3	2	3	2	1	1		1			1	1	1	2
310901.2	Describe and implement relations and functions.	3	3	3	3	2	1	2	1	2	2	3	1	1	1	1
310901.3	Apply logical reasoning to solve a variety of problems	3	3	2	2	2		1	2	1	1			2		3
310901.4	Apply statistical concepts to solve basic problems.	3	3	3	3	3	2	1			1	1	1	3	1	2
310901.5	Solve the problems of Discrete Distributions and Continuous Distributions.	3	3	3	3	2		2	2	3	2	1	2	2	2	2
310901.6	Explain various Descriptive Statistical concepts	3	3	3	3	3	2	2	2	2	2	1				
310902	Data structure and Algorithm															
310902.1	Explain the Complexity of Algorithms & fundamentals of Data Structures.	3	2	1	. 2	1	1	1	2	1	1	1	2	3	2	3
310902.2	Describe representation & application of Linked List	3	3	2	2	2	1		1	1	1	1	1	1	2	
310902.3	Write programs that uses stacks, queues.	3	3	3	2	2	2	1	1			1	1	1	2	1
310902.4	Apply nonlinear data structure trees to solve mathematical problems.	3	3	2	2	1	1	1	1	•	1	1	1	3	2	
310902.5	Explain representations & the applications of graphs.	2	3	2	1	1			1	1	1	1	1	1	3	
310902.6	Implement different searching and sorting algorithms.	3	3	2	3	1	1	1	1	1		1	1	2	1	
310903	Object Oriented Programming															
310903.1	Explore the basics of Oop	3	2	3	2	2	2		2	2	1			3	3	
310903.2	Analyze the strengths of object oriented programming	3	2	2	2	2			1	1				3	2	
310903.3	Design and apply OOP principles for effective programming	3	2	2	2	2				2	1			2	2	
310903.4	Develop programming application using object oriented programming language C++	3	2	2	2	2	2	1	1	1		1		3	3	
310903.5	Achieve applicability of OOP	3	2	2	. 2	2		1	1	1				2	2	
310903.6	Percept the utility of OOP for advanced programming	2	3	2	1	1			1	1		1			3	



PRINCIPAL

Genba Sopanrao Moze College of Engg.
25/1/3, Balewadi, Pune - 411 045

31090	04 Software Engineering & Project Management															
310904.	.1 Choose and apply appropriate lifecycle model of software development.	3	3	2	2	1	1	1		1	2	1	1	3	3	Ī
310904.	2 Analyze software requirements by applying various modelling techniques	3	2	3	2	2	1	1	1	1	2		1	3	3	ı
310904.	3 Describe principles of agile development, discuss the SCRUM process and distinguish Agile process model from other process models	3	2	2	2	2				2	1			2	2	
310904.4	Describe project schedule and cost estimation	2	2	1	2	1	1	2	2	1	2			2	1	1
310904.5	Understand IT project management through life cycle of the project and future trends in IT Project Management.	3	2	1	2	2	2	1	1			1	1	1	2	
310904.6	Define ethics and understand its importance in project leadership.	2	2	1	1	1	2	1			1	1	1	3	1	
310905	Information Systems and Engineering Economics															
310905.1	Understand the need, usage and importance Management Functions, Organisational structure and Information Systems.	2	2	1	2	2	2	2	2	2	1	2	1	2	1	
310905.2	Understand the Information Systems, Project Management, Managing Data resources, Knowledge Management, Business Process Integration and Enterprise Systems.	2	3	3	1	2	1	2	2	1	1	2	2	1		
	Understand the Management Information Systems Applications using in an Organization.	2	3	3	2	2	1	2	2	1	1	2	1		1	
	Elaborate Managerial Decision Making Models and applying to Business Intelligence.	2	3	2	1	2	1	2	2	1	1	2	2		1	
310905.5	Implement the basic Accounting concepts in the banking and financial applications	3	3	2	i	2	1	2	2	1	1	1	2	1	2	
310905.6 A	Apply the basic concepts of cost accounting in real world problem	3	2	2	1	1	1	1	2	1	2	1		3	1	



PRINCIPAL

Genba Sopanrao Moze College of Engg.

25/1/3, Balewadi, Pune - 411 045

310912	Database Management System															
310912.1	Design E-R Model for given requirements and convert the same into database tables.	3	2	2	3	2	1	1		1	1	2	1	2	2	Contract of
310912.2	Use database techniques such as SQL & PL/SQL.	3	2	3	3	1	1	2	1	2	2	3	1	1	1	
310912.3	Use modern database techniques such as NOSQL.	2	3	2	2	2		1	2	1	1		2	2	1	
310912.4	Explain transaction Management in relational database System.	3	3	3	3	3	2	1			1	1	1	3	1	
310912.5	Describe different database architecture and analyses the use of appropriate architecture in real time environment.	3	3	2	3	2		2	2	3	2	1	2	2	2	The state of the last
310912.6	Students will be able to use advanced database Programming concepts Big Data – HADOOP	3	2	3	3	2	2	2	2	2	2			3	2	THE REAL PROPERTY AND PERSONS NAMED IN
310913	Computer Network															Salar Lines
310913.1	Analyze the requirements for a given organizational structure to select the most appropriate networking architecture, topologies, transmission mediums, and technologies.	3	2	1	2	3	3	2	2	2	1	2	1	2	1	Name and Address of the Owner, where
310913.2	Demonstrate design issues, flow control and error control.	3	3	3	1	2	1	2	2	1	1	2	2	1	2	
310913.3	Analyze data flow between TCP/IP model using Application, Transport and Network Layer protocols.	3	2	2	2	1		1	2	1	1	2	1	1	1	
310913.4	Illustrate applications of Computer Network capabilities, selection and usage for various sectors of user community.	3	2	2	1	1	1	2	2	1	1	2	2	1		
310913.5	Illustrate Client-Server architectures and prototypes by the means of correct standards and technology.	3	3	2	2	2	2	2	2	1	1	1	2	1	2	
310913.6	Demonstrate different routing and switching algorithms.	3	2	2	1	1		1	2	1	2	1	1	3	1	
310914	Java Programming															
310914.1	Describe the core concept of Java programming	3	2	2	3	2	1	1		1		-	1	2	2	İ
310914.2	Discover the need for working with the multithreading and file handling	3	2	3	3	1	1	2	1	2	2	3	1	1	1	İ
310914.3	Illustrate the purpose of applet and AWT in Java programming	2	3	2	2	2		1	2	1	1			2		İ
310914.4	Indicate the use of database connectivity using Java Programming	3	3	3	3	3	2	1			1	1	1	3	1	f
310914.5	Articulate the networking concepts in Java	3	3	2	3	2		2	2	3	2	1	2	2	2	
310914.6	Implement Java Servlet and JSP concept in Java	3	2	3	3	2	2	2	2	2	2	1	-	3	2	
					7/10/19	000000										



PRINCIPAL

Genba Sopanrao Moze College of Engg.
25/1/3, Balewadi, Pune - 411 045

	Operating System			_	_											
310915.1	Fundamental understanding of the role of Operating Systems.															1
310915.2	To understand the concept of a process and thread.	3	3	2	2	3	2	2	2	2	1	1	1	2	1	t
310915.3	To apply the concept of process scheduling.	3	3	3	1	2	1	2	2	1	1	2	2	1	1	t
	To apply the concept of process synchronization, mutual exclusion and the deadlock	2	3	3	2		1	2	2	1	1	2	1	2	í	
		2	3	2	2	2	1	2	3	1	1	3	2		1	ı
2100157	To realize the concept of disk scheduling and File system	2	2	2	1	2	1	2	2	1	1	1	2	1	2	t
310913.0	To understand the various memory management techniques.	3	2	2		1	1	1	2	1	2	1	1	3	1	
310916	Elective-1 Block Chain															
310916.1	Understand the structure of a block chain and why/when it is better than a simple distributed database.	3	2	2	3	2	1	1		1		1	1	2	2	
310916.2	Analyze the incentive structure in a block chain based system and critically assess its functions, benefits and vulnerabilities	2	3	3	3	1		2	1	2	2	3	1	1	1	
	Explain Nakamoto consensus. Describe differences between proof-of-work and proof-of-stake consensus.	3	2	2	3	3	1	1		1	1	1	1	2	3	-
310916.4	Understand what constitutes a "smart" contract, what are its legal implications and what it can and cannot do, now and in the near future	3	3	3	2	3	2	1	2	1	1	1	1	2	1	-
310916.5	Attain awareness of the new challenges that exist in monetizing businesses around block chains and smart contracts,	3	3	2	3	1		2	2	3	2	1	2	2	2	-
310916.6	State-of-the-art, open research challenges, and future directions.	3	2	3	3		2	2	2	2	2	,		2	2	ł



PRINCIPAL

Genba Sopanrao Moze College of Engg,
25/1/3, Balewadi, Pune - 411 045



GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

5 No. 25/1/3, Balewadi, Pune - 411 045

(Approved by AACTE and Gove of Maharauhtra, Affiliated to Sauttribal Phule Pune University) Ph: 020-27390500 DTE Code - ENGLAS | I apreciate Affiliation ID - PU PN/ENGLE/138/1988 Website: www.gsmorecoe.org Email: ¿smoze@yahro ca in

Founder President: Shri Rambhau Muse

Criteria 2.6.2. CO PO Mapping FE 2019 Pattern

PRINCIPAL

13/1/3 Falawadi, Punt 411 045



GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

Department of First Year Engineering Academic Year:2018-2019

Subject	Course	Statement	T -	T										
	107009		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	POIO	PO11	POI
	107009.1	Understand water quality parameters and advanced water purification techniques												101
	107009.2	Understand basics of instrumental methods of chemical analysis and their applications	3	3	1	0	1	2	1	0	0	0	0	ş
Eng. Chemistry	107009.3	Understand the synthesis and applications of advanced materials	2	2	0	0	1	1	2	0	0	0	0	0
	107009.4	Understand qualities of good fuel such as calorific value and its determination			1	0		2	2	0	0	0	0	i
	107009.5	Understand the concept of nano structure of oarban	2	2	0	1	2	2	2	0	0	0	0	ì
	107009.6	and complexity of hydrogen as future fuel Understand basic chemistry behind corrosion of	3	2	1	0	2	1	1	0	0	0	0	1
	107009.0	metals and various corrosion prevention methods	3	2	0	1	2	1	2	0	0	0	0	1
	107002		PO1	DO:	200	20.227								
	107002.1	To Provide the basic concepts to resolve many engineering and technological problems.		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	107002.2	Students will be able to appreciate and use the methodologies to analyze and design a wide range of engineering systems.	3	2	2	0	2	3	1	0	0	0	0	3
Eng Physics	107002.3	To use various techniues for measurement, calculation, control and analysis of engineering problems based on the principles of optics, Ultrasonic acoustics, Quantum Physics, Superconductivity, laser, Physics of nanoparticles and Semiconductor Physics.	3	3	2	0	3	3	2	0	0	0	0	3
	107002.4	To understand the recent trends and advances in technology, this requires precise control over dynamics of macroscopic engineering systems.	3	3					_2	0	0	0	0	3
-3		Basic sciences like Physicsalso invoke manipulation of processess over micro and even nano-scale level as there is a growing demand of solid understanding		EGE	3	0	2	1	2	0	0	0	0	3

PRINCIPAL

107002.6	Physics provides the basic ideas and give the solutions for developing mathematical and analytical abilities with higher precision.	3	2	3	0	2	1	3	0	0	0	0	3
110003					— т		— т		— т				
110003.1	Introduction to Machine-level, Assembly level, HLL, LISP, Simulation Platforms, MATLAB, Open Source Programming	3	2	2	,		,	,					
110003.2	rasudo code, planning a program, flow charts, structure charts, indentation				•					3	2		
110003.3	Pointers, Arrays, Structure & Union	3	2	2	1								1
110003.4	C Programming - branching, if, switch, break for loop, while loop, sub-programs, do-while loops, using functions paramter by value or reference	3	1	3	2	2	3	1	1	1	2		1
102012												- 1	
102013	Explain Land Land Col	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	POII	POT
102013.1	and their applications	3	3	0	0	0	0	0	0				
102013.2	and their applications	3	3	0				10					1
102013.3	List down the types of road vehicles and their specifications	1	1									0	1
102013.4		<u>'</u>	1								3	0	1
102013.5	Discuss several manufacturing processes and identify the suitable process	3	3								3	3	1
102013.6	Explain various types of mechanism and its application									0	0	0	1
•				1_0_	1 0	1 0	0	0	0	0	0	0	1
104012		PO1	PO2	PO3	PO4	DO5	DOG		T	Т —	T	1	_
104012.1	To give knowledge of some basic electronic components and circuits.		20100-			105			PO8	PO9	PO10	PO11	PO
104012.2	To introduce basics of diode and transistor circuits.	3	3	2	1	2	-2		1	1	2	2	-
								1 1	1	3			
	110003.1 110003.2 110003.3 110003.4 102013.1 102013.2 102013.3 102013.4 102013.5 102013.6	107002.6 110003 Introduction to Machine-level, Assembly level, HLL. LISP, Simulation Platforms, MATLAB, Open Source Programming Algorithms, avoiding infinite loops, FLowchart, Pasudo code, planning a program, flow charts, structure charts, indentation C Programing - Constants, Variables, Keywords, COmments, Operators, I/O Operations, Preprocessor, Pointers, Arrays, Structure & Union C Programming - branching, if, switch, break for loop, while loop, sub-programs, do-while loops, using functions paramter by value or reference 102013 Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications List down the types of road vehicles and their specifications Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable process Explain various types of mechanism and its application 104012 To give knowledge of some basic electronic components and circuits.	107002.6 abilities with higher precision. 110003 Introduction to Machine-level, Assembly level, HLL. LISP, Simulation Platforms, MATLAB, Open Source Programming Algorithms, avoiding infinite loops, FLowchart, Pasudo code, planning a program, flow charts, structure charts, indentation C Programing - Constants, Variables, Keywords, COmments, Operators, I/O Operations, Preprocessor, Pointers, Arrays, Structure & Union C Programming - branching, if, switch, break for loop, while loop, sub-programs, do-while loops, using functions paramter by value or reference 3 102013.1 Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications List down the types of road vehicles and their specifications Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable process Explain various types of mechanism and its application To give knowledge of some basic electronic components and circuits.	107002.6 solutions for developing mathematical and analytical abilities with higher precision. 110003 Introduction to Machine-level, Assembly level, HLL. LISP, Simulation Platforms, MATLAB, Open Source Programming Algorithms, avoiding infinite loops, FLowchart, Pasudo code, planning a program, flow charts, 110003.2 structure charts, indentation C Programing - Constants, Variables, Keywords, Comments, Operators, I/O Operations, Preprocessor, Pointers, Arrays, Structure & Union C Programming - branching, if, switch, break for loop, while loop, sub-programs, do-while loops, using functions paramter by value or reference 102013 Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications List down the types of road vehicles and their specifications List down the types of road vehicles and their specifications Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable process Explain various types of mechanism and its application To give knowledge of some basic electronic components and circuits. 7 To give knowledge of some basic electronic components and circuits.	solutions for developing mathematical and analytical abilities with higher precision. 110003 Introduction to Machine-level, Assembly level, HLL. LISP, Simulation Platforms, MATLAB, Open Source Programming Algorithms, avoiding infinite loops, FLowchart, Pasudo code, planning a program, flow charts, structure charts, indentation 3 2 2 2 3 3 3 3 2 2 2 3 3 3 3 3 2 3	solutions for developing mathematical and analytical abilities with higher precision. 110003 Introduction to Machine-level, Assembly level, HLL. LISP, Simulation Platforms, MATLAB, Open Source Programming Algorithms, avoiding infinite loops, FLowchart, Pasudo code, planning a program, flow charts, structure charts, indentation C Programing - Constants, Variables, Keywords, COmments, Operators, I/O Operations, Preprocessor, Pointers, Arrays, Structure & Union C Programming - branching, if, switch, break for loop, while loop, sub-programs, do-while loops, using functions paramter by value or reference 102013.1 Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable process Explain various types of mechanism and its application Explain various types of mechanism and its application To give knowledge of some basic electronic components and circuits. To give knowledge of some basic electronic components and circuits. To give knowledge of some basic electronic components and circuits.	107002.6 abilities with higher precision. 3 2 3 0 2	107002.6 abilities with higher precision. 3 2 3 0 2 1	107002.6 abilities with higher precision. 3 2 3 0 2 1 3	107002.6 abilities with higher precision. 3 2 3 0 2 1 3 0 0 0 0 0 0 0 0 0	107002.6 solutions for developing mathematical and analytical abilities with higher precision. 3	107002.6	107002 6 abilities with higher precision 3 2 3 0 2 1 3 0 0 0 0 0 0 0 0 0

PUNE-45

*Balewadi *

PRINCIPAL

	104012.4	To study logic gates and their usage in digital circuits.					Т				-			
BXE		The dies.	3	1	3	2	2	3	1	1		2	1	
DAE		To expose the students to working of some power electronics devices transition										-	1	1
	104012.5	electronics devices, transdicers and application of transducers.	5.00									1	1	
		To introduce basic aspect of electronic	2	11	_ 3	2	2	2	2	3	2	1	2	2
	104012.6	communication systems.											-	-
		The associated Laboratory Practical course is	2	1	2	2	2	2	2	2	1	3	1	1
		designed to understand working of various											-	-
		Electronic sirsuits. The student will understand how									1	1		
		to use the basic test and measuring instruments to						1		1		1	1	
	104012.7	test the circuits.	,	_				1		1	-			
			3	2	2	1	1	3	2	2	1	1	1	1
	107001													
		System of Linear Fountiers 11111	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	POII	POL
		System of Linear Equations arising in all engineering fields, using matrix methods, stability of engineering											7011	1012
		sytems where knowledge of Eigen Values and eigen								1				
	107001.1	vectors are essential	-							1		1		
EM-I	107001.2		3	2		-	-		-	-	-	-	-	1
E [VI-]	107001.3	e dations	3	2	-	-	-		-	-	-	-		1
	107001.4	and approximations	3	2	-	-	-	-		-	-			1
		Engineering applications such as vibrations theory,	3	2		-	-	-	-	-	100	2	-	1
	107001.5	heat transfer, electrical circuits etc	- 3										-	1
		Stationary Values of functions (Maxima & Minima)	3	2		-		-		_			_	١.
	107001.6	arising in optimizatoph problems											-	1
		m openinzatoph problems	3	2	-	-	-		-	-	-			1
	103004												-	-
	103004	I indometer dead and a late	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	DOM	2000	T
	103004.1	Understand and solve problems on basic						100	107	100	109	PO10	PO11	PO
	103004.1	terminologies of electrical engineering.	3	0	0	3	0	0	0	0		_		
	103004.2	Understand and solve the problems on basic concepts of electromagnetism						-	-	-	0	0	0	3
	103004.2	of electromagnerism						1	1	1	0			1
BEE	1	Understand the C. J. J. A.	3	2	3	3	0	2	0				0	3
DLL	103004 3	Understand the fundamentals of electrostatics and	3	2	3	3	0	2	0	1	10	0	1	
DLL	103004.3	Understand the fundamentals of electrostatics and Single Phase transformer.	2	0	3	3	0							
DLL		Understand the fundamentals of electrostatics and Single Phase transformer. Understand and solve the problems on AC						0	0	0	0	0	0	
ol L	103004.3	Understand the fundamentals of electrostatics and Single Phase transformer. Understand and solve the problems on AC fundamentals.						0	0	0	0	0	0	
OL.E	103004.4	Understand the fundamentals of electrostatics and Single Phase transformer. Understand and solve the problems on AC fundamentals. Understand the fundamentals of AC single phase.	2	0	3	0	0							
DEL		Understand the fundamentals of electrostatics and Single Phase transformer. Understand and solve the problems on AC fundamentals. Understand the fundamentals of AC single phase circuits and polyphase circuits	2	0	3	0	0	0	0	0	0	0	0	
oll C	103004.4	Understand the fundamentals of electrostatics and Single Phase transformer. Understand and solve the problems on AC fundamentals. Understand the fundamentals of AC single phase circuits and polyphase circuits. Define various DC circuits laws, theorems and apply.	2 2 3	0 0 2	3	0	0	0	0	0	0	0	0	
<i>DEE</i>	103004.4	Understand the fundamentals of electrostatics and Single Phase transformer. Understand and solve the problems on AC fundamentals. Understand the fundamentals of AC single phase circuits and polyphase circuits	2 2 3	0 0 2	3	0	0 0	0 1 0	0 0	0 1 0	0 0	0 0	0 0	
OLIC .	103004.4	Understand the fundamentals of electrostatics and Single Phase transformer. Understand and solve the problems on AC fundamentals. Understand the fundamentals of AC single phase circuits and polyphase circuits. Define various DC circuits laws, theorems and apply.	2 2 3	0	3 0	0 0	0	0	0	0	0	0	0	
oce.	103004.4	Understand the fundamentals of electrostatics and Single Phase transformer. Understand and solve the problems on AC fundamentals. Understand the fundamentals of AC single phase circuits and polyphase circuits. Define various DC circuits laws, theorems and apply them to obtain solutions.	2 2 3	0 0 2	3 0 1	0 0	0 0	0 1 0	0 0	0 1 0	0 0	0 0	0 0	
	103004.4	Understand the fundamentals of electrostatics and Single Phase transformer. Understand and solve the problems on AC fundamentals. Understand the fundamentals of AC single phase circuits and polyphase circuits. Define various DC circuits laws, theorems and apply them to obtain solutions.	2 2 3 014F.0	0 0 2	3 0 1	0 0	0 0	0 1 0	0 0	0 1 0	0 0 0	0 0 0	0 0	
	103004.4	Understand the fundamentals of electrostatics and Single Phase transformer. Understand and solve the problems on AC fundamentals. Understand the fundamentals of AC single phase circuits and polyphase circuits. Define various DC circuits laws, theorems and apply them to obtain solutions.	2 3 OLAFO	0 0 2	3 0 1	0 0	0 0	0 1 0	0 0	0 1 0	0 0 0	0 0 0	0 0	2
	103004.4	Understand the fundamentals of electrostatics and Single Phase transformer. Understand and solve the problems on AC fundamentals. Understand the fundamentals of AC single phase circuits and polyphase circuits. Define various DC circuits laws, theorems and apply them to obtain solutions.	2 3 OLAFO	0 0 2	3 0 1	0 0	0 0	0 1 0	0 0	o 1 0 o	o o o	0 0 0	0 0 0	

	107708	Eng. Mathematics-II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	Besto		
	107708.1	Modelling Of various Physical Systems such as Newton's Law of Cooling, LCR Circuits, Rectilinear Motion, mass Spring Systems heat Transfer	3	2			103	100	107	108	109	PO10	ron	
Eng	107708.2	Design and analysis of continuous and discrete system, where knowledge of Fourier series and harmonic analysis is required	3	2		_	_				-	-	-	1
Mathematics-II	107708.3	Advanced Techniques to evaluate integrals.	3	2	_		_					-	-	
	107708.4	Measurements of arc lengths of various integrals	3	2					-	-	-	-	-	1
	107708.5	Sphere, cone and cylindert taht arise in vector calculus, electro magnetic field theory, cad-cam, computer graphics etc.	3	2	-		-	-		-		-	-	
	107708.6	Multiple integrals which are used in calculating areas, volume, mean and RMS values, mass,moment of inertia and centre of gravity.	3	2		-	-	_	_					
	102006		PO1	PO2	PO3	PO4	PO5	PO6	PO7	Boe	T BOO	Incus	T	T
	102006.1	To identify reference, principal, auxiliary planes and utilize fundamentals of engineering Drawing to draw and interpret projection of lines.	3	2	-	-	-	-	-	PO8	PO9	- PO10	PO11	POI
	102006.2	To apply concept of reference and auxiliary plane method for projection of different Shapes of planes	3	2	-	-	-	-	-			-	-	+
EG-I	102006.3	To draw and explain projection of solids resting on HP	3	2	-	-	-				-	-	+	+
	102006.4	To draw various types of engineering curves and development of lateral surfaces of Solids	3	2	-		-				+	-	-	+
	102006.5	To draw orthographic views of given pictorial view	3	2	-						-	-	+	+
	102006.6	To perceive two dimensional engineering drawings for imagining and constructing three Dimensional engineering drawing	3	2			-				-	-		
	110010									-				
L		Open source and C++ programing, BOSS GNU Linux	3	3	1	0	1	2	1	+-				
FPL-II	110010.2	Algorithm, Loops, Pseudocdoe, Logic writing,	2	3	0	0	1	+	-	0	0	0	-	-
		C Programing, constants, variablesm pointers,	TEG		1	0	1	1	2	0	0	-	-	-
		C Programming, Conditional and unconditional	11 1-19	r Oak	-	0	1	2	2	0	0	0	1 0)

PUNE-45

*Balewadi *

PRINCIPAL

Genba Sopanrao Moze College of Engg.
25/1/3, Balewadi, PUNE-411 pas

1

0

	102014		POI	PO2	PO3	PO4	PO5	week	news.	600				
	102014.1	The projection of fines.	7	2	ros	104	ros .	PON	PO7	P08	PC/9	PO19	POH	POIZ
	102014.2	To apply concept of reference and auxiliary plane method for projection of different Shapes of planes	3	2	-	-	-	-	-			-		
EG-II	102014 3	To draw and explain projection of solids resting on	3	2	-	-	-		-		-	-	-	- 3
	102014.4	To draw various types of engineering curves and development of lateral surfaces of Solids	3	2	•	-	-					-		- 3
	102014.5	To draw orthographic views of given pictorial view	3	2	-	-			-	-	-		-	- 3
	102014.6	To perceive two dimensional engineering drawings for imagining and constructing three Dimensional engineering drawing	3	2	1	-								





GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

Department of First Year Engineering Academic Year: 2019-2020

Course Code	Name of Course	POI	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	POH	PO12
107009	Eng. Chemistry								100	,	1010	1011	1012
107009.1	Illustrate the technology involved in analysis and quality of water as comidity and its implimentation.	3	3	1	2	2	2	1	0	0	0	0	
107009.2	Demonstrate electro analytical techniquesthat faciliate the rapid and precise description of material.	3	ı	0	2	1	1		1	0	0	0	0
107009.3	Describe the structures properties and applications of speciality polymers and nanomaterials.	3	1	1	2	1	2	1	2	1	0	0	,
107009.4	Illustrate conventional and alternative fuel with respect to their properties and applications.	3	2	0	2	2	2	ı	1	0	0	0	1
107009.5	Describe spectroscopic techniques for chemical analysis.	3	2	0	2	2	ı	1	1	1	0	0	1
107009.6	Explain corrosion mechanism and methods preventative methods for corrosion control.	3	2	0	2	2	1	1	1	0	0	0	,

107002	Eng. Physics	POI	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
107002.1	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications.	3	3	3	0	3	3	1	0	0	0	0	,
107002.2	Learn basics of lasers and optical fibers and their use in some applications.	3	1	3	0	3	3	2	0	0	0	0	,
107002.3	understand principle and concept in quantum mechanics. Relate them to some applications	3	3	2	0	1	1	2	0	0	0	0	3
107002.4	Understand theory of semiconductors and their applications in some semiconductor devices.	EGE	286	3	0	2	1	2	0	0	0	0	3

PUNE-45

PRINCIPAL

Summarize basics of magnetism and superconductivity. Explore few of their technological applications.	2	2	2	0	2	2	2	0	0	0	0	3
Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications	3	2	3	0	2	1	3	0	0	0	0	1

110005	PPS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
110005.1	Inculcate and apply various skills in problem solving.	3	3	1	0	2	2	1	0	0	0	0	
110000	Choose most appropriate programming constructs and features to solve the problems in diversified domains.	3	1	0	0	,							-
	Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical	3	1	1	0	1	2		0	0	0	0	0
110005.4	Demonstrate significant experience with the Python program development environment.	3	2	0	0	2	2		0	0	0	0	0

SME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	POU	BOIL
Explain basic laws of thermodynamics, heat transfer and their applications	3	3	0	0	0							PO12
Explain basic laws of thermodynamics, heat transfer and their applications	3	3	0	0								ž.
List down the types of road vehicles and their specifications	1	1	0	0	0	0			3			
Illustrate various basic parts and transmission system of a road vehicle	1	1	0	0	0	0			0			- 1
Discuss several manufacturing processes and identify the suitable process	3	3	0	0							3	1
Explain various types of mechanism and its application	LLEGE	0,5				0	0	-0	0	0	0	1
	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications List down the types of road vehicles and their specifications Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications List down the types of road vehicles and their specifications 1 Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable process 3	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications 3 3 List down the types of road vehicles and their specifications 1 1 Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable process 3 3	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 List down the types of road vehicles and their specifications 1 1 0 Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable process 3 3 0	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable process 3 3 0 0 0	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications List down the types of road vehicles and their specifications 1 1 0 0 0 Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable process 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 0 Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable process 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 0 0 Illustrate various basic parts and transmission system of a road vehicle Discuss several manufacturing processes and identify the suitable process 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

PUNE-45 Balewadi *

PRINCIPAL

104010	BXE									T			T
104010.	Explain the working of P-N junction diode and its circuit	PO	1 PO	2 PO.	3 PO4	PO	5 PO6	PO7	POS	PO9	PO10	POH	POI
104010.	Identify types of Diodes and plot their above in its	3	2	2	1	1	2	2	1	1	2	2	1
104010.3	Build and test analog circuit using OPAMP and digital circuits using basic/univarsal gates and Flip-flops.	3	2	2	1	2	I	1	1	1	1	1	1
104010.4	Use different electronics measuring instruments to measure various	3	2	2	I	2	1	1	1	1	1	1	1
104010.5	Select sensors for specific applications	3	1	1	I	2	1	1	1	1	1	1	ı
104010.6	Describe basic principles of communication systems.	2	1	3	2	2	2	2	1	2	_1	2	2
		2	_1	2	2	2	2	1	_2	1	3	1	1
107001	EM-I	POI											
07001.1	Mean Value theorems and its generalizations leading to taylor's and Maclaurin's series useful in the analysis of analysis of engineeering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	The Fourier series representation and harmonic analysis for design and analysis of periodic continuous and discrete systems.	3	2	0	0	0	0	0	0	0	0	0	ı
	To deal with derivative of functions of several variables that are essential in various branches of engineering.	3	2	0	0	0	0	0	0	0	0	0	1
1	To apply the concept of Jacobian to find portion desired.	3	2	0	0	0	0	0	0	0	0	0	1
7001.4	the essential tour of matrices and linear algebra in a comprehensive	3	2	0	0	0	0	0	0	0	0	0	1
7001.5 m	nanner fpr analysis of system of linear equations,	3	2	0	0	0	0	0					

PUNE-45 FEB

*Balewadi *

PRINCIPAL

103004	BEE												1
103004.1	Differentiate between electrical and magnetic circuits and derive mathematical relation for self and mutual inductance along with coupling effect.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	Calculate sories	2	0	0	3	0	0	0	0	0	0	0	3
03004.2	Calculate series, parallel and composite capacitor as well as characteristics parameters of alternating quantity and phasor arithmetic.	2			628								
03004.3	RLC circuit with AC supply along with phasor diagram		1	3	3	0	2	0	1	0	0	0	3
	demonstrate the operation of simple at her	2	0	3	0	0	0	0	0	0	0	0	2
	Apply and analyze the resistive circuits using star-delta conversion KVL, KCL and different	2	0	0	0	0	1	0	-1	0	0	0	2
	Evaluate work power and energy policy	3	2	1	0	0	0	0	0	0	0	0	,
3004.6	Evaluate work, power and energy relations and suggest various batteries for different applications, concept of charging and discharging and depth	3	2	0	0	0	1	0	0	0	0	0	

102012	- givering of upines	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	DOG	Boso		
102012.1	Draw the fundamental engineering objects using basic rules and able to construct the simple geometries	3	3	2	0	0	0	0	0	PO9	PO10	PO11	PO12
102012.2	Construct the various engineering curves using the drawing instruments	,	3	3					U	0	0	()	1
102012.3	Apply the concept of orthographic projection of an object to draw several 2D views and its sectional views for visualizing the physical	2	1	3	1	0	0	0	0	0	0	0	1
102012.4	Apply the visualization skill to draw a simple isometric projection from given orthographic views precisely using drawing equipment	2	3	3	0	1	0	0	0	0	0	0	1
102012.5	Draw the development of lateral surfaces for cut section of geometrical solids	3	3	3	0			0	0	0	0	-0	1
02012.6	Draw fully-dimensioned 2D, 3D drawings using computer aided drafting tools	٠		3	,		0	0	0	0	0	0	

PUNE-45

*Balewadi *

PRINCIPAL

107008	Engineering Mathematics-II							ſ					
	The effective mathematical and a second seco	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
107008.1	equations that model physical processes such as Newton's law of cooling, electrical circuit, rectilinear motion, mass spring systems, heat	3	2	0	0	0	0	0	0	0	0	0	7012
	Advanced integration techniques and	3	2	0	0	0	0	0	0	0			
	functions, Gamma functions, Differentiation under integral sign and Error functions needed in evaluating multiple integrals and their applications.									0	0	0	
07008.3	To trace the curve for a given equation and measure are length of various curves.	3	2	0	0	0	0	0	0	0	0	0	
07008.4	The concepts of solid geometry using equations of sphere, cone and cylinder in a comprehensive manner.	3	2	0	0	0	0	0	0	0	0	0	
07008.5	Evaluation of multiple integrals and its application to find area bounded by curves, volume bounded by surfaces, Centre of gravity and Moment of inertia.	3	2	0	0	0	0	0	0	0	0	0	





GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

Department of First Year Engineering

Course	Acad	emic \	ear:	2020-	2021								
Code	Name of Course	PO1	PO2	PO3	DO4	DO.				1		1	
107009	Eng. Chemistry	101	102	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
107009.1	Illustrate the technolgy involved in analysis and quality of water as comidity and its implimentation.												
107009.2	Demonstrate electro analytical techniquesthat faciliate the rapid and precise description of material.	3	3	1	0	2	_ 2	1	0	0	0	0	1
107009.3	Describe the structures properties and applications of speciality polymers and nanomaterials.	3	_1	0	0	1	1	1	0	0	0	0	0
	Illustrate conventional and alternative fuel with respect to their properties and	3	1	1	0	1	2	1	0	0	0	0	0
107009.4	applications.	3	2	0	0	2	2	1	0	0	0	0	
	Describe spectroscopic techniques for chemical analysis.	3	2	0	0	2					1		1
07009.6	Explain corrosion mechanism and methods preventative methods for corrosion control.				-	2	1	1	0	0	0	0	0
		3	2	0	0	2	1	1	0	0	0	0	,

	POI	PO2	PO3	POA	POS	POC.	DO-					
Develop understanding of interference, diffraction and polarization; connect it to			103	104	105	PU	PO7	PO8	PO9	PO10	PO11	PO12
few engineering applications.	3	_ 3	3	0	3	3	1	0	0			
Learn basics of lasers and optical fibers and their use in some applications.	3	1	3	0	3	3	2	0	0	0	0	3
applications							_	-		0	0	3
	Eng. Physics Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. Learn basics of lasers and optical fibers and their use in some applications. understand principle and concept in quantum mechanics. Relate them to some applications	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. 3 Learn basics of lasers and optical fibers and their use in some applications. 3 understand principle and concept in quantum machine. But the interpretation of the principle and concept in quantum machine.	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. 3 3 Learn basics of lasers and optical fibers and their use in some applications. 3 1 understand principle and concept in quantum peach spice. Published.	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. 3 3 3 Learn basics of lasers and optical fibers and their use in some applications. 3 1 3 understand principle and concept in quantum machining Pales of the state of the stat	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. 1 3 3 0 Learn basics of lasers and optical fibers and their use in some applications. 3 1 3 0 understand principle and concept in quantum peachesis. Published.	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. PO1 PO2 PO3 PO4 PO5	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. PO1 PO2 PO3 PO4 PO5 PO6	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. PO1 PO2 PO3 PO4 PO5 PO6 PO7	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11

PUNE-45

PRINCIPAL

Understand theory of semiconductors and their applications in some semiconductor devices.	3	3	3	0	2	1	2	0	0	0	0	3
Summarize basics of magnetism and superconductivity. Explore few of their technological applications.	3	2	2	0	2	2	2	0	0	0	0	3
Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications	3	2	3	0	2	1	3	0	0	0	0	3
				,								
PPS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Inculcate and apply various skills in problem solving.	3	3	1	o	2	2	1	0	o	0	0	1
	3	1	0	0	1	1	1	0	0	0	0	0
Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python.	3	1	1	0	1	2	1	0	0	0	0	0
Demonstrate significant experience with the Python program development environment.	3	2	0	0	2	2	1	0	0	0	0	1
SME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	POI
Explain basic laws of thermodynamics, heat transfer and their applications	3	3	0	0	0	0			0	0	0	1
Explain basic laws of thermodynamics, heat transfer and their applications	3	3	0	0	0	0	0	0				1
List down the types of road vehicles and their specifications	1	1	0	0								
Illustrate various basic parts and transmission system of a road vehicle						J	-	-	3	3	0	1
	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications PPS Inculcate and apply various skills in problem solving. Choose most appropriate programming constructs and features to solve the problems in diversified domains. Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python. Demonstrate significant experience with the Python program development environment. SME Explain basic laws of thermodynamics, heat transfer and their applications Explain basic laws of thermodynamics, heat transfer and their applications	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications PPS Inculcate and apply various skills in problem solving. Choose most appropriate programming constructs and features to solve the problems in diversified domains. Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python. Demonstrate significant experience with the Python program development environment. 3 SME PO1 Explain basic laws of thermodynamics, heat transfer and their applications 3 Explain basic laws of thermodynamics, heat transfer and their applications 1	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications PPS PO1 PO2 Inculcate and apply various skills in problem solving. Choose most appropriate programming constructs and features to solve the problems in diversified domains. Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python. Demonstrate significant experience with the Python program development environment. 3 1 SME PO1 PO2 Explain basic laws of thermodynamics, heat transfer and their applications 3 3 Explain basic laws of thermodynamics, heat transfer and their applications 1 1 List down the types of road vehicles and their specifications	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications PPS POI PO2 PO3 Inculcate and apply various skills in problem solving. Choose most appropriate programming constructs and features to solve the problems in diversified domains. Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python. Demonstrate significant experience with the Python program development environment. SME POI PO2 PO3 Explain basic laws of thermodynamics, heat transfer and their applications 3 0 Explain basic laws of thermodynamics, heat transfer and their applications 3 0 List down the types of road vehicles and their specifications 1 1 0	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications PPS POI PO2 PO3 PO4 Inculcate and apply various skills in problem solving. Choose most appropriate programming constructs and features to solve the problems in diversified domains. Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python. Demonstrate significant experience with the Python program development environment. 3 1 0 0 SME PO1 PO2 PO3 PO4 Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 Choose most appropriate programming constructs and features to solve the problems in diversified domains. SME PO1 PO2 PO3 PO4 PO4 PO5 PO3 PO4 Explain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 Choose most appropriate programming constructs and features to solve the problems in diversified domains. 3 1 0 0 Choose most appropriate programming skills in problem solving. 3 1 0 0 Choose most appropriate programming constructs and features to solve the problems in diversified domains. 3 1 0 0 Choose most appropriate programming constructs and features to solve the problems the problems in diversified domains. 3 1 0 0 Choose most appropriate programming constructs and features to solve the problems the problems the problems the problems the problems the problems the program development and problems the	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications PPS PO1 PO2 PO3 PO4 PO5 Inculcate and apply various skills in problem solving. Choose most appropriate programming constructs and features to solve the problems in diversified domains. Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python. Demonstrate significant experience with the Python program development environment. SME PO1 PO2 PO3 PO4 PO5 Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 Explain basic laws of thermodynamics, heat transfer and their applications	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications PPS PO1 PO2 PO3 PO4 PO5 PO6 Inculcate and apply various skills in problem solving. Choose most appropriate programming constructs and features to solve the problems in diversified domains. Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python. Demonstrate significant experience with the Python program development environment. SME PO1 PO2 PO3 PO4 PO5 PO6 Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 List down the types of road vehicles and their specifications	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications PPS PO1 PO2 PO3 PO4 PO5 PO6 PO7 Inculcate and apply various skills in problem solving. Choose most appropriate programming constructs and features to solve the problems in diversified domains. Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python. Demonstrate significant experience with the Python program development environment. SME PO1 PO2 PO3 PO4 PO5 PO6 PO7 Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 0 0 Capplain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 0 0 0 Capplain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 0 0 0 Capplain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 0 0 0 0 Capplain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 0 0 0 0 Capplain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 0 0 0 0 Capplain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 0 0 0 0 Capplain basic laws of thermodynamics, heat transfer and their applications	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications POI POI POI POI POI POI POI POI POI POI	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications PPS POI POZ PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO8 PO9 PO8 PO9 PO9 PO9 PO9 PO9 PO9 PO9 PO9 PO9 PO9	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications. PPS POI PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 Inculcate and apply various skills in problem solving. Choose most appropriate programming constructs and features to solve the problems in diversified domains. Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python. Demonstrate significant experience with the Python program development environment. POI PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 SME POI PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 0 0 0 0 0 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 Explain basic laws of thermodynamics, heat transfer and their applications 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Summarize basics of magnetism and superconductivity. Explore few of their technological applications. Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications PPS PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 Inculcate and apply various skills in problem solving. Choose most appropriate programming constructs and features to solve the problems in diversified domains. Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python. SME PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 Explain basic laws of thermodynamics, heat transfer and their applications 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

LEGEO

PUNE-45

* Balanadi *

102003.5	Discuss several manufacturing processes and identify the suitable process	3	3	0	0	0	0	0	0	0	0	0	1
102003.6	Explain various types of mechanism and its application	3	3	0	0	0	0	0	0	0	0	0	1
104010	BXE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	POII	PO12
104010.1	Explain the working of P-N junction diode and its circuit	3	2	2	,	1	2	2	1	,	2	2	
04010.2	Identify types of Diodes and plot their characteristics and also can compare BJT with MOSFET.	3	2	2	,	2	1	1	1		1		
04010.3	Build and test analog circuit using OPAMP and digital circuits using basic/univarsal gates and Flip-flops.	3	2	2		2	1	1	1		Ι,		
04010.4	Use different electronics measuring instruments to measure various electrical parameters.	3	1	1	i i	2	1	1	1	1	Ι΄,	<u> </u>	
04010.5	Select sensors for specific applications	2	1	3	2	2	2	2	1	,			
04010.6	Describe basic principles of communication systems.	2	1	2		2	2	1	2	-			
								1		1	1 3	1	1
107001	EM-I												
	Mean Value theorems and its generalizations leading to taylor's and Maclaurin's series useful in the analysis of analysis of engineeering problems.	3	2	0	0	0	C	0	0		0 0)	0
7001.2	The Fourier series representation and harmonic analysis for design and analysis of periodic continuous and discrete systems.	3	2	0	0	0	0	0			0	0	0
	To deal with derivative of functions of several variables that are essential in various branches of engineering.	3	2	0	0	0	1		1		0	0	0

PUNE-45

PRINCIPAL

To apply the concept of Jacobian to find partial derivative of implicit function and functional dependence. Use of partial derivatives in estimating error and approximation and finding extreme values of the function.	3	2	0	0	0	0	0	0	0	0	0	
The essential tour of matrices and linear algebra in a comprehensive manner fpr analysis of system of linear equations,	3	2	0	0	0	0	0	0	0	0	0	1
						500000						

103004	BEE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
103004.1	Differentiate between electrical and magnetic circuits and derive mathematical relation for self and mutual inductance along with coupling effect.	2	0	0	3	0	0	0	0	0	0	0	3
103004.2	Calculate series, parallel and composite capacitor as well as characteristics parameters of alternating quantity and phasor arithmetic.	2	1	3	3	0	2	0	1	0	0	0	3
103004.3	Derive expression for impedance, current, power in series and parallel RLC circuit with AC supply along with phasor diagram.	2	0	3	0	0	0	0	0	0	0	0	,
103004.4		2	0	0	0	0	1	0	1	0	0	0	,
9	Apply and analyze the resistive circuits using star-delta conversion KVL, KCL and different Network theorems under DC supply	3	2	1	0	0	0	0	0	0	0	0	2
103004.6	Evaluate work, power and energy relations and suggest various batteries for different applications, concept of charging and discharging and depth of charge.	3	2	0	0	0	1	0	0	0	0	0	2

102012	Engineering Graphics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	POL
102012.1	Draw the fundamental engineering objects using basic rules and able to construct the simple geometries	3	3	2	0	0	0	0	0	0	0	0	1
102012.2	Construct the various engineering curves using the drawing instruments	2	3	3	0	3	0	0	0	0	0	0	1
102012.3	Apply the concept of orthographic projection of an object to draw several 2D views and its sectional views for visualizing the physical state of the object	2	1	3	1	0	0	0	0	0	0	0	1

PUNE-45 PH

PRINCIPAL

102012	Apply the visualization skill to draw a simple isometric projection from given orthographic views precisely using drawing equipment								_	,			
02012,4	5 Gdupment	2	3	3	0	1	0	0	0	0	0	0	1
102012.5	Solids Solids	3	3	3	0	1	0	0	0	0	0	0	1
02012.6	Draw fully-dimensioned 2D, 3D drawings using computer aided drafting tools	3	3	3	1	1	0	0	0	0	0	0	1
107008	Engineering Mathematics-II	PO1	PO2	PO2	PO4	nos	Po c						
07008.1	The effective mathematical tools for solutions of first order differential equations that model physical processes such as Newton's law of cooling, electrical circuit,	3		PO3			PO6 0		PO8 0			PO11 0	PO12
07008.2	Advanced integration techniques such as Reduction formulae, Beta functions, Gamma functions, Differentiation under integral sign and Error functions needed in evaluating multiple integrals and their applications.	3	2	0	0	0	0	0	0	0	0	0	1
	To trace the curve for a given equation and measure are length of various curves.	3	2	0	0	0	0	0	0	0	0	0	1
	The concepts of solid geometry using equations of sphere, cone and cylinder in a comprehensive manner.	3	2	0	0	0	0	0	0	0	0	0	1
07008.5	Evaluation of multiple integrals and its application to find area bounded by curves, volume bounded by surfaces, Centre of gravity and Moment of inertia.	3	2	0	0	0	0	0	0	0	0	0	1
					To the control of the		-						-
					The second secon								
	TIEG	E OF											
	PUN	IE-45	Wellswin or a series of the se							Genb	a Sopa	PRIN	CIPAL
	loi di	IE-45	WE ERING							Genb	a Sopa /1/3, B	PRIN nrao M alewao	



GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

Department of First Year Engineering Academic Year 2021-22

Course Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1	PO1 2
107009	Eng. Chemistry												
107009.1	Illustrate the technology involved in analysis and quality of water as comidity and its implimentation.	3	3	1	0	2	2	1	0	0	0	0	1
107009.2	Demonstrate electro analytical techniquesthat faciliate the rapid and precise description of material.	3	1	0	0	1	1	1	0	0	0	0	0
107009.3	Describe the structures properties and applications of speciality polymers and nanomaterials.	3	1	1	0	1	2	1	0	0	0	0	0
107009.4	Illustrate conventional and alternative fuel with respect to their properties and applications.	3	2	0	0	2	2	1	0	0	0	0	1
107009.5	Describe spectroscopic techniques for chemical analysis.	3	2	0	0	2	1	1	0	0	0	0	0
07009.6	Explain corrosion mechanism and methods preventative methods for corrosion control.	3	2	0	0	2	,	1	0				

107002	Eng. Physics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO1	PO1
107002.1	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications.	~3	3	3	0	3	3	1	0	0	0	0	3

PRINCIPAL

107000 -													
10/002.2	Learn basics of lasers and optical fibers and their use in some applications.	3	1	3	0	3	3	2	0	0	0	0	3
107002.3	understand principle and concept in quantum mechanics. Relate them to some applications	3	3	2	0	1	1	2	0	0	0	0	3
107002.4	Understand theory of semiconductors and their applications in some semiconductor devices.	3	3	3	0	2	1	2	0	0	0	0	3
107002.5	Summarize basics of magnetism and superconductivity. Explore few of their technological applications.	3	2	2	0	2	2	2	0	0	0	0	3
107002.6	Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications	3	2	3	0	2	1	3	0	0	0	0	3

110005	PPS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1	PO1 2
110005.1	Inculcate and apply various skills in problem solving.	3	3	1	0	2	2	1	0	0	0	0	1
110005.2	Choose most appropriate programming constructs and features to solve the problems in diversified domains.	3	1	0	0	1	1	1	0	0	0	0	0
110005.3	Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python.	3	1	1	0	1	2	1	0	0	0	0	0
110005.4	Demonstrate significant experience with the Python program development environment.	3	2	0	0	2	2	1	0	0	0	0	1

102003 SME

PRINCIPAL

02003.1	Explain basic laws of thermodynamics, heat transfer and their applications	3	3	0	0	0	0	0	0	0	0	0	1
02003.2	Explain basic laws of thermodynamics, heat transfer and their applications	3	3	0	0	0	0	0	0	0	0	0	1
02003.3	List down the types of road vehicles and their specifications	1	1	0	0	0	0	0	0	3	3	0	1
102003.4	Illustrate various basic parts and transmission system of a road vehicle	1	1	0	0	0	0	0	0	0	3	3	1
102003.5	Discuss several manufacturing processes and identify the suitable process	3	3	0	0	0	0	0	0	0	0	0	1
102003.6	Explain various types of mechanism and its application	3	3	0	0	0	0	0	0	0	0	0	1

104010	BXE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2
104010.1	Explain the working of P-N junction diode and its circuit	3	2	2	1	1	2	2	1	1	2	2	1
104010.2	Identify types of Diodes and plot their characteristics and also can compare BJT with MOSFET.	3	2	2	1	2	1	1	1	1	1	1	1
104010.3	Build and test analog circuit using OPAMP and digital circuits using basic/univarsal gates and Flip-flops.	3	2	2	1	2	1	1	1	1	1		
104010.4	Use different electronics measuring instruments to measure various electrical parameters.	3	1	1	1	2	1	1	1	1	1		1
104010.5	Select sensors for specific applications	2	1	3	2	2	2	2	1	2	1	2	2

PUNE-45

* Balewadi *

PRINCIPAL

04010.6	Describe basic principles of communication systems.	2	1	2	2	2	2			·			
		1	1 1	2	1_2_			1	2	1 1	3		1
107001	EM-I	POI	Bos	no.	DO.						PO1	POI	POI
107001.1		PO1		PO3	PO4		PO6	PO7	PO8	PO9	0	1	2
107001.2	The Fourier series representation and harmonic analysis for design and analysis of periodic continuous and discrete systems.	3	2	0	0	_ 0	0	0	0	0	0	0	1
107001.3	To deal with derivative of functions of several variables that are essential in various branches of engineering.	3	2	0	0	0	0	0	0	0	0	0	1
107001.4	To aplly the concept of Jacobian to find partial derivative of implicit function and functional dependence. Use of partial derivatives in estimating error and approximation and finding extreme values of the function.	3	2	0	0	0	0	0	0	0	0	0	1
107001.5	The essential tour of matrices and linear algebra in a comprehensive manner fpr analysis of system of linear equations,	3	2	0	0	0	0	0	0	0	0	0	1
										1			
103004	BEE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1	PO1 2
	Differentiate between electrical and magnetic circuits and derive mathematical												
03004.1	relation for self and mutual inductance along with coupling effect.	2	0	0	3	0	0	0	0	0	0	0	3
	Calculate series, parallel and composite capacitor as well as characteristics parameters of alternating quantity and phasor arithmetic.	2	0						0	0	0	0	3
103004.1 103004.2	Calculate series, parallel and composite capacitor as well as characteristics			3	3	0	2	0	1 0	0	0	0	3

PRINCIPAL Genba Sopanrao Moze College of Engg. 25/1/3, Balewadi, PUNE-411 nas

	PUNE-45									Genha	Some	PRII	ICIPAL Moze Co	4
107008	Engineering Mathematics-II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1	PO1 2	
02012.6	average and a district tools	3	3	3	1	1	0	0	0	0	0	0	1	-
02012.5	Draw the development of lateral surfaces for cut section of geometrical solids Draw fully-dimensioned 2D, 3D drawings using computer aided drafting tools	3	3	3	0	1	0	0	0	0	0	0	1	
	Apply the visualization skill to draw a simple isometric projection from given orthographic views precisely using drawing equipment	2	3	3	0	1	0	0	0	0	0	0	1	
2012.3	Apply the concept of orthographic projection of an object to draw several 2D views and its sectional views for visualizing the physical state of the object	2	1	3	1	0	0	0	0	0	0	0	1	
2012.2	Construct the various engineering curves using the drawing instruments	2	3	3	0	3	0	0	0	0	0	0	1	
02012.1	Draw the fundamental engineering objects using basic rules and able to construct the simple geometries	3	3	2	0	0	0	0	0	0	0	0	1	
102012	Engineering Graphics													
	- mage,	3	2	0	0	0	1	0	0	0	0	0	2	-
03004.6	different applications concept of charging and different applications	3	2	1	0	0	0	0	0	0	0	0	2	1
3004.5	Apply and analyze the resistive circuits using star-delta conversion KVL, KCL and different Network theorems under DC supply.													1
3004.4	Relate phase and line electrical quantities in polyphase networks, demonstrate the operation of single phase transformer and calculate efficiency and regulation at different loading conditions.	e 2	0	0	0	0	1	0		0	0	0	2	

107008.1	The effective mathematical tools for solutions of first order differential equations that model physical processes such as Newton's law of cooling, electrical circuit, rectilinear motion, mass spring systems, heat transfer etc. Advanced integration techniques such as Bodustics (1)	3	2	0	0	0	0	0	0	0	0	0	
	Advanced integration techniques such as Reduction formulae, Beta functions, Gamma functions, Differentiation under integral sign and Error functions needed in evaluating multiple integrals and their applications.	3	2	0	0	0	0	0	0	0	0	0	1
107008.3	To trace the curve for a given equation and measure are located in	3	2	0	0	0	0	0	0	0	0	0	1
107008.4	The concepts of solid geometry using equations of sphere, cone and cylinder in a comprehensive manner.	3	2	0	0	0	0	0	0	0	0	0	1
107008.5	Evaluation of multiple integrals and its application to find area bounded by curves, volume bounded by surfaces, Centre of gravity and Moment of inertia.	3	2	0	0	0	0	0	0	0	0	0	1
				All the state of t			A CONTRACTOR OF THE CONTRACTOR		_				
						100	No. Company of State	-				_	
		_	-			-					-		
			-		-						-		-
		-	-										
						_			_				-
		-		-	-	-	-		-			-	
	OLEGE OF E												
	PUNE-45 Palewadi *								Gei	nba So 25/1/3	Pi panrad	RINC Moze	PAL College



GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

Department Of First Year Engineering

Academic Year: 2022-2023

Course Code	Name of Course	PO1	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	POI
107009	Eng. Chemistry												
107009.1	Illustrate the technology involved in analysis and quality of water as comidity and its implimentation.	3	3	1	0	2	2	1	0	0	0	0	1
107009.2	Demonstrate electro analytical techniquesthat faciliate the rapid and precise description of material.	3	1	0	0	1	1	1	0	0	0	0	0
107009.3	Describe the structures properties and applications of speciality polymers and nanomaterials.	3	1	1	0	1	2	1	0	0	0	0	0
107009.4	Illustrate conventional and alternative fuel with respect to their properties and applications.	3	2	0	0	2	2	1	0	0	0	0	1
107009.5	Describe spectroscopic techniques for chemical analysis.	3	2	0	0	2	1	1	0	0	0	0	0
107009.6	Explain corrosion mechanism and methods preventative methods for corrosion control.	3	2	0	0	2	1	1	0	0	0	0	1

107002	Eng. Physics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
107002.1	Develop understanding of interference, diffraction and polarization; connect it to few engineering applications.	3	3	3	0	3	3	1	0	0	0	0	3
107002.2	Learn basics of lasers and optical fibers and their use in some applications.	3	1	3	0	3	3	2	0	0	0	0	3
107002.3	understand principle and concept in quantum mochanics. Relate them to some applications	3	3	2	0	1	1	2	0	0	0	0	3

PUNE-45 图

* Balevradi

PRINCIPAL

107002.4	Understand theory of semiconductors and their applications in some semiconductor devices.	3	3	3	0	2	1	2	0	0	0	0	3
107002.5	Summarize basics of magnetism and superconductivity. Explore few of their technological applications	3	2	2	0	2	2	2	0	0	0	0	3
107002.6	Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their applications	3	2	3	0	2	1	3	0	0	0	0	3
									1			1	
110005	PPS												
110005.1	Inculcate and apply various skills in problem solving.	3	3	1	0	2	2	1	0	0	0	0	1
110005.2	The problems in diversified domains	3	1	0	0	1	1	1	0	0	0	0	0
110005.3	Exhibit the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language. Puthon	3	1	1	0	1	2	1	0	0	0	0	0
10005.4	Demonstrate significant experience with the Python program development environment.	3	2	0	0	2	2	1	0	0	0	0	1
102003	SME	PO1	PO2	PO3	PO4	PO5	PO(Po#					
02003.1	Explain basic laws of thermodynamics, heat transfer and their applications	3	3	0	0	0	PO6 0	PO7	PO8	PO9	PO10 0	PO11 0	PO
2003.2	Explain basic laws of thermodynamics, heat transfer and their applications	3	3	0	0	0	0	0	0	0	0	0	1
2003.3	List down the types of road vehicles and their specifications	1	1	0	0	0	0	0	0	3	3	0	1
2003.4	Illustrate various basic parts and transmission system of a food vehicle	1	1	0	0	0	0	0	0	0	3		-
												3	1

* Balewadi *

102003.5	Discuss several manufacturing processes and identify the suitable process	3	3	0	0	0	0	0	0	0	0	0	ı
102003.6	Explain various types of mechanism and its application	3	3	0	0	0	0	0	0	0	0	0	1

104010	BXE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	POL
104010.1	Explain the working of P-N junction diode and its circuit	3	3	1	2	1	2	2	1	2	2	2	
104010.2	Identify types of Diodes and plot their characteristics and also can compare BJT with MOSFET.	3	2	2	1	1	2	2	1	2	2	2	
104010.3	Build and test analog circuit using OPAMP and digital circuits using basic/univarsal gates and Flip-flops.	3	2	2	2	1	2	2	1	2	1	2	
104010.4	Use different electronics measuring instruments to measure various electrical parameters.	3	2	1	2	1	2	1	1	2	1	1	
104010.5	Select sensors for specific applications	3	1	3	1	1	2	2	1	2	3	2	
104010.6	Describe basic principles of communication systems.	3	2	2	2	1	2	2	1	2	3	2	

107001	EM-I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	DO9	BOO	DOIA	DO.	
107001.1	Mean Value theorems and its generalizations leading to taylor's and Maclaurin's series useful in the analysis of analysis of engineeering problems.	3	2	0	0	0	0	0	0	0	PO10 0	0	POI
107001.2	The Fourier series representation and harmonic analysis for design and analysis of periodic continuous and discrete systems	3	2	0	0	0	0	0	0	0	0	0	
107001.3	To deal with derivative of functions of severe variables that are essential in various branches of engineering	3	2	0	0	0	0	0	0	0	0	0	

	Differentiate between electrical and magnetic circuits and derive										•		
103004	BEE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	POI
107001.5	The essential tour of matrices and linear algebra in a comprehensive manner fpr analysis of system of linear equations,	3	2	0	0	0	0	0	0	0	0	0	
107001.4	To apply the concept of Jacobian to find partial derivative of implicit function and functional dependence. Use of partial derivatives in estimating error and approximation and finding extreme values of the function.	3	2	0	0	0	0	0	0	0	0	0	

103004	BEE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	POI
103004.1	Differentiate between electrical and magnetic circuits and derive mathematical relation for self and mutual inductance along with coupling effect.	2	0	0	3	0	0	0	0	0	0	0	3
103004.2	Calculate series, parallel and composite capacitor as well as characteristics parameters of alternating quantity and phasor arithmetic.	2	1	3	3	0	2	0	1	0	0	0	3
103004.3	Derive expression for impedance, current, power in series and parallel RLC circuit with AC supply along with phasor diagram.	2	0	3	0	0	0	0	0	0	0	0	2
103004.4	Relate phase and line electrical quantities in polyphase networks, demonstrate the operation of single phase transformer and calculate efficiency and regulation at different loading conditions	2	0	0	0	0	1	0	ı	0	0	0	2
103004.5	Apply and analyze the resistive circuits using star-delta conversion KVL, KCL and different Network theorems under DC supply	3	2	1	0	0	0	0	0	0	0	0	2
103004.6	Evaluate work, power and energy relations and suggest various batteries for different applications, concept of charging and discharging	3	2	0	0	0	1	0	0	0	0	0	2

102012	Engineering Graphics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	
102012.1	Draw the fundamental engineering objects using basic rules and able to construct the simple geometries	3	3	2	0	0	0	0	0	0	0	0	1	0
102012.2	Construct the various engineering curves using the drawing instruments	2	3	3	0	3	0	0	0	0	0	0	1	0

102012.3	Apply the concept of orthographic projection of an object to draw several 2D views and its sectional views for visualizing the physical	2	1	3	1	0	0	0	0	0	0	0	1	0
102012.4	Apply the visualization skill to draw a simple isometric projection from given orthographic views precisely using drawing equipment	2	3	3	0	1	0	0	0	0	0	0	1	0
102012.5	Draw the development of lateral surfaces for cut section of geometrical solids	3	3	3	0	1	0	0	0	0	0	0	1	0
102012.6	Draw fully-dimensioned 2D, 3D drawings using computer aided drafting tools	3	3	3	1	1	0	0	0	0	0	0	1	0

107008	Engineering Mathematics-II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11 0	PO12
	The effective mathematical tools for solutions of first order differential equations that model physical processes such as Newton's law of cooling, electrical circuit, rectilinear motion, mass spring	3	2	0					0	0			0
	systems, heat transfer etc. Advanced integration techniques such as Reduction formulae, Beta functions, Gamma functions, Differentiation under integral sign and Error functions needed in evaluating multiple integrals and their	3	2	0									
107008.2	applications. To trace the curve for a given equation and measure are length of	3	2	. (0	0	0	0 (0	0	0
07008.3	various curves.	1	3 3	2	0	0	0	0	0	0	0	0	0
	The concepts of solid geometry using equations of sphere, cone and cylinder in a comprehensive manner.		3	2	0	0	0	0	0	0	0	0	0
	Evaluation of multiple integrals and its application to the curves, volume bounded by surfaces, Centre of gravity and Moment of												



Genba Sopanrao Moze College of Engg. 25/1/3, Balewadi, PUNE-411 045

25/1/3, Balewadi, PUNE-411 045





Enhance: Design, Development and Implementation Genba Sopanrao Moze Trust's GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045, Mechanical Engineering Department

Criteria 2.6.2 CO PO Mapping 2019 Pattern

Sr. No.	Course Code	Course Name					
		Semester - III					
1	202041	Solid Mechanics					
2	202042	Solid Modeling and Drafting					
3	202043	Engineering Thermodynamics					
4	202044	Engineering Metarick 116 116					
5	203156	Engineering Materials and Metallurgy					
		Electrical and Electronics Engineering					
6	207002						
7	202047	Engineering Mathematics - III					
8	202047	Kinematics of Machinery					
9	202048	Applied Thermodynamics					
10	202050	Fluid Mechanics					
		Manufacturing Processes					
11	302041	Semester - V					
12	302041	Numerical & Statistical Methods					
13		Heat & Mass Transfer					
14	302043	Design of Machine Elements					
15	302044	Mechatronics					
13	302045	Elective I					
17		emester - VI					
18	302049	Artificial Intelligence & Machine Learning					
19	302050	Computer Aided Engineering					
20	302051	Design of Transmission Systems					
20	302052	Elective II					
21		emester - VII					
21	402041	Heating Ventilation Air-Conditioning and Refrigeration					
22	402042	Dynamics of Machinery					
23	402043	Turbomachinery					
24	402044	Elective – III					
25	402045	Elective - IV - Product Design and Development					
		17 Froduct Design and Development					
	Ser	mester - VIII					
25	402048	Computer Integrated Manufacturing					
26	402049	Energy Engineering					
27	402050	Elective - V					
28	402051	Elective - VI - Industrial Psychology and Organizational Behavior					





PRINCIPAL

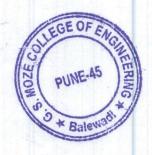


Enhance: Design, Development and Implementation Genba Sopanrao Moze Trust's GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

Balewadi, Pune - 411045. Mechanical Engineering Department

Criteria 2.6.2 CO PO Mapping 2015 Pattern

Sr. No.	Course Code	Course Name					
	Semester -	- III (2015)					
1	207002	Engineering Mathematics – III					
2	202041	Manufacturing Process-I					
3	202042						
4	202043	Computer Aided Machine Drawing Thermodynamics					
	202044	Material Science					
5	203156						
	Semester -	Strength of Materials					
6	202045	Fluid Mechanics					
7	202048						
8	202049	Theory of Machines – I					
9	202050	Engineering Metallurgy					
10	203152	Applied Thermodynamics Electrical and Electronics Engineering					
11	Semester -						
12	302041	Design of Machine Elements-I					
13	302042	Heat Transfer					
14	302043	Theory of Machines-II\$					
15	302044	Turbo Machines					
13	302045	Metrology and Quality Control					
17	Semester - '						
	302047	Numerical Methods and Optimization*					
18	302048	Design of Machine Elements-II					
19	302049	Refrigeration and Air Conditioning					
20	302050	Mechatronics					
	302051	Manufacturing -Process-II\$					
	Semester - V	TH (2015)					
21	402041	Hydraulics and Pneumatics					
22	402042	CAD CAM Automation					
23	402043	Dynamics of Machinery					
24	402044	Elective – I					
25	402045	Elective – II					
	Semester - VI	II (2015)					
25	402047	Energy Engineering					
26	402048	Mechanical System Design					
27	402049	Elective - III					
28	402050	Elective - III Elective - IV - Product Design and Development					



Principal

PRINCIPAL



Enhance: Design, Development and Implementation Genba Sopanrao Moze Trust's GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045.

Mechanical Engineering Department AY 2022-23

202041. COL DEFINE various types of stresses and strain developed on determinate and indeterminate members.	Cou	irse Coo	le Name of Course AY 2022-23															
202041.2 CO2. DRAW Sherr Force and bending moment diagram for various types of transverse localized and support. 3	2	202041	Solid Mechanics	PO1	PO2	PO3	PO4	PO5	P06	PO7	POS	POO	PO10	POT	Inor	alpac	-T	-
202041.3 CO3. COMPUTE the slope & effection, bending stresses and shear stresses and	20	02041.1	COI. DEFINE various types of stresses and strain developed and the						. 50	107	100	109	PUI	PUL	POL	PSO	PSO	2 PSO3
202041.4 COA. CALCULATE torsional shear stress in shaft and buckling on the column. 3 3 3 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20	2041.2	CO2. DRAW Shear force and hending moment diagram for various for the control of t	3	2	2	1	1	1	2	1	1	1		-	-	-	
202041.5 COS. APPLY the concept of principal stresses and the stresses of a 2-D element. 3 3 3 1 1 1 1 1 1 1	20	2041.3	CO3. COMPUTE the slone & deflection bonding moment diagram for various types of transverse loading and support.	3	3	2		1			-	1		1	1		1	1
202041.6 CO6. UTILIZE the concepts of SPD & BMD, torsion and principal stresses and the concept of SPD & BMD, torsion and principal stresses to solve combined loading applicat 202042. Solid Modelling and Drafting 202042. Solid Modelling and Drafting 202042. Solid Modelling and Drafting 202042. Solid Modelling and Drafting 202042. Solid Modelling and Drafting 202042. Solid Modelling and Drafting 202042. Solid Modelling and Drafting 202042. Solid Modelling and Drafting 202042. Solid Modelling and Drafting 202042. Solid Modelling and Brafting 202042. Solid Modelling and Drafting 202043. Solid Modelling and Drafting 202043. Solid Modelling and Drafting 202043. Solid Modelling and Drafting 2020443. Solid Modelling and Drafting 2020443. Solid Modelling and Drafting 2020443. Solid Modelling and Drafting 2020443. Solid Modelling and Drafting 2020443. Solid Modelling and Drafting 2020443. Solid Modelling and Drafting 2020443. Solid Modelling and Drafting 2020443. Solid Modelling and Drafting 2020443. Solid Modelling and Drafting and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid Modelling and Salad Solid	20	2041.4	CO4. CALCULATE torsional shear stresses and shear stresses on a beam.	3	3	3		_			-	1		-	1	-	1	1
202042. Solid Modeling and Drafting 202042. Solid Modeling and Drafting 202042. COLUNDERSTAND basic concepts of CAD system, need and scope in Product Lifecycle Management 3 3 3 2 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1	20	2041.5	CO5, APPLY the concept of principal drives in snart and buckling on the column.	3	3				-					-		1	1	1
202042. Solid Modeling and Drafting 202042. Solid Modeling and Drafting 202042. COLUNDERSTAND basic concepts of CAD system, need and scope in Product Lifecycle Management 3 3 3 2 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1	20	2041.6	CO6. UTILIZE the concept of SED 8. PMD.	3	3	_					1					1	1	1
202042 Solid Modeling and Drafting			torsion and principal stresses to solve combined loading application	1	3						1					1	1	1
202042.1 COL UNIDERSTAND basic concepts of CAD system, need and scope in Product Lifecycle Management 3 3 2 2 1 1 1 1 1 1 1 1	2	02042								2	1	1	1	1	1	1	1	1
202042.2 CO2. UTILIZE knowledge of curves and surfacing features and methods to create complex solid geometry 3 3 2 2 1 1 1 1 1 1 1 1	20	2042.1	COLUNDERSTAND basis consents of GAD															
202042.3 COS. CONSTRUCT solid models, assembles using yarous modeling techniques & PERFORM mass property analysis 1 3 3 2 2 2 2 1 1 1 1 1 1	0.0000000000000000000000000000000000000		CO2 UTILIZE knowledge of sweet and system, need and scope in Product Lifecycle Management	3	3	2	2	1	1									
202042.4 COd. APPLY geometric transformations to simple Various modeling techniques & PERFORM mass property analysis 1 3 3 2 2 2 2 1 1 1 1 1 1	20	2042.3							_		_	_	_	1	1	1	1	1
202042.5 COS. USE CAD model data for various CAD based engineering applications viz. production drawings, 3D printing, Fl 3 3 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-		The state of solid models, assembles lising various modeling technique of personal	1			-	_			-	_	-	1	1	1	1	1
202043. Engineering Thermodynamics 202043. COI. DESCRIBE the basics of thermodynamics with heat and work interactions. 1 3 3 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-		COS LISE CAD model duristormations to simple 2D geometries					-			_		1	1	1	1	1	1
202043. Engineering Thermodynamics 202043. COI. DESCRIBE the basics of thermodynamics with heat and work interactions. 1 3 3 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1			CO6 LISE PML & MDD							_			1	1	1	1	1	1
202043. Engineering Thermodynamics 202043. Engineering Thermodynamics with heat and work interactions. 202043. COI. DESCRIBE the basics of thermodynamics with heat and work interactions. 1 3 3 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			Coo. OSE TWILE WISD approach for communication									_	1	1	1	1	1	1
202043.1 CO1. DESCRIBE the basics of thermodynamics with heat and work interactions.	20	2043	Engineering Thornock was win.	-	3	3	1	1	1	1	1	1	1	1	1	1	1	1
202043.3 CO3. APPLY entropy, available energy for an Open and Closed System, 3 2 2 2 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1			COLDESCRIBE the Land Coldescribe Coldescri				-											100000
202043.5 CO3. APPLY entropy, available and non available energy for an Open and Closed System 3 3 2 2 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1			non available operations.	1	2	2	2											
202043.4 CO4. DETERMINE the properties of steam and their effect on performance of vapour power cycle. 3 3 3 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-	2043 3	To a Apply A	-		_						1	1	1	1	1	1	1
202043.6 COG. SELECT various instrumentations process and products of combustion. 3 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	_		COA DETERMINE A. COA DE		-			_					1	1	1	1	1	1
202043.6 CO6. SELECT various instrumentations process and products of combustion. 3 3 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			COS ANALYSE the properties of steam and their effect on performance of vapour power cycle.						_			1	1	1	1	1	1	1
202044.1 CO1. COMPARE crystal structures and ASSESS different lattice parameters. 202044.2 CO2. CORRELATE crystal structures and imperfections in crystals with mechanical behaviour of materials. 202044.3 CO3. DIFFERENTIATE and DETERMINE mechanical properties using destructive testing of materials. 202044.4 CO4. IDENTIFY & ESTIMATE different parameters of the system viz., phases, variables, component, grains, grain by 202044.6 CO6. SELECT appropriate materials for various applications. 202044.6 CO6. SELECT appropriate materials for various applications. 203156.1 APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded systems 203156.2 DEVELOP interfacing of different types of sensors and other hardware devices with Atmega328 based Arduino Board 203156.5 CHOOSE energy storage devices and electrical drives for EVs 1 1 3 2 3 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1				-					-			1	1	1	1	1	1	1
202044.1 CO1. COMPARE crystal structures and ASSESS different lattice parameters. 1 2 3 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	202	1045.0	eco. SELECT various instrumentations required for safe and efficient operation of steam generator.	_						-	1	1	1	1	1	1	1	1
202044.1 COI. COMPARE crystal structures and ASSES different lattice parameters. 202044.2 CO2. CORRELATE crystal structures and imperfections in crystals with mechanical behaviour of materials. 202044.3 CO3. DIFFERENTIATE and DETERMINE mechanical properties using destructive and non-destructive testing of materials. 202044.4 CO4. IDENTIFY & ESTIMATE different parameters of the system viz., phases, variables, component, grains, grain by 202044.5 CO5. ANALYSE effect of alloying element & heat treatment on properties of ferrous & nonferrous alloy. 202044.6 CO6. SELECT appropriate materials for various applications. 203156.1 APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded systems 203156.2 DEVELOP interfacing of different types of sensors and other hardware devices with Atmega328 based Arduino Board 203156.5 EXPLAIN about emerging technology of Electric Vehicle (EV) and its modular subsystems 1 1 3 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20	2044		3	2	3	1	1	1	1	1	1	1	1	1	1	1	1
202044.3 CO3. DIFFERENTIATE and DETERMINE mechanical behaviour of materials. 1 1 2 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-		Engineering Materials and Metallurgy														1000	
202044.3 CO3. DIFFERENTIATE and DETERMINE mechanical behaviour of materials. 1 1 2 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-	044.1	COL COMPARE crystal structures and ASSESS different lattice parameters.	1	2	2	-						also Ales		JUNE -			
202044.4 CO4. IDENTIFY & ESTIMATE different parameters of the system viz., phases, variables, component, grains, grain b 202044.5 CO5. ANALYSE effect of alloying element & heat treatment on properties of ferrous & nonferrous alloy. 202044.6 CO6. SELECT appropriate materials for various applications. 1 1 3 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1		M. P. P.	COZ. CORRELATE CIVISTAL Structures and imperfections in the state of the structures and imperfections in the state of the	-					_		1	1	1	1	1	1	1	1
202044.5 CO5. ANALYSE effect of alloying element & heat treatment on properties of ferrous & nonferrous alloy. 202044.6 CO6. SELECT appropriate materials for various applications. 1 1 3 2 3 2 2 2 1 1 1 2 1 1 1 1 1 1 1 1	_				_	_					1	1	1	1	1	1		
202044.6 CO6. SELECT appropriate materials for various applications. 1 1 3 2 3 2 2 1 1 2 1 1 1 1 2 1 1 1 1 2 2 1 1 1 1 1 1 2 2 1	_	044.4	CO4. IDENTIFY & ESTIMATE different parameters of the system viz., phases, variables, component grains, crain by	_						_	1	1	1	1	1			
203156.1 APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded systems 203156.2 DEVELOP interfacing of different types of sensors and other hardware devices with Atmega328 based Arduino Board 203156.4 DISTINGUISH between types of three phase induction motor and its characteristic features 203156.5 EXPLAIN about emerging technology of Electric Vehicle (EV) and its modular subsystems 203156.6 CHOOSE energy storage devices and electrical drives for EVs 203156.9 La 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1									1	2	1	1	1	1	2			
203156. Electrical and Electronics Engineering 203156.1 APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded systems 1 1 3 2 3 2 2 1 1 1 1 2 1 1 1 1 1 1 2 2 1 1 1 1	202	044.6	CO6. SELECT appropriate materials for various applications.						2	2	1	1	2	_				
Electrical and Electronics Engineering 203156.1 APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded systems 203156.2 DEVELOP interfacing of different types of sensors and other hardware devices with Atmega328 based Arduino Board 203156.3 UNDERSTAND the operation of DC motor, its speed control methods and braking 3 2 2 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-			1	1	3	2	3	2	2	1	1	1		_			_
203156.2 DEVELOP interfacing of different types of sensors and other hardware devices with Atmega328 based Arduino Board 203156.3 UNDERSTAND the operation of DC motor, its speed control methods and braking 203156.4 DISTINGUISH between types of three phase induction motor and its characteristic features 203156.5 EXPLAIN about emerging technology of Electric Vehicle (EV) and its modular subsystems 1 1 3 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	_	3156	Electrical and Electronics Engineering													-	-	-
203156.3 UNDERSTAND the operation of DC motor, its speed control methods and braking 203156.4 DISTINGUISH between types of three phase induction motor and its characteristic features 203156.5 EXPLAIN about emerging technology of Electric Vehicle (EV) and its modular subsystems 1 1 3 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	_		APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded and the controller in embedd															
203156.4 DISTINGUISH between types of three phase induction medias and braking 3 2 2 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1								3	1	1	1	1	1	1	1	1	1	1
203156.6 CHOOSE energy storage devices and electrical drives for EVs 1 1 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1					_		_	3	1	1								
203156.6 CHOOSE energy storage devices and electrical drives for EVs 1 1 3 2 3 1 3 1 1 2 1 1 1 1 1 1 1 1 1 1		100.4	DISTINGUISH between types of three phase induction motor and its characteristic feetures				2	2	1	2	1		_		_		_	
1 1 3 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		100.0	EXPLAIN about emerging technology of Electric Vehicle (EV) and its modulor subsystems				1	2 2	2	2	1		_					
	2031	156.6	choose energy storage devices and electrical drives for EVs				2	3	1 :	3					_	_		
				1	1	3	2	3 2	2 3	3 1	l					1		1





A STATE OF THE STA																	
207002	Engineering Mathematics III	_	_														
207001.		-										I		1	1		
207001.								A STATE OF		DE LOS				-			8139
207001.	Solve system of linear equations using appropriate techniques for modellinganalyzing of electrical circuits Apply Statistical methods like correlation, regression and probability theory.	its 1		_	1 2	2 2	2	2	2	1	1	1	1			-	
207001.4	Apply Statistical methods like correlation, regression and probability theory in data analysis and predictions in civil er	ffe 3	_		3 1	1			1	1	1	1	_		-	-	
207001.5	Perform vector differentiation & integration, analyze the vector fields and apply to fluid flow problems. Solve Partial differential equations such that as welcome sector fields and apply to fluid flow problems.				2	1			1	1	1	1	_	-		-	_
207001.3	Solve Partial differential equations such that as wave equations, one and two dimensional heat flow equations	3	-		1	1				1	1	1	_	_	-	-	_
202047	Kinamatian CN	3	3	2	1	1				1	1	1	1			1	_
202047.1	Kinematics of Machinery										-	1	1	1	1	1	
202047.2												-	-	-		-	-
202047.3	To develop the competency to analyze the velocity and acceleration in mechanisms using analytical and graphical a. To develop the skill to propose and synthesize the mechanisms using mechanisms using analytical and graphical a.	01 1	-	-	2	2	2	2 2	2	1	1	1	1	-		-	-
202047.4	To develop the skill to propose and synthesize the mechanisms using graphical and graphical at 4. To develop the competency to understand & apply the principle of the competency to the competency to understand & apply the principle of the competency to understand & apply the principle of the competency to understand & apply the principle of the competency to understand & apply the principle of the competency to the competency to the competency to the competency to the competency to the competency to the competency to the competency to the competency to the competency to the competency to the competency to the competency to the competency to the competency to the competency to the co		_	2	1	1	1	_	-	1	1	1	1	1	-	1	-
202047.5	To develop the competency to understand & apply the principles of gear theory to design various applications. To develop the competency to design a cam profile for various fall.	3	-	2	2	1	1	_	_	1	1	1	1	1	-	1	_
202047.3	5. To develop the competency to design a cam profile for various follower motions.	3	3	3	1	1	_	_	-	1	1	1	1	1	-	1	
202048		3	3	2	1	1	_	_		1	1	_	1	1	1	1	
	Applied Thermodynamics							1		1	1	1	1	1	1	1	
202048.1	CO1. DETERMINE COP of refrigeration system and ANALYZE psychrometric processes. CO2. DISCUSS basics of engine terminology in the control of								-	-	_						T
202048.2	CO2. DISCUSS basics of engine terminology, air standard, fuel air and actual cycles. CO3. IDENTIFY factors affecting the combination of the combi	1	1	2	2	3	1	1	-		-						
202048.3	CO3. IDENTIFY factors affecting the combustion performance of SI and CI engines.	3	2	2	2	2	1	_	-	1	1	1	1	1	1	1	T
202048.4		1	1	2	2	3	1	-	-	1	1	1	1	2	1	1	
202048.5		1	1	2	2	3	-	-	-	1	1	1	1	1	1	1	
202048.6	CO6. CALCULATE performance of single and multi stage reciprocating compressors and DISCUSS rotary positive display	1	1	2	2	_	1	-	-	_	1	1	1	1	1	1	1
	in single and multi-stage reciprocating compressors and DISCUSS rotary positive display	3	2	2	2	3	1	1	_		1	1	1	1	1	1	
202049	Fluid Mechanics		-	1 4	1 2	2	1	2	1	1	1	1	1	2	1	1	+
202049.1	COI. DETERMINE various proporties of and						-										-
202049.2	CO2. APPLY the laws of fluid statics and concepts of buoyancy	1	1	2	1												-
202049.3	CO3. IDENTIFY types of fluid flowers and concepts of buoyancy	3	2		2	3	1	1	1		1	1	1	1	1	1	
202049.4	CO3. IDENTIFY types of fluid flow and terms associated in fluid kinematics CO4. APPLy principles of fluid dynamics to laminar flow	1		2	2	2	1	2	1		1	1	1	2	1	1	
202049.5		3	1	2	2	3	1	1	1		1	1	1	1	1	1	-
202049.6	CO5. ESTIMATE friction and minor losses in internal flows and DETERMINE boundary layer formation over an exte	1	2	2	2	2	1	2	1		1		1	2	1	1	1
	CO6. CONSTRUCT mathematical correlation considering dimensionless parameters, also ABLE to predict the performance of the perfo		1	2	2	3	1	1	1			_	1	1	1		1
202050	Manufacturing Processes	3	2	2	2	2	1	2	1			_	1	2	1	1	1
202050.1	COLSELECT STREET								1				-	-	1	1	1
202050.2	CO1. SELECT appropriate moulding, core making and melting practice and estimate pouring time, solidification rate a											_		-		-	
202050.3	CO2. UNDERSTAND mechanism of metal forming techniques and CALCULATE load required for flat rolling CO3. DEMONSTRATE press working operations and APPLY the beginning to the control of th	3	2	2	2	2	1	2	1	1		1	1	2	,	-	
	CO3. DEMONSTRATE press working operations and APPLY the basic principles to DESIGN dies and tools for form CO4. CLASSIFY and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different welding processes and EVALUATE and EXPLAIN different well	1	1	2	2	3	1	1	1	_	_		1	1	1	1	1
202050.5	CO4. CLASSIFY and EXPLAIN different welding processes and EVALUATE welding characteristics CO5. DIFFERENTIATE thermoplastics and thermosetting and EVALUATE welding characteristics	3	2	2	2	2	1	2	1	_			1		1	1	1
202050.6	CO5. DIFFERENTIATE thermoplastics and thermosetting and EXPLAIN polymer processing techniques CO6. UNDERSTAND the principle of manufacturing of the artists.	3	2	2	2	2	1	2	1	-		_		2	1	1	1
202030.0	CO6. UNDERSTAND the principle of manufacturing of fibre-reinforce composites and metal matrix composites	1	1	2	2	3	1	1	1	1		-	-	2	1	1	1
211man C - 1	emposites and metal matrix composites	3	2	2	2	2	1	2	1	1	-	_		1	1	1	1
302041	Name of Course			H TRANS										2	1	1	1
	Numerical & Statistical Methods	PO1	PO2	PO3	PO4	PO5	PO6	PO7	POS	DO	nlno	10/20	244				
302041.1	UNDERSTAND applications of systems of equations and solve mechanical engineering applications. APPLY differential equations to solve the applications in the differential equations.						- 00	201	1 08	PU	9 PO	10 PC)11 P	J12 P	SO1 P	SO2 P	PS0
302041.2	APPLY differential equations of systems of equations and solve mechanical engineering applications. LEARN numerical integration techniques for engineering applications in the domain of fluid mechanics, structural, etc.	1	3	1	2	1	2	1	1	-	-	-					333
	3. LEARN numerical integration techniques for engineering applications.	3	3	3	1	2	1	2	1	1	_	_	_	_	1	1	1
302041.3				100000	-	4	1	/	1	1	1	1	1				-
302041.4	4. COMPARE the system's behavior for the experience applications.	3	3	2	2	1	1			1	_	-	_	1	1	1	1
302041.4 302041.5	4. COMPARE the system's behavior for the exergimental data. 5. INTERPRET Statistical measures for quantitative that the system's behavior for the exergimental data.	3	3 2	2	2	1	1	1	1	1	1	1	1				1
302041.4 302041.5	4. COMPARE the system's behavior for the experimental data. 5. INTERPRET Statistical measures for quantitative data.		3 2 3	3 3	1	1	1 1 1			1	1	1	1	1	1	1	_



202042.1 IDENTIFY the 202042.2 UNDERSTAN 202042.3 ANALYZE the 202042.4 UNDERSTAN 202042.5 UNDERSTAN 202042.6 ANALYZE var 302043 Design of Maci 302043.1 DESIGN AND 302043.1 DESIGN Shafts, 302043.2 DESIGN Shafts, 302043.4 EVALUATE did 302043.5 EVALUATE did 302044.6 APPLY the desi 302044.1 DEFINE key ele 302044.1 DEFINE key ele 302044.2 UTILIZE concept 302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045.1 ANALYSE the el 302045.2 ASSESS the pare 302045.3 ANALYSE the el 302045.4 CLASSIFY varion 302045.5 CLASSIFY varion 302045.6 INTERPRET the 302045.6 INTERPRET the 302049.1 CO1. DEMONST 02049.2 CO2. APPLY fea 02049.3 CO3. APPLY mac 02049.4 CO4. DEVISE AN 02049.5 CO5. EXPLAIN c 02049.6 CO6. SIMULATE 02050.1 UNDERSTAND the s 02050.1 UNDERSTAND the s 02050.1 UNDERSTAND the s 02050.1 UNDERSTAND the s 02050.1 UNDERSTAND the s	and Mass Transfer		-	_												
202042.2 UNDERSTAN 202042.3 ANALYZE the 202042.4 UNDERSTAN 202042.5 UNDERSTAN 202042.6 ANALYZE var 302043.1 DESIGN AND 302043.1 DESIGN AND 302043.2 DESIGN Shafts, 302043.3 ANALYZE diff 302043.4 EVALUATE diff 302043.6 APPLY the desi 302044.1 DEFINE key ele 302044.1 DEFINE key ele 302044.2 UTILIZE concept 302044.1 DEFINE key ele 302044.2 UTILIZE concept 302044.3 DETERMINE the 302044.4 EVALUATE Pol 302044.5 APPLY the concept 302044.5 APPLY the concept 302044.6 DEVELOP the la 302045.1 ANALYSE the ele 302045.1 ANALYSE the ele 302045.2 ASSESS the para 302044.4 CLASSIFY variou 302045.5 CLASSIFY variou 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.7 CO2. APPLY fea 302045.8 CO3. APPLY fea 302049.1 CO1. DEMONST 302049.1 CO1. DEMONST 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY fea 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the B 302050.3 UNDERSTAND the B 302050.3 UNDERSTAND the B 302050.3 UNDERSTAND the B 302050.3 UNDERSTAND the B 302050.3 UNDERSTAND the B 302050.3 UNDERSTAND the B 302050.3 UNDERSTAND the B 302050.3 UNDERSTAND the B 302050.3 UNDERSTAND the B	and Mass Transfer							1	T	T	T	-	-	-		
202042.4 UNDERSTANI 202042.5 UNDERSTANI 202042.6 ANALYZE vari 302043.1 DESIGN AND 302043.1 DESIGN AND 302043.2 DESIGN Shafts, 302043.3 ANALYZE diffi 302043.4 EVALUATE di 302043.6 APPLY the desi 302044.1 DEFINE key ele 302044.1 DEFINE key ele 302044.2 UTILIZE concer 302044.3 DETERMINE the 302044.4 EVALUATE Pol 302044.5 APPLY the concer 302044.6 DEVELOP the la 302044.6 DEVELOP the la 302045.1 ANALYSE the el 302045.2 ASSESS the para 302045.1 ANALYSE the el 302045.2 ASSESS the para 302045.3 ANALYSE the el 302045.4 CLASSIFY varior 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.6 CO2. APPLY fea 302045.6 CO3. APPLY mac 302049.1 CO1. DEMONSI 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY mac 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the s 302050.3 UNDERSTAND the s 302050.3 UNDERSTAND the s 302050.3 UNDERSTAND the s	TIFY the laws for different modes of heat transfer.															
202042.4 UNDERSTANI 202042.5 UNDERSTANI 202042.6 ANALYZE vari 302043.1 DESIGN AND 302043.1 DESIGN AND 302043.2 DESIGN Shafts, 302043.3 ANALYZE diffi 302043.4 EVALUATE di 302043.6 APPLY the desi 302044.1 DEFINE key ele 302044.1 DEFINE key ele 302044.2 UTILIZE concer 302044.3 DETERMINE the 302044.4 EVALUATE Pol 302044.5 APPLY the concer 302044.6 DEVELOP the la 302044.6 DEVELOP the la 302045.1 ANALYSE the el 302045.2 ASSESS the para 302045.1 ANALYSE the el 302045.2 ASSESS the para 302045.3 ANALYSE the el 302045.4 CLASSIFY varior 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.6 CO2. APPLY fea 302045.6 CO3. APPLY mac 302049.1 CO1. DEMONSI 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY mac 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the s 302050.3 UNDERSTAND the s 302050.3 UNDERSTAND the s 302050.3 UNDERSTAND the s	EKSTAND the properties and aconomics of the state of the	3	3	1	2	2	2	2	1							
202042.5 UNDERSTAN 202042.6 ANALYZE var 302043.1 DESIGN AND 302043.1 DESIGN AND 302043.2 DESIGN Shafts, 302043.3 ANALYZE diff 302043.4 EVALUATE diff 302043.5 EVALUATE & 302043.6 APPLY the desi 302044.1 DEFINE key ele 302044.2 UTILIZE concep 302044.2 UTILIZE concep 302044.3 DETERMINE th 302044.6 DEVELOP the la 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045.1 ANALYSE the el 302045.2 ASSESS the para 302045.3 ANALYSE the el 302045.4 CLASSIFY varior 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.7 CCA.SSIFY varior 302049.1 CO1. DEMONS 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY fea 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the I 302050.2 UNDERSTAND the I 302050.1 UNDERSTAND the I 302050.3 UNDERSTAND the I 302050.3 UNDERSTAND the I 302050.3 UNDERSTAND the I 302050.3 UNDERSTAND the I 302050.3 UNDERSTAND the I 302050.3 UNDERSTAND the I 302050.3 UNDERSTAND the I 302050.1 UNDERSTAND the I 302050.1 UNDERSTAND the I 302050.1 UNDERSTAND the I 302050.1 UNDERSTAND the I 302050.1 UNDERSTAND the I 302050.1 UNDERSTAND the I 302050.1 UNDERSTAND the II 302050.2 UNDERSTAND the II 302050.2 UNDERSTAND the II 302050.2 UNDERSTAND the II 302050.2 UNDERSTAND the II 302050.2 UNDERSTAND the II 302050.2 UNDERSTAND the II 302050.2 UNDERSTAND the II 302050.2 UNDERSTAND the II 302050.2 UNDERSTAND the II 302050.2 UNDERSTAND the II 302045.2 UNDERSTAND the II 302050.2 UNDERSTAND	YZE the natural and forced convective mode of heat transfer in various geometric configurations. ERSTAND AND REALIZE various laws with their intended.	nei 2	3	3	1	1	1	1		_				_	1	1
302043.1 Design of Maci 302043.1 DESIGN AND 302043.2 DESIGN Shafts, 302043.3 ANALYZE diff 302043.4 EVALUATE diff 302043.5 EVALUATE & 302043.6 APPLY the desi 302044.1 DEFINE key ele 302044.2 UTILIZE concep 302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302044.5 APPLY the Conc 302045.1 ANALYSE the ele 302045.2 ASSESS the para 302045.3 ANALYSE the ele 302045.4 CLASSIFY varion 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.1 CO1. DEMONS7 302049.1 CO1. DEMONS7 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY fea 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l	RSTAND AND REALIZE various laws with their interrelations and us geometric configurations.	3	2	3		2	1	1	_	_		_			1 1	1
302043.1 Design of Maci 302043.1 DESIGN AND 302043.2 DESIGN Shafts, 302043.3 ANALYZE diff 302043.4 EVALUATE diff 302043.5 EVALUATE & 302043.6 APPLY the desi 302044.1 DEFINE key ele 302044.2 UTILIZE concep 302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302044.5 APPLY the Conc 302045.1 ANALYSE the ele 302045.2 ASSESS the para 302045.3 ANALYSE the ele 302045.4 CLASSIFY varion 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.1 CO1. DEMONS7 302049.1 CO1. DEMONS7 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY fea 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.3 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l 302050.1 UNDERSTAND the l	RSTAND AND REALIZE various laws with their interrelations and analyzeRadiation heat transfer in black a RSTAND the fundamentals and laws of mass transfer and its applications.	nd 3	3	2		1	1	2	_	-	_			1 :	1 1	1
302043.1 Design of Maci 302043.1 DESIGN AND 302043.2 DESIGN Shafts, 302043.3 ANALYZE diff 302043.4 EVALUATE di 302043.5 EVALUATE di 302044.6 APPLY the desi 302044.1 DEFINE key ele 302044.2 UTILIZE concer 302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045.1 ANALYSE the el 302045.2 ASSESS the para 302045.3 ANALYSE the el 302045.4 CLASSIFY varion 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.1 CO1. DEMONS? 302049.1 CO1. DEMONS? 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY mac 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the s 302050.3 UNDERSTAND the s 302050.3 UNDERSTAND the s 302050.3 UNDERSTAND the s 302050.3 UNDERSTAND the s	YZE various performance parameters for existing heat exchanger and DEVELOPmethodologies for designing	2	2	_	2	1	1		1	-	_		1 :	1 1	1 1	1
302043.1 Design of Maci 302043.1 DESIGN AND 302043.2 DESIGN Shafts, 302043.3 ANALYZE diff 302043.4 EVALUATE di 302043.5 EVALUATE di 302044.6 APPLY the desi 302044.1 DEFINE key ele 302044.2 UTILIZE concer 302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045.1 ANALYSE the el 302045.2 ASSESS the para 302045.3 ANALYSE the el 302045.4 CLASSIFY varion 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.1 CO1. DEMONS? 302049.1 CO1. DEMONS? 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY mac 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the s 302050.3 UNDERSTAND the s 302050.3 UNDERSTAND the s 302050.3 UNDERSTAND the s 302050.3 UNDERSTAND the s	tel existing heat exchanger and DEVELOPmethodologies for designing	a 3	3		1	1	_	2	1	_	_	1 1	1 1	1 1	1 1	1
302043.1 DESIGN AND 302043.2 DESIGN Shafts, 302043.3 ANALYZE diff. 302043.4 EVALUATE diff. 302043.5 EVALUATE & 302044.1 DEFINE key ele 302044.1 DEFINE key ele 302044.2 UTILIZE concept 302044.3 DETERMINE th 302044.5 APPLY the conc 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045. AVAINATE the ele 302045.1 ANALYSE the ele 302045.2 ASSESS the para 302045.4 CLASSIFY varion 302045.6 INTERPRET the 302045.6 INTERPRET the 302045.1 CO1. DEMONIST 302049.1 CO1. DEMONIST 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY mac 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.1 UNDERSTAND the la 302050.1 UNDERSTAND the la 302050.1 UNDERSTAND the la 302050.1 UNDERSTAND the la 302060.3 UNDERSTAND the la 3020	of Machine Elements			1	1	1	1	1	1	1	1	. 1	1 1	1 1	1 1	
302043.3 ANALYZE diffication of the control of the	N AND ANALYZE the cotter and knowledge to the															
302043.3 ANALYZE diffication of the control of the	N shafts, keys and couplings under static loading conditions.	1	3	1	1											-
302043.5 EVALUATE & 302043.6 APPLY the desi 302044.1 DEFINE key ele 302044.2 UTILIZE concer 302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045.1 ANALYSE the el 302045.1 ANALYSE the el 302045.2 ASSESS the para 402045.4 CLASSIFY varior (CLASSIFY VAr	YZE different stresses in power screws and APLY those in the procedure to design screw jack. JATE dimensions of machine components under flushing the procedure to design screw jack.	3	3	-	2	2	2	2	1	1	1	1	1 1	1 1	1	
302043.5 EVALUATE & 302043.6 APPLY the desi 302044.1 DEFINE key ele 302044.2 UTILIZE concer 302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045.1 ANALYSE the el 302045.1 ANALYSE the el 302045.2 ASSESS the para 402045.4 CLASSIFY varior (CLASSIFY VAr	IATE dimensions of multi-	2		3	1	1	1	1	1	1	1	1			-	
302044. APPLY the desi 302044.1 DEFINE key ele 302044.1 DEFINE key ele 302044.2 UTILIZE concer 302044.3 DETERMINE th 302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045.1 ANALYSE the el 302045.1 ANALYSE the el 302045.2 ASSESS the para 302045.3 ANALYSE the el 302045.4 CLASSIFY varior 302045.6 INTERPRET the 302045.6 INTERPRET the 302049.1 CO1. DEMONSI 02049.1 CO1. DEMONSI 02049.2 CO2. APPLY fea 02049.3 CO3. APPLY mac 02049.4 CO4. DEVISE AN 02049.5 CO5. EXPLAIN c 02049.6 CO6. SIMULATE 402050. Computer Aided Er 02050.1 UNDERSTAND the la 02050.3 UNDERSTAND the la 0205	JATE dimensions of microecomponents under fluctuating loads.	-	3	3	2	1	1	1	1	1	1		_		-	
302044 Mechatronics 302044.1 DEFINE key ele 302044.2 UTILIZE conception 302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conception 302044.6 DEVELOP the la 302045.1 ANALYSE the ele 302045.2 ASSESS the para 302045.4 CLASSIFY varion 302045.5 CLASSIFY varion 302045.6 INTERPRET the 302045.6 INTERPRET the 302049.1 CO1. DEMONIS 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY mac 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the la 302050.3 UNDERSTAND the la 302050.3 DEFINE SURE SURE SURE SURE SURE SURE SURE SUR	JATE & INTERPRET the stress developed on the different type of welded and threaded joints. (the design and development procedure for different type of welded and threaded joints.)	3	3	2	1	1	1	2	1	1	1	_		-	-	-
302044 Mechatronics 302044.1 DEFINE key ele 302044.2 UTILIZE concer 302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.5 APPLY the conc 302045.1 ANALYSE the el 302045.1 ANALYSE the el 302045.2 ASSESS the para 302045.3 ANALYSE the el 302045.4 CLASSIFY vario 402045.5 CLASSIFY vario 402045.6 INTERPRET the 302049.4 Artificial Intelliger 402049.1 CO1. DEMONS 702049.2 CO2. APPLY fea 702049.3 CO3. APPLY fea 702049.4 CO4. DEVISE AN 702049.5 CO5. EXPLAIN c 702049.6 CO6. SIMULATE 702050.2 UNDERSTAND the el 702050.3	the design and development procedure for different types of springs.	3	3	2	1	1	1	2	1	1	1	_	_	-	-	-
302044.1 DEFINE key ele 302044.2 UTILIZE concep 302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045 Advance formin 302045.1 ANALYSE the el 302045.2 ASSESS the para 402045.2 ASSESS the para 402045.4 CLASSIFY vario 402045.6 INTERPRET the 402045.6 INTERPRET the 402049.1 CO1. DEMONS 402049.1 CO1. DEMONS 402049.2 CO2. APPLY fea 402049.3 CO3. APPLY fea 402049.4 CO4. DEVISE AN 402049.5 CO5. EXPLAIN c 402050.2 Computer Aided En 402050.1 UNDERSTAND the el 402050.2 UNDERSTAND the el 402050.2 UNDERSTAND the el 402050.3 UNDER		3	3	2	1	1	1	1	1	1	1	_	_	-	-	
302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045.1 ANALYSE the et 302045.2 ASSESS the para 302045.3 ANALYSE the et 302045.4 CLASSIFY variot 102045.5 CLASSIFY variot 102045.6 INTERPRET the 302049.4 Artificial Intelliger 102049.2 CO2. APPLY fea 102049.3 CO3. APPLY fea 102049.4 CO4. DEVISE AN 102049.5 CO5. EXPLAIN c 102049.6 CO6. SIMULATE 102050.2 NURTURE students 102050.1 UNDERSTAND the s 102050.3 UNDERSTAND the s 102050.3 UNDERSTAND the s 102050.3 UNDERSTAND the s 102050.1 DEVENTION the s 102050.3 UNDERSTAND the s 102050.1 UNDERSTAND the s 102050.1 DEVENTION the s 102050.1 UNDERSTAND the s	ironics							240		-	1	1 1	1	1	1	
302044.3 DETERMINE th 302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045.1 ANALYSE the et 302045.2 ASSESS the para 302045.3 ANALYSE the et 302045.4 CLASSIFY variot 102045.5 CLASSIFY variot 102045.6 INTERPRET the 302049.4 Artificial Intelliger 102049.2 CO2. APPLY fea 102049.3 CO3. APPLY fea 102049.4 CO4. DEVISE AN 102049.5 CO5. EXPLAIN c 102049.6 CO6. SIMULATE 102050.2 NURTURE students 102050.1 UNDERSTAND the s 102050.3 UNDERSTAND the s 102050.3 UNDERSTAND the s 102050.3 UNDERSTAND the s 102050.1 DEVENTION the s 102050.3 UNDERSTAND the s 102050.1 UNDERSTAND the s 102050.1 DEVENTION the s 102050.1 UNDERSTAND the s	E key elements of mechatronics, principle of sensor and its characteristics										-	+				
302044.4 EVALUATE Pol 302044.5 APPLY the conc 302044.6 DEVELOP the la 302045.1 ANALYSE the et 302045.2 ASSESS the para 302045.3 ANALYSE the et 302045.4 CLASSIFY variot 302045.5 CLASSIFY variot 302045.6 INTERPRET the 302049.1 CO1. DEMONS 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY mac 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the a 302050.1 UNDERSTAND the a 302050.2 UNDERSTAND the a 302050.2 UNDERSTAND the a 302050.2 DEVELORS TO SECONDO TO SECONDO THE SECOND	E concept of signal processing and MAKE use of interfacting systems such as ADC, DAC, Digital I/O. MINE the transfer function by using block diagram reductions to the such as ADC, DAC, Digital I/O.	3	1	2	1	2	2	2	2	-	-	-				
302044.5 APPLY the conc 302044.6 DEVELOP the la 302044.6 DEVELOP the la 302045.1 ANALYSE the et 302045.2 ASSESS the para 302045.3 ANALYSE the et 302045.4 CLASSIFY varior 302045.5 CLASSIFY varior 302045.6 INTERPRET the 302049.1 CO1. DEMONS 302049.1 CO2. APPLY fea 302049.2 CO2. APPLY fea 302049.3 CO3. APPLY mac 302049.4 CO4. DEVISE AN 302049.5 CO5. EXPLAIN c 302049.6 CO6. SIMULATE 302050.1 UNDERSTAND the s 302050.3 UNDERSTAND the s 30205050.3 3 UNDERSTAND the s 3020505050505050505050505050505050505050	MINE the transfer function by using block diagram reduction technique	2	1	2	1	3	2			1	2	1	2	1	1	
302044.6 DEVELOP the la 302045.1 Advance formin 302045.1 ANALYSE the et 302045.2 ASSESS the para 402045.3 ANALYSE the et 402045.4 CLASSIFY variot 02045.5 CLASSIFY variot 02045.6 INTERPRET the 302049 Artificial Intelliger 02049.1 CO1. DEMONST 02049.2 CO2. APPLY fea 02049.3 CO3. APPLY fea 02049.4 CO4. DEVISE AN 02049.5 CO5. EXPLAIN c 02049.6 CO6. SIMULATE 02050.1 UNDERSTAND the la 12050.1 UNDERSTAND the la 12050.3 UNDERSTAND the la 12050.1 UNDERSTAND the la		3	1	1	1	1		1	1	2	2	1	1	1	1	1
302044.6 DEVELOP the la	the concept of different controller modes to an industrial application	2	2	1	2	2	2	2	1	1	1	1	1	1	1	
302045	OP the ladder programming for industrial application	2	2	1	1		1	3	1	2	2	2	2	1	1	li
ANALYSE the earn		3	2	1		1	1	1	1	1	1	1	1	1	1	1
ANALYSE the earn	e forming And joining Process		1 4	1	1	2	1	1	-1	1	1	1	1	1	1	1
ANALYSE the ef ANAL	SE the effect of friction in the second seco											11000		1	1	1
ANALYSE the ef ANAL	SE the effect of friction in metal forming deep drawing and IDENTIFICATION of surface defects and their re the parameters for special forming operation and SELECT appropriate special forming operation for particula SE the effect of HAZ on microstructure and mechanical properties of metals for the particular properties of metals.	1												-		-
CLASSIFY varion	SE the effect of the A.Z.	1	2	2	1	2	2	2	1	1	1	1	1	1	-	-
102045.5 CLASSIFY variot	SE the effect of HAZ on microstructure and mechanical properties of materials FY various solid state welding present and mechanical properties of materials		3	2	1	2	1	1	1	1	1	1	1	1	1	1
02045.6 INTERPRET the 302049 Artificial Intelliger 02049.1 CO1. DEMONST 02049.2 CO2. APPLY fea 02049.3 CO3. APPLY mac 02049.4 CO4. DEVISE AN 02049.5 CO5. EXPLAIN c 02049.6 CO6. SIMULATE 02050.1 UNDERSTAND the s 12050.1 UNDERSTAND the s 12050.3 UNDERSTAND the s	FY various solid state welding process and SELECT suitable welding processes for particular applications FY various advanced welding process and SELECT suitable welding processes for particular applications	2	2	2	2	2	1	1	1	1	1	1	1	_	1	1
302049 Artificial Intellige 02049.1 CO1. DEMONST 02049.2 CO2. APPLY fea 02049.3 CO3. APPLY mac 02049.4 CO4. DEVISE AN 02049.5 CO5. EXPLAIN c 02049.6 CO6. SIMULATE 02050.1 UNDERSTAND the I 02050.2 UNDERSTAND the I	FY various advanced welding process and SELECT suitable welding processes for particular applications. RET the principles of sustainable manufacturing and its role in more formal processes.	3	3	3	2	2	3	3	1	1	1	1		1	1	1
302049 Artificial Intelliger 02049.1 CO1. DEMONS 02049.2 CO2. APPLY fea 02049.3 CO3. APPLY mac 02049.4 CO4. DEVISE AN 02049.5 CO5. EXPLAIN c 02049.6 CO6. SIMULATE 02050.1 UNDERSTAND the t 02050.2 UNDERSTAND the t 02050.3 UNDERSTAND the s	RET the principles of sustainable manufacturing and its role in manufacturing industry.	3	2	3	1	2	1	2	1	1	1	1	1	1	1	1
02049.1 COL. DEMONS' 02049.2 CO2. APPLY fea 02049.3 CO3. APPLY mac 02049.4 CO4. DEVISE AN 02049.5 CO5. EXPLAIN c 02049.6 CO6. SIMULATE 02050.1 UNDERSTAND the I 02050.2 UNDERSTAND the I 02050.3 UNDERSTAND the I	Y	3	2	2	2	1	1	1	1	1	1		1	1	1	1
02049.3 CO3. APPLY mac 02049.4 CO4. DEVISE AN 02049.5 CO5. EXPLAIN c 02049.6 CO6. SIMULATE 02050.1 UNDERSTAND the I 02050.2 NURTURE students 02050.3 UNDERSTAND the s 02050.3 UNDERSTAND the s	Intelligence &Machine Learning							-	-	-	1	1	1	1	1	1
02049.3 CO3. APPLY mac 02049.4 CO4. DEVISE AN 02049.5 CO5. EXPLAIN c 02049.6 CO6. SIMULATE 02050.1 UNDERSTAND the I 02050.2 NURTURE students 02050.3 UNDERSTAND the s	MONSTRATE fundamentals of artificial intelligence and machine learning.								-	-						
02049.4 CO4. DEVISE AN 02049.5 CO5. EXPLAIN c 02049.6 CO6. SIMULATE 02050.1 UNDERSTAND the t 02050.2 UNDERSTAND the to 02050.3 UNDERSTAND the to 02050.3 UNDERSTAND the s	PLY feature extraction and selection techniques.	1	3	1	2	2	2	2			-					in the last
02049.5 CO5. EXPLAIN c 02049.6 CO6. SIMULATE 002050 Computer Aided Er 02050.1 UNDERSTAND the I 02050.2 UNDERSTAND the I 02050.3 UNDERSTAND the I	L I machine learning algorithms for all its	3	3	3	_		_		1	1	1	1	1	1	1	1
02049.6 CO6. SIMULATE 02050 Computer Aided En 02050.1 UNDERSTAND the to 02050.2 NURTURE students 02050.3 UNDERSTAND the so		3	3	3		_				1	1	1	1	1	1	1
02050. Computer Aided En 02050.1 UNDERSTAND the to 02050.2 NURTURE students 02050.3 UNDERSTAND the students		3	2	2	-	_		_	_	1	1	1	1	1	1	1
2050.1 Computer Aided En 2050.1 UNDERSTAND the B 2050.2 NURTURE students 2050.3 UNDERSTAND the B	MULATE machine learning model in mechanical engineering problems.	3	3	3		-	_	_	_	1	1	1	1	1	1	1
02050.1 UNDERSTAND the B 02050.2 NURTURE students 02050.3 UNDERSTAND the B		3	2	3			_	_	_	1	1	1	1	1	1	1
2050.1 UNDERSTAND the to 2050.2 NURTURE students 2050.3 UNDERSTAND the a	Aided Engineering		-	3	1	1	1	1	1	1	1	1	1	1	1	1
2050.3 UNDERSTAND the a	AND the basic concepts of Computer All 1.15			-											-	
2050.3 UNDERSTAND the a	AND the basic concepts of Computer Aided Engineering (CAE) and CHARACTERISTICS of various elements required students about the discretization process and criteria for qualify means.	1	2											-	-	
	students about the discretization process and criteria for quality mesh.		2		2 :		2 2	2	1	1	1	1	1	1	1	
2050.4 DEVELOP the knowledge		3	-		1 :		1 1				_	1	1		1	
2050.5 APPLY computations	the knowledge and chills product to all the body.	2		3	2 1		1	_	_			1		1	1	
2050.6 STUDY the application	The Manual of the Control of the Con	0 1	2	2							1	T	1	1	1	
2030.0 STUDY the application	nputational technique to solve complex solid mechanics problems and its loading states.	2	2	2	1 1	1	2	1	1	1	1	1	1	1	1	





30205	1 Design of Transmission Systems	_		_		2016										
302051							1		1	T		_	_	_		
302051												-		1000		
302051	2. UNDERSTAND the philosophy that real engineering design problems are open-ended and challenging. 3. DEMONSTRATE design skills for the problems in real life industrial.			1	2	2	2	2	1	-		-				
302051	3. DEMONSTRATE design skills for the problems in real life industrial applications. 4. DEVELOP an attitude of team word, with the problems in real life industrial applications.	3	3	3	1	_	-	-	-	-	-	_	_	-	1	
302051	 4. DEVELOP an attitude of team work, critical thinking, communication, planning and scheduling through design pro 5. PERCEIVE about safety, ethical, legal, and other societal constraint; 	3	3	3	2		_	100		-	-	-	-	1	1	T
	 5. PERCEIVE about safety, ethical, legal, and other societal constraints in execution of their design projects. 6. BUILD a holistic design approach to find out prayments exhibits in execution of their design projects. 	je 3	2	2	1	_	_	-	-	_		_		1	1	T
302051.	6 BUILD a holistic design approach to find out pragmatic solutions to realistic domestic and industrial problems	3	3	3	1	1	1	_	_		_		1	1	1	T
2000	- Tegritations to realistic domestic and industrial problems	3	2	3	1	1	1	2	1	-		1	1	1	1	+
302052	1			1	1	1	1	1	1	1	1	1	1	1	1	+
302052.	1 CO1. DEFINE & COMPARE composite the second						-							A 1/2/201		+
302052.		1	3	1	1							N CONTRACT				+
302052.	CO3. CATEGORISE and APPLY Metal Matrix Process from possessions landscape. CO4. DETERMINE volume/weight frontiers and record from possessions landscape.	3	-	-	2	2	2	2	1	1	1	1	1	1	1	+
302052.	4 CO4. DETERMINE volume/weight fraction and strength of Composites.	3	-	3	1	1	1	1	1	1	1	1	1	1		+
302052.	5 CO5. SELECT appropriet testing and strength of Composites.	3	3	3	2	1	1	1	1	1	_	_	1	1	1	+
302052.	CO5. SELECT appropriate testing and inspection method for composite materials. CO6. SELECT composites materials for various applications.	3	2	2	1	1	1	2	1	1		1	1		1	+
	CO6. SELECT composites materials for various applications.		3	3	1	1	1	1 2	1	1	_	1	-	1	1	1
ourse Co	de Name of Course	3	2	3	1	1	1	1	1	1	-	-	1	1	1	L
402041	Vacinity Vacinity						Silve Val			-		1	1	1	1	
402041	Heating Ventilation Air-Conditioning and Refrigeration	PO1	PO2	PO3	PO4	PO5	PO6	PO7	DO	I poo	PO10	ln a			Takan badan	
402041.1	COI, SELECT appropriate moulding				Wall.		100	107	100	P09	POIO	PO11	PO12	PSO1	PSO2	P
	CO2. UNDERSTAND mechanism of metal forming techniques and CALCULATE load required for flat rolling CO3. DEMONSTRATE press working operations and APPLY the beginning the second required for flat rolling	1	2	1	2	2	2									
402041.3	CO3. DEMONSTRATE press working operations and APPL v. the heart load required for flat rolling	2	2	3	1	1		2	1	1	1	1	1	1	1	
102041.4	CO4. ESTIMATE cooling load for air and the last three basic principles to DESIGN dies and tools for form	2	2	3	2	1	1	1	1	1	1	1	1	1	1	
402041.5	CO5. DESIGN air distribution quaternal	3	3	2	1		1	1	1	1	1	1	1	1	1	
402041.6	CO6. EXPLAIN the working of types of decisionant consideration of ventilation and infiltration.	2	2	3	_	1	1	2	1	1	1	1	1	1	1	
	CO6. EXPLAIN the working of types of desiccants, evaporative, thermal storage, radiant cooling, clean room and heat	3	2	3	2	2	2	2	1	1	1	1	1	1	1	
402042	Dynamics of Machinery	-	2	3	2	2	2	2	1	1	1	1	1	1	1	-
102042.1	To conversant with balancing problems of machines.													-	-	
102042.2	To understand mechanisms for system control – Gyroscope.	1														
102042.3	To understand fundamentals of free and forced vibrations.	2	2	1	2	2	2	2	1	1	1	1	1	1		
02042.4	To develon competency in the and forced vibrations.		2	3	1	1	1	1	1	1	1	1	1		_	1
02042.5	To develop competency in understanding of vibration in Industry.	2	2	3	2	1	1	1	1	1	1					1
02042.6	To develop analytical competency in solving vibration problems.	3	3	2	1	1	1	2	1	1	1	_	1			1
12012.0	To understand the various techniques of measurement and control of vibration and noise.	2	2	3	2	2	2	2	1	1	_					1
402043		3	2	3	2	2	2	2	1	1	1		1		1	1
02043.1	Turbomachinery							-	1	1	1	1	1	1	1	1
	VALIDALE impulse moment principle using flat, inclined and curved surfaces and DANGERIA									-	_					S.
02043.2	"VALIDATE impulse moment principle using flat, inclined and curved surfaces and INVESTIGATE performance chara DETERMINE performance parameters of impulse and reaction steam turbine along with discussion of nozzles, govern	1	3	1	2	2	2	2								
02043.3	MEASURE performance parameters of simple 9 and reduction steam turbine along with discussion of nozzles, govern	3	3			1				1		1	1	1	1	1
02043.4	EXPLAIN performance parameters of centrifinal compresses along with discussion of cavitation and s	3	3	-		1				1	1	1	1			1
AND THE PERSON	prosess along with discussion of theoretical aspects of axial com	3	3	_	_		_			1	1	1				1
)2044D	Industrial Engineering	3				_	_		1	1	1					1
2044D.1	EVALUATE the productivity and IMPLEMENT.		3	3	2	2	2	2	1	1				1 1	-	1
2044D.2	APPLY work study techniques and LINDERS various productivity improvement techniques.	1	- 1	-					100				-		1	T
2044D.3	APPLY work study techniques and UNDERSTANDS its importance for better productivity. DEMONSTRATE the ability to SELECT plottle.						2	2	1	1	1	1	1 1			_
2044D.4	DEMONSTRATE the ability to SELECT plant location, appropriate layout and material handling equipment. USE of Production planning and control tools for effective cleaning.	2			2	2	2			_			_		-	_
2044D 5	USE of Production planning and control tools for effective planning, scheduling and managing the shop floor control. PLAN inventory requirements and EXERCISE effective control or secretary and managing the shop floor control.	2		3	2	1			_					1 1	-	_
2044D 6	PLAN inventory requirements and EXERCISE effective control on manufacturing requirements. APPLY Ergonomics and lenislatings for burgers and exercise control on manufacturing requirements.	3		1	1							_	1 1	_	_	1
0.0	APPLY Ergonomics and legislations for human comfort at work place and UNDERSTANDS the role of value engineering in impro	3	2	3	1	_	1 1		_		1 1		_	1 1	1	
	ness and onders I ANDS the role of value engineering in impro											1 1		1 1		_



402044C	Modern Machining Processes				_												
402044C.	I IINDEPSTAND and ANALYSIS II	-	-							-		1	T	T	1	_	_
		-								-51			-	-	-		+
402044C	2 UNDERSTAND the mechanism, construction and working of laser, plasma and electron beam assisted machining. 3 CLASSIFY and ANALYZE the mechanism, process parameters of the mechanism and electron beam assisted machining.	3	_	-	3	2	2	2	2	1	1	1	1		-		1
402044C	CLASSIFY and ANALYZE the mechanism, process parameters of the chemical and electron beam assisted machining. RELATE and ANALYZE the mechanism and select process parameters of the chemical and electrochemical machining.	1	-	2 1	1	1	1			1	1	1	1	1	1	1	1
402044C	RELATE and ANALYZE the mechanism and select process parameters of the chemical and electrochemical machining. ILLUSTRATE the application of micromachining processes	2	-	3	2	1	1	_		1	1	1	1	1	1	1	
402044C	ILLUSTRATE the application of micromachining processes.	3	-	1	1	1	1			-	1		1	1	1	1	
1020440.0	SUGGEST appropriate nanomachining processes.	2	2	1	2	2		_	_			1	1	1	1	1	
402045		3	2	3	2	2	_	_	_	-	1	1	1	1	1	1	
102045A.1	Product Design and Development							-	-	-	1	1	1	1	1	1	
										-							T
102045A.2	Tonderstand Flocesses, 1001s and techniques for Management of the standard of	2	3	1	2	2	2	2	-							1000	
02045A.3	Understand Processes, tools and techniques for Concept Inception, Verification and selection Understand Processes, tools and techniques for Concept Inception, Verification and selection	3	3	3	1	1	1	1	1		1	1	1	1	1	1	
02045A.4		3	3	3	2	1	1	1	1		1	1	1	1	1	1	
02045A.5	Understand Processes, tools and techniques for Design Verification and Validation	2	2	2	1	1	1	1	1		1	1	1	1	1	1	
02045A.6	Understand Processes, tools and techniques for Design Verification and Validation Understand Processes, tools and techniques for Robust Design and Development	3	3	2	1	1	1	2	1		1	1	1	1	1	1	-
	and Development	3	3	2	1	1	1	2	1		1	1	1	1	1	1	
402048	Computer Integrated Manufacturing	-	1 3	1 2	1 1	11	1 1	1	1		1	1	1	1	1	1	-
102048.1	CO1. EXPLAIN CIM and factory automation.	1								all laston					1 1	1	_
102048.2	CO2. UNDERSTAND the interest of the interest o	2	1 2	1 -	_												
102048.3	CO2. UNDERSTAND the integration of hardware and software elements for CIM CO3. APPLY CNC program for property for the control of the control	3	3	3	2	1	1	1	1	1	1	1	1	1 1	1	1 1	_
		2	2	2	1	1	1	2	1	1		1	1	1	1	1	_ 1
		2	3	1	2	2	2	2	1	1		1	1	-	1	1	_1
		3	3	3	1	1	1	1	1	i	_	1	1	1	1	1	1
	CO6. ANALYZE the effect of IOT, Industry-4.0 and cloud base manufacturing.	3	3	2	1	1	1	2	1	1		1		1	1	1	1
		3	3	2	1	1	1	1	1	1	_		1	1	1	1	1
02049.1	Energy Engineering							No. of the	1	1	-	1	1	1	1	1	1
02049.1	EXPLAIN the power generation scenario, the layout components of thermal power plant and ANALYZE the improved RANALYZE the performance of steam condensers, cooling tower sustems PECOL NATE.									-	-						
02049.2	ANALYZE the performance of steam condensers, cooling tower system; RECOGNIZE an environmental impact of energy EXPLAIN the layout, component details of diesel engine plant, budgl and purely and provided and provid	1	3	1	2	2	2	2	1	-	-						
22040.2	EXPLAIN the layout, component details of diesel engine plant, hydel and nuclear energy systems. ANALYZE gas and improved power cycles.	3	3	3	1	1	1	1		1		_		1	1	1	1
02049.3		3	3	3	2	1	1		1	1	-	_		1	1	1	1
02049.3	ANALTZE gas and improved power cycles	2			-			1	1	1	_	_	1	1	1	1	1
02049.3	EXPLAIN the fundamentals of renewable operations	3	3	2	1	1	4			1	1	1	1	1	1	1	1
02049.3	EXPLAIN the fundamentals of renewable operations		3	2	1	1	1	2	1								_
02049.4 02049.5 02049.6	EXPLAIN the fundamentals of renewable energy systems. "EXPLAIN basic principles of energy management, storage and economics of power generation."	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1	1
02049.4 02049.4 02049.5 02049.6	EXPLAIN the fundamentals of renewable energy systems. "EXPLAIN basic principles of energy management, storage and economics of power generation." Manufacturing System and Simulation	3				_					1			-			1
02049.4 02049.4 02049.5 02049.6	EXPLAIN the fundamentals of renewable energy systems. "EXPLAIN basic principles of energy management, storage and economics of power generation." Manufacturing System and Simulation	3	3	2	1	1	1	2	1	1	-			-			1
02049.3 02049.4 02049.5 02049.6 02050C 2050C.1	EXPLAIN the fundamentals of renewable energy systems. "EXPLAIN basic principles of energy management, storage and economics of power generation." Manufacturing System and Simulation To help mechanical engineers understand broadly the fundicine.	3 3 3	2	2	1	1	1 1	2	1	1	-			-			_
02049.3 02049.4 02049.5 02049.6 02050C 2050C.1	EXPLAIN the fundamentals of renewable energy systems. "EXPLAIN basic principles of energy management, storage and economics of power generation." Manufacturing System and Simulation To help mechanical engineers understand broadly the functioning of manufacturing systems.	3 3 3	2	2 2 1	1 1 2	1 1 2	1 1 2	2	1	1	-		1	1	1	1	1
02049.3 02049.4 02049.5 02049.6 02050C 2050C.1 2050C.2 2050C.3	EXPLAIN the fundamentals of renewable energy systems. "EXPLAIN basic principles of energy management, storage and economics of power generation." Manufacturing System and Simulation To help mechanical engineers understand broadly the functioning of manufacturing systems. To describe the role of facilities and support systems.	3 3 3 1 2	2 2 3	2 2 1 3	1 1 2 1	1 1 2 1	1 1	2	1	1	1		1	1	1	1	1
02049.3 02049.4 02049.5 02049.6 02050C 2050C.1 2050C.2 2050C.3	EXPLAIN the fundamentals of renewable energy systems. "EXPLAIN basic principles of energy management, storage and economics of power generation." Manufacturing System and Simulation To help mechanical engineers understand broadly the fundicine.	3 3 3	2	2 2 1	1 1 2	1 1 2	1 1 2	2 1 2	1 1 1	1 1	1		1	1	1	1 1 1	1



402051D.3 7 402051D.3 7 402051D.4 7 402051D.5 7	Industrial Psychology and Organizational Behavior To develop an understanding of the nature, functioning and design of organization as social collectivities. To orient the students to the application of principles of psychology in an industrial and organizational workplace To demonstrate the understanding of job requirement and related fatigue, boredom and ways to handle it. To develop the insights into performance management and understanding related improvement strategies. To have an understanding of human behavior in groups and develop knowledge and skills in leadership, power, communication of the develop the acumen to understand the organizational culture, change management and organizational development.	3 3 3 2 3 3	2 3 2 2 3 2	1 3 3 3 2 2	2 1 2 2 2 1	2 1 1 1 1 1 1 1	2 1 1 1 1 1 1	2 1 1 2 2 2	1 1 1 1 1 1 1 1	1 1 1 1 1 1	1 1 1 1 1	1 1 1 1	1 1 1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1
	e organizational development.	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1





Enhance: Design, Development and Implementation Genba Sopanrao Moze Trust's GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045.

Mechanical Engineering Department

	de Name of Course AY 2021-22	7047														
202041	Solid Mechanics	PO	1 PO	PO	3 PO	PO:	PO	6 PO	7 PO	8 PO	POL	POI	1 PO1	2 PSO	lnos	alac
202041.1	CO1. DEFINE various types of stresses and strain developed on determinate and indeterminate members.								1	1	101	0101	IFOI	PSU	PSO	2 PSC
202041.2	CO2. DRAW Shear force and bending moment diagram for various types of transverse loading and support.	3	2	2	1	1	1	2	1	1	1	1	-	-	-	-
202041.3	CO3. COMPUTE the slope & deflection, bending stresses and shear stresses on a beam.	3	3	2	2	1	1	1	1	1	-	1	1	1	1	1
202041.4	CO4. CALCULATE torsional shear stress in shaft and buckling on the column.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202041.5	CO5. APPLY the concent of principal stress in shall and buckling on the column.	3	3	2	1	1	1	1		-	1	1	1	1	1	1
202041.6	COS. APPLY the concept of principal stresses and theories of failure to determine stresses on a 2-D element.	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
	CO6. UTILIZE the concepts of SFD & BMD, torsion and principal stresses to solve combined loading applicat	1	3	3	2	2	2	-	1	1	1	1	1	1	1	1
202042	Solid Modeling and Drafting	- 1		3	-			2	1	1	1	1	1	1	1	1
202042.1	COL LINDERSTAND beging appearance of CAD			18738												
202042.2	CO1. UNDERSTAND basic concepts of CAD system, need and scope in Product Lifecycle Management CO2. UTILIZE knowledge of curves and surfacing features.	3	3	2	1	4										
202042.3	CO2. UTILIZE knowledge of curves and surfacing features and methods to create complex solid geometry CO3. CONSTRUCT solid models, assemblies unique surfacing features.		3	3	1	1	1	1	1	1	1	1	1	1	1	1
202042.4		1	3	3	1	1	1	1	1	1	1	1	1	1	1	1
202042.5	CO3. APPLY geometric transformations to simple 2D geometries	3	2		2	2	2	2	1	1	1	1	1	1	1	1
202042.6	CO5. USE CAD model data for various CAD based engineering applications viz. production drawings, 3D printing, F CO6. USE PMI & MBD approach for communication	3		2	1	_	1	2	1	1	1	1	1	1	1	1
202042.0	CO6. USE PMI & MBD approach for communication		3	2	2	1	1	1	1	1	1	1	1	1	1	1
202043	Facility of the second of the	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202043.1	Engineering Thermodynamics														-	
	CO1. DESCRIBE the basics of thermodynamics with heat and work interactions.															
202043.2	non available energy for an Open and Closed System	1	3	3	2	2	2	2	1	1	1	1	1	1	1	-
202043.3	CO3. APPLY entropy, available and non available energy for an O	3	2	2	1	1	1	2	1	1	1	1	1	1		1
202043.4	100 t. BETERIVINE the properties of steam and their effect on park	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
		3	3	3	1	1	1	2	1	1	1	1		-	1	1
202043.6	CO6. SELECT various instrumentations required for safe and efficient operation of steam generator.	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1
		3	3	3	1	_	1	1	1	1	1	-	1	1	1	1
202044	Engineering Materials and Metallurgy						-	-	1	1	1	1	1	1	1	1
202044.1	CO1. COMPARE crystal structures and ASSESS different lattice parameters.						-	-	-	-						
202044.2	CO2. CORRELATE crystal structures and disease of different lattice parameters.	1	2	3	2	3	1	1								
02044.3	CO2. CORRELATE crystal structures and imperfections in crystals with mechanical behaviour of materials. CO3. DIFFERENTIATE and DETERMINE mechanical	1	_		_	_	-	_	_	1	1	1	1	1	1	1
02044.4	CO3. DIFFERENTIATE and DETERMINE mechanical properties using destructive and non-destructive testing of me	1	_	-	_	-	-	_		1		1	1	1	1	1
02044.5	CO4. IDENTIFY & ESTIMATE different parameters of the system viz., phases, variables, component, grains, grain b	3	_	_	_		_	_	_	_		1	1	1	1	1
02044.6	CO5. ANALYSE effect of alloying element & heat treatment on properties of ferrous & nonferrous alloy. CO6. SELECT appropriate materials for various applications.	_	_	_	_		_		_	_	_	1	2	1	1	1
	CO6. SELECT appropriate materials for various applications.			_	_		_		_	_	2	1	2	1	1	1
203156	Electrical and Electronics Engineering	1	1	3	2	3	2	2	1	1	1	2	1	1	1	1
03156.1	CO1 APPLY programing		-	+		-	-									
03156.2	CO1.APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded systems CO2.DEVELOP interfacing of different types of sensors and other hands.	1	1	3	-											
03156.3	CO2.DEVELOP interfacing of different types of sensors and other hardware devices with Atmega328 based Arduino Board CO3.UNDERSTAND the operation of DC motor, its speed control and the control of the c	_		_	_	3 1	-	_	_	1	1	1	1	1	1	1
		-	1 :	_		3 1			_	1	1	1	1	1	1	1
	COSE DISTRICTION Detween types of three phase induction motor and its characteristic features		2 :			2 1			_	1	1	1	1	1	1	1
	Society Early about emerging technology of Flectric Vehicle (EV) and its and its	_	2	_	_	2 2	-	_	1	1	1	1		1	1	1
0.0010	ses. of record energy storage devices and electrical drives for EVa	-	1 3	-	2 3		-	3 1		1 :	2			1	1	1
	Sign PUNE IN	1	1 3	1	2 3	2	1 3	2 1						1		1

PRINCIPAL

207002	Engineering Mathematics III					T	T	T	1	-	-	-		100		
207001.1	Solve higher order linear differential equation value			1	+	+	+	+	+	-	-					
207001.2	Solve higher order linear differential equation using appropriate techniques for modellinganalyzing of electrical circuit.	s 1	3	1	2	2	-	-	+							
207001.3	Solve system of linear equations using direct and iterative numerical techniques for modellinganalyzing of electrical circuit Apply Statistical methods like correlation repression and probability the	e 3	-	3	1	_	2	2	-	-	-	_	1	1	1	
207001.4	Apply Statistical methods like correlation, regression and probability theory in data analysis and predictions in civil engagement of the perform vector differentiation & integration analyze the vector fields and probability theory in data analysis and predictions in civil engagement.	g 3	-	3	_	1	1	1	1	-	1	1	1	1	1	
207001.5	Perform vector differentiation & integration analyze the vector fields and apply to fluid flow problems.	3	-	-	2	1	1	1	1	1	1	1	1	1	1	
All the second	Solve Partial differential equations such that as wave equations, one and two dimensional heat flow equations	3	3	2	1	1	1	2	1	_	1	1	1	1	1	-
202047	Kinematics of Machinery	1	1 3	1 2	1	1	1	2	1	1	1	1	1	1	1	1
02047.1	To make the students compared to the		-		-											1
02047.2	1. To make the students conversant with kinematic analysis of mechanisms applied to real life and industrial application. 2. To develop the competency to analyze the velocity and acceleration.	1	1 2	-	-								1			+
02047.3	To develop the competency to analyze the velocity and acceleration in mechanisms using analytical and graphical and 3. To develop the skill to propose and synthesize the mechanisms using analytical and graphical	1	3	3	2	2	2	2	1	1	1	1	1	1	1	+
02047.4	3. To develop the skill to propose and synthesize the mechanisms using graphical and graphical application of the competency to understand & could be considered by the could be competency to understand & could be considered by the could		2	2	1	1	1	2	1	1	1	1	1	1	1	+
02047.5		3	3	2	2	1	1	1	1	1	1	1	1	1	1	+
2047.5	5. To develop the competency to design a cam profile for various follower motions.	3	3	3	1	1	1	2	1	1	1	1	1	1	-	+
02040	自然的问题,我们就是一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个	3	3	2	1	1	1	1	1	1	1	1	1		1	+
02048	Applied Thermodynamics		1000		27.60		1 1 1 7			1	1	1	1	1	1	+
2048.1	CO1. DETERMINE COP of refrigeration system and ANALYZE psychrometric processes.	A B		1	100					-	-	-	-			1
2048.2		1	1	2	2	3	1	1	1	1		-				1
2048.3	CO3. IDENTIFY factors affecting the combustion performance of SI and CI engines.	3	2	2	2	2	1	2	_	1	1	1	1	1	1	
2048.4	CO4. DETERMINE performance parameters of IC Engines and emission control.	1	1	2	2	3	_		1	1	1	1	2	1	1	T
2048.5	COS. EXPLAIN working of various Costs.	1	1	2	2	3	1	1	1	1	1	1	1	1	1	T
2048.6	COS. EXPLAIN working of various IC Engine systems and use of alternative fuels.	1	1	2	_		1	1	1	1	1	1	1	1	1	T
-	CO6. CALCULATE performance of single and multi stage reciprocating compressors and DISCUSS rotary positive displa	3	2	2	2	3	1	1	1	1	1	1	1	1	1	†
02049	Fluid Mechanics	-	-	2	2	2	1	2	1	1	1	1	2	1	1	1
2049.1	COLDETEDMINE		-	-												+
	CO1. DETERMINE various properties of fluid		-	-												H
	CO2. APPLY the laws of fluid statics and concepts of buoyancy	1	1	2	2	3	1	1	1	1	1	1	1	1	1	+
0.17.0	COS. IDENTIFY types of fluid flow and terms associated in G.:11:	3	2	2	_	2	1	2	1	1	1	1	2	1	1	-
		1	1	2		3	1	1	1	1	1	1	1	1	_	-
047.5	CO3. ESTIMATE friction and minor losses in internal G	3	2	2	2	2	1	2	1	1	1	1	2	-	1	-
049.6	CO6. CONSTRUCT mathematical correlation considering dimensionless parameters, also ABLE to predict the perform	1	1	2	2	3	1		1	i	1	1	1	1	1	
	amensionness parameters, also ABLE to predict the perform	3	2	2	2	2	1	-	1	1	1	1	-	1	1	
2050	Manufacturing Processes							-	-	1	1	1	2	1	1	
050.1	CO1. SELECT appropriate moulding core making and making						+		-	-						
050.2	CO1. SELECT appropriate moulding, core making and melting practice and estimate pouring time, solidification rate a CO2. UNDERSTAND mechanism of metal forming techniques and CALCULATE load required for flat rolling	3	2	2	2	2	1	2		-						
050.3	CO3. DEMONSTRATE press working continuing techniques and CALCULATE load required for flat rolling	1		_	-		-		1	1	1	1	2	1	1	
050.4	CO3. DEMONSTRATE press working operations and APPLY the basic principles to DESIGN dies and tools for form	3	-	_	_	_	_	_	1	1	1	1	1	1	1	
050.5		-	-	_	_	_	_		_	1	1	1	2	1	1	97
200	CO6. UNDERSTAND the principle of manufacturing of fibre-reinforce composites and metal matrix composites	-		_		2	1	2	1	1	1	1	2	1	1	1
050.6		1	1 i													



302041	Numerical & Statistical Name	Inc	1 DO	alm o	-1	1				or said	1000					
302041.1	Numerical & Statistical Methods	P	PO	PO	3 PO	4 PO	5 PO	6 PC)7 P	08 P	09 PC	010 PO	11 PO	12 PSC	1 PS	02 1
302041.1	UNDERSTAND applications of systems of equations and solve mechanical engineering applications. APPLY differential equations to solve the applications in the decidence of the solution of the soluti		_	-	-	-							1	130	1130	12 1
302041.2	APPLY differential equations to solve the applications in the domain of fluid mechanics, structural, etc. LEARN numerical integration techniques for exprise size.	1	-	1	2	1	2	1	1	1 1	1 1	1	1	1	1	+
302041.4		3	-	3	1	2	1	2	1	1 1	1 1	1	_	1	-	-
	1. COM ARE the system's penavior for the experimental data	3	-	2	2	1	1	1	1	1	_	_	-	1	1	-
302041.5	15. INTERPRET Statistical measures for quantitative data	3	-	3	1	1	1	2	1	_	-	-	1	-	1	-
302041.6	6. ANALYZE datasets using probability theory and linear algebra.	3	3	3	1	1	1	2	1	_		_	1	1	1	+
302042		3	2	3	1	1	1	1	1	_	-	-	1	1	1	+
202042.1	Heat and Mass Transfer					Carlo S						-	1	1	1	+
	IDENTIFY the laws for different modes of heat transfer.													1/2/		+
202042.2	UNDERSTAND the properties and economics of the second to t	3	3	1	2	2	2	2	1	1	1	1	1	-		+
202042.3	ANALYZE the natural and forced convective mode of heat transfer in various geometric configurations. UNDERSTAND AND REALIZE various laws with their invarious geometric configurations.	2	3	3	1	1	1	1	1	-	-	-	1	1	1	+
202042.4	UNDERSTAND AND REALIZE various laws with their interrelations and analyzeRadiation heat transfer in black and UNDERSTAND the fundamentals and laws of mass transfer and its and laws of mass transfer and its analyzeRadiation heat transfer in black and	3	2	3	1	2	1	1	1	-	_	-	_	1	1	+
02042.5	UNDERSTAND the fundamentals and laws of mass transfer and its applications. ANALYZE various performances	3	3	2	2	1	1	2	1	1	_	_	1	1	1	1
02042.6	ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for existing heat exchange performance parameters for existing heat exchange in ANALYZE various performance parameters for exchange in ANALYZE various performance parameters for existing heat exchange in ANALYZE various performance parameters for exchange performance parameters for	2	2	3	2	1	1	2	1	1	_	-	1	1	1	1
	ANALYZE various performance parameters for existing heat exchanger and DEVELOPmethodologies for designing a	3	3	3	1	1	1	1	1	1	-	1	1	1	1	
302043	Design of Machine Elements			-		-	-	1	1	1	1	1	1	1	1	
02043.1	DESIGN AND ANALYZE the cotter and knowledge Lines.						E HERE			+	-	-				
02043.2	DESIGN AND ANALYZE the cotter and knuckle Joints, levers and components subjected to eccentric loading. DESIGN shafts, keys and couplings under static loading conditions.	1	3	1	2	2	2	-	-	-						
02043.3	ANALYZE different stresses in powers and conditions.	3	3	3	1	1		2	1	1	1	1	1	1	1	
302043.4	ANALYZE different stresses in power screws and APPLY those in the procedure to design screw jack. EVALUATE dimensions of machine components under fluctuating loads.	2	3	3	2	1	1	1	1	1	1	1	1	1	1	
02043.5	EVALUATE & INTER DEET the Components under fluctuating loads.	3	3	2	1		1	1	1	-	1	1	1	1	1	
02043.6	EVALUATE & INTERPRET the stress developed on the different type of welded and threaded joints. APPLY the design and development procedure for different type of welded and threaded joints.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	
	APPLY the design and development procedure for different types of springs.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	
302044	Mechatronics	-	3	2	1	1	1	1	1	1	1	1	1	1	1	1
					-										14.9	
02044.2	DEFINE key elements of mechatronics, principle of sensor and its characteristics	3			-											
		2	1	2	1	2	2	2	2	1	2	1	2	1	1	1
02044.4	DETERMINE the transfer function by using block diagram reduction technique	3	1	2	-	3	2	1	1	2	2	1	1	1	1	1
	2 11 EOTTE TORS and Zero frequency domain possesses c	2	1	1	1	1	2	2	1	1	1	1	1	1	1	1
02044.6	APPLY the concept of different controller modes to an industrial application	-	2	1	_	2	1	3	1	2	2	2	2	1	1	1
2044.0	BEVELOT the ladder programming for industrial application	2	-	1	1	1	1	1	1	1	1	1	1	1	1	1
		3	2	1	1	2	1	1	1	1	1	1	1	1	1	1
	Advance forming And joining Process	-	-											-	1	-1
2045.1	ANALYSE the effect of friction in metal forming deep drawing and IDENTIFICATION of surface defects and their re	-														_
2045.2	ASSESS the parameters for special forming deep drawing and IDENTIFICATION of surface defects and their re ANALYSE the effect of HAZ on microstructure and mechanical properties.	1		2	1	2	2	2	1	1	1	1	1	1		-
2045.3	ANALYSE the effect of HAZ on microstructure and mechanical properties of materials	3	3	2	1	2	1		_	1	1	1	1	_	1	1
		_	2	2	2	2	1	_	_	1	1	1		1	1	1
2045.5	CLASSIFY various advanced welding process and SELECT suitable welding processes for particular applications NTERPRET the principles of sustainable manufacturing and its relations.	3	3	3	2	_	-	_	-	1	1	1	1	1	1	1
2045.6	NTERPRET the principles of sustainable manufacturing and its role in manufacturing industry.	3	2	3	_	-		_	_	1		_	1	1	1	1
	manufacturing and its role in manufacturing industry.	3	2	_	_				_	1	1	1	1	1	1	1



302049	Artificial Intelligence & Machine Learning				I		T	T				_		100	193	411
302049.1	COL DEMONSTRATE Indonestal Color				-	-	-	-	-	-						
302049.2	CO2. APPLY feature extraction and selection techniques.	1	3	1	2	-	-	-	-							
302049.3	CO3 APPLY machine learning all selection techniques.	3	-	3		2	-	2	1	-	1 1	1	. 1	1	1	
302049.4	CO3. APPLY machine learning algorithms for classification and regression problems.	3		3	-	1	1	1	1	1	1	1	1	1	1	
302049.5	CO4. DEVISE AND DEVELOP a machine learning model using various steps. CO5. EXPLAIN concepts of reinforced and deep learning.	3	-	2	2	1	1	1	1	1	1	1	. 1	1	1	1
302049.6	CO6 SIMIII ATE mode in Teniorced and deep learning.	3	_	3		1	1	2	1	1	1	1	1	1	1	T
	CO6. SIMULATE machine learning model in mechanical engineering problems.	3	-	3	1	1	1	2	1	1	-	1	1	1	1	1
302050	Computer Aided Engineering	1	-	3	1	1	1	1	1	1	1	1	1	1	1	T
302050.1	UNDERSTAND the basic proposed of Community							262								T
302050.2	UNDERSTAND the basic concepts of Computer Aided Engineering (CAE) and CHARACTERISTICS of various elements require NURTURE students about the discretization process and criteria for quality methods.	20 1	2	1	1	-			-							T
302050,3	NURTURE students about the discretization process and criteria for quality mesh.	3	3	2	2	2	2	2	1	1	1	1	1	1	1	T
02050.4	UNDERSTAND the approaches of Finite Element Method (FEM) and to find displacement and stresses over the body. DEVELOP the knowledge and skills needed to effectively exclusive the stresses.	2	3	3	1	1	1	1	1	1	1	1	1	1	1	T
02050.5		2	2	2	2	1	1	1	1	1	1	1	1	1	1	T
02050.6		2	3	1	1	1	1	2	1	1	1	1	1	1	1	+
	STUDY the applications of CAE in the various domains of the Mechanical Engineering.	3	2	3	1	1	1	2	1	1	1	1	1	1	1	T
02051	Design of Transmission Systems	1 3	1 2	3	1	1	1	1	1	1	1	1	1	1	1	1
02051.1	1 APPLY Findowstell C. 1			10.0								3/6				+
02051.2	APPLY fundamentals for the design and/or selection of elements in transmission systems. UNDERSTAND the philosophy that real-residual processing and the philosophy that the philosophy that the philosophy that real-residual processing and the philosophy that the philosophy t	-										March 1				+
02051.3		1	3	1	2	2	2	2	1	1	1	1	1	1	1	+
02051.4	DEMONSTRATE design skills for the problems in real life industrial applications.	3	3	3	1	1	1	1	1	1	1	1	1	1	1	+
02051.5		3	3	3	2	1	1	1	1	1	1	1	1	1	1	+
02051.6	5. PERCEIVE about safety, ethical, legal, and other societal constraints in execution of their design projects. 6. BUILD a holistic design approach to find out progressive selections.		2	2	1	1	1	2	1	1	1	1	1	1	1	H
02031.0	BUILD a holistic design approach to find out pragmatic solutions to realistic domestic and industrial problems	3	3	3	1	1	1	2	1	1	1	1	1	1	1	H
02052	202062 A. C	3	2	3	1	1	1	1	1	1	1	1	1	1	1	H
2052.1	302052-A: Composite Materials													-		-
	CO1. DEFINE & COMPARE composites with traditional materials.									CE DI						-
2052.2	COZ. IDENTIF I & ESTIMATE different parameters of the D. I.	1	3	1		2	2	2	1	1	1	1	1	1	1	H
		3	3	3	_	1	1	1	1	1	1	1	1	1	1	
		3	3	3	2	1	1	1	1	1	1	1	1	1	1	_
	COS. SELECT appropriate testing and inspection method for	3	2	2	1	1	1	2	1	1	1	1	1	1	1	
2052.0	CO6. SELECT composites materials for various applications.		3	3	1	1	1	2	1	1	1	1	1	1	1	
		3	2	3	1	1	1	1	1	1	1	1	1	1	1	
se Code	Name of Course (2015 Pattern)					TOPY				7		-		1	1	_
2041	Hydraulics and Pneumatics	PO1 I	PO2 F	O3 I	O4 P	05 P	06 P	07 P	O8 I	PO9	PO10F	011	PO12	PSO1 I	ecoal	ne
041.1	g principle of components used in hydraulic & pneumotic guesterns	_	_								2101	OII.	012	3011	502	-
2041.2	Identify various applications of hydraulic 8	2		100			_				ACCOUNTS NOT THE	THE PERSON NAMED IN				

402041 Hydraulics and Pneumatics	PO	1 PO	2 PO.	PO4	PO:	PO	6 PO	7 PO	PO	9 PO10	POL	PO11	PSO	IDEO	alno
402041.1 Understand working principle of components used in hydraulic & pneumatic systems											101)	1012	1301	PSU	PS
Tachery various applications of hydraulic & pneumatic systems	2	2	3	1	1	1	1	1	1	1	1	1	1	-	-
402041.5 Selection of appropriate components required for hydraulic and appropriate	2	2	3	2	1	1	1	1	1	1	1	1	1	1	1 1
Thanyse hydraulic and pneumatic systems for industrial/mobile and in the	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
Design a system according to the requirements	2	2	3	2	2	2	2	1	1	1	1	1	1	1	
402041.6 Develop and apply knowledge to various applications	3	2	3	2	2	2	2	1	1	1	1	1	1	1	1
g anodo applications	1	2	1	2	2	2	2	1	1	1	1	1	1	1	1
				-			1 2	1	1	1	1	1	1	1	1



402042	CAD CAM Automation			1	1	1	1	1	1	-	1					
402042.1	□ Apply homogeneous transformation motiving to a second of the second o	T		1		-	-	-	+	+	-	_				
402042.2	☐ Apply homogeneous transformation matrix for geometrical transformations of 2D CAD entities for basic geometric ☐ Use analytical and synthetic curves and surfaces in part modeling. ☐ Do real times replaced.	t 1	2	1	2	2	1	-	-	-					000	
402042.3	Do real times analysis of simple modeling.	1 2	-	-	_		-	-	_	_	_	_	1	1	1 :	1
402042.4	☐ Do real times analysis of simple mechanical elements like beams, trusses, etc. and comment on safety of engineering Generate CNC program for Turning / Milling and generate tool path with CNL (CAL) (CAL	19 2	_	_	_	+-	_	-	_	-	_	1	1	1	1 1	1
402042.5	Generate CNC program for Turning / Milling and generate tool path using CAM software.	2	-	3	-	-	-	-	_	-		1	1		1 1	1
402042.6	☐ Demonstrate understanding of various rapid manufacturing techniques and develop competency in designing and designing and develop competency in designing and december to the control of the control o	2 2		3	_	1	1	-	-		-	1	1 :		1 1	1
	Understand the robot systems and their applications in manufacturing industries.	3	_	2	_	1	1	1	1	-	_	1	1 1		1 1	1
402043	Dynamics of Machinery	+	1	1 -	1	1	1	2	1	1	. 1	1 :	1 1	1	1	
402043.1	To conversant with balancing problems of machines.															
402043.2	To understand mechanisms of machines.	1	2	1	-											
402043.3	To understand mechanisms for system control – Gyroscope.	2	2	-	2	_	2	2	1	-	1	. 1	1	1	1	
402043.4	To understand fundamentals of free and forced vibrations.	2	_	3	1		1	1	1	1	1	1	1	_	_	-
402043.5	To develop competency in understanding of vibration in Industry.	+	2	3	2		1	1	1	1	1	1	1	_	-	-
402043.6	To develop analytical competency in solving vibration problems.	3	3	2	-	1	1	2	1	1	1	1	1	-	_	_
102043.0	To understand the various techniques of measurement and control of vibration and noise.	2	2	3	-	2	2	2	1	1	1	1	_	1	-	-
402044		3	2	3	2	2	2	2	1	1	1	1	_	1	1	-
02044A.1	Elective – I					100						1	1	+ -	1	+
02044A.1	☐ Understand the different techniques used to solve mechanical engineering problems.													-	-	+
	1 = 2 cive and use 1-D and 2-D element stiffness motrices and 1-1	3	3	3	1	1	1	1	1	1	1	1	1	1	+ -	+
)2044A.3	□ Apply mechanics of materials and machine design topics to provide preliminary results used for testing the reasonab	3	3	3	2	1	1	1	1	1	1	1	1	1	1	+
02044A.4	□ Explain the inner workings of a finite element code for linear stress, displacement, temperature and modal analysis. □ Use commercial finite element analysis software to color software to c		2	2	1	1	1	2	1	1	1	1	1	1	1	+
02044A.5	☐ Use commercial finite element analysis software to solve complex problems in solid mechanics and heat transfer. ☐ Interpret the results of finite element analyses and make an analyse and make an analyse and an analyse and analyse and an analyse and an analyse and an ana	3	3	2	1	1	1	2	1	1	1	1	1	1	1	-
02044A.6	☐ Interpret the results of finite element analyses and make an assessment of the results in terms of modeling (physics a	3	3	2	1	1	1	1	1	1	1	1	1	1	1	-
1000		2	3	1	2	2	2	2	1	1	1	1	1	1	1	-
402045	Elective – II							-	1	1	1	1	1	1	1	
)2045A.1	Understand Product design and Product development processes															
		2	3	1	2	2	2	2	1	1	1		-			
)2045A.3	Understand Processes, tools and techniques for Market Survey & Product Specification Finalization Understand Processes, tools and techniques for Concept Inception, Verification and selection Understand Processes, tools and techniques for Concept Inception, Verification and selection	3	3	3	1	1	1	1	1	1	1	1	1	1	1	
2045A.4	Understand Processes, tools and techniques for Concept Inception, Verification and selection Understand Processes, tools and techniques for Concept Exploration & Development	3	3	3	2	1	1	1	1	-	1	1	1	1	1	1
		2	2	2	1	1	_	2	1	1	1	1	1	1	1	
2045A.6	Understand Processes, tools and techniques for Design Verification and Validation Understand Processes, tools and techniques for Robust Design and Development	3	3	2	1	1	_	2	1	1	1	1	1	1	1	
	test and teeningles for Robust Design and Development	3		2	1	1	-	_	1	1	1	1	1	1	1	1
102047	Energy Engineering			-	1	1	1	1	1	1	1	1	1	1	1	1
02047.1	Describe the power generation scopping the L		1	-	-	-	-	-	-	_		200				
2047.2	Describe the power generation scenario, the layout components of thermal power plant and analyze the improved R Analyze the steam condensers, recognize the an environmental imports of the power plant and analyze the improved R	1	3	1	2	-	-		-							
2047.3	Analyze the steam condensers, recognize the an environmental impacts of thermal power plant and analyze the improved R Recognize the layout, component details of hydroelectric news of thermal power plant and method to contri	3	-	3	-		_	-	_	1	1	1	1	1	1	1
2047.4	Recognize the layout, component details of hydroelectric power plant and nuclear power plant and method to contri Realize the details of diesel power plant	3	_	3		_	_		-	1	1	1	1	1	1	1
		3	-	-	_		_	_	_	1	1	1	1	1	1	1
		-		2			_	_	1	1	1	1	1	1	1	1
	bescribe the uniterent power plant electrical instruments and have	3	3	2	1	1 :	1 .	2 :	1	1	1	1	1	_	-	-



402048	Mechanical System Design		1	1	1	1	1	1	1	1	1	,				
102050C.1	To help mechanical engineers understand broadly the 6 materials						+	+	-	-	-					-
102050C.2	To describe the role of facilities and support systems.	1	12	1	2	2	1	-	-					a a sur	11111	
102050C.3	To enable students understand various types of simulations used in manufacturing environment.	2	3	3	1	1	2	2	1	1	1	1	1	1	1	
102050C.4	To acquaint with the methodology of months to acquaint with the methodology of months and acquaint with the months acquaint with the months and acquaint with the months acquaint with the months acqu	2	2	3	2	1	1	1	1	1	1	1	1	1	1	
02050C.5	To acquaint with the methodology of manufacturing simulation using computer software and the repercussions of changes & variation of showcase the areas of simulation applications in manufacturing and allied field.	3	2	2	1	1	1	1	1	1	1	1	1	1	1	
	and allied field.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	
402049	Elective - III	-	3	2	1	1	1	2	1	1	1	1	1	1	1	
														- Cell	2000	
02051D.2	To develop an understanding of the nature, functioning and design of organization as social collectivities. To orient the students to the application of principles of the students to the application of principles of the students to the application of principles of the students to the application of principles of the students to the application of principles of the students to the application of principles of the students to the application of the students of the students to the application of the students of the student	3	2	1	2	-										
02051D.3	To demonstrate the understanding of ich requires or psychology in an industrial and organizational workplace	3	3	3	1	2	2	2	1	1	1	1	1	1	1	1
02051D.4	To develop the insights into performance requirement and related fatigue, boredom and ways to handle it.	3	2	3	2	1	1	1	1	1	1	1	1	1	1	1
02051D.5	To have an understanding of human believe management and understanding related improvement strategies.	2	2	3	2	1	1	1	1	1	1	1	1	1	1	1
02051D.6	To develop the actimen to understood the country of in groups and develop knowledge and skills in leadership, power, commit	3	3	2	2	1	1	2	1	1	1	1	1	1	1	1
	To develop the acumen to understand the organizational culture, change management and organizational development.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
	Elective - IV			-	1	1	i	1	1	1	1	1	1	1	1	1
	To understand essential factors for product design														-1-11	
02050C.2	To design product as per customer needs and satisfaction	2	3	2	-											-
02050C.3	To understand Processes and concepts during product development	2	2	3	2	2	2	2	1	1	1	1	1	1	1	1
02050C.4	To understand methods and processes of Forward and Reverse engineering	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1
2050C.5	To carry various design processes or Forward and Reverse engineering To carry various design processes as DFA, DFMEA, design for safety	3	2	3	2	2	1	1	1	1	1	1	1	1	1	1
2050C.6	To understand the product life cycle and product data management	3	3	2	3	1	1	2	1	1	1	1	1	1	1	1
	- 2 See product life cycle and product data management	2	3	3	3	1	1	2	1	1	1	1	1	1	1	1
		2	2	3	1	1	1	1	1	1	1	1	,		-	-





Enhance: Design, Development and Implementation Genba Sopanrao Moze Trust's GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045.

Mechanical Engineering Department

202041	Name of Course AY 2020-21 Solid Mechanics															
202041.1	Solid Mechanics	PO	1 PC	2 PC)3 PC)4 P(05 PC)6 PC	7 PC	10 DC	no no	1000	-1-	_		Sint.
	COL DEFINE various types of stresses and strain developed on determine							7011	7/110	OFU	PU	10 PO1	1 PO1	2 PSO	1 PSO	2 PS
202041.2	CO1. DEFINE various types of stresses and strain developed on determinate and indeterminate members.	3			_	_	1	-		-	-					
202041.3	CO3. COMPUTE the slone & deflection hand and support	3	3	2	_	-	1	2	-	1	1	1	1	1	1	1
202041.4	CO4. CALCULATE torsional shear stress in a lear stresses on a beam.	3	3	_	_	1	-	1	-	1	1	1	1	1	1	1
202041.5	CO4. CALCULATE torsional shear stress in shaft and buckling on the column. CO5. APPLY the concept of principal stress.	3	_	3		1	1	2	1	1	1	1	1	1	1	1
202041.6		3	3	2	-	1	1	1	1	1	1	1	1	1	1	1
	CO6. UTILIZE the concepts of SFD & BMD, torsion and principal stresses to solve combined loading applications.	3	3	3	-	1	1	1	1	1	1	1	1	1	1	1
202042	Solid Modeling and Drafting	1	3	3	2	2	2	2	1	1	1	1	1	1	1	1
	Sond Moderning and Dratting							STORY BY				1 1	1 1	1	1	1
202042.1	CO1. UNDERSTAND basic concepts of CAD system, need and scope in Product Lifecycle Management CO2. UTILIZE knowledge of curves and surfacing features and methods.				Table No.											
202042.3	CO2. UTILIZE knowledge of curves and surfacing features and methods to create complex solid geometry CO3. CONSTRUCT solid models, assemblies using various models.	3	3	3	1	1	1	12	1	1	1	T .				
02042.3	CO3. CONSTRUCT solid models, assemblies using various modeling techniques & PERFORM mass property analys	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1
02042.4	CO4. APPLY geometric transformations to simple 2D geometries CO5. USE CAD model letters.	1	3	3	2	2	2	2	1	1	1	1	1	1	1	1
02042.5	COS. USE CAD model data for various CAD based	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
02042.6	CO5. USE CAD model data for various CAD based engineering applications viz. production drawings, 3D printing, F CO6. USE PMI & MBD approach for communication	3	3	2	2	1	1	2	1	1	1	1	1	1	1	1
		3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
202043	Engineering Thermodynamics	-	3	3	1	1	1	1	1	1	1	1	1	1	1	1
202043.1	CO1. DESCRIBE the basics of thermodynamics with heat and work interactions.							CP AN							-	1
02043.2	CO2. APPLY laws of thermodynamics with heat and work interactions.															
		1	3	3	2	2	2	2	1	1	1	1	1	1	-	
02043.4	CO3. APPLY entropy, available and non available energy for an Open and Closed System	3	2	2	1	1	1	2	1	1	1	1	1		1	1
02043.5	CO4. DETERMINE the properties of steam and their effect on performance of vapour power cycle.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
02043.6	CO5. ANALYSE the fuel combustion process and products of combustion.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
02043.0	CO6. SELECT various instrumentations required for safe and efficient operation of steam generator.	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1
102044	emotent operation of steam generator.	3	3	3	1	1	1	1	1	-	1	1	1	1	1	1
02044 I	Engineering Materials and Metallurgy					-	-	-	1	1	1	1	1	1	1	1
02044.1	COI. COMPARE crystal structures and ASSESS 1100				1			-	-	-						77-77
		1	2	3	2	2	-	-								
02044.3	CO2. CORRELATE crystal structures and imperfections in crystals with mechanical behaviour of materials. CO3. DIFFERENTIATE and DETERMINE mechanical properties using destructive and non-destructive testing of ma	1		2		3	1	1	1	1	1	1	1	1	1	1
02044.4	O4. IDENTIFY & FSTIMATE different and incommentation properties using destructive and non-destructive testing of ma	1			2	3	1	1	1	1	1	1	1	1	1	1
2044.5	204. IDENTIFY & ESTIMATE different parameters of the system viz., phases, variables, component, grains, grain by			2	2	3	1	1	1	1	1	1	1	1	1	1
2044.6	O5. ANALYSE effect of alloying element & heat treatment on properties of ferrous & nonferrous alloy. O6. SELECT appropriate materials for various applications			2	2	2	1	2	1		1	1	2	1	1	1
	O6. SELECT appropriate materials for various applications.		1	3	2	3	2	2	1		2			1	1	1
			1	3	2	3	2	2	-	1	4	1	2	1	1	1



302041	Name of Course (2015)																
202041	Design of Machine Elements-I	P	01 P	O2 P	03 P	04 P	05 PC)6 P	07 P	000	POO	DOLO	DO	1 PO1			
302041.1	Ability to identify and understand failure modes for mechanical elements and the income and the					-		1	0/1	001	109	POIC	POI	1 PO1	12 PS(DI PS	O2 P
302041.2	Ability to design Shafts, Keys and Coupling for industrial applications. Ability to design machine elements based on Ability to design machine elements based on Ability to design machine elements.	str				_	1 2	-	-	-	_						
302041.3	Ability to design machine elements at its about an applications.		_			_	_	_	_	_	1	1	1	1	1	1	
		_	-			_		_	_	_	1	1	1	1	1	1	_
302041.5	Ability to design fasteners and welded joints subjected to different loading conditions. Ability to design various Springs for strength.	_			_	_	-	_	_		1	1	1	1	1	1	
302041.6	Ability to design various Springs for strength and stiffness.	_	-		_	1	-			1	1	1	1	1	1	1	_
HAR STREET	the design various springs for strength and stiffness.	_	_	3 3		_	1	1 2		1	1	1	1	1	1	1	-
302042	Heat and Mass Transfer	-	3 ;	2 3	3 1	1	1	1	1	1	1	1	1	1	1	-	_
302042.1	IDENTIFY 4. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1													1	1	1	-
302042.1	IDENTIFY the laws for different modes of heat transfer.						11/1/				1				-		
002042.2	UNDERS (ANI) the properties and assert is	2	3	1	2	2	2	2	1		1	1			-		
302042.3	ANALYZE the natural and forced convective mode of heat transfer in various geometric configurations. UNDERSTAND AND REALIZE various laws with their interpolation.	ne 2	2	3	2		_	_	_	-		1	1	1	1	1	
302042.4	UNDERSTAND AND REALIZE various laws with their interrelations and analyzeRadiation heat transfer in black at UNDERSTAND the fundamentals and laws of mass transfer and its applications.	3	3	_	_				-	_	_	1	1	1	1	1	1
302042.5	UNDERSTAND the fundamentals and laws of mass transfer and its applications. ANALYZE various performance parameters for a property of the state of t	10 3	3				_	+-	-	-		1	1	1	1	1	
202042.6	ANALYZE various performance parameters for mass transfer and its applications.	3		_	-	-	-	_	_	_		1	1	1	1	1	1
	ANALYZE various performance parameters for existing heat exchanger and DEVELOPmethodologies for designing	a 3	_	_	_	-	-	-	-	1	1	1	1	1	1	1	1
302043	Theory of Machines-II\$	4 3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	_
302043.1	DESIGN AND ANALYZE (-	-	-										-	-	1	1
302043.2	DESIGN AND ANALYZE the cotter and knuckle Joints, levers and components subjected to eccentric loading. DESIGN shafts, keys and couplings under static loading conditions.	-															-
302043.3	DESIGN shafts, keys and couplings under static loading conditions. ANALYZE difference of the static loading conditions.	1	3	1	2	2	2	2	1	1		1	1	-			-
	THE TEL UITEIEN SITESSES IN NOWER SCIENCE and A DDI VIII	3	3	3	1	1	1	1	1	-	_	_		1	1	1	1
302043.4	EVALUATE dimensions of machine components under fluctuating loads.	2	3	2	2	1		1	1	-	-	_	1	1	1	1	1
		3	3	3	1	1	-	2	-	+	-	_	1	1	1	1	1
302043.6	APPLY the design and development procedure for different types of springs.	3	3	2	1	1	1		1	-	-	_	1	1	1	1	1
		3	3	2	1	1		2	1	1	_		1	1	1	1	1
302044	Turbo Machines			-	1	1	1	1	1	1	1	1	1	1	1	1	1
302044.1	Apply Momentum Principle and Valority Triangle							3 1 1									-
302044.2	Apply Momentum Principle And Verocity Triangle On a Pelton Turbines For Its Analysis.	2															
302044.3	Apply Momentum Principle And Velocity Triangle On a Reaction Turbines For Its Analysis. Apply Momentum Principle And Velocity Triangle On a Reaction Turbine For Its Analysis.	_	1		1				16.15								
02044.4	Apply Momentum Principle And Velocity Triangle On Steam Turbines For Its Analysis. Apply Momentum Principle And Velocity Triangle On Steam Turbines For Its Analysis.	2	2		`1												
02044.5	Apply Momentum Principle And Velocity Triangle Consept Of Centrifugal Pump For Its Analysis. Apply Thermodynamic Concept Using T.S. Diagram And Use Centrifugal Pump For Its Analysis.	3	2	2	1												
02044.6	Apply Thermodynamic Concept Using T S Diagram And Used Of Velocity Triangle On Centrifugal Compressor For I	3	2	2	1								-	-	-		
02044.0 F	Apply Thermodynamic Concept Using T S Diagram And Used Of Velocity Triangle On Centrifical Compressor For I	3	2	2	1							-	-				
202045	Apply Thermodynamic Concept Using T S Diagram And Used Of Velocity Triangle On Centrifugal Compressor For I Page 1975 Analysis Concept Using T S Diagram And Used Of Velocity Triangle On axial compress For Its Analysis	2	2	2	1						-	1					
302045 N	Metrology and Quality Control							-				-					
02045.1 1	. Understand the methods of massurement and six a					-		-	-								
02045.2 2	Explain tolerance, limits of size, fits, geometric and position tolerances and gauge design Understand and use/apply Quality Control Techniques.	3	3	2	1	2	-	-									E N
02045.3 3	. Understand and use/apply Quality Control To the and position toler ances and gauge design	2	2		_	_	_	_		1	1	1		1	1	1	1
02045.4 4	. Understand and use/apply Quality Control Techniques/ Statistical Tools appropriately. . Develop an ability of problem solving and decision making by identifying and analyzing the cause for variation and	3								1	1	1	_	_	1	1	1
	or problem solving and decision making by identifying and analyzing the cause for varioties and		3	_			_		1	1	1	1		_	1	1	
302047 N	Immerical Methods and Ovident Control of the education and	3	2	3	1	2	1	2	1	1	1	1					1
02047.1 1	fumerical Methods and Optimization*										-	1	-	-	1	1	1
02047.1 1.	Use appropriate Numerical Methods to solve complex mechanical engineering problems.								1		18 18 1	-	-	-			
02047.2 2.	Formulate algorithms and programming.		3	3	1	1	1 :	1	1	1		-	-				
02047.3 3.	Use Mathematical Solver			3			1 1	_	_		1	1	_			1	1
02047.4 4.	Generate Solutions for real life problem using a significant signi						_	_	_	1	1	1			1	1	1
02047.5 5.	Analyze the research problem 3	_	_		_		1 2 1 2	_	_	1	1	1	1		1	_	1
							1 2		1	1	1	1					-



203156	Electrical and Electronics Engineering						T	T		T	-	-				
203156.1	APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded systems							-	-	-						245010
203156.2	DEVELOP interfacing of different types of sensor and en wilcroprocessor and Microcontroller in embedded systems	1	1	1 3	2	3	1	1	-	1	1	-				
203156.3	DEVELOP interfacing of different types of sensors and other hardware devices with Atmega328 based Arduino Board UNDERSTAND the operation of DC motor, its speed control methods and braking	1	_	-	_	_		-	_		_	1	1	1	1	1
203156.4	DISTINGUISH between types of these shared	3		_	-		-	-	-	_	_	1	1	1	1	1
203156.5	DISTINGUISH between types of three phase induction motor and its characteristic features	3	_			_	_	_	_	-			1	1	1	1
203156.6	EXPLAIN about emerging technology of Electric Vehicle (EV) and its modular subsystems	1	_	3		-	_	_	_	-			1	1	1	1
200100.0	CHOOSE energy storage devices and electrical drives for EVs	1	_	3	_	_	-	_	-	_		2	1	1	1	1
207002	Engineering M. A. W. C. YY	1	1	13	1	3	2	3	1		1	1	2	1	1	1
	Engineering Mathematics III		-			-										-
207001.1	Solve higher order linear differential equation using appropriate techniques for modellinganalyzing of electrical circuits solve system of linear equations using direct and its extractions are considered to the control of the contr	1	-	-		-										
207001.2			3	1	_	-	2	2	1		1 1	1	1	1	1	1
207001.3		3	3	3	-	-	1	1	1	1	1 1	_			1	
207001.4			3	3	_	_	1	1	1	1	1 1	_			1	1
207001.5	Solve Partial differential equations such that as wave equations, one and two dimensional heat flow equations	3	3	2	1	1	1	2	1	_		-				1
		3	3	2	1	1	1	2	1		-					1
202047	Kinematics of Machinery								-	+	-		-	1	1	1
202047.1	1. To make the students conversant with kinematic analysis of mechanisms and like the			100					1	-		-	-	_	_	
202047.2	2. To develop the competency to analyze the velocity and acceleration in mechanisms using analytical and graphical a 3. To develop the skill to propose and synthesize the machinisms using analytical and graphical a	1	3	3	2	2	2	2	1	1	-	-	-			
202047.3	3. To develop the skill to propose and synthesize the mechanisms using graphical and analytical and graphical at To develop the competency to understand a single graphical and analytical technique.	3	2	2	2	1	1	2	1	-	-	_				1
02047.4		3	3	2	1	1	1	1	-	-	-	-		1 :	1	1
02047.5	4. To develop the competency to understand & apply the principles of gear theory to design various applications.	3	3	3	1	1	1		1	1	-	-		1 1	1 1	1
	5. To develop the competency to design a cam profile for various follower motions.	3	3	2	1	1		2	1	1	_	1	1 1	1 :	1 1	1
202048	Applied Thermodynamics				1	1	1	1	1	1	1	1	1	1 1	1 1	
	Applied Institutional Institution (Institution Institution .5															
202048.2	CO1. DETERMINE COP of refrigeration system and ANALYZE psychrometric processes.	1	1	2	2	2										
202048.3	CO2. DISCUSS basics of engine terminology, air standard, fuel air and actual cycles.	3	2			3	1	1	1	1	1	1	1	1	1	
02040.3	COS. IDENTIFY factors affecting the combustion performance of Stand Clanging.	1	1	2	2	2	1	2	1	1	1	1	2	1	_	-
02040.4	CO4. DETERMINE performance parameters of IC Engines and emission control	1		2	2	3	1	1	1	1	1	1	1		-	
02040.5	COS. EXPLAIN WORKING OF VARIOUS IC Engine systems and use of alternative fund	1	1	2	2	3	1	1	1	1	1	1	_	_	-	
202048.6	CO6. CALCULATE performance of single and multi stage reciprocating compressors and DISCUSS rotary positive displa		1	2	2	3	1	1	1	1	1	1		_ ^	1	-
		3	2	2	2	2	1	2	1	1	1	1	2	-		-
202049	Fluid Mechanics												+-	+	1	1
02049.1	CO1. DETERMINE various properties of fluid												-	-	-	-
02049.2	CO2. APPLY the laws of fluid statics and concents of buoyaney	1	1	2	2	3	1	1	1	1	1	1	1	1	1	-
02049.3	CO3. IDENTIFY types of fluid flow and terms associated in fluid kinematics	3	2	2	2	2	1	2	1	1	1	1	2	-	1	1
02049.4	CO4. APPLY principles of fluid dynamics to laminar flow	1	1	2	2	3	_	1	1	1	1	1	_	_	1	1
02049.5	CO5. ESTIMATE friction and minor losses in internal flows and DETERMINE.	3	2	2	2	2		2	1	1	1		1	1	1	1
02049.6	CO6, CONSTRUCT mathematical correlation considering direction boundary layer formation over an exte	1	1	2	2	-		1	1			1	2		1	1
	CO6. CONSTRUCT mathematical correlation considering dimensionless parameters, also ABLE to predict the performance of the perfo	3		2	2	_		2	1	1	1	1	1	1	1	1
	Manufacturing Processes				-	-	1	-	1	1	1	1	2	1	1	1
	COL SELECT appropriate moulding constant						-	-	-	-						
02050.2	CO1. SELECT appropriate moulding, core making and melting practice and estimate pouring time, solidification rate:	3	2	2	2	2		-	-							
		1		2	_	_		_	_	1	1	1	2	1	1	1
		3		2		_		_	-	1	1	1	1	1	1	1
		_		_	_	_	_	_	_	1	1	1	2	1	1	1
020000	COS. DITTERENTIATE thermoplastics and thermosetting and FXPI AIN polymor processing the	-		2	_	-		_		1	1	1	2	1	1	1
02050.6							1	1	1							



302048	Design of Machine Elements-II	T	T	T	T	T	T	-	-								
302048.1	CO 1: To understand and apply principles of the Living State of th				-	-	+	-	-								
302048.2	CO 1: To understand and apply principles of gear design to spur gears and industrial spur gear boxes.	3		3	3	1	+		-								
302048.3	CO 2: To become proficient in Design of Helical and Bevel Gear	3		_	_	1 1	_	_		1	1	1	1	1	1		1
302048.4	1 o o . To develop capability it) analyse Rolling contact bearing and 1 .			_	_	1 1	_	_		1	1	1	1	1	1		1
	CO 4: To learn a skill to design worm gear box for various industrial applications.	3	_	_		2 1	1	1		1	1	1	1	1	1	-	
302048.5	100 5. To incurcate all ability to design helt drives and soloction act.	3	_	2 :	_	1 1	1	2		1	1	1	1	1	1	-	
302048.6	CO 6: To achieve an expertise in design of Sliding contact bearing in industrial applications.	3	_	3	3	1 1	1	2			1	1	1	1		-	-
		3		2 3		1 1	1	1	_	_	1	1		-	1	-	
302049	Refrigeration and Air Conditioning									-	-	1	1	1	1	1	
302049.1	Illustrate the fundamental principles and applications of the									-				-			
302049.2	Obtain cooling capacity and coefficient of performance by conducting test on vapour compression refrigeration Present the properties, applications and environmental issues of ties.	3	1	3 3	1	1	1	1	+		-						
302049.3		n 3	_	_	_	-	-	-	-		_	1	1	1	1	1	
302049.4	Present the properties, applications and environmental issues of different refrigerants	3	-	_	_	_	1	-	-		_	1	1	1	1	1	
302049.5	The state of the s	3	-	_	_	-	-	-	_	1	1	1	1	1	1	1	1
002047.5	Operate and analyze the refrigeration and air conditioning systems	_	+	-	-	-	1	2	1	. 1	1	1	1	1	1	1	1
202050		3	2	3	1	1	1	1	1	1	1	1	1	1	1	1	_
302050	Mechatronics													-	1	+ +	-
302050.1	UNDERSTAND the basic concepts of Computer Aided Engineering (CAE) and CHARACTERISTICS															-	-
302050.2	UNDERSTAND the basic concepts of Computer Aided Engineering (CAE) and CHARACTERISTICS of various elements required NURTURE students about the discretization process and criteria for quality mesh.	e 1	2	1	2	2	2	2	1	1		1	4				
302050.3	UNDERSTAND the approaches of Finite Flement Method (FEAL)	3	3	2	1	_	1	1	1	_	-	1	1	1	1	1	
302050.4	UNDERSTAND the approaches of Finite Element Method (FEM) and to find displacement and stresses over the body. DEVELOP the knowledge and skills needed to effectively evaluate the results using Finite Element Analysis (FEA).	2	3	3	2	_	1	1	-	-	_	1	1	1	1	1	
302050.5		2	2	-	1		-	-	1	-	_	1	1	1	1	1	
302050.6		2	3	-	-	_	1	2	1	-	_	1	1	1	1	1	
	STUDY the applications of CAE in the various domains of the Mechanical Engineering.	3	+	_	1	-	1	2	1	_	_	1	1	1	1	1	1
302051	Manufacturing -Process-IIS	1 3	1 2	3	1	1	1	1	1	1		1	1	1	1	1	-
302051.1	TA DILLY C.		-	-													+
	APPLY fundamentals for the design and/or selection of elements in transmission systems. UNDERSTAND the philosophy that real engineering the philosophy that the philosophy the philosophy that the philosophy that the philosoph			-													-
202051.2		1	3	1	2	2	2	2	1	1	1	1	1	1	1	- 1	-
302051.3	DEMONSTRATE design skills for the problems in real life industrial applications. 4. DEVELOP an attitude of term used. 4. DEVELOP an attitude of term used.	3	3	3	1	1	1	1	1	1	_		1	1	1	1	1
		3	3	3	2	1	1	1	1	-	_		1	1		1	1
302051.5	 PERCEIVE about safety, ethical, legal, and other societal constraints in execution of their design projects. BUILD a holistic design approach to find out praymetic solution. 	3	2	2	1	1	1	2	1	1	1	-	_	_	1	1	1
302051.6	BUILD a holistic design approach to find out pragmatic solutions to realistic domestic and industrial problems	3	3	3	1	1	1	2	1	1	-	_	1	1	1	1	1
	problems	3	2	3	1	1	1	1	1	_	1		1	1	1	1	1
ourse Code	Name of Course (2015 Pattern)					1	1	1	1	1	1		1	1	1	1	1
402041	Hydraulics and Pneumatics	PO1	PO2	PO3	PO	DOS	DOC	DO-			_					V Males	100
102041.1	Understand wowling pain in the	- 01	102	103	1 04	103	ruo	PO	PO8	PO9	PO	10 P	011 P	012	PSO1	PSO2	PSO
102041.2		2	_														- 50
	The state of the s		2	3	1	1	1	1	1	1	1		1	1	1	1	-
Caltrono	Selection of appropriate components required for hydronic and	2	2	3	2	1	1	1	1	1	1			1	1	1	1
	- 1	3	3	2	1	1	1	2	1	1	1	_		1	1		1
	E Design a system according to the requirements	2	2	3	2	2	2	2	1	1	1				_	1	1
02041.6	☐ Develop and apply knowledge to various applications	3	2	3	2	2	2	2	1	1	1	_			1	1	1
Control of the Contro		1	2	1	2	2	2	2	1	1	1	_			1	1	1
402042	CAD CAM Automation		-				- 1	-	1	1	1		1	1	1	1	1
02042.1	Apply homogeneous transformation matrix 5																
02042.2	□ Apply homogeneous transformation matrix for geometrical transformations of 2D CAD entities for basic geo □ Use analytical and synthetic curves and surfaces in part modeling.	2	2	2 1	2 1	. 1	. 1										
02042.3	Use analytical and synthetic curves and surfaces in part modeling.	2	3	_		_	1		1	1	1			1	1	1	1
Catronio	Do real times analysis of simple mechanical elements like t	3	$\overline{}$	2	1	_	_		1	1	1	1			_	1	1
02042.4	Generate CNC program for Turning / Milling and generate tool path using CAM software.									1	1	1				1	
02042.5	Demonstrate understanding of various rapid manufacturing techniques and develop competency in designing	2	2	3	1	1	1	1	1	1	1					1	1

☐ Demonstrate understanding of various rapid manufacturing techniques and develop competency in designing 2

☐ Understand the robot systems and their applications in manufacturing industries.



402043	Dynamics of Machinery				1	1	1	1	1	1	- 1	- 1				
402043.1	To conversant with balancing problems of machines.															
402043.2	To understand mechanisms for system control – Gyroscope.	1	2	1	2	2	2	2								
402043.3	To understand fundamentals of free and forced vibrations.	2	_	3	1	1	1	_	-	-	_			_	1 :	1
402043.4	To develop competency in understanding of vibration in Industry.	2		3	2	1	_	-	-	_		_			1 :	1
402043.5	To develop analytical competency in solving vibration problems.	3		2	1	1	-	-	-	_	1 :			1 1	1 1	1
402043.6	To understand the various tachniques of second problems.	2	-	3	2	2	-	-	-	_				1 1	1 1	1
	To understand the various techniques of measurement and control of vibration and noise.	3	-	3	2	2	2	-	-	_		_	_	1 1	1	1
402044	Elective – I	1	1	1	1	1	2	2	1		1 1		1 :	1 1	1	1
102044A.1							-		-							
02044A.2	☐ Understand the different techniques used to solve mechanical engineering problems.	3	3	3	1		-									
02044A.3	Delive and use 1-D and 2-D element stiffness matrices and 11	1 3	3	3	1	1	1	1	1	1	1	1	1	1	1	
02044A.4	☐ Apply mechanics of materials and machine design topics to provide preliminary results used for testing the reasona ☐ Explain the inner workings of a finite element code for lives the code for lives th	1 2	-		2	1	1	1	1	1	1	1	1	1	1	
02044A.5	□ Explain the inner workings of a finite element code for linear stress, displacement, temperature and modal analysis. □ Use commercial finite element analysis software to selve a stress of the str	2	2	2	1	1	1	2	1	1	1	1	1	1	1	
	☐ Use commercial finite element analysis software to solve complex problems in solid mechanics and heat transfer. ☐ Interpret the results of finite element analyses and make or problems in solid mechanics and heat transfer.	3	3	2	1	1	1	2	1	1	1	1	1	-	1	+
02044A.6	☐ Interpret the results of finite element analyses and make an assessment of the results in terms of modeling (physics a	3	3	2	1	1	1	1	1	1	1	1	1	1	1	+
		2	3	1	2	2	2	2	1	1	1	1	1	1	1	-
402045	Elective – II									1	1	1	1	1	1	-
02045A.1	Understand Product design and Product development processes					10-12-1						-	-		-	-
02045A.2	Understand Processes tools and techniques for M. L. C.	2	3	1	2	2	2	2	1	1	1	+ ,	-	-		_
02045A.3	Understand Processes, tools and techniques for Concept Inception, Verification and selection Understand Processes, tools and techniques for Concept Inception, Verification and selection	3	3	3	1	1	1	1	1	1	1	1	1	1	1	
		3	3	3	2	1	1	1	1	1	1	1	1	1	1	
02045A.5	Understand Processes, tools and techniques for Concept Exploration & Development Linderstand Processes, tools and techniques for Design Verification and Validation	2	2	2	1	1	1	2	1	1	1	1	1	1	1	
02045A.6	Understand Processes, tools and techniques for Design Verification and Validation Understand Processes, tools and techniques for Robust Design and Development	3	3	2	1	1	1	_	1	1	1	1	1	1	1	
er (Gulter mi	Processes, tools and techniques for Robust Design and Development	3	3	2	1	1	1	2	1	1	1	1	1	1	1	
402047	Energy Engineering			-	1	1	1	1	1	1	1	1	1	1	1	
	Describe the power second			-	-		-									
02047.2	Describe the power generation scenario, the layout components of thermal power plant and analyze the improved R Analyze the steam condensers, recognize the an environmental incomposite in the power plant and analyze the improved R	1	3		-	-			0.575/11	000						
		3		1	2	2	2	2	1	1	1	1	1	1	1	
02047.4	Recognize the layout, component details of hydroelectric power plant and nuclear power plant and method to contr		3	3		_	1	1	1	1	1	1	1	1	1	1
	the details of diesel power plant, gas nower plant and analyze and the	3	3	3		_	1	1	1	1	1	1	1	1	1	
		3	3	_	1	1	1	2	1	1	1	1	1	1	1	1
02047.6	Describe the different power plant electrical instruments and basic principles of economics of power generation.	3	3	_	1	1	1	2	1	1	1	1	1	1	1	-
		3	2	2	1	1	1	1	1	1	1	1	1	1	1	
402048	Mechanical System Design												1	+ -	1	1
2050C.1	To help mechanical engineers understand broadly the functioning of manufacturing systems.															
		1	2	1	2	2	2	2	1	1	1	4	-			
2050C.3	o enable students understand various types of cimulations and ti	2	3	_	_	_		_	1	1	-	1	1	1	1	1
2050C.4	o acquaint with the methodology of manufacturing simulation using computer software and the repercussions of changes & variations to the computer of the compu	2		_	_	-	-	-	-		1	1	1	1	1	1
	of manufacturing simulation using computer software and the representation of the second seco	-					_		1	1	1	1	1	1 1	1	1
2050C.5	o showcase the areas of simulation applications in manufacturing and allied field.	3	2	2	1	1	1	2	1	1	1	1	1	_	_	_



1																
	Elective - III	1	1	1	1											
402051D.1	To develop an understanding of the nature functioning at 11.			-					-							
402051D.2	To develop an understanding of the nature, functioning and design of organization as social collectivities. To orient the students to the application of principles of psychology in an industrial and organizational workplace. To demonstrate the understanding of job requirement and related for incomplete the property of the property	3	2	1	2	1 2	-		-	-						
402051D.3	To demonstrate the understanding of interpretable of psychology in an industrial and organizational workplace	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
402051D.4	To develop the insights into performance management and related fatigue, boredom and ways to handle it. To have an understanding of human behavior in groups and develop the improvement strategies.	3	2	3	2	1	1	1	1	1	1	1	1	1	1	1
402051D.5	To have an understanding of human behavior in groups and develop knowledge and skills in leadership, power, comm To develop the acumen to understand the organizational culture, change more than the communication of the same and the organizational culture, change more than the communication of the communication of the same and the communication of the communicatio	2	2	3	2	1	1	2	1	1	1	1	1	1	1	1
402031D.6	To develop the acumen to understand the organizational culture, change management and organizational development	3	3	2	2	1	1	2	1	1	1	1	1	1	1	1
402050	Floring IV P. 1 - 7 - 1	3	2	2	1	1	1	1	1	i	1	1	1	1	1	1
402050C.1	Elective - IV - Product Design and Development												1	1	1	1
402050C.2	To understand essential factors for product design To design product as per customer needs and satisfaction										100	16.0				
402050C.3	To understand Processes and concepts during product development	2	3	2	2	2	2	2	1	1	1	1	1	1	1	
402050C.4	To understand methods and processes of Forward and Reverse engineering	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1
		3	2	3	2	2	1	1	1	1	1	1	1	1	1	1
402050C.6	To understand the product life cycle and product data management	3	3	2	3	1	1	2	1	1	1	1	1	1	1	1
	, so and product data management	2	2	3	1	1	1	2	1	1	1	1	1	1	1	1
					1	1	1	1	1	1	1	1	1	1	1	1



Principal



Enhance: Design, Development and Implementation Genba Sopanrao Moze Trust's GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045.

Mechanical Engineering Department AY 2019-20

ALCOHOLD BY	A1 2015-20		-	- 1							T	1				
207002	Engineering Mathematics – III															
207002.1	1) Solve higher order linear differential equations and apply to modeling and analyzing mass spring sy	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
207002.2	2) Apply Laplace transform and Fourier transform techniques to solve differential equations involved	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
207002.3	3) Apply statistical methods like correlation, regression analysis in analyzing, interpreting experiment	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
207002.4	4) Perform vector differentiation and integration, analyze the vector fields and apply to fluid flow pro	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
207002.5	5) Solve various partial differential equations such as wave equation, one and two dimensional heat flo	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
													1-12-1			
202041	Manufacturing Process-I															
202041.1	• Understand and analyze foundry practices like pattern making, mold making, Core making and Inspection	1	2	3	2	3	1	1	1	1	1	1	1	1	1	1
202041.2	Understand and analyze Hot and Cold Working, Rolling, Forging, Extrusion and Drawing Processes.	1	1	2	2	3	1	1	1	1	1	1	1	1	1	1
202041.3	Understand different plastic molding processes, Extrusion of Plastic and Thermoforming	3	2	2	2	2	1	2	1	1	1	1	2	1	1	1
202041.4	Understand different Welding and joining processes and its defects	3	2	1	1	2	2	2	1	1	1	1	1	1	1	1
202041.5	Understand, Design and Analyze different sheet metal working processes	1	1	3	2	3	2	2	1	1	2	1	2	1	1	1
202041.6	Understand the constructional details and Working of Centre Lathe	1	1	3	2	3	2	2	1	1	1	2	1	1	1	1
						1000										
202042	Computer Aided Machine Drawing															
202042.1	Understand the importance of CAD in the light of allied technologies such as CAM, CAE, FEA, CFD, PLM.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202042.2	Understand the significance of parametric technology and its application in 2D sketching.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202042.3	• Understand the significance of parametric feature-based modeling and its application in 3D machine com	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202042.4	Ability to create 3D assemblies that represent static or dynamic Mechanical Systems.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202042.5	Ability to ensure manufacturability and proper assembly of components and assemblies.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202042.6	Ability to communicate between Design and Manufacturing using 2D drawings.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
										-	-	-				
202043	Thermodynamics											-				1
202043.1	Apply various laws of thermodynamics to various processes and real systems.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202043.2	• Apply the concept of Entropy, Calculate heat, work and other important thermodynamic properties for various ideal ga		3	2	2	1	1	1	1	1	1	1	1	1	1	1
202043.3	• Estimate performance of various Thermodynamic gas power cycles and gas refrigeration cycle and availability in each		3	3	1	1	1	2	1	1	1	1	1	1	1	1
202043.4	Estimate the condition of steam and performance of vapour power cycle and vapour compression cycle.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202043.5	• Estimate Stoichiometric air required for combustion, performance of steam generators and natural draught requireme	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202043.6	• Use Psychromertic charts and estimate various essential properties related to Psychrometry and pro-	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
					7.77						-					
								10/15/10/19								
202044	Material Science										-	-	-	-	1	1
	Understand the basic concepts and properties of Material.	1	2	3	2	3	1	1	1	1	1	1	1	1	1	1
202044 202044.1 202044.2	Understand the basic concepts and properties of Material. Understand about material fundamental and processing.	1	1	2	2	3	1 1	1	1	1	1	1	1	1	1	1
202044 202044.1 202044.2 202044.3	Understand the basic concepts and properties of Material. Understand about material fundamental and processing. Select proper metal, alloys, nonmetal and powder metallurgical component for specific requirement	1 3	1 2	2	2	3 2	1 1 1	1 2	1	1	1	1	1 2	1	1	1
202044 202044.1 202044.2 202044.3 202044.4	Understand the basic concepts and properties of Material. Understand about material fundamental and processing. Select proper metal, alloys, nonmetal and powder metallurgical component for specific requirement. Detect the defects in crystal and its effect on crystal properties.	1 3 3	1 2 2	2 2 1	2 2 1	3 2 2	1 1 1 2	1 2 2	1 1 1	1 1 1	1 1 1	1	1 2 1	1 1 1	1 1 1	1 1 1
202044 202044.1 202044.2 202044.3	Understand the basic concepts and properties of Material. Understand about material fundamental and processing. Select proper metal, alloys, nonmetal and powder metallurgical component for specific requirement	1 3	1 2	2	2	3 2	1 1 1 2 2 2	1 2	1	1	1	1	1 2	1	1	1

		1														
203156	Strength of Materials	2	2	2	1	1	1	2	1	1	1	1	1	1	1	1
203156.1	Apply knowledge of mathematics, science for engineering applications	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1
203156.2	Design and conduct experiments, as well as to analyze and interpret data	3	3	2	2	1					1	1	1	1	1	1
203156.3	Design a component to meet desired needs within realistic constraints of health and safety	3	3	3	1	1	1	2	1	1	_	1	1	1	1	1
203156.4	Identify, formulate, and solve engineering problems	3	2	2	1	1	1	2	1	1	1	-	1	1	1	1
203156.5	Practice professional and ethical responsibility	3	3	2	2	1	1	1	1	1	1	1	1	-	1	1
203156.6	Use the techniques, skills, and modern engineering tools necessary for engineering practice	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
A CONTRACTOR	自己的一种,我们就是一种的一种,我们就是一个一种的一种,我们就是一种的一种的一种的一种的一种的一种。		-			et te										
202045	Fluid Mechanics															1
202049.1	CO1. DETERMINE various properties of fluid	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
	CO2. APPLY the laws of fluid statics and concepts of buoyancy	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202049.3	CO3. IDENTIFY types of fluid flow and terms associated in fluid kinematics	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202049.4	CO4. APPLY principles of fluid dynamics to laminar flow	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202049.5	CO5. ESTIMATE friction and minor losses in internal flows and DETERMINE boundary layer formation of	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202049.6	CO6. CONSTRUCT mathematical correlation considering dimensionless parameters, also ABLE to predict	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202048	Theory of Machines – I					10										
202048.1	Identify mechanisms in real life applications.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202048.2	Perform kinematic analysis of simple mechanisms.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202048.3	Perform static and dynamic force analysis of slider crank mechanism.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202048.4	Determine moment of inertia of rigid bodies experimentally.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202048.5	Analyze velocity and acceleration of mechanisms by vector and graphical methods.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202010.0																
202049	Engineering Metallurgy	ne s														
202049.1	describe how metals and alloys formed and how the properties change due to microstructure	1	3	3	2	2	2	2	1	1	1	1	1	1	1	1
202049.2	apply core concepts in Engineering Metallurgy to solve engineering problems.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202049.3	conduct experiments, as well as to analyze and interpret data	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202049.4	select materials for design and construction.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202049.5	possess the skills and techniques necessary for modern materials engineering practice	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1
202049.6	recognize how metals can be strengthened by alloying, cold-working, and heat treatment	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
20201910																
202050	Applied Thermodynamics															
202050.1	• Classify various types of Engines, Compare Air standard, Fuel Air and Actual cycles and make out v	1	3	3	2	2	2	2	1	1	1	1	1	1	1	1
202050.2	• Understand Theory of Carburetion, Modern Carburetor, Stages of Combustion in S. I. Engines and	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202050.3	• Understand Fuel Supply system, Types of Injectors and Injection Pumps, Stages of Combustion in CI Engi	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202050.4	Carry out Testing of I. C. Engines and analyze its performance.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202050.5	Describe construction and working of various I. C. Engine systems (Cooling, Lubrication, Ignition, Government)	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1
202050.6	Describe construction, working of various types of reciprocating and rotary compressors with performance	_	3	3	1	1	1	1	1	1	1	1	1	1	1	1
202030.0	Desired College of the College of th															
203152	Electrical and Electronics Engineering				15.5	100	8920			Ton-			1	a line		
203152.1	Develop the capability to identify and select suitable DC motor and its speed control method for given indus	3	3	2	2	2	1	1	1	1	1	1	1	1	1	1
203152.1	Develop the capability to identify and select suitable induction motor and its speed control method for given	3	3	2	2	2	1	1	1	1	1	1	1	1	1	1
203152.3	Develop the capability to identify and select suitable special purpose motor and its speed control method for	3	3	2	2	2	1	2	1	1	1	1	1	1	1	1
203152.4	Program Arduino IDE using conditional statements	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1
203152.4	Interfacing sensors with Arduino IDE	1	1	1	2	3	2	2	1	1	1	1	1	1	1	1
203152.5	Data acquisition system for mechanical applications	1	1	1	2	3	2	2	1	1	1	1	1	1	1	1
200102.0	Data addition of order for modulation approximate	1		1												770

						ALC: N					100000					
ourse Code	Name of Course (2015)	PO ₁	PO ₂	PO ₃	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO ₂	PS0
302041	Design of Machine Elements-I											1000				
302041.1	Ability to identify and understand failure modes for mechanical elements and design of machine elements ba	1	3	1	2	1	2	1	1	1	1	1	1	1	1	1
302041.2	Ability to design Shafts, Keys and Coupling for industrial applications.	3	3	3	1	2	1	2	1	1	1	1	1	1	1	1
302041.3	Ability to design machine elements subjected to fluctuating loads.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
302041.4	Ability to design Power Screws for various applications.	3	2	3	1	1	1	2	1	1	1	1	1	1	1	1
302041.5	Ability to design fasteners and welded joints subjected to different loading conditions.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
302041.6	Ability to design various Springs for strength and stiffness.	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1
302042	Heat and Mass Transfer															
302042.1	IDENTIFY the laws for different modes of heat transfer.	2	3	1	2	2	2	2	1	1	1	1	1	1	1	1
302042.2	UNDERSTAND the properties and economics of thermal insulation and ANALYZE heat transfer through f	2	2	3	2	1	1	1	1	1	1	1	1	1	1	1
302042.2	ANALYZE the natural and forced convective mode of heat transfer in various geometric configurations.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
302042.4	UNDERSTAND AND REALIZE various laws with their interrelations and analyzeRadiation heat transfer in	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
302042.4	UNDERSTAND the fundamentals and laws of mass transfer and its applications.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
202042.6	ANALYZE various performance parameters for existing heat exchanger and DEVELOPmethodologies for or	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
302043	Theory of Machines-II\$															
302043.1	DESIGN AND ANALYZE the cotter and knuckle Joints, levers and components subjected to eccentric load	1	3	1	2	2	2	2	1	1	1	1	1	1	1	1
302043.1	DESIGN shafts, keys and couplings under static loading conditions.	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
302043.3	ANALYZE different stresses in power screws and APPLY those in the procedure to design screw jack.	2	3	3	2	1	1	1	1	1	1	1	1	1	1	1
302043.4	EVALUATE dimensions of machine components under fluctuating loads.	3	3	2	2	1	1	2	1	1	1	1	1	1	1	1
302043.5	EVALUATE & INTERPRET the stress developed on the different type of welded and threaded joints.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
302043.6	APPLY the design and development procedure for different types of springs.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
302044	Turbo Machines															
302044.1	Apply Momentum Principle And Velocity Triangle On a Pelton Turbines For Its Analysis.	2	1		1											
302044.2	Apply Momentum Principle And Velocity Triangle On a Reaction Turbine For Its Analysis.	2	2		`1											_
302044.3	Apply Momentum Principle And Velocity Triangle On Steam Turbines For Its Analysis.	3	2	2	1								LANCE OF			
302044.4	Apply Momentum Principle And Velocity Triangle Concept Of Centrifugal Pump For Its Analysis.	3	2	2	1										No control	
302044.5	Apply Thermodynamic Concept Using T S Diagram And Used Of Velocity Triangle On Centrifugal Compr	3	2	2	1											_
302044.6	Apply Thermodynamic Concept Using T S Diagram And Used Of Velocity Triangle On axial compress For	2	2	2	1			-		-						-
302045	Metrology and Quality Control															
302045.1	1. Understand the methods of measurement, selection of measuring instruments / standards of measurement.	1 3	3	2	1	2	1	1	_	_	1	1	1	1	1	1
302045.2	2. Explain tolerance, limits of size, fits, geometric and position tolerances and gauge design	2	2	2	2	2	1	1	1	1	1	1	1	1	1	
302045.3	3. Understand and use/apply Quality Control Techniques/ Statistical Tools appropriately.	3	3	3	2	2	3	3	1	1	1	1	1	1	1	
302045.4	4. Develop an ability of problem solving and decision making by identifying and analyzing the cause for va	r 3	2	3	1	2	1	2	1	1	1	1	1	1	1	+
302047	Numerical Methods and Optimization*															
302047.1	Use appropriate Numerical Methods to solve complex mechanical engineering problems.	3	3	3	1	1	1	1	1	1	_	1	1	1	1	-
302047.1		2	3	2	2	1	1	1	1	1	_	1	1	1	1	1
302047.3		3	3	2	1	1	1	2	1	1	1	1	1	1	1	
302047.4		3	3	3	1	1	1	2	1	_	_	1	1	1	1	
	5. Analyze the research problem	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1



302048	Design of Machine Elements-II											-				
302048.1	CO 1: To understand and apply principles of gear design to spur gears and industrial spur gear boxes.	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
302048.2	CO 2 : To become proficient in Design of Helical and Bevel Gear	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
302048.3	CO 3: To develop capability to analyse Rolling contact bearing and its selection from manufacturer's Catalog		3	3	2	1	1	1	1	1	1	1	1	1	1	1
302048.4	CO 4: To learn a skill to design worm gear box for various industrial applications.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
302048.5	CO 5: To inculcate an ability to design belt drives and selection of belt, rope and chain drives.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
302048.6	CO 6: To achieve an expertise in design of Sliding contact bearing in industrial applications.	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1
302040.0	or 10 defices an expertise in design of Stiding contact bearing in industrial applications.	3		3	_		10.00	-	-		-	-		-	-	
302049	Refrigeration and Air Conditioning															
302049.1	Illustrate the fundamental principles and applications of refrigeration and air conditioning system	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
302049.1	Obtain cooling capacity and coefficient of performance by conducting test on vapour compression refu	_	3	3	2	1	1	1	1	1	1	1	1	1	1	1
	 	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
302049.3	Present the properties, applications and environmental issues of different refrigerants					1	1	2	1	1	1	1	1	1	1	1
302049.4	Calculate cooling load for air conditioning systems used for various	3	3	3	1			_	_	_	1		1	_		1
302049.5	Operate and analyze the refrigeration and air conditioning systems	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1
302050	Mechatronics															
302050.1	UNDERSTAND the basic concepts of Computer Aided Engineering (CAE) and CHARACTERISTICS of various elements	1	2	1	2	2	2	2	1	1	1	1	1	1	1	
302050.2	NURTURE students about the discretization process and criteria for quality mesh.	3	3	2	1	1	1	1	1	1	1	1	1	1	1	
302050.3	UNDERSTAND the approaches of Finite Element Method (FEM) and to find displacement and stresses over the body.	2	3	3	2	1	1	1	1	1	1	1	1	1	1	
302050.4	DEVELOP the knowledge and skills needed to effectively evaluate the results using Finite Element Analysis (FEA).	2	2	2	1	1	1	2	1	1	1	1	1	1	1	
302050.5	APPLY computational technique to solve complex solid mechanics problems and its loading states.	2	3	1	1	1	1	2	1	1	1	1	1	1	1	
302050.6	STUDY the applications of CAE in the various domains of the Mechanical Engineering.	3	2	3	1	1	1	1	1	1	1	1	1	1	1	
302030.0	of ODT the applications of ODE in the various domains of the Medianical Engineering.	-	-	3	1	1	-	1	_	-	-	-				
302051	Manufacturing -Process-II\$									1				0.70		
302051.1	1. APPLY fundamentals for the design and/or selection of elements in transmission systems.	1	3	1	2	2	2	2	1	1	1	1	1	1	1	1
302051.2	2. UNDERSTAND the philosophy that real engineering design problems are open-ended and challenging.	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
302051.3	3. DEMONSTRATE design skills for the problems in real life industrial applications.	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1
302051.4	4. DEVELOP an attitude of team work, critical thinking, communication, planning and scheduling through	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
302051.5	5. PERCEIVE about safety, ethical, legal, and other societal constraints in execution of their design projects.	. 3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
302051.6	6. BUILD a holistic design approach to find out pragmatic solutions to realistic domestic and industrial prob	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1
		200	200	200	201	200	DO	200	noo	DO0	DO10	2011	DO14	DCO1	DCOS	DCC
	Name of Course (2015 Pattern)	POI	PO2	PO3	PO4	PO5	PO6	PO7	PU8	PO9	POI	POH	POIZ	PSUI	PSO2	PSC
402041	Hydraulics and Pneumatics															
402041.1	☐ Understand working principle of components used in hydraulic & pneumatic systems	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1
402041.2	☐ Identify various applications of hydraulic & pneumatic systems	2	2	3	2	1	1	1	1	1	1	1	1	1	1	1
402041.3	☐ Selection of appropriate components required for hydraulic and pneumatic systems	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
402041.4	☐ Analyse hydraulic and pneumatic systems for industrial/mobile applications	2	2	3	2	2	2	2	1	1	1	1	1	1	1	1
402041.5	☐ Design a system according to the requirements	3	2	3	2	2	2	2	1	1	1	1	1	1	1	1
402041.6	☐ Develop and apply knowledge to various applications	1	2	1	2	2	2	2	1	1	1	1	1	1	1	1
102012	CAD CAM Automation			-												
402042	CAD CAM Automation		1	1	1	1	1	1	1	1	1	1	1	1	1	1
402042.1	☐ Apply homogeneous transformation matrix for geometrical transformations of 2D CAD entities for	_	2	3	2	1	1	1	1	1	1	1	1	1	_	
402042.2	Use analytical and synthetic curves and surfaces in part modeling.	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1
402042.3	Do real times analysis of simple mechanical elements like beams, trusses, etc. and comment on safet	-	2	1	2	2	2	2	1	1	1	1	1	1	1	1
402042.4	Generate CNC program for Turning / Milling and generate tool path using CAM software.	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1
402042.5	Demonstrate understanding of various rapid manufacturing techniques and develop competency in	_	2	3	2	1	1	1	1	1	1	1	1	1	1	1
402042.6	☐ Understand the robot systems and their applications in manufacturing industries.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1

															T	
402043	Dynamics of Machinery	11000	11277													
402043.1	To conversant with balancing problems of machines.	1	2	1	2	2	2	2	1	1	1	1	1	1	1	1
402043.1	To understand mechanisms for system control – Gyroscope.	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1
402043.2	To understand fundamentals of free and forced vibrations.	2	2	3	2	1	1	1	1	1	1	1	1	1	1	1
402043.4	To develop competency in understanding of vibration in Industry.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
402043.5	To develop analytical competency in solving vibration problems.	2	2	3	2	2	2	2	1	1	1	1	1	1	1	1
402043.5	To understand the various techniques of measurement and control of vibration and noise.	3	2	3	2	2	2	2	1	1	1	1	1	1	1	1
10201010																
402044	Elective – I															1
402044A.1	☐ Understand the different techniques used to solve mechanical engineering problems.	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
402044A.2	☐ Derive and use 1-D and 2-D element stiffness matrices and load vectors from various methods to solve fo	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1
402044A.3	Apply mechanics of materials and machine design topics to provide preliminary results used for testing th	2	2	2	1	1	1	2	1	1	1	1	1	1	1	1
402044A.4	☐ Explain the inner workings of a finite element code for linear stress, displacement, temperature and modal	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
402044A.5	Use commercial finite element analysis software to solve complex problems in solid mechanics and heat t	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1
402044A.6	☐ Interpret the results of finite element analyses and make an assessment of the results in terms of modeling	2	3	1	2	2	2	2	1	1	1	1	1	ı	1	1
402045	Elective – II															
	Understand Product design and Product development processes	2	3	1	2	2	2	2	1	1	1	1	1	1	1	1
	Understand Processes, tools and techniques for Market Survey & Product Specification Finalization	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
402045A.2	Understand Processes, tools and techniques for Concept Inception, Verification and selection	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1
402043A.3	Understand Processes, tools and techniques for Concept Exploration & Development	2	2	2	1	1	1	2	1	1	1	1	1	1	1	1
402043A.4	Understand Processes, tools and techniques for Design Verification and Validation	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
402045A.6		3	3	2	1	1	1	1	1	1	1	1	1	1	1	1
402047	Energy Engineering					1 - 2										
402047.1	Describe the power generation scenario, the layout components of thermal power plant and analyze the in	1	3	1	2	2	2	2	1	1	1	1	1	1	1	1
402047.2	Analyze the steam condensers, recognize the an environmental impacts of thermal power plant and method	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
402047.3	Recognize the layout, component details of hydroelectric power plant and nuclear power plant	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1
402047.4	Realize the details of diesel power plant, gas power plant and analyze gas turbine power cycle	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
402047.5	Emphasize the fundaments of non-conventional power plants	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
402047.6	Describe the different power plant electrical instruments and basic principles of economics of power general	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1
402048	Mechanical System Design			-		2	2	2	1	1	1	1	1	1	1	1
402050C.1	To help mechanical engineers understand broadly the functioning of manufacturing systems.	1	2	1	2	-	1	1	1	1	1	1	1	1	1	1
402050C.2		2	3	3	1	1	-	-	_	-	1	1	1	1	1	1
402050C.3	To enable students understand various types of simulations used in manufacturing environment.	2	2	3	2	1	1	1	1	1	1	1	1	1	1	1
402050C.4	To acquaint with the methodology of manufacturing simulation using computer software and the repercussions of char	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
402050C.5	To showcase the areas of simulation applications in manufacturing and allied field.	3	3	2	1	1 1	1 1	1 2	1 1	1 1	1 1	1 1	1 1	1 -	1	-



402049	Elective - III			7												
402051D.1	To develop an understanding of the nature, functioning and design of organization as social collectivities.	3	2	1	2	2	2	2	1	1	1	1	1	1	1	1
402051D.2	To orient the students to the application of principles of psychology in an industrial and organizational work	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
402051D.3	To demonstrate the understanding of job requirement and related fatigue, boredom and ways to handle it.	3	2	3	2	1	1	1	1	1	1	1	1	1	1	1
402051D.4	To develop the insights into performance management and understanding related improvement strategies.	2	2	3	2	1	1	2	1	1	1	1	1	1	1	1
402051D.5	To have an understanding of human behavior in groups and develop knowledge and skills in leadership, pov	3	3	2	2	1	1	2	1	1	1	1	1	1	1	1
402051D.6	To develop the acumen to understand the organizational culture, change management and organizational dev	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1
402050	Elective - IV - Product Design and Development															
402050C.1	To understand essential factors for product design	3	2	2	1	2	2	2	1	1	1	1	1	1	1	1
402050C.2	To design product as per customer needs and satisfaction	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1
402050C.3	To understand Processes and concepts during product development	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
	To understand methods and processes of Forward and Reverse engineering	3	3	3	3	1	1	2	1	1	1	1	1	1	1	1
402050C.5	To carry various design processes as DFA, DFMEA, design for safety	2	2	3	2	1	1	2	1	1	1	1	1	1	1	1
	To understand the product life cycle and product data management	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1





Enhance: Design, Development and Implementation Genba Sopanrao Moze Trust's GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING Balewadi, Pune - 411045.

Mechanical Engineering Department

AY 2018-19

Course Code	Name of Course	PO ₁	PO ₂	PO ₃	PO ₄	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
207002	Engineering Mathematics – III		11													
207002.1	1) Solve higher order linear differential equations and apply to modeling and analyzing mass spring systems.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
	2) Apply Laplace transform and Fourier transform techniques to solve differential equations involved in Vibration		3	2	2	1	1	1	1	1	1	1	1	1	1	1
207002.3	3) Apply statistical methods like correlation, regression analysis in analyzing, interpreting experimental data and p	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
207002.4	4) Perform vector differentiation and integration, analyze the vector fields and apply to fluid flow problems.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
207002.5	5) Solve various partial differential equations such as wave equation, one and two dimensional heat flow equations.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202041	Manufacturing Process-I															
202041.1	 Understand and analyze foundry practices like pattern making, mold making, Core making and Inspection of defects. 	1	2	3	2	3	1	1	1	1	1	1	1	1	1	1
202041.2	Understand and analyze Hot and Cold Working, Rolling, Forging, Extrusion and Drawing Processes.	1	1	2	2	3	1	1	1	1	1	1	1	1	1	1
202041.3	Understand different plastic molding processes, Extrusion of Plastic and Thermoforming	3	2	2	2	2	1	2	1	1	1	1	2	1	1	1
202041.4	Understand different Welding and joining processes and its defects	3	2	1	1	2	2	2	1	1	1	1	1	1	1	1
202041.5	Understand, Design and Analyze different sheet metal working processes	1	1	3	2	3	2	2	1	1	2	1	2	1	1	1
202041.6	Understand the constructional details and Working of Centre Lathe	1	1	3	2	3	2	2	1	1	1	2	1	1	1	1
202042	Computer Aided Machine Drawing															
202042.1	Understand the importance of CAD in the light of allied technologies such as CAM, CAE, FEA, CFD, PLM.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202042.2	Understand the significance of parametric technology and its application in 2D sketching.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202042.3	• Understand the significance of parametric feature-based modeling and its application in 3D machine components mo	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202042.4	Ability to create 3D assemblies that represent static or dynamic Mechanical Systems.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202042.5	Ability to ensure manufacturability and proper assembly of components and assemblies.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202042.6	Ability to communicate between Design and Manufacturing using 2D drawings.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202043	Thermodynamics															
202043.1	Apply various laws of thermodynamics to various processes and real systems.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202043.2	- Apply the concept of Entropy, Calculate heat, work and other important thermodynamic properties for various ideal gas processes.	. 3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202043.3	Estimate performance of various Thermodynamic gas power cycles and gas refrigeration cycle and availability in each case.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202043.4	Estimate the condition of steam and performance of vapour power cycle and vapour compression cycle.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202043.5	- Estimate Stoichiometric air required for combustion, performance of steam generators and natural draught requirements in boiler programmes.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202043.6	Use Psychromertic charts and estimate various essential properties related to Psychrometry and processes	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202044	Material Science															
202044.1	Understand the basic concepts and properties of Material.	1	2	3	2	3	1	1	1	1	1	1	1	1	1	1
202044.2	Understand about material fundamental and processing.	1	1	2	2	3	1	1	1	1	1	1	1	1	1	1
202044.3	Select proper metal, alloys, nonmetal and powder metallurgical component for specific requirement	3	2	2	2	2	1	2	1	1	1	1	2	1	1	1
202044.4	Detect the defects in crystal and its effect on crystal properties.	3	2	1	1	2	2	2	1	1	1	1	1	1	1	1
202044.5	• Evaluate the different properties of material by studying different test	1	1	3	2	3	2	2	1	1	2	1	2	1	1	1
202044.6	• Recognize how metals can be strengthened by cold-working and hot working	1	1	3	2	3	2	2	1	1	1	2	1	1	1	1

			_						_	_		_		_		_
203156	Strength of Materials									+						-
203156.1	Apply knowledge of mathematics, science for engineering applications	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
203156.2	Design and conduct experiments, as well as to analyze and interpret data	3	3	2	2	1	1	1	1	1	-	1	-	1	1	-
203156.3	Design a component to meet desired needs within realistic constraints of health and safety	3	3	3	1	1	1	2	1	-	_	1	1	1	1	1
203156.4	Identify, formulate, and solve engineering problems		-	2	1			_	-	_	_	-	1	-		1
203156.5		3	2			1	1	2	1	1	_	1	1	1	1	1
	Practice professional and ethical responsibility We the technique of the product of th	3	3	2	2	1	1	1	1	1	_	1	1	1	1	1
203156.6	Use the techniques, skills, and modern engineering tools necessary for engineering practice	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202045	Fluid Mechanics									-						
202049.1	CO1. DETERMINE various properties of fluid	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202049.2	CO2. APPLY the laws of fluid statics and concepts of buoyancy	3	3	2	2	1	1	1	1	1		1	1	1	1	1
202049.3	CO3. IDENTIFY types of fluid flow and terms associated in fluid kinematics	3	3	3	1	1	1	2	1	1	_	1	1	1	1	1
202049.4	CO4. APPLY principles of fluid dynamics to laminar flow	3	2	2	1	1	1	2	1	1	-	1	1	1	1	1
202049.5	CO5. ESTIMATE friction and minor losses in internal flows and DETERMINE boundary layer formation over an external		3	2	2	1	1	1	1	1	1	1	1	1	1	1
202049.6	CO6. CONSTRUCT mathematical correlation considering dimensionless parameters, also ABLE to predict the performance of the perfo		2	2	1	1	1	-	1	1	1	-	-	-	1	-
202049.0	CONSTRUCT mamematical conference considering dimensionless parameters, also ABLE to predict the performance considering dimensionless parameters, also ABLE to predict the performance considering dimensionless parameters, also ABLE to predict the performance considering dimensionless parameters.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202048	Theory of Machines – I															
202048.1	• Identify mechanisms in real life applications.	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202048.2	Perform kinematic analysis of simple mechanisms.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202048.3	Perform static and dynamic force analysis of slider crank mechanism.	3	2	2	1	1	1	2	1	1	-	1	1	1	1	1
202048.4	Determine moment of inertia of rigid bodies experimentally.	3	3	2	2	1	1	1	1	1	_	1	-	1	1	-
202048.5	Analyze velocity and acceleration of mechanisms by vector and graphical methods.	3	3	3	1	1	1	2	1	1	_	1	1	-		1
202040.3	Analyze velocity and acceleration of mechanisms by vector and graphical methods.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202049	Engineering Metallurgy															
202049.1	describe how metals and alloys formed and how the properties change due to microstructure	1	3	3	2	2	2	2	1	1	1	1	1	1	1	1
202049.2	apply core concepts in Engineering Metallurgy to solve engineering problems.	3	2	2	1	1	1	2	1	1	-	1	1	1	1	1
202049.3	conduct experiments, as well as to analyze and interpret data	3	3	2	2	1	1	1	1	1	-	1	1	1	1	1
202049.4	select materials for design and construction.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202049.5	• possess the skills and techniques necessary for modern materials engineering practice	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1
202049.6	recognize how metals can be strengthened by alloying, cold-working, and heat treatment	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
202050	Applied Thermodynamics															
202050.1	· Classify various types of Engines, Compare Air standard, Fuel Air and Actual cycles and make out various losses	1	3	3	2	2	2	2	1	1	1	1	1	1	1	1
202050.2	· Understand Theory of Carburetion, Modern Carburetor, Stages of Combustion in S. I. Engines and Theory of De	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
202050.3	• Understand Fuel Supply system, Types of Injectors and Injection Pumps, Stages of Combustion in Cl Engines, Theory o	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
202050.4	Carry out Testing of I. C. Engines and analyze its performance.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
202050.5	• Describe construction and working of various I. C. Engine systems (Cooling, Lubrication, Ignition, Governing, and Start	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1
202050.6	• Describe construction, working of various types of reciprocating and rotary compressors with performance calculations	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
203152	Electrical and Electronics Engineering															
203152.1	Develop the capability to identify and select suitable DC motor and its speed control method for given industrial application		3	2	2	2	1	1	1	1	1	1	1	1	1	1
203152.2	Develop the capability to identify and select suitable induction motor and its speed control method for given industrial ap		3	2	2	2	1	1	1	1	1	1	1	1	1	1
203152.3	Develop the capability to identify and select suitable special purpose motor and its speed control method for given industrial	3	3	2	2	2	1	2	1	1	1	1	1	1	1	1
203152.4	Program Arduino IDE using conditional statements	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1
203152.5	Interfacing sensors with Arduino IDE	1	1	1	2	3	2	2	1	1	1	1	1	1	1	1
203152.6	Data acquisition system for mechanical applications	1	1	1	2	3	2	2	1	1	1	1	1	1	1	1



Course Cod	Name of Course (2015)	DO:	DO:	no	no.	no	no	no.	DO.	n no	0 700	-				1
302041	Design of Machine Elements-I	FUI	POZ	PUS	PU4	PUS	PU	PU	PO	8 PO	9 PO10	POI	PO12	PSO1	PSO	2 P
302041.1	Ability to identify and understand failure modes for mechanical elements and design of machine elements based on streng	1	3	1	2	1	1	-	-	-	-				-	+
302041.2	Ability to design Shafts, Keys and Coupling for industrial applications.	3	3	3	1	2	2	1	1	1	1	1	1	1	1	-
	Ability to design machine elements subjected to fluctuating loads.	3	3	2	2	1	1	2	1	1	1	1	1	1	1	+
302041.4	Ability to design Power Screws for various applications.	3	2	3	1	1	1	-	1	1	1	1	1	1	1	+
302041.5	Ability to design fasteners and welded joints subjected to different loading conditions.	3	3	3	1	_	_	2	1	1	1	1	1	1	1	+
	Ability to design various Springs for strength and stiffness.	3	2	3	1	1	1	2	1	1	1	1	1	1	1	+
		3		3	1	1	1	1	1	1	1	1	1	1	1	+
302042	Heat and Mass Transfer															+
302042.1	IDENTIFY the laws for different modes of heat transfer.	2	3	1	2	2	2	2	1	1	1	1	1	1	1	+
302042.2	UNDERSTAND the properties and economics of thermal insulation and ANALYZE heat transfer through fins and therma	2	2	3	2	1	1	1	1	1	1	1	1	1	1	+
302042.3	ANALYZE the natural and forced convective mode of heat transfer in various geometric configurations.	3	3	2	2	1	1	1	1	1	1	1	1	1	1	+
302042.4	UNDERSTAND AND REALIZE various laws with their interrelations and analyzeRadiation heat transfer in black and gr	3	3	2	1	1	1	2		1	1	1	1	1	1	+
302042.5	UNDERSTAND the fundamentals and laws of mass transfer and its applications.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	÷
202042.6	ANALYZE various performance parameters for existing heat exchanger and DEVELOPmethodologies for designing a heat	3	3	2	2	1	1	1	_	1	1	1	1	1	1	+
							New 1							-		†
302043	Theory of Machines-II\$			1						1		No.			La marci	+
302043.1	DESIGN AND ANALYZE the cotter and knuckle Joints, levers and components subjected to eccentric loading.	1	3	1	2	2	2	2	1	1	1	1	1	1	1	†
302043.2	DESIGN shafts, keys and couplings under static loading conditions.	3	3	3	1	1	1	1	1	1	1	1	1	1	1	t
302043.3	ANALYZE different stresses in power screws and APPLY those in the procedure to design screw jack.	2	3	3	2	1	1	1	1	1	1	1	1	1	1	+
302043.4	EVALUATE dimensions of machine components under fluctuating loads.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	t
302043.5	EVALUATE & INTERPRET the stress developed on the different type of welded and threaded joints.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	t
302043.6	APPLY the design and development procedure for different types of springs.	3	3	2	1	1	1	1	1	1	1	1	1	1	1	t
302044	Turbo Machines															T
																F
302044.1	Apply Momentum Principle And Velocity Triangle On a Pelton Turbines For Its Analysis.	2	1		1					-						Г
302044.2	Apply Momentum Principle And Velocity Triangle On a Reaction Turbine For Its Analysis.	2	2		1											I
302044.3	Apply Momentum Principle And Velocity Triangle On Steam Turbines For Its Analysis.	3	2	2	1					3/2						Г
302044.4	Apply Momentum Principle And Velocity Triangle Concept Of Centrifugal Pump For Its Analysis.	3	2	2	1										THE WAR	Γ
302044.5	Apply Thermodynamic Concept Using T S Diagram And Used Of Velocity Triangle On Centrifugal Compressor For Its A	3	2	2	1											Г
302044.6	Apply Thermodynamic Concept Using T S Diagram And Used Of Velocity Triangle On axial compress For Its Analysis.	2	2	2	1											
302045	Metrology and Quality Control														President l	
	1. Understand the methods of measurement, selection of measuring instruments / standards of measurement, carrye	-	-													L
302045.2	2. Explain tolerance, limits of size, fits, geometric and position tolerances and gauge design	3	3	2	1	2	1	1	1	1	1	1	1	1	1	L
302045.3	Understand and use/apply Quality Control Techniques/ Statistical Tools appropriately.	2	2	2	2	2	1	1	1	1	1	1	1	1	1	L
302045.4	Develop an ability of problem solving and decision making by identifying and analyzing the cause for variation and rec	3	3	3	2	2	3	3	1	1	1	1	1	1	1	L
	The state of the s	3	2	3	1	2	1	2	1	1	1	1	1	1	1	-
302047	Numerical Methods and Optimization*															H
302047.1	Use appropriate Numerical Methods to solve complex mechanical engineering problems.	3	3	3	1	1	1	1	1	1	1	1	1	1	1	-
302047.2	2. Formulate algorithms and programming.	2	3	3	2	1	1	1	1	1	1	1	1	1	1	-
302047.3	3. Use Mathematical Solver.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	
302047.4	4. Generate Solutions for real life problem using optimization techniques.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	
302047.5		3	3	2	1	1	1	1	1	1	1	1	1	1	1	-



			_						_								
302048	Design of Machine Elements-II																
302048.1	CO 1: To understand and apply principles of gear design to spur gears and industrial spur gear boxes.	3	-			-			-	-	-	-			1000	_	_
302048.2	CO 2: To become proficient in Design of Helical and Bevel Gear	3	3	3	1	1	1	-	-	_	_	1	1	1	1	1	1
302048.3	CO 3: To develop capability to analyse Rolling contact bearing and its selection from manufacturer's Catalogue.	3	3	3	1	1	1	_	_	_	_	1	1	1	1	1	1
302048.4	CO 4: To learn a skill to design worm gear box for various industrial applications.	1	-	3	2	1	1	-	_	_	$\overline{}$	1	1	1	1	1	1
302048.5	CO 5: To inculcate an ability to design belt drives and selection of belt, rope and chain drives.	3	2	2	1	1	1	_	1	_	_	1	1	1	1	1	1
302048.6	CO 6: To achieve an expertise in design of Sliding contact bearing in industrial applications.	3	3	3	1	1	1	2	1	_		1	1	1	1	1	1
302040.0	CO 0. To achieve all expertise in design of sharing contact bearing in industrial applications.	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1
302049	Refrigeration and Air Conditioning									-	-	-					+
302049.1	Illustrate the fundamental principles and applications of refrigeration and air conditioning system	3	3	3	1	1	1	1	1	1		1	1	1	1	1	+
302049.2	Obtain cooling capacity and coefficient of performance by conducting test on vapour compression refrigeration sys	3	3	3	2	1	1	1	1	_	_	1	1	1	1	1	
302049.3	Present the properties, applications and environmental issues of different refrigerants	3	2	2	1	1	1	2	1	1	_	1	1	1		1	
302049.4	Calculate cooling load for air conditioning systems used for various	3	3	3	1	1	1	2	1	1	_	1	1	1	1		
302049.5	Operate and analyze the refrigeration and air conditioning systems	3	2	3	1	1	1	1	1	1	_	1	1	1	1	1	-
00201710					1	1	1	1	1	1		1	1	1	1	1	-
302050	Mechatronics		100								+	-					+
302050.1	UNDERSTAND the basic concepts of Computer Aided Engineering (CAE) and CHARACTERISTICS of various elements required for	1	2	1	2	2	2	2	1	1		1	1	1	1	1	1
302050.2	NURTURE students about the discretization process and criteria for quality mesh.	3	3	2	1	1	1	1	1	1		1	1	1	1	1	
302050.3	UNDERSTAND the approaches of Finite Element Method (FEM) and to find displacement and stresses over the body.	2	3	3	2	1	1	1	1	1		_	1	1	1	1	-
302050.4	DEVELOP the knowledge and skills needed to effectively evaluate the results using Finite Element Analysis (FEA).	2	2	2	1	1	1	2	1	1	-		1	1	1	1	1
302050.5	APPLY computational technique to solve complex solid mechanics problems and its loading states.	2	3	1	1	1	1	2	1	1	-	-	1	1	1	1	+
302050.6	STUDY the applications of CAE in the various domains of the Mechanical Engineering.	3	2	3	1	1	1	1	1	1	-	-	1	1	1	1	+
															-		
302051	Manufacturing -Process-II\$																
302051.1	APPLY fundamentals for the design and/or selection of elements in transmission systems.	1	3	1	2	2	2	2	1	1	1		1	1	1	1	1
302051.2	2. UNDERSTAND the philosophy that real engineering design problems are open-ended and challenging.	3	3	3	1	1	1	1	1	1	_		1	1	1	1	1
302051.3	3. DEMONSTRATE design skills for the problems in real life industrial applications.	3	3	3	2	1	1	1	1	1	-	_	1	1	1	1	1
302051.4	4. DEVELOP an attitude of team work, critical thinking, communication, planning and scheduling through design project	3	2	2	1	1	1	2	1	1	-	_	1	1	1	1	1
302051.5	5. PERCEIVE about safety, ethical, legal, and other societal constraints in execution of their design projects.	3	3	3	1	1	1	2	1	1	1	_	1	1	1	1	1
302051.6	6. BUILD a holistic design approach to find out pragmatic solutions to realistic domestic and industrial problems	3	2	3	1	1	1	1	1	1	-		1	1	1	1	1
	N CO MALER W.																
	Name of Course (2015 Pattern)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO	9 PO	10 P	011 P	2012	PSO1	PSO2	PS(
402041	Hydraulics and Pneumatics															a finding!	
402041.1	Understand working principle of components used in hydraulic & pneumatic systems	2	2	3	1	1	1	1	1	1	1		1	1	1	1	1
402041.2	☐ Identify various applications of hydraulic & pneumatic systems	2	2	3	2	1	1	1	1	1	1		1	1	1	1	1
402041.3	Selection of appropriate components required for hydraulic and pneumatic systems	3	3	2	1	1	1	2	1	1	1		1	1	1	1	1
402041.4	☐ Analyse hydraulic and pneumatic systems for industrial/mobile applications	2	2	3	2	2	2	2	1	1	1		1	1	1	1	1
402041.5	☐ Design a system according to the requirements	3	2	3	2	2	2	2	1	1	1		1	1	1	1	1
402041.6	Develop and apply knowledge to various applications	1	2	1	2	2	2	2	1	1	1		1	1	1	1	1
402042	CAD CAM Automation																
402042.1					-						-						
402042.1	☐ Apply homogeneous transformation matrix for geometrical transformations of 2D CAD entities for basic geomet		_	1	2	2	2	2	1	1	_	_	1	1	1	1	1
	Use analytical and synthetic curves and surfaces in part modeling.	2	2	3	1	_	1	1	1	1	_	_	1	1	1	1	1
402042.3	Do real times analysis of simple mechanical elements like beams, trusses, etc. and comment on safety of engineeri		2	3	2		1	1	1	1	-	_	1	1	1	1	1
402042.4	Generate CNC program for Turning / Milling and generate tool path using CAM software.	2	2	3	1	_	1	1	1	1	_	_	1	1	1	1	1
	Demonstrate understanding of various rapid manufacturing techniques and develop competency in designing and		2	3	2	1	1	1	1	1	_	_		1	1	1	1
402042.6	Understand the robot systems and their applications in manufacturing industries.	3	3	2	1	1	1	2	1	1	1		1	1	1	1	1



			-				_		1	_		_	1		1	_
402043	Dynamics of Machinery											2000				
402043.1	To conversant with balancing problems of machines,	1	2	1	2	2	2	2	1	1	1	1	1	1	1	1
402043.2	To understand mechanisms for system control – Gyroscope.	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1
402043.3	To understand fundamentals of free and forced vibrations.	2	2	3	2	1	1	1	1	1	1	1	1	1	-	+
402043.4	To develop competency in understanding of vibration in Industry.	3	3	2	1	1	1	2	-	1	1	1	1	1	1	1
402043.5	To develop analytical competency in solving vibration problems.	2	2	3	2	2	2	2	1	1	1	1	1	1	1	1
402043.6	To understand the various techniques of measurement and control of vibration and noise.	3	2	3	2	2	2	2	1	1	1	1	1	1	1	1
402044A	Elective – I (Finite Element Analysis)															
402044A.1	☐ Understand the different techniques used to solve mechanical engineering problems.	3	3	3	1	1	1	1	1	1	1	1	1			+-
402044A.2	☐ Derive and use 1-D and 2-D element stiffness matrices and load vectors from various methods to solve for displacement	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1
402044A.3	☐ Apply mechanics of materials and machine design topics to provide preliminary results used for testing the reasonabler	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
402044A.4	☐ Explain the inner workings of a finite element code for linear stress, displacement, temperature and modal analysis.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
402044A.5	☐ Use commercial finite element analysis software to solve complex problems in solid mechanics and heat transfer.	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1
402044A.6	☐ Interpret the results of finite element analyses and make an assessment of the results in terms of modeling (physics assu		3	1	2	2	2	2	1	1	1	1	1	1	1	1
	g (Projection of the Control of the			-					1	1	1	1	1	1	1	1
402045	Elective – II															
402045A.1	Understand Product design and Product development processes	2	3	1	2	2	2	2	1	1	1	1	1	1	1	1
402045A.2	Understand Processes, tools and techniques for Market Survey & Product Specification Finalization	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
402045A.3	Understand Processes, tools and techniques for Concept Inception, Verification and selection	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1
402045A.4	Understand Processes, tools and techniques for Concept Exploration & Development	2	2	2	1	1	1	2	1	1	1	1	1	1	1	1
402045A.5	Understand Processes, tools and techniques for Design Verification and Validation	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
402045A.6	Understand Processes, tools and techniques for Robust Design and Development	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1
402047	Energy Engineering															
402047.1	Describe the power generation scenario, the layout components of thermal power plant and analyze the improved Ran	1	3	1	2	2	2	2	1	1	1	1	1	1	1	1
402047.2	Analyze the steam condensers, recognize the an environmental impacts of thermal power plant and method to control	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
402047.3	Recognize the layout, component details of hydroelectric power plant and nuclear power plant	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1
402047.4	Realize the details of diesel power plant, gas power plant and analyze gas turbine power cycle	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
402047.5	Emphasize the fundaments of non-conventional power plants	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
402048	Mechanical System Design	II OVE						6.00	0220							
402050C.1	To help mechanical engineers understand broadly the functioning of manufacturing systems.	1	2	1	2	2	2	2	1	1	1	1	1	1	1	1
	To describe the role of facilities and support systems.	2	3	3	1	1	1	1	1	1	1	1	1	1	1	1
	To enable students understand various types of simulations used in manufacturing environment.	2	2	3	2	1	1	1	1	1	1	1	1	1	1	1
402050C.4	To acquaint with the methodology of manufacturing simulation using computer software and the repercussions of changes & variabi	3	2	2	1	1	1	2	1	1	1	1	1	1	1	1
402050C.5	To showcase the areas of simulation applications in manufacturing and allied field.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1



A STATE OF THE STA																
	Elective - III															-
402051D.1	To develop an understanding of the nature, functioning and design of organization as social collectivities.	3	2	1	2	2	2	2	1	1	1	ı	1	1	1	1
402051D.2	To orient the students to the application of principles of psychology in an industrial and organizational workplace	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
402051D 3	To demonstrate the understanding of job requirement and related fatigue, boredom and ways to handle it.	3	2	3	2	1	1	1	1	1	1	1	1	1	1	1
402051D 4	To develop the insights into performance management and understanding related improvement strategies.	2	2	3	2	1	1	2	1	1	1	1	1	1	1	1
402051D.5	To have an understanding of human behavior in groups and develop knowledge and skills in leadership, power, communi	3	3	2	2	1	1	2	1	1	1	1	1	1	1	1
402051D.6	To develop the acumen to understand the organizational culture, change management and organizational development.	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1
402031D.0	To develop the available to marrows in a great part of the second part				1											
402050	Elective - IV - Product Design and Development															
402050C.1	To understand essential factors for product design	3	3	2	1	2	2	2	1	1	1	1	1	1	1	1
	To design product as per customer needs and satisfaction	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1
402050C 3	To understand Processes and concepts during product development	2	2	2	2	1	1	-1	1	1	1	1	1	1	1	1
402050C.5	To understand methods and processes of Forward and Reverse engineering	2	2	3	3	1	1	2	1	1	1	1	1	1	1	1
402050C.4	To carry various design processes as DFA, DFMEA, design for safety	3	2	3	2	1	1	2	1	1	1	1	1	1	1	1
402050C.5	To understand the product life cycle and product data management	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1





"EMPOWERMENT THROUGH TECHNOLOGICAL EXCELLENCE" GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

S. No. 25/1/3, Balewadi, Pune - 411 045

(Approved by AICTE and Govt. of Maharashtra, Affiliated to Savitribai Phule Pune University DTE Code - EN6144 University Affiliation ID - PU/PN/ENGG/138/1999 Email: gsmoze@yahoo.co.in Website: www.gsmozecoe.org Ph: 020-27390500 Founder President: Shri Rambhan Moze

Criteria 2.6.2 CO-PO Mapping E&TC 2019 Pattern

Sr. No.	Course Code	Course Name
		Semester - III
1	207005	Engineering Mathematics III
2	204181	Electronic Circuits
3	204182	Digital Circuits
4	204183	Electrical Circuits
5	204184	Data structures
and the reference		Semester - IV
6	204191	Signals & Systems
7	204192	Control Systems
8	204193	Principles of Communication Systems
9	204194	Object Oriented Programming
		Semester - V
10	304181	Digital Communication
11	304182	Electromagnetic Field Theory
12	304183	Database Management
13	304184	Microcontrollers
14	304185	Elective - I (Computer Networks)
		Semester - VI
15	304192	Cellular Networks
16	304193	Project Management
17	304194	Power Devices & Circuits
18	304195	Elective-II (Network Security)
		Semester - VII
19	404181	Radiation & Microwave Theory
20	404182	VLSI Design and Technology
21	404183	Cloud Computing
22	404184	Elective - 3 (Modernized IoT)
23	404185	Elective - 4 (Electronic Product Development)
		Semester - VIII
24	404190	Fiber Optic Communication
25	404191	Elective - 5 (Mobile Computing)
26	404192	Elective - 6 (Digital Marketing)







"EMPOWERMENT THROUGH TECHNOLOGICAL EXCELLENCE" GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

S. No. 25/1/3, <u>Balewadi</u>, Pune – 411 045

(Approved by AICTE and Govt. of Maharashtra, Affiliated to Savitribai Phule Pune University)

DTE Code - EN6144 University Affiliation ID - PU/PN/ENGG/138/1999

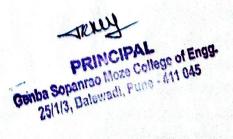
Ph: 020-2/390500 Website: www.gsmozecoe.org Email: gsmoze@yahoo.co.in

Founder President: Shri Rambhan Moze

Criteria 2.6.2 CO-PO Mapping E&TC 2015 Pattern

Sr. No.	Course Code	Course Name
994 J. C. C. C. C. C. C. C. C. C. C. C. C. C.		Semester - III
1	204181	Signals and Systems
2	204182	Electronic Devices and Circuits
3	204183	Electrical Circuits and Machines
4	204184	Data Structures and Algorithms
5	204184	Digital Electronics
		Semester - IV
6	207005	Engineering Mathematics -III
7	204187	Integrated Circuits
8	204188	Control Systems
9	204189	Analog Communications
10	204190	Object Oriented Programming
		Semester - V
11	304181	Digital Communication
12	304182	Digital Signal Processing
13	304183	Electromagnetics
14	304184	Microcontroller
15	304185	Mechatronics
		Semester - VI
16	304186	Power Electronics
17	304187	Communication Naturals
18	304188	Business Management
19	304189	Advanced Processors
20	304190	System Programming and Operating System
	and the second	Semester - VII
21	404181	VLSI Design& Technology
22	404182	Computer Networks & Security
23	404183	Radiation & Microwave Techniques
24	404184	Elective I (Digital Image and Video Processing)
25	404185	Elective II (Electronics Product Design)
		Semester - VIII
26	404189	Mobile Communication
27	404190	Broadband Communication Systems
28	404191	Elective III (Audio Video Engineering)
29	404192	Elective IV (Wireless Sensor Networks)





262 CO-PO Manning

Name of Course BE (2015 Pattern) AY 18-19	POI	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	P011	PO12	PSO1	PSO2	PSO3
VLSI Design& Technology	3	3	3	2	3						3				
Write effective HDL coding for digital design	3	3	3	3		2					3		1		
Apply knowledge of real time issues in digital design	3	3	3	2	3									2	
Model digital circuit with HDL, simulate, synthesis and prototype in PLDs	3	3	3	3	3						2		1		2
Design CMOS circuits for specified applications.	3	3	3	3	2									1	1
Analyze various issues and constraints in design of an ASIC	3	3	3	2			. In .								
Apply knowledge of testability in design and build self test circuit															
Alle San San San San San San San San San San															
Computer Networks & Security															
Understand fundamental underlying principles of computer networking	3	3	3	3	3							3		2	
Describe and analyze the hardware, software, components of a network and their interrelations.	3	2	2	2		1		2	2			2			
Analyze the requirements for a given organizational structure and select the most appropriate activorking architecture and technologies	3	3	3			3	3	3				3		2	1
Have a basic knowledge of installing and configuring networking applications.	3	3	3		2	3	3	3				3			
	3	3	3	3	3	3	3	3	2	1				1	
lave a basic knowledge of the use of cryptography and network security.	2	2	2	2	1	2						2			3
Radiation & Microwave Techniques															
differentiate various performance parameters of radiating elements.	3	3	3	3	3					- Park		-			١,
analyze various radiating elements and arrays.	2	2	2	2				2	No.	ENGIN		+	_		+
apply the knowledge of waveguide fundamentals in design of transmission lines.	3	3	3			3	3	3/	3/_	215	131	-	-	+	+,
	3	3	3			3	3	3	31	18. I	10	,	-	+.	
	3	3	3	3	3	3	3	3	TOW	89*	DIE!			-	PR
Acasure various performance parameters of microwave components.	2	2	2	2		2			1			,		Genba	Saparire
	Name of Course BE (2015 Pattern) AY 18-19 VLSI Design& Technology Write effective HDL coding for digital design Apply knowledge of real time issues in digital design Model digital circuit with HDL, simulate, synthesis and prototype in PLDs Design CMOS circuits for specified applications. Analyze various issues and constraints in design of an ASIC	Name of Course BE (2015 Pattern) AY 18-19 VLSI Design& Technology Write effective HDL coding for digital design Apply knowledge of real time issues in digital design Apply knowledge of real time issues in digital design Model digital circuit with HDL, simulate, synthesis and prototype in PLDs Design CMOS circuits for specified applications. 3 Analyze various issues and constraints in design of an ASIC 3 Apply knowledge of testability in design and build self test circuit Computer Networks & Security Understand fundamental underlying principles of computer networking Describe and analyze the hardware, software, components of a network and their interrelations. 3 Analyze the requirements for a given organizational structure and select the most appropriate entworking architecture and technologies Have a basic knowledge of installing and configuring networking applications. 3 Specify and identify deficiencies in existing protocols, and then go onto select new and better rotocols Ladiation & Microwave Techniques Differentiate various performance parameters of radiating elements. 3 Analyze various radiating elements and arrays. 2 Design and set up a system consisting of various passive microwave components. 3 Analyze tube based and solid state active devices along with their applications. 3 Apply the knowledge of waveguide fundamentals in design of transmission lines. 3 Analyze tube based and solid state active devices along with their applications.	Name of Course BE, (2015 Pattern) AY 18-19 PO1 PO2	Name of Course BE (2015 Pettern) AY 18-19 PO2 PO3 VLSI Design-& Technology Write effective HDL coding for digital design 3 3 3 Apply knowledge of real time issues in digital design Apply knowledge of real time issues in digital design Model digital circuit with HDL. simulate, synthesis and prototype in PLDs 3 3 3 Design CMOS circuits for specified applications. 3 3 3 3 Analyze various issues and constraints in design of an ASIC 3 3 3 3 Apply knowledge of ustability in design and build self test circuit Computer Networks & Security Understand flandamental underlying principles of computer networking 3 3 3 Analyze the requirements for a given organizational structure and select the most appropriate containing architecture and technologies Have a basic knowledge of instabiling and configuring networking applications. 3 3 3 Analyze the requirements for a given organizational structure and select the most appropriate containing architecture and technologies Have a basic knowledge of instabiling and configuring networking applications. 3 3 3 Analyze the requirements in existing protocols, and then go onto select new and better 3 3 3 3 Analyze the requirements of the use of cryptography and network security. 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Name of Course BC (2015 Pattern) AV 18-19	Name of Charter BE (2015 Partiern) AY 18-19 POS POS POS POS POS POS POS PO	Name of Course RE (2015 Pertern) AY 18-19 PO1 PO2 PO3 PO4 PO5 PO6 V1.SI Perignal Technology 3 3 3 3 3 2 3 Apply increding for digital design 3 3 3 3 3 2 3 3 Apply increding of real time issues in digital design 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Name of Course BE CRIST Patterns) AY 18-19 PO1 PO2 PO3 PO4 PO5 PO5 PO7 VLSI Designal. Technology 3 3 3 3 3 2 3 3 2 3 3 2 3 3 3 3 3 3 3	Name of Course RE CRIS Patterny AV 18-19 VI.SI Designal Technology Write officiaries (IDL), coding for digital design 3 3 3 3 3 2 3 3 2 3 3 3 3 3 3 3 3 3 3	POST Probability This Probabi	Note of Christs Technology 13 3 2 2 3 3	Name of Control of Control of Policy Policy	Name of Course IE (GNP Protects) AY 1819 1901 POID POID POID POID POID POID POID POID	Name of Contents Profession A VIE-19 Profession	Name of Content BC (1915) Perform AX 19-1197 PO2 PO3

1 1 1 1 1 1 2 2 2 1 1	1 1 2 2 2 2 2
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 2
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1
T T T	1 1
T T T	1 1
T T T	1 1
T T T	1 1
1 1 1	f t
1 ,	1
, ,	
ı	ı
3	
	3
1	
3	
1	

Na ourse Code	me of Course BE (2015 Pattern) AY 19-20	POI	PO2	PO3	PO4	POS	P06	PO7	POB	PO9	POIG	POU	-Gen	a-Sop	antao 1 Balowa	oze Co di Punc	ege of E
				EED	ENCH										PRIN	CIPA	l_ lege of E -411 04
			1	1		EST											Amy
104192.6	amine the issues involved in design and deployment of WSN	3	2 owad	(1)	chen.	(S)	3		2			1	3			2	
104192.5	derstand techniques of data aggregation and importance of security in WSN	2	2	W 100	S. MO	N.	1					2		t		2	
4192.4 Re	cognize importance of localization and routing techniques used in WSN	1	2	2	2	1	1		1			ı	2	2		1	
4192.3 Ex	plain various wireless standards and protocols associated with WSN	3	2	1	1	2	3		2			t	3			2	
	escribe importance and use of radio communication and link management in WSN	2	2	3	1		1	4 - 7				2		ı		2	
H192	cplain various concepts and terminologies used in WSN	3	2	2	2	1	1	Harris of	1			1	2	2		1	
	lective IV (Wireless Sensor Networks)																
1191.6		2								-		•				+	+
191.5	o Study Acoustics principles. Application	2	3	1	2	2	2			2		2	1	1		3	1
4191.4	to study audio recording systems such CD/DVD recording, Audio Standards,	2	3	I	2	1	2			3		2	1		1		+
4191.3	Greater emphasis on television standards. To study the advanced topics in Digital Television and High Definition Television.	2	3	1	2	2				2		2				3	1
4191.2	To study the various Colour Television systems .	2	3	1	2	I	2		- 1	2		I	I	I			1
04191.1	Tubes and Television Camera Tubes.	3	2	2	1	2	2			1		2	2		3		
404191	Elective III (Audio Video Engineering) To study the analysis and synthesis of TV Pictures, Composite Video Signal, Receiver, Picture	la Lewin															
	deservation in 1970 in the proper productions. - The state of the second control of the						4				17 - 17						
104190.6	Analyze the design requirements and the performance of satellite communication systems	2	2	3	1		1			lag um		2		1		2	
404190.5	Explain the principles, concepts and operation of satellite communication systems	ı	2	2	2	1	1		1			ı	2	2		I	+
404190.3	Understand the basic principle & terminologies of Satellite communication systems	2	1	1		1	3			3		2	1		1		
404190.2	Learn the fiber optical network components and optical amplifiers.	2	3	1	2	2				2		2				3	-
404190.1	Carry out Link power budget and Rise Time Budget	2	3	-	2	1	2		-	2	 	-	1	1			-
404190.1	Understand the basic elements of optical fiber transmission link, fiber modes configurations, different kind of losses, optical sources and detectors	3	2	2	2	1	1		1			1	2	2		1	

		,	,	3	2	,	- 1	1	1		3				
104181	VLSI Design& Technology	Automobile a	Name of the last o	-							 3		1		
M181.	Write effective HDL coding for digital design	3	3	3	3		2				 ,		,		
4181.2	Apply knowledge of real time issues in digital design	3	3	3	2	3								2	
1181.3	Model digital circuit with HDL, simulate, synthesis and prototype in PLDs	3	3	3	3	3					2		1		2
181.4	Design CMOS circuits for specified applications.	3	3	3	3	2								1	1
81.5	Analyze various issues and constraints in design of an ASIC	3	3	3	2										
81.6	Apply knowledge of testability in design and build self test circuit														
01.0															
82	Computer Networks & Security														
82.1	Understand fundamental underlying principles of computer networking	3	3	3	3	3						3		2.	
2.2	Describe and analyze the hardware, software, components of a network and their interrelations.	3	2	2	2		1		2	2		2			
2.3	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies	3	3	3			3	3	3			3		2	1
	Have a basic knowledge of installing and configuring networking applications.	3	3	3		2	3	3	3			3			
1.	Specify and identify deficiencies in existing protocols, and then go onto select new and better rotocols	3	3	3	3	3	3	3	3	2				1	
1	lave a basic knowledge of the use of cryptography and network security.	2	2	2	2		2					2			3
1															
	adiation & Microwave Techniques														
	ifferentiate various performance parameters of radiating elements.	3	3	3	3	3						3			
	nalyze various radiating elements and arrays.	2	2	2	2				2	2		2	2		1
	pply the knowledge of waveguide fundamentals in design of transmission lines.	3	3	3			3	3	3			3		2	
	esign and set up a system consisting of various passive microwave components.	3	3	3	L HV-		3	3	3			3			1
	nalyze tube based and solid state active devices along with their applications.	3	3	3	154	0.8.	0.3	3	3					3	
	easure various performance parameters of microwave components.	2	2	2		19	18					2			
1				7 77 77	2:	PUNE 45	In								
E	ective I (Digital Image and Video Processing)				To the second	5	13		***************************************						- v
D	velop and implement basic mathematical operations on digital images.	3	2	2	100	341	2			1	2	2			PRINC

Analyze and solve image enhancement and image restoration problems. Identify and design image processing techniques for object segmentation and recognition Represent objects and region of the image with appropriate method.	2	3	1	2	1	2		1	1	1	1				
Represent objects and region of the image with appropriate method.	2								2	1					
		3	- 1	2	2				-		1	1	1		
Analy 3 D. A.	2	1	1			3		-	2	-	2				3
Apply 2-D data compression techniques for digital images	3	2	2		2	2	-	-	3		2	i		1	
Explore video signal representation and different algorithm for video processing.	2	3		+	-		-		1		2	2		3	
		-	-	2	1	2			2		1	ı	1		
Sective II (Electronics Product Design)															
inderstand various stages of hardware, software and PCBdesign.	3		2	1	1	1		1							
raportance of product test & testspecifications	3	-	3	1	1			,	1	1	1	1	,	1	1
ocial design considerations and importance ofdocumentation	3		3					'	1	,	1	1	1	The state of the s	1
	3						1	1	1	1	1	1	1	,	1
	3				1	1	1	1	1	1	1	1		1	1
			2	1	1	1	'	1	1	1	1	1	ī	1	
HELD acsign and learn different tools in PCB design.	3		1	1	1	'	1	1	1	-,	1	,	1	T Onto	1
				4			-								
ile Communication								100							
accommunication switching, traine and networks	3	2	2	2	D	.									
ze the telecommunication traffic.	2	2	3		1			1			1	2	2		1
ze radio channel and cellular capacity.	3	2				1	,- m				2		ı		2
arative study of different generation of Mobile system like 1G 2G 3G	14			1	2	3		2			ı	3			2
		2	3	I		1					2		1		2
	3	2	1	. 1	2	3		2			ı	3			2
	3	2	2	2	1	1		1			ı	2	2		1
			No	¥ 6.8	MOSS	1									
and the basic elements of option 64			No.	3	1	3/1									
kind of losses, optical sources and detectors	3	2	121	2		61				-					
at Link power budget and Rise Time Budget			0.0		10			1			1	2	2		1
	2	3	1	NEED	ENG	2			2		l	1	a I	DINIA	DAI
components and optical amplifiers.	2	3	ı	2	2				2		2	Genh	Sopan	rao Maz	Coll
	portance of product test &testspecifications portance of product test &testspecifications portance of product test &testspecifications portance of product test &testspecifications portance of product test &testspecifications product test &testspecifications product test &testspecifications product test &testspecifications product design consideration of analog, didgital and mixed circuit design. product design and mixed circuit design. product design and learn different tools in PCB design.	portance of product test &testspecifications portance of product test &testspecifications portance of product test &testspecifications and design considerations and importance of documentation. The different consideration of analog, didgital and mixed circuit design. processess and importance of documentations and PCB design and learn different tools in PCB design. The Communication and apply the concepts recommunication switching traine and networks are the telecommunication traffic. are radio channel and cellular capacity. and apply concepts of GSM. and apply concepts of GSM. and apply concepts of CDMA system. 3 and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and Communication Systems and the basic elements of optical fiber transmission link, fiber modes configurations, kind of losses, optical sources and descetors 3 c. Link power budget and Rise Time Budget 2	decision decision various stages of hardware, software and PCBdesign. 3 portance of product test &testspecifications 3 cial design considerations and importance of documentation. 3 and the different consideration of analog, didgital and mixed circuit design. 3 are Communication and learn different tools in PCB design. 3 4 3 4 3 4 3 4 4 4 4 4 4	portance of product test &testspecifications and apply concepts of GSM. and apply concepts of GSM. and apply concepts of GSM. and apply concepts of GSM. and apply concepts of CDMA system. and Communication Systems and optical fiber transmission link, fiber modes configurations, kind of losses, optical Sources and detectors 3 2 2 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	nderstand various stages of hardware, software and PCBdesign. 3 2 1 1 2 1 1 2 1 1 3 2 2 1 1 3 2 1 1 3 2 1 1 3 2 1 1 3 2 1 1 3 2 1 1 3 2 1 1 4 3 2 1 1 5 3 2 1 1 5 5 6 6 6 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6	and protections stages of hardware, software and PCBdesign. 3 2 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1 2 1	destrated various stages of hardware, software and PCBdesign. 3	decreased various stages of hardware, software and PCBdesign. 3 2 2 1 1 1 2 3 3 1 1 1 2 3 3 2 1 1 1 2 3 3 2 1 1 1 2 3 3 2 1 1 1 2 3 3 2 1 1 1 2 3 3 2 2 1 1 1 2 3 3 2 3 3 2 1 1 1 2 3 3 2 3 3 3 2 1 1 1 2 3 3 3 3	decreased various stages of hardware, software and PCBdesign. 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	decreased various stages of hardware, software and PCDdesign. 3 2 2 1 1 2 3 2 2 1 1 1 2 3 2 2 3 1 1 1 2 3 3 2 1 1 1 2 3 3 2 2 3 1 1 1 2 3 3 2 2 3 1 1 1 2 3 3 2 2 3 1 1 1 2 3 3 2 2 3 1 1 1 2 3 3 2 2 3 3 1 1 1 1	decreased various maps of barrhams, software and PCRdesign. 3	decreased various stages of hardware, software and PCRdesign. 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	protect of Product our Resemptifications 3	decreased various region of hardware, software and PCRoberign. 3	decreased various stages of bashware, software and PC Biology. 3 3 3 1 1 2 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1 1 2 2 2 1

11.2	Apply knowledge of real time issues in digital design	3	2	3	The same of	1110	1								Balew	in m	1. 44
91,1	Write effective HDL coding for digital design	3	3	1.	ONIN	MON	3					3	G	enha So	PRI panrao	NCIP Moze (AL ollege
81	VLSI Dzsign& Technology			ewadi e		्र मं	EGE										40
Code	Name of Course BE (2015 Pattern) AY 20-21	POI	PO2	Popular	1	PO5	1	PO7	POS	P09	POIO	POII	PO12	PSOI	PS02	PS03	10
						MOZ											
J.M.			-	,	1	2	3		2			1	3			2	
92.6	Examine the issues involved in design and deployment of WSN	3	2	3	1		1					2		1		2	
192.4	Understand sechniques of data aggregation and importance of security in WSN	1	2	2	2	1	1		1			1	2	2		1	
192.3	Explain various wireless standards and protocols associated with WSN Recognize importance of localization and routing techniques used in WSN	3	2	1	1	2	3		2			1	3			2	
192.2		2	2	3	1		1					2		1		2	
1921		3	2	2	2	1	1		1			ı	2	2			
4192																	
							3			2		2				3	
4191.6	To Study Acoustics principles. Application	2	3	1	2	2	2			2		ı	1	1			
6419 1.	To study audio recording systems such CD/DVD recording, Audio Standards,	2	3	1	2	1	3			3		2	ı		1		
184191.	To study the advanced topics in Digital Television and High Definition Television.	2	3	1	2	2				2		2				3	
464191.	Greater combasis on television and	2	3	1	2	1	2			2		1	1	1			
494191	To study the various Colors Totalisis	3	2	2	1	2	2			1		2	2		3		
48419	To study the analysis and synthesis of TV Pictures, Composite Video Signal Pages and Telephone Composite Video Signal Pages 201																
	Elective III (Audio Video Engineering)											1	-	1		2	
4041	Analyze the design requirements and the performance of satellite communication systems 159.6	2	2	3	1		1					2	2	2		1	
404	Explain the principles, concepts and operation of satellite communication systems Analyze the design requirements and the communication systems	1	2	2	2	1	1		1	3		2	1		1		
1	Understand the basic principle & terminologies of Satellite communication systems	2	1	1		1	3	1 1			1	1					

184,4	present objects and region of the image with appropriate method.	2	1	ı		1	3			3		2	,25/	1/3, Bal	ewadi,	Pune - 4	11 04
184,3	entify and design image processing techniques for object segmentation and recognition	2	3	ı	2	2				2		2	Genba	Sopani	ao Moz	e Colleg	e of I
84.2 A	nalyze and solve image enhancement and image restoration problems.	2	N.	1931VIC		ı	2			2		1	1	1	DINIC	DAI	4,
De 194.1	evelop and implement basic mathematical operations on digital images.	3	(*)] 2	2			l		2	2		3		N'
B4 E1	ective I (Digital Image and Video Processing)		ewad)	95-END	15			a deservi									
			(30)	G. S. A	05/4	1											
	leasure various performance parameters of microwave components.	2	2	2	2		2						2				
	nalyze tube based and solid state active devices along with their applications.	3	3	3	3	3	3	3	3						3		
	vesign and set up a system consisting of various passive microwave components.	3	3	3			3	3	3				3			,	
	apply the knowledge of waveguide fundamentals in design of transmission lines.	3	3	3			3	3	3				3		2		
	Analyze various radiating elements and arrays.	2	2	2	2				2	2	10 10 ha 1 ha 1 h		2	2		,	
	Differentiate various performance parameters of radiating elements.	3	3	3	3	3							3				
183	Radiation & Microwave Techniques																
02.0											7.6						
182.5	Have a basic knowledge of the use of cryptography and network security.	2	2	2	2		2						2			3	
	Specify and identify deficiencies in existing protocols, and then go onto select new and better protocols	3	3	3	3	3	3	3	3	2					1		
182.3	Have a basic knowledge of installing and configuring networking applications.	3	3	3		2	3	3	3				3		2	'	
1182.2	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies	3	3	3	-		3	3	3				3				
4182.1	Describe and analyze the hardware, software, components of a network and their interrelations.	3	2	2	2	•	1		2	2			2		2		
04182	Understand fundamental underlying principles of computer networking	3	3	3	3	3											
	Computer Networks & Security			-													
M181.6	1445, montrade of research in design and omits sett lest circuit	2	3	3	2	3	-					3		2		1	
4181.5	Apply knowledge of testability in design and build self test circuit	3	3	3	2	-					-						-
104181.4	Design CMOS circuits for specified applications. Analyze various issues and constraints in design of an ASIC	3	3	3	3	2									1	1	
							-							-	-		+

404	Apply 2-D data compression techniques for digital images	3	2	1		1	1	1	1	1							
4041	Explore video signal representation and different algorithm for video processing.	2	- Andrew	2	1	2	2			1		2	2		3		
	Electrical and the second seco		3	ı	2	1	2			2		ı	1	1			
40418	Elective II (Electronics Product Design)			-													
404185	.1 Understand various stages of hardware, software and PCBdesign.	3		2													
404185		3		3			1	1	1	1	1	1	1	,		,	
404185		3			1	,	1	1	1		1	1	'	,	r		
404185.				3	1	1	L	1	1	1	1	1	1	1	ı	7-	
Asian C	the emercial consideration of analog, didgital and mixed circuit design.	3		1	1	1	1	1	1	1	1	ı	1	1	3	1	
404185.	and importance of documentations	3		2	1	1	1	1	1	1	1	1	1	2		F	
404185.0	Learn PCB design and learn different tools in PCB design.	3		1	1	1	1	1	1	1	1	1	•	1	1	2	
	the second comparison and providing a second comparison of the second c									/							
404189	Mobile Communication																
404189.1	Explain and apply the concepts telecommunication switching, traine and networks	3	2	2	2	1	1		1								
404189,2	Analyze the telecommunication traffic.	2	2	3	1		1		•			1	2	2		1	
	Analyze radio channel and cellular capacity.	3	2	1	1	2						2		ı		2	
404189_3	Comparative study of different generation of Mobile system like 1G,2G,3G	2	2	3		2	3		2			1	3			2	
404189,4	Explain and apply concepts of GSM	-			1		1					2		1		2	
404189.5		3	2	1	1	2	3		2			1	3			2	
404189,6	Explain and apply concepts of CDMA system.	3	2	2	2	1	1		1			l.	2	2		t	
	No. 6 Color Color Superior Superior State	No.		100	The second	1 198	110		788	19.50			19,471			4874	
404190	Broadband Communication Systems																
	Understand the basic elements of optical fiber transmission link, fiber modes configurations, different kind of losses, optical sources and detectors	3	2	6.5	MOZE	1	1		1			ı	2	2		1	
404190.1	Carry out Link power budget and Rise Time Budget	2	12	1	2 /6	16											
404190.2			Wewadi .		2	<u> </u>	2			2		t .	1	1			- Duy
404190.3	Learn the fiber optical network components and optical amplifiers.	2	E1 78 P	18	2	E				2		2				3	DAI
404190.4	Understand the basic principle & terminologies of Satellite communication systems	2	1	(N) STA	ION3	1	3			3		2	1	Renha	Sopanra	o Moze	College of
404190.5	Explain the principles, concepts and operation of satellite communication systems	1	2	2	2	1	1		1			-	2	25/	/3, Bale	wadi, P	PAL College of une - 411 0
404190.6	Analyze the design requirements and the performance of satellite communication systems	2	2	3	1		1					2		1		2	
														1	<u> </u>		J.

1		1		1			_	,								
 	Elective III (Audio Video Engineering)												7			1
404191	To study the analysis and combanic Company				100000000000000000000000000000000000000								-	+		24
404191.1	Tubes and Television Camera Tubes.	3	2	2				-	+	-	-	-				
404191,2	To study the various Colour Television systems .				-	2	2			1		2	2		3	
	Greater emphasis on television standards.	2	3	1	2	1	2			2		1	1	1		
-		2	3	1	2	2				2		2				
404191.4	To study the advanced topics in Digital Television and High Definition Television.	2	1	ı		1	3		-	-	+	-	-			3
404191.5	o study audio recording systems such CD/DVD recording, Audio Standards,		+			•	,			3		2	1		ı	
1	o Study Acoustics principles. Application	2	3	1	2	1	2			2		f	1	1		
404191.6	, Aprication	2	3	1	2	2				2		2				3
																,
404192 E	lective IV (Wireless Sensor Networks)															
E	xplain various concepts and terminologies used in WSN															
404192.1		3	2	2	2	1	1		1			1	2	2		1
404192.2	Describe importance and use of radio communication and link management in WSN	2	2	3	1		1					2				
404192.3 E	xplain various wireless standards and protocols associated with WSN	3	2	I	1	2	3					-		ı		2
	ecognize importance of localization and routing techniques used in WSN					101 \ 0	3		2			I	3			2
104172.4		1	2	2	2	1	1		1			1	2	2		1
404192.5	nderstand techniques of data aggregation and importance of security in WSN	2	2	3	1		1					2		1		2
404192.6	camine the issues involved in design and deployment of WSN	3	2	1	1	2	3		2							
												ı	3			2
ourse Code	ame of Course : BE (2015 Pattern) AY 21-22	PO1	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	P012	PSO1		
	LSI Design& Technology	3	3	3	2	3							1012	raut	PSO2	PS03
404181	rite effective HDL coding for digital design					,						3				
404181.1		3	3	S.S.A	40		2				ing .	3				
404181.2 A _I	ply knowledge of real time issues in digital design	3	60	4.3	100	3									2	
M-	odel digital circuit with HDL, simulate, synthesis and prototype in PLDs	3	11 425 5	3,5	3 1	3	-									
+04161.3	sign CMOS circuits for specified applications.		(Swadi	SP ZNO	- //							5		1		2
04181.4		3	Sax S	-	3/0	2						140			•	1
404181.5 Ar	alyze various issues and constraints in design of an ASIC	3		2 3-1 N	Washington of								8	- 1	RING	IPAL
A _F	ply knowledge of testability in design and build self test circuit			California in course of	Ho								Genb	a Sopa	irao Mo	IPAL ze Colleg Pune
													2	5/1/3, B	alewadi	Pune -4

	de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la							1	1	1		1	1	1	1	Г
04182 C	omputer Networks & Security															
4182.1	derstand fundamental underlying principles of computer networking	3	3	3	3	3										
	escribe and analyze the hardware, software, components of a network and their interrelations.	3	2	2	2		1		2	2			2		2	
14182.3 An	alyze the requirements for a given organizational structure and select the most appropriate working architecture and technologies	3	3	3			3	3	3				3			
H182.4	ave a basic knowledge of installing and configuring networking applications.	3	3	3		2	3	3	3				3		2	1
4182.5 Sp	secify and identify deficiencies in existing protocols, and then go onto select new and better otocols	3	3	3	3	3	3	3	3	2					1	
04182.6	ave a basic knowledge of the use of cryptography and network security.	2	2	2	2		2						2		<u>'</u>	3
Adapat 7																
404183 R.	adiation & Microwave Techniques															
D 404183.1	ifferentiate various performance parameters of radiating elements.	3	3	3	3	3	y						3			
M04183.2	nalyze various radiating elements and arrays.	2	2	2	2				2	2			2	2		,
404183.3	pply the knowledge of waveguide fundamentals in design of transmission lines.	3	3	3			3	3	3				3		2	
404183.4	design and set up a system consisting of various passive microwave components.	3	3	3	7		3	3	3				3			1
404183.5	analyze tube based and solid state active devices along with their applications.	3	3	3	3	3	3	3	3						3	
404183.6	Measure various performance parameters of microwave components.	2	2	2	2		2						2			
404184	Elective I (Digital Image and Video Processing)															
404184.1	Develop and implement basic mathematical operations on digital images.	3	2	2	JG.	S. MOS	2			1		2	2		3	
404184.2	Analyze and solve image enhancement and image restoration problems.	2	3	1/2	1	E 1 /	13			2		1	t	ı		
404184.3	Identify and design image processing techniques for object segmentation and recognition	2	3	adi	2	2		M. A. M. M. M. M. M. M. M. M. M. M. M. M. M.		2		2				3
404184.4	Represent objects and region of the image with appropriate method.	2	1	1	20					3		2	ı		1	
404184.5	Apply 2-D data compression techniques for digital images	3	2	2	1	Y I	2			1		2	2		3 P	RINCI
404184.6	Explore video signal representation and different algorithm for video processing	2	3	1	2	ı	2			2		1	1	Genba	Sopani	21MCl ao Moz ewadi,
										1979	<i>B</i>			25/	113, Ba	ewani,
404185	Elective II (Electronics Product Design)	1-3-15-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1														an .

404185.1	Understand various stages of hardware, software and PCBdesign.	3	T	2	T 1	1 1	1 7										
04185.2	Importance of product test &testspecifications	3							'	1	,	T		1	1	1	1
4185.3	Special design considerations and importance ofdocumentation.	3	-				1	1	1		1 1	1	1		7	1	1
	Learn the different consideration of analog, didgital and mixed circuit design.			3	1		L	,	1	1	-	1	7	,		1	,
- 1		3		1	'	1	1	1	F	1	,	1		r -	1	F.	1
	Understand the processess and importance of documentations	3		2	1	,		1	1	,	1	ſ		-	a distribution of the state of		
185.6	Learn PCB design and learn different tools in PCB design.	3		1	1	1	-	1	1	1	1	1	-	-		No. of the last of	
4189	Mobile Communication									-							
189.1	explain and apply the concepts telecommunication switching, traine and networks					-											
	Analyze the telecommunication traffic.	3	2	2	2	1	1		1			I	2	2		1	
4189.2	Analyze radio channel and cellular capacity.	2	2	3	I		I					2		1		2	
4189.3		3	2	1	1	2	3		2			1	3			2	
4189.4	Comparative study of different generation of Mobile system like 1G,2G,3G	2	2	3	1		1					2		1		2	+
04189.5	Explain and apply concepts of GSM .	3	2	1	1	2	3		2			ı	3			2	+
04189,6	Explain and apply concepts of CDMA system.	3	2	2	2	1	1		1			1	2	2		1	+
		W.X	-	le set	190	960	3136			diam.	147872		i jana	246400		100	1
404190	Broadband Communication Systems																-
	Understand the basic elements of optical fiber transmission link, fiber modes configurations, different kind of losses, optical sources and detectors	3	2	2	2	1	1		1								-
104190,1	Carry out Link power budget and Rise Time Budget	2	3									1	2	2		1	
404190.2				I	2	1	2			2		ı	l.	1;			
404190.3	Learn the fiber optical network components and optical amplifiers.	2	3	1	2	2				2		2				3	
404190 <i>.</i> 4	Understand the basic principle & terminologies of Satellite communication systems	2	1		. S. M		3			3		2	ı		ı		
404190,5	Explain the principles, concepts and operation of satellite communication systems	1	2		2	18	1		ı			ı	2	2		ı	
404190.6	Analyze the design requirements and the performance of satellite communication systems	2	2	wadi	i i) LEG	1					2		1		2	PO'
				10	es ·	131											
404191	Elective III (Audio Video Engineering) To study the analysis and postbasis of CU D			1	TOINT	- Aller								abo Co	PRI	CIPA	ilege o
404191.	To study the analysis and synthesis of TV Pictures, Composite Video Signal, Receiver, Picture Tubes and Television Camera Tubes.	3	2	2	ı	2	2			1		2	2	25/1/3	Balewa	di, Pun	o · 411
	To study the various Colour Television systems							200	The state of	District St.							1. 16.1.

	reater emphasis on television standards.	2	,	. 1	. 1					1	1	1	1	1	1	a e Figure 1	7
191.3 T	o study the advanced topics in Digital Television and High Definition Television.	2	1	1	2	2				2		2				3	4
	study audio recording systems such CD/DVD recording. Audio Standards.	2	3	-	2	1	3			2		2	1		1		\perp
	Study Acoustics principles. Application	2	3	'	2	2	2			2		2	1	1		1	+
1712				•		2						1				3	\exists
H192	lective IV (Wireless Sensor Networks)																
	explain various concepts and terminologies used in WSN	3	2	2	2	1	1		1			1	2	2		1	1
14192.2	Describe importance and use of radio communication and link management in WSN	2	2	3	1		1					2	71	1		2	1
04192.3	Explain various wireless standards and protocols associated with WSN	3	2	1	1	2	3		2			1	3			2	
184192.4	Recognize importance of localization and routing techniques used in WSN	1	2	2	2	1	1		1			1	2	2		1	
404192.5	Understand techniques of data aggregation and importance of security in WSN	2	2	3	I		1					2		1		2	1
484192.6	Examine the issues involved in design and deployment of WSN	3	2	1	1	2	3		2			1	3			2	-
																	-
	Name of Course: BE (2019 Pattern) AY 22-23	P01	PO2	P03	P04	P05	P06	P07	PO8	P09	POIO	P011	P012	PSOt	PS02	PS03	
Course Co	Radiation & Microwave Theory																
404181	Apply the fundamentals of electromagnetic to derive free space propagation equation and distringuish various performance parameters of antenna.	3	3	3	3	3							3	2	2	1	
404181	Identify various modes in the waveguide. Compare: coaxial line, rectangular waveguides & stringings and identify applications of the same.	2	2	2	2				2	2			2	and the second		2	
40415	Explore construction and working of principles passive microwave devices/components.	3	3	3		9 1	3	3	3				3		2	40.7	
3041		3	3	3			3	3	3				•	and a special	•	2	
4041		3	3	X G	S. MO	344	3	3	3				2		2		
***	Know the various microwave systems, device set ups of microwave measurement devices and identify the effect of radiations on environmental sustainability.	2	2	201	" PUNE.	COLLEG	2						•				_1
	VLSI Design and Technology		-	*	5	Vol									P	RINIC reo **	* C0
1	u182		-	2	1	1	-					3		Genb	Sobal	alowalu	Pur
and the same of th	Develop effective HDL codes for digital design.	3	3	300	1	3	The said							- 0	51413.0	210	

404182.3	Model digital circuit with HDL, simulate, synthesis and prototype in PLDs.	3	3	3	T	T			_								
404182.4	Design CMOS circuits for specified applications.	3			2	3									T		
404182.5	Analyze various issues and constraints in design of an ASIC.		3	3	3	3						2				2	
404182,6	Apply knowledge of testability in design and Build In Self Test (BIST) circuit.	3	3	3	3	2									1	1	
	tea (5/31) circuit.	3	3	3	2										1	1	
													_	-		+	
404183	Cloud Computing									-					-	-	
404183.1	Understand the basic concepts of Cloud Computing.	3	3		3	2											4
404183.2	Describe the underlying principles of different Cloud Service Models.	3	3	2	3	3					f	1	2	1	0	0	4
404183.3	Classify the types of Virtualization.	3	3	3	3	3					2	2	2				4
	Examine the Cloud Architecture and understand the importance of Cloud Security.	3	3	3	3	2					3	3	3	,			1
404183.4	Develop applications on Cloud Platforms.	2	3	3	2	2					2	2	3				1
404183.5	Evaluate distributed computing and the Internet of Things	3	3	3	3	3	e de la companya de la companya de la companya de la companya de la companya de la companya de la companya de		20.00		2	2	2			1	+
404183.6						3					3	3	3		•		+
	Elective - 3 (Modernized IoT)																
404184	Comprehend and analyze concepts of sensors, actuators, IoT and IoE.	3	2	3	3	3	1	1					1		1	1:	
404184.1	Interpret IoT Architecture Design Aspects.	2	2	2	2	1	1	1				1	1		•	1	
404184.2	Comprehend the operation of IoT protocols.	3	3	3	3	3		e prosposon			3	3	3	1			
404184.3	Describe various IoT boards, interfacing, and programming for IoT	3	3	3	3	2					2	2	3				
404184.	Illustrate the technologies, Catalysts, and precursors of IloT using suitable use cases.	3	3	3	3	3	3	3	3		LANCE OF				1	3	
404184.	Provide suitable solution for domain specific applications of IoT	2	2	-	MOS		2						3		2	1	
404184			1/3	*	- 1												
40418	5 Elective - 4 (Electronic Product Development)		lewach			SOLUE OF											
40418	Understand and explain design flow of design of electronics product.	3	1/4	673	· /		ı	١	1	3	2	2			29		8
40418	5.2 Associate with various circuit design issues and testing	3	-	WY JO	1001	3	3	2	2	١	,	1		Genba	100000	owadi.	W.
40418	Inferring different software designing aspects and the Importance of product test & test specifications.	3		2	1	3	1	1	•	3	1	3		0.710	-1		
40418		2		1	2	١	2	3	2	1	1	2	6.0	1 _	2	2	
				The second second													

11 045

4185.5 Est	mating assorted product design aspects.	2		2	3	1	ı	1	2	3	1	2			anno	I	
185.6 Exc	mplifying special design considerations and importance of documentation.	3		3	2	1	2	2	3	ſ	2	3			2	2	
4190 Fib	er Optic Communication																
4190.1	plain the working of components and measurement equipments in optical fiber networks.	2	1	2	1	1	1	1		ſ	2		2		1	ı	
Ca 4190.2	culate the important parameters associated with optical components used in fiber optic ecommunication systems.	3	2	ı	2	1	ı	1		2	2		ı		2	2	
4190.3	ompare and contrast the performance of major components in optical links.	3	1	2		1	1	1		1	2		2		1	1	
04190.4 E	valuate the performance viability of optical links using the power and rise time budget nalysis.	2	1	2		1	1	1		ī	2		2		1	1	
	esign digital optical link by proper selection of components and check its viability using mulation tools	2	1	2	1	1	1	1		I	2		2		1	I	
1	ompile technical information related to state of art components, standards, simulation tools and current technological trends by accessing the online resources to update their domain knowledge.	3	1	2	1	1	1	1		1	2		2		1	1	
404191	Elective - 5 (Mobile Computing)																
404191.1	Understand concepts of Mobile Communication.	3	3		3	2		772.21			1	1	2	1	a	0	
404191.2	Analyse next generation Mobile Communication System.	3	3	2	3	3					2	2	2				
404191.3	Understand network layers of Mobile Communication.	3	3	3	3	3					3	3	3	1			
404191.4	Understand IP and Transport layers of Mobile Communication	3	3	3	3	2					2	2	3			1	
404191.5	Study of different mathematical models	2	3	3	2	2					2	2	3		,		
404191.6	Understand different mobile applications.	3	3	3	3	3					3	3	•				
404192	Elective - 6 (Digital Marketing)				G.S.1	10			2	3	2	2		١,	0	0	
404192.1	Design websites using free tools like Wordpress and explore it for digital marketing.	2	1	180		1	,	2	2	 	3	,2					
404192.2	Apply various keywords for a website & to perform SEO	1		Caremach	SF-3HO	, , ,	2	1	1	3	1	2		1	2	2	1
404192.3		2		114	1	1	11	3	2	ı	ı	2				1	10000
404192.4		2		1	WATEN		1	1	2	3	ı	2		Genba	,PI	RINC	PAL
404192.5	Use Linked in platform for various campaigning.	2	2	2				2	3	1	2	3		Genba 25/	opani /3, Eal	ewądi,	-con
404192.6	Understand the importance of recent trends in digital marketing	2	2	3	2	1	2				<u> </u>	<u> </u>				1	1

2.6.2. CO-PO Mapping Matrix (TE E&TC) AY 18-19 to 22-23

Digital Communication Understand working of waveform coding techniques and analyse their performance. Od 181.1 CO-2: Analyze the performance of a baseband and pass band digital communication system in terms of error rate and spectral efficiency. Perform the time and frequency domain analysis of the signals in a digital communication system. 2 1 2 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 304181.4 Design of digital communication system. 2 1 2 1 1 Design of digital communication system. 2 1 2 1 1 Design of digital communication system.	Code	Name of Course TE (2015 Pattern) AY 18-19	PO1	PO2	PO3	PO4	PO5	PO6	PO7	POS	PO9	PO10	PO11	PO12	PSO1	PS02	PS
Understand working of waveform coding techniques and analyse their performance. 2 1 2 1 1 1 2 3 3	ourse Code					1 1001-3	- 1, - 7									There is not	
Understand working of Vaverborn coding techniques and analyse their performance 2 1 2 1 1 1 2 3 3	304181		-		2												-
Analyze the performance of a baseband digital communication system in terms of error and spectral efficiency. Perform the time and frequency domain analysis of the signals in a digital communication system. 2 1 2 1 1 1 1 2 1 2 1 2 1 2 1 2 1 2 1			2	1	2	1	1						1	2		3	
Perform the time and spectral efficiency. Perform the time and frequency domain analysis of the signals in a digital communication system. 2 1 2 1 1 1 1 1 2 1 2 1 2 1 2 1 1 2 1 2	304181.1	CO-2: Analyze the performance of a baseband and pass band digital communication system in												page of the			
Perform the time and frequency domain analysis of the signals in a digital communication system. 2 1 2 1 1 3 3 3 94181.3 Study of signal space representation. 1 2 2 1 2 1 2 1 1 2 1 2 1 2 3 3 94181.4 Design of digital communication system. 2 1 2 1 1 3 1 2 1 2 3 3 94181.5 Understand working of spread spectrum communication system and analyze its performance 2 2 2 2 1 1 3 1 2 1 1 3 2 1 2 1 1 3 3 94181.5 Understand working of spread spectrum communication system and analyze its performance 2 2 2 2 1 1 1 3 3 94181.5 Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 1 1 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1		Analyze the performance of a baseband and pass band digital communication system in terms of error rate and spectral efficiency.	1	2	2	1	2						1	2	1	2	
Study of signal space representation. 1 2 2 1 2 104181.4 Design of digital communication system. 2 1 2 1 2 1 2 1 2 304181.5 Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 304182.4 Analyze the discrete time signals and concept of sampling theorem in time domain. 2 2 2 1 304182.4 Analyze fourier transform in discrete domain and concepts of linear and circular convolution. 2 2 1 1 304182.4 Analyze fourier transform and relation between with different transforms 1 2 2 3 1 1 304182.4 Design and implement the IIR filter for filtering different real world signals. 1 2 2 1 304182.5 Develop different signal processing applications using DSP processor. 2 2 1 304182.6 Develop different signal processing applications using DSP processor. 2 2 1 304182.6	304181.2	1.0 Landaria of the signals in a digital communication system					11=2-11		10	Saya	1	efection in			1		1
Study of signal space representation. 1 2 2 1 2 1 2 1 2 304181.4 Design of digital communication system. 2 1 2 1 1 1 2 3 3 304181.5 Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 Design and implement the IIR filter for filtering different real world signals. 1 2 2 1 1 Design and implement the FIR filter for filtering different real world signals. 1 2 2 1 1 Develop different signal processing applications using DSP processor. 2 1 2 1 1 Develop different signal processing applications using DSP processor.		Perform the time and frequency domain analysis of the signals in a digital communication system.	2	1	2	1	1						ı	2		,	
Design of digital communication system. Design of digital communication system. Design of digital communication system. Digital Signal Processing Digital Signal Processing Digital Signal Processing Analyze the discrete time signals and concept of sampling theorem in time domain. Analyze the discrete time signals and concepts of linear and circular convolution. Analyze fourier transform in discrete domain and concepts of linear and circular convolution. Analyze fourier transform and relation between with different transforms 1 2 2 1 1 1 1 2 1 1 1 2 1 1 1 1 2 1	304181.3	Study of signal space representation.			M			7 11-2-14					1	2	1	2	
Design of digital communication system. 2 1 2 1 1 1 1 2 3 304181.5 Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 1 1 2 1 1 Digital Signal Processing Analyze the discrete time signals and concept of sampling theorem in time domain. 2 2 2 1 1 1 1 2 1 1 2 1 1 1 2 2 1 1 1 1	204101 4	Study of signal space representation.	1	2	2	1	2							_			+
Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 1 1 2 1 304181.6 Digital Signal Processing 304182.1 Analyze the discrete time signals and concept of sampling theorem in time domain. 2 2 2 1 1 1 304182.1 Analyze fourier transform in discrete domain and concepts of linear and circular convolution. 2 2 1 1 1 2 2 1 304182.1 Analyze fourier transform in discrete domain and concepts of linear and circular convolution. 2 2 1 1 2 2 1 3 3 1 1 304182.2 Design and implement the IIR filter for filtering different real world signals. 2 2 1 1 3 304182.4 Design and implement the FIR filter for filtering different real world signals. 1 2 2 1 1 3 304182.5 Develop different signal processing applications using DSP processor. 2 1 1 2 2 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3	304181.4	Design of digital communication system.		10.1	in the second		١,						1	2		3	1
Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 1 2 1 2 304181.6 Digital Signal Processing Digital Signal Processing Analyze the discrete time signals and concept of sampling theorem in time domain. 2 2 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1			2	1	2	1	1										
Understand working of spread spectrum communication system and analyze its performance 2 2 2 1 1 1 2 1 2 304181.6 Digital Signal Processing Digital Signal Processing Analyze the discrete time signals and concept of sampling theorem in time domain. 2 2 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	304181.5		-		_					2 - 3 - 1	1			The same			
Digital Signal Processing 304182.1 Analyze the discrete time signals and concept of sampling theorem in time domain. 2 2 2 1 304182.1 Analyze fourier transform in discrete domain and concepts of linear and circular convolution. 2 2 1 1 304182.2 Analyze the need of Z transform and relation between with different transforms 1 2 2 3 1 1 304182.3 Design and implement the IIR filter for filtering different real world signals. 2 2 1 1 304182.4 Design and implement the FIR filter for filtering different real world signals. 1 2 2 1 1 1		Understand working of spread spectrum communication system and analyze its performance	2	2	2	1	1						1	2		ı	1
Digital Signal Processing 304182.1 Analyze the discrete time signals and concept of sampling theorem in time domain. 2 2 2 1 304182.1 Analyze fourier transform in discrete domain and concepts of linear and circular convolution. 2 2 1 1 304182.2 Analyze the need of Z transform and relation between with different transforms 1 2 2 3 1 1 304182.3 Design and implement the IIR filter for filtering different real world signals. 2 2 1 1 304182.4 Design and implement the FIR filter for filtering different real world signals. 1 2 2 1 1 1	304181.6		-	_							(in .						
Analyze the discrete time signals and concept of sampling theorem in time domain. 2 2 2 1 1 1 2 1 304182.1 Analyze fourier transform in discrete domain and concepts of linear and circular convolution. 2 2 1 1 1 2 1 304182.2 Analyze the need of Z transform and relation between with different transforms 1 2 2 3 1 1 2 3 3 1 1 304182.3 Design and implement the IIR filter for filtering different real world signals. 2 2 1 1 2 2 3 1 1 304182.4 Design and implement the FIR filter for filtering different real world signals. 1 2 2 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1																	1
Analyze the discrete time signals and concept of sampling theorem in time domain. 2 2 2 1 304182.1 Analyze fourier transform in discrete domain and concepts of linear and circular convolution. 2 1 1 1 304182.2 Analyze the need of Z transform and relation between with different transforms 1 2 2 3 1 1 2 3 1 2 304182.3 Design and implement the IIR filter for filtering different real world signals. 2 2 1 1 1 1		Digital Signal Processing															
Analyze the discrete time signals and concept of sampling theorem in time domain. 2 2 2 1 304182.1 Analyze fourier transform in discrete domain and concepts of linear and circular convolution. 2 1 1 1 304182.2 Analyze the need of Z transform and relation between with different transforms 1 2 2 3 1 1 2 3 1 2 304182.3 Design and implement the IIR filter for filtering different real world signals. 2 2 1 1 1 1	304182	to the demain		7	Name of the				1			Market 1	-	part of the			
Analyze fourier transform in discrete domain and concepts of linear and circular convenients 2 2 1 1 1 304182.2 Analyze the need of Z transform and relation between with different transforms 1 2 2 3 1 1 2 304182.3 Design and implement the IIR filter for filtering different real world signals. 2 2 1 1 1 1		Analyze the discrete time signals and concept of sampling theorem in time domain.	2	2	2	1		1			1			1	,		1
Analyze the need of Z transform and relation between with different transforms 1 2 2 3 1 1 304182.3 Design and implement the IIR filter for filtering different real world signals. 2 2 1 1 1	304182.1	to the state of linear and circular convolution.	il me	The second		6	1	e e	100	- a-vai					2	1	1
Analyze the need of Z transform and relation between with different dansforms 1 2 2 3 1 1 304182.3 Design and implement the IIR filter for filtering different real world signals. 2 2 1 1 1		Analyze fourier transform in discrete domain and concepts of linear and of the same of the	2	2	1	1									1		+
Design and implement the IIR filter for filtering different real world signals. Design and implement the FIR filter for filtering different real world signals. Design and implement the FIR filter for filtering different real world signals. Design and implement the FIR filter for filtering different real world signals. Design and implement the FIR filter for filtering different real world signals. Design and implement the FIR filter for filtering different real world signals. 2 2 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	304182.2	Analyze the need of Z transform and relation between with different transforms	1	2	2	3	1	1								2	
Design and implement the IIR filter for filtering different real world signals. 2 2 1 1 1 CFM DEMO Design and implement the FIR filter for filtering different real world signals. 1 2 2 1 1 2 2 2 3 1 1 3 304182.5 Develop different signal processing applications using DSP processor. 2 2 1 1 2 2 3 304182.6													_		-	+	+
Design and implement the FIR filter for filtering different real world signals. 1 2 2 1 1 2 1 1 1 1 2 2 1 1 1 1 1 1 1	304182.3	at a Clarific Alexant real world signals.	e de maria				- Take	The second			1	1 10000			2	1	
Design and implement the FIR filter for filtering different real world signals. 1 2 2 1 1 2 304182.5 Develop different signal processing applications using DSP processor. 2 2 1 2 1 304182.6	1100	Design and implement the IIR filter for filtering different feat works	2	2	1	1	C	A ME	N. T.								
304182.6						-	100	-			_						
304182.6	304182.4	Design and implement the FIR filter for filtering different real world signals.	-		١.,	1	0/		1100							2	
304182.6		Design and mysteria	1	1	1 *	1 113	y c		12	W.	1				_	-	-
304182.6	304182.5					11:	1	JAVA			1						
304182.6		Develop different signal processing applications using DSP processor.	2	2	1	1/2		1016	1 10						•	-	-
8/109	304182.6					1	W.										
							1	3 170					71				1
								114									

Genba Sopanrao Moze College of Engg. 25/1/3, Balewadi, Pune - 411 045

	Understand the basic mathematical concepts related to electromagnetic vector fields.	3	3	2	3	3						1	3			
304183.1	Apply the principles of electrostatics to the solutions of problems relating to	3	2	2	2		1		2	2			2		1	
304183.2	electric field and electric potential, boundary conditions and electric energy density. Apply the principles of magnetostatics to the solutions of problems relating to							-								
304183.3	Apply the principles of magnetostatics to the solutions of problems relating to magnetic field and magnetic potential, boundary conditions and magnetic energy density.	3	3	3			3	3	3		2	1	3		2	_
304183.4	Understand the concepts related to Faraday's law, induced emf and Maxwell's equations.	3	3	2		2	3						3			
304183.5	Apply Maxwell's equations to solutions of problems relating to transmission lines	3	2	2	2		1					-	2		1	
	Apply Maxwell's equations to solutions of problems relating to uniform plane wave propagation.	3	3	3	3	3	3	3	3	2		3			1	
304183.6				1												
all the	Microcontroller											e g				
304184	To understand architecture and features of typical Microcontroller.	3	3	2	1	2	1					3		1		
304184.1	Learn importance of microcontroller in designing embedded application	3	3	3	3	3	3					3				
304184.2	To understand need of microcontrollers in real life applications	3	2	3	2	3					2		1		,	
304184.3	To study various hardware and software tools for developing applications.	3	2	2	2	3					2		,	2	,	
304184.4	Develop interfacing to real world devices.LED, LCD (4&8 bits), and Key board						3						3			1
304184.5		3	3	2		2	•			-	-	-				2
304164.3	Develop interfacing to real world devices. UART, Sensor interfacing using ADC, RTC	3	2	1		3	3							2	3	+
304184.6																+
304185	Mechatronics				1	SG V	Mady	To a								1
304185.1	Identification of key elements of mechatronics system and its representation in terms of block diagram	3	2	3	2	g/ 3g	# TMO	10			2		,			1
304185.2	Understanding basic principal of Sensors and Transducer. Understanding basic principal of Sensors and Transducer.	3	2	3	N.	3	1444				5		,		1	+
304185.3	Study the Hydraulic systems	3	2	2	ASSESSED OF	10	TEE	0			2		١		1	-
	Understand pneumatic systems	3	3	2		2	3						3			

	Study of electrical and electromechanical actuactors						T	T	T	ГТ	 				
304185.5		3	2	2	2		1					2		1	
	Understand the mechatronics system in automabile			-	and the second policy of	-							2.5		
304185.6		3	3	3	3	3	3				3			1	
304186	Power Electronics														
304186.1	Design and implement a triggering /gate drive circuit for a power device.	3	3	3	3	3	3				 3				
304186.2	Perform & analyze different AC to DC power converters.	3	2										2		
304186.3	Perform & analyze different DC to A C power converters.	3	3	3	3	3					2				
304186.4	Perform & analyze DC-DC converters & AC Voltage Controller.	3	3	3	3	2	1				2				
304186.5	Design & implement over voltage / over current protection circuit.	3	3	3	3	3					2			ı	
304186.6	Evaluate battery backup time & design a battery charger.	3	3	3	3	2	1				2		2	2	
	Properties were property in ASS, to discuss the State of														-
304187	Information Theory Coding Techniques and Communication Network	2	3	2	1	2						2.		2	
304187.1	Perform information theoretic analysis of communication system. CO-2: Design a data compression scheme using suitable source coding technique.	2	1	3	2	1						1	3	2	
304187.2	Design a data compression scheme using suitable source coding technique.	2	3	2											-
304187.3	Design a channel coding scheme for a communication system.	2	1	3									2		and the same of
304187.4	Design of different coding &decoding techniques.	2	3	2		1863	MASKA	1697							1000
304187.5	Understand and apply fundamental principles of data communication and networking.						20-3a-	19						8,1	
304187.6	Apply flow and error control techniques in communication networks.	2	3	3		10	-116)	*/.s	1					ı	
						W.VO	PIEG	000							
304188	Business Management														

	Get overview of Management Science aspects useful in business.		T				-	-								
304188.1		3	2	3	3	3	1	1								_
	To understand concept of Quality Management, Financial Management and Project Management.							1					1		1	
304188.2	, management,	3	3	3		1	1									-
304188.2	Get motivation for Entrepreneurship					'	'	1				2	1		1	
		2		_												L
304188.3	To leave themes D	-	2	2	2	1	1	1				1	1		1	
	To learn Human Resource Management, marketing management are the major tasks in Business															
304188.4		2	3	3	3	1	1		li test 1		1.455	1		1	1	
	Get Quality Aspects for Systematically Running the Business						-	-								
304188.5		3	3	3	1	1	1	1				2				
	To Develop Project Management aspect and Entrepreneurship Skills.												1		1	
204100 /		3	3	3	1	1	١.									1
304188.6				,		'	1	0				1	1		1	
	Section and the second section in the second section is a second section of the second section in the second section is a second section of the second section in the second section is a second section of the second section in the second section is a second section of the second section in the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section is a second section of the second section of the second section is a second section of the second section of the second section of the second section of the second section of the second section of the section of the second section of the se															+
	Advanced Processors											-				L
304189																
	To understand need and application of ARM Microprocessors in embedded system.			-												
304189.1		3	3	3	3	3	3					3			2	
304189.1	Describe the ARM microprocessor architectures and its feature.														-	
	and its readile.	3	2			Alba I										
304189.2							104							3	2	
	Interface the advanced peripherals to ARM based microcontroller	3														
304189.3		3	3	3	3	3						2				
	Design embedded system with available resources	1886			314											+
304189.4		3	3	3	3	2	1					2		2		
304107.4	Use of DSP Processors and resources for signal processing applications.															-
		3	3	3	3	3						2				
304189.5	To understand architecture and features of typical ARM7& DSP Processors.															L
	To and stand a surfecture and readines of typical Artistica DSI 110cessors.	3	3	3	3	2	1					2		2		
304189.6																
	Approximate to the contract of															
		THE SEC														
304190	System Programming and Operating System	E.S.					-	- AND COLOR							t	
304170	Demonstrate the knowledge of Systems Programming						2	DEMay	1							
		3	2	3	2	3/	No. W	and the same	110		2		1			
304190.1	Formulate the Problem and develop the solution for same.	-	-	-	-	F4 73		-	129							
	Tomasse are records and develop the solution for same.	3	2	3	2	NEE	Chi		18.1		2		,			
304190.2						1	40	ENO.	100							-
	Compare and analyze the different implementation approach of system programming	3	2	2	2	100	1		161		2		,			
304190.3						10	2	-	1							_
	Demonstrate the knowledge of Operating Systems		-			-	39	OFFE	11			2				
		3	3	3	3	2	-	I	F.	11 11 12		•				

PRINCIPAL

Genba Sopanrao Moze College of Engg.
25/1/3, Balewadi, Pune - 411 045

	Formulate the Problem and develop the solution for same.	3	2	2	2	3					2		1		2	
304190.5	Compare and analyze the different implementation approach operating system abstractions. Interpret various OS functions used in Linux / Ubuntu	3	3	3	3	2	1					2			1	
304190.6																
ourse Code	Name of Course TE (2015 Pattern) AY 19-20	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	1
304181	Digital Communication			1 2												
	Understand working of waveform coding techniques and analyse their performance. CO-2: Analyze the performance of a baseband and pass band digital communication system in	2	1	2	ı	1						1	2		3	
504181.1	Analyze the performance of a baseband and pass band digital communication system in terms of error rate and spectral efficiency.	1	2	2	1	2						1	2	1	2	
04181.2	Perform the time and frequency domain analysis of the signals in a digital communication system.	2	1	2	1	1						t	2		3	
04181.3	Study of signal space representation.	1	2	2	1	2						1	2	1	2	-
04181.4	Design of digital communication system.	2	1	2	1	1						1	2		3	The second second
304181.5	Understand working of spread spectrum communication system and analyze its performance	2	2	2	1	1						1	2		ı	
304181.6																-
	Digital Signal Processing															
304182	Analyze the discrete time signals and concept of sampling theorem in time domain.	2	2	2	1								1	1		
304182.1	Analyze fourier transform in discrete domain and concepts of linear and circular convolution.	2	2	1	1									2	•	
304182.2	Analyze the need of Z transform and relation between with different transforms	1	2	2	3	1	1								2	-
304182.3	Design and implement the IIR filter for filtering different real world signals.	2	2	1	1									2	,	-
304182.4	Design and implement the FIR filter for filtering different real world signals.	1	2	2	1	MINES	1000	No.							2	-
304182.5	Develop different signal processing applications using DSP processor.	2	2	,	NGINE	Sp		10						2	,	
304182.6					The state of	1	May	100	-	-						1

PRINCIPAL

Genba Sepanrae Moze College of Engg.
25/1/3, Balewadi, Pune - 411 045

	Electromagnetics												Site.			
304183			-			-		1					- 100			
304183.1	Understand the basic mathematical concepts related to electromagnetic vector fields.	3	3	2	3	3						1	3			
304183.2	Apply the principles of electrostatics to the solutions of problems relating to electric field and electric potential, boundary conditions and electric energy density.	3	2	2	2		1		2	2			2		1	
	Apply the principles of magnetostatics to the solutions of problems relating to magnetic field and magnetic potential, boundary conditions and magnetic energy density.	3	3	3			3	3	3		2	1	3		2	
304183.3	Understand the concepts related to Faraday's law, induced emf and Maxwell's equations.	3	3	2		2	3						3			
304183.4	Apply Maxwell's equations to solutions of problems relating to transmission lines	3	2	2	2		1						2		1	
304183.5	Apply Maxwell's equations to solutions of problems relating to uniform plane wave propagation.	3	3	3	3	3	3	3	3	2		3			1	
304183.6	propagation.															
	Microcontroller															
304184	To understand architecture and features of typical Microcontroller.	3	3	2	1	2	1					3		1		
304184.1	Learn importance of microcontroller in designing embedded application	3	3	3	3	3	3					3				
504184.2	To understand need of microcontrollers in real life applications	3	2	3	2	3					2		1		,	-
304184.3	To study various hardware and software tools for developing applications.	3	2	2	2	3					2		1:	2	,	
304184.4	Develop interfacing to real world devices.LED, LCD (4&8 bits), and Key board	3	3	2		2	3						3			
304184.5	Develop interfacing to real world devices. UART, Sensor interfacing using ADC, RTC	3	2	1		3	3							2	3	
304184.6																
304185	Mechatronics					13	MG	PEMO,	18							
304185.1	Identification of key elements of mechatronics system and its representation in terms of block diagram	3	2	3	2	NCIN	53	Vne	60		2		,			
304185.2	Understanding basic principal of Sensors and Transducer. Understanding basic principal of Sensors and Transducer.	3	2	3	2	100	-	-	3/		3		,		1	
	Study the Hydraulic systems	,	2	2	2	-	् उन	00			,				,	

PRINCIPAL

Genba Sopanrao Moza College of Engg.
25/1/3, Balewadi, Pune - 411 045

304185.4	Understand pneumatic systems	3	3	2		2	3					3			
304185.5	Study of electrical and electromechanical actuactors	3	2	2	2		1	111				2		1	
304185.6	Understand the mechatronics system in automabile	3	3	3	3	3	3				3			1	
304186	Power Electronics														
304186.1	Design and implement a triggering /gate drive circuit for a power device.	3	3	3	3	3	3				3				
304186.2	Perform & analyze different AC to DC power converters.	3	2											2	
304186.3	Perform & analyze different DC to A C power converters.	3	3	3	3	3					2				
304186.4	Perform & analyze DC-DC converters & AC Voltage Controller.	3	3	3	3	2	1			12	2		1		
304186.5	Design & implement over voltage / over current protection circuit.	3	3	3	3	3					2			1	
304186.6	Evaluate battery backup time & design a battery charger.	3	3	3	3	2	1				2		2	2	
304187	Information Theory Coding Techniques and Communication Network	2	3	2	1	2						2		2	
304187.1	Perform information theoretic analysis of communication system.	2	1	3	2	1						t	3	2	
304187.2	CO-2: Design a data compression scheme using suitable source coding technique. Design a data compression scheme using suitable source coding technique.	2	3	2											
304187.3	Design a channel coding scheme for a communication system.	2	1	3									2		
304187.4	Design of different coding &decoding techniques.	2	3	2					Car						
304187.5	Understand and apply fundamental principles of data communication and networking.							NG X	IDE/MO/	1		7.7			
304187.6	Apply flow and error control techniques in communication networks.	2	3	3			SGINE	Sign	M:	0				1	
							THE WAY		2	3/					

PRINCIPAL

Genba Sopanrao Moze College of Engg.
25/1/3, Balewadi, Pune - 411 045

304188	Business Management							1					1	1	Γ	
	Get overview of Management Science aspects useful in business.					Nitron of decide										
304188.1		3	2	3	3	3	1	1								
	To understand concept of Quality Management, Financial Management and Project Management.												1		1	1
304188.2	last and reject intringenent.	3	3	3	1	1	1	1								
304188.2	Get motivation for Entrepreneurship											2	1		1	1
		2	2	2	2											
304188.3	To learn Human Danaum Manager		•	-		1	1	1				1	1		1	1
	To learn Human Resource Management, marketing management are the major tasks in Business															
304188.4		2	3	3	3	1	1					1		1	1	
	Get Quality Aspects for Systematically Running the Business															
304188.5		3	3	3	1	1	1	1	The second			2	1	1	1	1
	To Develop Project Management aspect and Entrepreneurship Skills.															
304188.6		3	3	3	1	1	1	0				1	1		1	1
	Advanced Processors															
304189																
	To understand need and application of ARM Microprocessors in embedded system.	3	3	3	3	3	3									
304189.1		"	'	1 ,	,	*	,					3			2	2
	Describe the ARM microprocessor architectures and its feature.				100											
304189.2		3	2			1								3	2	2
	Interface the advanced peripherals to ARM based microcontroller				94.									1		
304189.3		3	3	3	3	3	1.					2				
304187.3	Design embedded system with available resources					_		_			+		-	+	_	-
		3	3	3	3	2	1					2		2		
304189.4	Use of DSP Processors and resources for signal processing applications.	-	+-	-	-	+	1			-	+	-	+	-		_
	Osc of Dist 1 locessors and resources for signal processing approximations.	3	3	3	3	3						2				
304189.5	The state of the s	-	-	-	+	+		A			-	-	-	+		_
	To understand architecture and features of typical ARM7& DSP Processors.	3	3	3	3	2	1					2		2		
304189.6																
								-								
							S.G.	k Ipen							1	2
20.4100	System Programming and Operating System						d'in	-	100							•
304190	Demonstrate the knowledge of Systems Programming	1			1	1/3	77		100							
		3	2	3	2	GIR	1 5%	1	0		2		'			
304190.1	Formulate the Decklers and develop the column for the column	-	-	-	-	1		Mod	100	+			-			
	Formulate the Problem and develop the solution for same.	3	2	3	2	11 67			X		2		,			
304190.2						1		7700	0	-			_	-	-	
304170.2	Compare and analyze the different implementation approach of system programmir															

PRINCIPAL

Genba Sopanrao Moza College of Engg
25/1/3, Balewadi, Pune - 411 045

304190.4	Demonstrate the knowledge of Operating Systems	3	3	3	3	2	1					2				
	Formulate the Problem and develop the solution for same.	3	2	2	2	3					2		1		2	1
304190.5																
304190.6	Compare and analyze the different implementation approach operating system abstractions. Interpret various OS functions used in Linux / Ubuntu	3	3	3	3	2	1					2			1	1
	the state of the s				4	4-1										
ourse Code	Name of Course TE (2015 Pattern) AY 20-21	POI	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	P011	PO12	PSO1	PSO2	P
304181	Digital Communication															
	Understand working of waveform coding techniques and analyse their performance.		14													
	CO 2: Analyze the performance of a baselend and near head division.	2	1	2	1	1						1	2		3	
304181.1	CO-2: Analyze the performance of a baseband and pass band digital communication system in Analyze the performance of a baseband and pass band digital communication system in terms of		-	-											_	-
304181.2	remarke the performance of a baseonial and pass oand digital communication system in terms of error rate and spectral efficiency.	1	2	2	1	2						1	2	1	2	
	Perform the time and frequency domain analysis of the signals in a digital communication system.															
		2	1	2	1	1	F - 3					I	2		3	
304181.3	Co. A. of circular and circular			1	-								-	-		-
	Study of signal space representation.	1	2	2	1	2			1			1	2	1	2	
304181.4			-	-		1						1	-		-	
	Design of digital communication system.	1			- I			- 1/6								1
		2	1	2	1	1		1	1 9 9			1	2		3	
304181.5	Understand working of spread spectrum communication system and analyze its performance	-	-	-		-				-	-			-		+
	Onderstand working or spread spectrum communication system and analyze its performance	2	2	2	1	1						1	2		1	1
304181.6																
	Digital Signal Processing					7										1
304182			-				-									
	Analyze the discrete time signals and concept of sampling theorem in time domain.	2	2	2	١,									1 ,		
304182.1		-	-	1												
	Analyze fourier transform in discrete domain and concepts of linear and circular convolution.															
		2	2	1	1			-	100					2	1	1
304182.2	Analyze the need of Z transform and relation between with different transforms	-	-	+	+	+	1		-	-			-	-	-	-
	The same of the sa	1	2	2	3	1/8	NiG.	IDEA							2	
304182.3		1				1//	11		18							
304182.4	Design and implement the IIR filter for filtering different real world signals.	2	2	1	,	GINE	\$3	J	1					2	,	-
	Design and implement the FIR filter for filtering different real world signals.	-	1	-	+	1	· U	100	100			-				
304182.5		1	2	2	3	1	1/3	100	3	/					2	

roug

PRINCIPAL

Genba Sopanrao Moza College of Engg.
25/1/3, Balewadi, Pone - 411 045

04182.6		2	2	1	1	7 34								2	,	2
e, a pas		ē -										\dashv	+	+	+	-
04183	Electromagnetics									-			+	+	+	
14183.1	Understand the basic mathematical concepts related to electromagnetic vector fields.	3	3	2	3	3						1	3		+	-
04183.2	Apply the principles of electrostatics to the solutions of problems relating to electric field and electric potential, boundary conditions and electric energy density.	3	2	2	2		1		2	2			2		,	2
	Apply the principles of magnetostatics to the solutions of problems relating to magnetic field and magnetic potential, boundary conditions and magnetic energy density.	3	3	3			3	3	3		2	1	3		2	
04183.4	Understand the concepts related to Faraday's law, induced emf and Maxwell's equations.	3	3	2		2	3					4	3			
04183.5	Apply Maxwell's equations to solutions of problems relating to transmission lines	3	2	2	2		1						2		,	
04183,6	Apply Maxwell's equations to solutions of problems relating to uniform plane wave propagation.	3	3	3	3	3	3	3	3	2	- A Company of the Co	3			1	
April 1							***************************************		-							
304184	Microcontroller				***************************************					TO STREET STREET, STRE						
304184.1	To understand architecture and features of typical Microcontroller.	3	3	2	1	2	1					3		1		
304184,2	Learn importance of microcontroller in designing embedded application	3	3	3	3	3	3		PROPERTY OF STREET			3				
304184,3	To understand need of microcontrollers in real life applications	3	2	3	2	3	N CONTRACTOR OF THE PARTY OF TH	THE CONTROL OF THE PARTY OF THE		-	2		1		,	1
304184.4	To study various hardware and software tools for developing applications.	3	2	2	2	3	THE PERSONS INVESTORS	hare the contract production of		THE RESERVE THE PARTY OF THE PA	2		1	1	1	-
304184,5	Develop interfacing to real world devices LED, LCD (4&8 bits), and Key board	9	3	9	MINISTER STATE	2	3	STATE OF THE PARTY	THE REPORT OF THE PARTY OF	OR THE WOOD PAR		CAN BE A THE SAME OF THE SAME	*	Transport Mark Street	SO EXCISE COMMON	and the same
	Develop interfacing to real world devices UART, Sensor interfacing using ADC, RTC	3	2	illerand displaced and providence	thank a terr cocceyyo	9	3	Tene day & State American			CERTIFICATION OF THE PERSON OF		HELIA BOS HOLISONINA	1	1	100.00
304184.6		tion infrareduces	TO SEE SEE SEE SEE SEE SEE	NOTE OF BRIDE NAME OF STREET	KARAPAN AND DESCRIPTION	innere professioner	13	3			s de la compansión de l	NATIONAL PROPERTY.		HOLE BOOK OF THE PARTY OF THE P	es de la companyo	COOR COL
304185	Mechatronics	tinesservenus		t Assemble Annual My as	CHI TO STATEMENT OF	AND SECURED AND SE		N. S. S. S. S. S. S. S. S. S. S. S. S. S.	THE PERSON NAMED IN	10	Model (1962)	MATCHE RESIDENCE	NESS BORNESS AND		In Co. 8 (1979)	100000
304185.1	Identification of key elements of mechatronics system and its representation in terms of block	nerse colorena inc			ng and an expression	navitan (desensors)	And the second	HERROTTAL PROPERTY.	Salar Salar Salar Salar Salar Salar Salar Salar Salar Salar Salar Salar Salar Salar Salar Salar Salar Salar Sa						Section 1	2000

PRINCIPAL

Genba Sopanrao Mosa College of Engg
25/1/3, Balewadi, Pune - 411 049

	assic principal of Sensors and Transducer. Understanding basic principal of and Transducer.			T												
	Study the Hydraulic systems	3	2	3	2	3	- ka				2		1		1	2
304185.3		3	2	2	2	3				-				-	-	
304185.4	Understand pneumatic systems	_				-					2		1		1	1
	Study of algorithms	3	3	2		2	3						3			
304185.5	Study of electrical and electromechanical actuactors	3	2	2	2		1									
304185.6	Understand the mechatronics system in automabile	3	3	3	3	3	3					3	2		1	2
	as a little and the first reading of											,			1	1
304186	Power Electronics															
304186.1	Design and implement a triggering /gate drive circuit for a power device.	3	3	3	3	3	3					3				
304186.2	Perform & analyze different AC to DC power converters.	3	2													
304186.3	Perform & analyze different DC to A C power converters.	3	3	3	3	3						2				
304186.4	Perform & analyze DC-DC converters & AC Voltage Controller.	3	3	3	3	2	1					2				
304186.5	Design & implement over voltage / over current protection circuit.	3	3	3	3	3						2			1	2
304186.6	Evaluate battery backup time & design a battery charger.	3	3	3	3	2	1					2		2	2	1
304187	Information Theory Coding Techniques and Communication Network															
304187.1	Perform information theoretic analysis of communication system. CO-2: Design a data compression scheme using suitable source coding technique.	2	1	3	2	1							1	3	2	2
304187.2	Design a data compression scheme using suitable source coding technique.	2	3	2				ia *	De							
304187.3	Design a channel coding scheme for a communication system.	2	1	3			13	-	13	15				2		
304187.4	Design of different coding &decoding techniques.	2	3	2			ENG	200	May.	(i)						
304187.5	Understand and apply fundamental principles of data communication and networking.	2	3	2	1	2	180	PER	1				2		2	

PRINCIPAL
PRINCIPAL
Genba Sopanrao Moze College of Engg.
25/1/3, Balewadi, Pune - 4/1 045

04187.6	Apply flow and error control techniques in communication networks.	2	3	3											1	
					. 1											
304188	Business Management															
04188.1	Get overview of Management Science aspects useful in business.	3	2	3	3	3	1	1					1		1	
	To understand concept of Quality Management, Financial Management and Project Management.	3	3	3	1	1	1	1				2	1		1	
04188.2	Get motivation for Entrepreneurship	2	2	2	2	1	1	1				1	1		,	-
04188.3	To learn Human Resource Management, marketing management are the major tasks in Business	2	3	3	3	1	1									-
04188.4	Get Quality Aspects for Systematically Running the Business		8797	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	777				20%			1		1	1	
04188.5	To Develop Project Management aspect and Entrepreneurship Skills.	3	3	3	1	1	1	1				2	1		1	
04188.6		3	3	3	1	1	1	0				1	1		1	
204400	Advanced Processors															
304189	To understand need and application of ARM Microprocessors in embedded system.	3	3	3	3	3	3					3			2	
304189.2	Describe the ARM microprocessor architectures and its feature.	3	2			1	1							3	2	
304189.3	Interface the advanced peripherals to ARM based microcontroller	3	3	3	3	3						2				
304189.4	Design embedded system with available resources	3	3	3	3	2	1	,				2		2		
304189.5	Use of DSP Processors and resources for signal processing applications.	3	3	3	3	3						2				
304189.6	To understand architecture and features of typical ARM7& DSP Processors.	3	3	3	3	2	1	To A				2		2		
							(3)		100	A						
304190	System Programming and Operating System						ENG	93/		9						
304190.1	Demonstrate the knowledge of Systems Programming	3	2	3	2	3	10	0377	10	1	2		,			-

ruy

PRINCIPAL

Genba Sopanrao Moza College of Engg.
25/1/3, Balewadi, Pune - 411 045

	Formulate the Problem and develop the solution for same.		T				_		_							
304190.2		3	2	3	2	3	1				2	1000				
304170.2	Compare and analyze the different implementation approach of system programming	-	this improve										1			
304190.3	The state of the s	3	2	2	2	3					2	S. Land	1		100	
304190.4	Demonstrate the knowledge of Operating Systems	3	3	3	3	2	1					2				
304190.4	Formulate the Problem and develop the solution for same.											2				
304190.5		3	2	2	2	3			N-71-109		2		1		2	1
304190.6	Compare and analyze the different implementation approach operating system abstractions. Interpret various OS functions used in Linux / Ubuntu	3	3	3	3	2	1					2			í	1
	Name of Course TE (2019 Pattern) AY 21-22	POI	PO2	PO3	PO4	PO5	PO6	PO7	POS	PO9	PO10	POU	POIS			
Course Code		101	FU2	rus	PU4	PUS	106	PO/	PUS	PU9	POIO	PO11	PO12	PSO1	PSO2	PSC
304181	Digital Communication															
304181.1	Apply the statistical theory for describing various signals in a communication system.	2	1	2	1	1	2	2	1		2	1	2		3	2
304181.2	Understand and explain various digital modulation techniques used in digital communication systems and analyze their performance in presence of AWGN noise.	1	2	2	1	2	1	1	2		1	I	2	1	2	2
304181.3	Analyze performance of digital modulation techniques in presence of AWGN noise.	2	1	2	1	1	2	2	1		2	ı	2		3	2
304181.4	Describe and analyze the digital communication system with spread spectrum modulation.	1	2	2	l	2	1	1	2		1	ı	2	t	2	2
304181.5	Analyze a communication system using information theoretic approach.	2	2	2	1	1	2	1	1	1	2	1	2		ı	2
304181.6	Use error control coding techniques to improve performance of a digital communication system	2	1	2	1	1	2	2	1	×17,795.45	2	l	2		3	2
					x(0)) 60											
304182	Electromagnetic Field Theory						1	GN	PRANSPO	1		Ĭ.				
304182.1	Apply the basic electromagnetic principles and determine the fields (E & H) due to the given source.	2	2	2	1		SINE	\$7.3	Way	6.8			1	•		
304182.2	Apply boundary conditions to the boundaries between various media to interpret behavior of the fields on either sides	2	2	1	1		Til.		1	MOS				5	•	
304182.3	State, Identify and Apply Maxwell's equations (integral and differential forms) in both the forms (Static, time-varying or Time-harmonic field) for various sources, Calculate the time average power density using Poynting Theorem, Retarded magnetic vector potential.	1	2	2	3	1	,	EGE	1703			[9 			2	

reary

PRINCIPAL

Genba Sopanrao Mczo College of Eng
25/1/3, Balewadi, Pune - 411 045

	Formulate, Interpret and solve simple uniform plane wave (Helmholtz Equations) equations, and analyze the incident/reflected/transmitted waves at normal incidence	2	2	1	2									1	1	
	Interpret and Apply the transmission line equation to transmission line problems with load impedance to determine input and output voltage/current at any point on the Transmission line, Find input/load impedance, input/load admittance, reflection coefficient, SWR, Vmax/Vmin, length of transmission line using Smith Chart	2	1	2	2	1					1					
	Carry out a detailed study, interpret the relevance and applications of Electromagnetics	1	2	1	2	1								2	1	
04102.0																
304183	Database Management															
304183.1	Ability to implement the underlying concepts of a database system	3	3	2	3	3						1	3		2	
304183.2	Design and implement a database schema for a given problem-domain using data model.	3	2	2	2		1		2	2			2		1	
304183.3	Formulate, using SQL/DML/DDL commands, solutions to a wide range of query and update problems	3	3	3			3	3	3		2	1	3		1	
304183.4	Implement transactions, concurrency control, and be able to do Database recovery	3	3	2		2	3	3	3				3		2	
304183.5	Able to understand various Parallel Database Architectures and its applications.	3	3	3	3	3	3	3	3	2		3			ı	
304183.6	Able to understand various Distributed Databases and its applications	2	2	2	2		2		2		2		2			
304184	Microcontrollers															-
304184.1	Understand the fundamentals of microcontroller and programming	3	3	2	1	2	1					3		,		
304184.2	Interface various electronic components with microcontroller	3	3	3	3	3	3					3		2	1	
304184.3	Analyze the features of PIC 18F XXXX	3	2		ļ.,										2	
304184.4	Describe the programming details in peripheral support.	3	3	3	3	3						2		1	1	
304184.5	Develop interfacing models according to applications.	3	3	3	3	2	1					2				
304184.6	Evaluate the serial communication details and interfaces.	3	3	3	2							1		2	1	

remy

PRINCIPAL

Genba Sopanrao Moze College of Engg
25/1/3, Balewadi, Pune - 411 945

				91.9						a) e	1.5						
04185	Elective - I (Computer Networks)		-			-											
04185.1	Design LAN using appropriate networking architecture, topologies, transmission media, and networking devices.	3	2	3	2	3					2		1	,			
004185.2	Understand the working of controlling techniques for flawless data communication using data link layer protocols.	3	2	3	2	3					2		1	2	,		
304185.3	Learn the functions of network layer, variousswitching techniques and internet protocol addressing	3	2	2	2	3					2		1		2		
304185.4	Explore various interior and exterior, unicasting and multicasting protocols.	3	2	3	2	3					2		,	1	,		
304185.5	Analyze data flow using TCP/UDP Protocols, congestion control techniques for QoS.	3	2	3	2	3					2		1			2	
304185.6	Illustrate the use of protocols at application layer.	3	,	3	2	3					2		2	2	,		
					I												
304192	Cellular Networks		*******														
304192.1	Understand fundamentals of wireless communications.	3	3	3	3	3	3					3		,			
304192.2	Discuss and study OFDM and MIMO concepts.	3	2								Magazine Company	**************************************		2			
304192.3	Elaborate fundamentals mobile communication.	3	3	3	3	3						2			2		
304192.4	Describes aspects of wireless system planning.	3	3	3	3	2	1					2					
304192.5	Understand of modern and futuristic wireless networks architecture.	3	3	3	2			A - Exp				,				2	
304192.6	Summarize different issues in performance analysis	3	3	3	3	3	-					3		2	,		
						100	* 6.	MO	1								
304193	Project Management					wadi	1		lin lin								
364193.1	Apply the fundamental knowledge of project management for effectively handling the projects.	2		2	ı	10	1	2	J	3	3	3	2	3	3	2	4
304193.2	Identify and select the appropriate project based on feasibility study and undertake its effective planning.	2		3	2	1	1	-	1	2	2	3	ı	3	2	pŘľi	-

Genba Sopanico Moso College of Engg-25/1/3, Balewadi, Pune - 411 045

304193.3	Assimilate effectively within the organizational structure of project and handle project management related issues in an efficient manner.	2		2	1	2	3	2	3	3	3	3	2	3	1	2
304193.4	Apply the project scheduling techniques to create a Project Schedule Plan and accordingly utilize theresources to meet the project deadline.	2		3	2	1	1	1	1	2	2	3	1	2	1	
904193.5	Identify and assess the project risks and manage finances in line with Project Financial Management Process.	2		2	2	2	2	1	1	2	2	3	2	3	2	
304193.6	Develop new products assessing their commercial viability and develop skillsetsfor becoming successful entrepreneurs while being fully aware of the legal issuesrelated to Product development and Entrepreneurship.	2		3	3	2	2	2	2	3	3	3	3	3	1	
				(equips)				lives or								
304194	Power Devices & Circuits		g	April 1 December												
304194.1	To differentiate based on the characteristic parameters among SCR, GTO, MOSFET & IGBT and identify suitability of the power device for certain applications and understand the significance of device ratings.	3	2	3	3	3	1	1					1		1	
304194.2	To design triggering / driver circuitsfor various power devices	2	2	2	2	1	1	1				1	1		1	
304194.3	To evaluate and analyze various performance parameters of the different converters and its topologies.	3	3	3	1	1	1	1				2	1		1	
304194.4	To understand significance and design of various protections circuitsfor power devices.	3	3	3	1	1	1	0				1	1		1	
204104.5	To evaluate the performance of uninterruptible power supplies, switch mode power supplies and battery.	3	3	3	3	3	1	0					1		1	
304194.5	To understand case studies of power electronics in applicationslike electric vehicles, solar systems etc.	2	2	2	2	1	1	0				a	1		1	
304195	Elective-II (Network Security)															
204194.1	Analyze attacks on computers and computer security.	3	3	3	3	3	3					3				
204194.2	Demonstrate knowledge of cryptography techniques	3	2		-											
204194.3	Illustrate various Symmetric and Asymmetric keys for Ciphers	3	3	3	3	3		S. MC				2				
204194.4	Evaluate different Message Authentication Algorithms and Hash Functions	3	3	3	3	Men		PU	18			2				
204194.5	Get acquainted with various aspects of E-Mail Security	3	3	3	2	4 lips	1	1E-45	363			1				
2041946	Assimilate various aspects of Web Security	3	3	3	3	3	Way.	NON	J			3				

Genba Sopanrao Moze College of En 25/1/3, Balewadi, Puns - 411 045

		1	1	1	1	1	1	,		,						
To be a second of the second o																
				The state of the s	All and the second of the second	THE BOTTON CHIEFLAND			and the second	THE STATE OF THE S	A STORY OF MARKET	THE SHAPE SHAPE	None Species		-	-
		Commission of the Commission o	ENDERONAL SE	THE STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, ST	THE RESERVE	Madestonie		togeneous generally	Marie Company	and the second property of the			Mart V. Scriptoring and		CHANGE CONTRA	-
Course Code	Name of Course TE (2019 Pattern) AV 22-23	POI	POI	PO3	PO4	POA	PO6	PO7	POR	P09	PO10	POH	POH	PSOI	PSO1	M
304181	Digital Communication	TOTAL BESTELLE MATERIAL	PARTICULAR SECTION		TO STATE OF	Descriptions	THE REPORT OF STREET	erus entre entre	BONE GOVERNMENT		and anticological polynopia	A CONTRACTOR OF		MATERIAL PROPERTY.	B ertislete-reine	day com
304181.1	Apply the statistical theory for describing various signals in a communication system	2	l e	2	l l	l	2	2	l	n greenbere state state of the	1	1	3		1	-
304181,2	Understand and explain various digital modulation techniques used in digital communication systems and analyze their performance in presence of AWGN noise.	THE ENGINEERING	2	2	l	2		1	2		j	ľ	3	p.	,	- I
304181.3	Analyze performance of digital modulation techniques in presence of AWGN noise.	2	BEKENMEN, N. (1990)	2	CONTROL AND CONTROL OF CONTROL		2	2	(BOOL HART OF BRIDE	3	1	1		*	1
304181.4	Describe and analyze the digital communication system with spread spectrum modulation.	1	2	2	l I	2			3	DAMINISTRA PRODUCTION	ı	1	3	,	1	
304181,5	Analyze a communication system using information theoretic approach.	2	2	2	l l	Distance and the Control of the Cont	2		1	1	,	ı	3		1	1
304181.6	Use error control coding techniques to improve performance of a digital communication system	2	1	2	1	ı	2	2	ı	10A504/0000000000000000000000000000000000	2	1	3		1)
3041013						a menana serapi an		ensceniere (Anne Pari		S STANDARD STANDARD					Name (Sec.)	Carrier
304182	Electromagnetic Field Theory					name increases different for the		accessorial Vanda Rose								
304182,1	Apply the basic electromagnetic principles and determine the fields (E & H) due to the given source.	2	2	2	,					************			,	'		n comment
304182,2	Apply boundary conditions to the boundaries between various media to interpret behavior of the fields on either sides	,	2	,	,									*	•	SCHOOLS
	State, Identify and Apply Maxwell's equations (integral and differential forms) in both the forms (Static, time-varying or Time-harmonic field) for various sources, Calculate the time average power density using Poynting Theorem, Retarded magnetic vector potential	,	2	2	3	1	,	Marria de							2	and the same of th
304182.3	Formulate, Interpret and solve simple uniform plane wave (Helmholtz Equations) equations, and analyze the incident/reflected/transmitted waves at normal incidence		2	,	2	K	WG.S	. MO						,	•	Department of
304182.4	Interpret and Apply the transmission line equation to transmission line problems with load impedance to determine input and output voltage/current at any point on the Transmission line, Find input/load impedance, input/load admittance, reflection coefficient, SWR, Vmax/Vmin,	2	,	2		le la			37.50		•					,
304182.5	length of transmission line using Smith Chart Carry out a detailed study, interpret the relevance and applications of Electromagnetics	,	2	1		1		The same of the sa						,	1	
304182.6			-	-	-	-	4	MIA	To the same of							P

remy

PRINCIPAL

Genba Sepanree Moze College of Engg.
25/1/3, Balewadi, Pune - 411 045

	in the second of														
304183	Database Management														
304183.1	Ability to implement the underlying concepts of a database system	3	3	2	3	1	,					1	3		
304183.2	Design and implement a database schema for a given problem-domain using data model.	3	2	2	2		,		2	2			2		
304183.3	Formulate, using SQL/DML/DDL commands, solutions to a wide range of query and update problems	3	3	3			3	3	3		2	1	3		
304183.4	Implement transactions, concurrency control, and be able to do Database recovery	3	3	2		2	3	3	3				3		
	Able to understand various Parallel Database Architectures and its applications.	3	3	3	3	3	3	3	3	2		3			
304183.5	Able to understand various Distributed Databases and its applications	2	2	2	2		2		2		2		2		
304183.6															
	Microcontrollers						1								
304184	Understand the fundamentals of microcontroller and programming	3	3	2	1	2	1					3			
304184.1	Interface various electronic components with microcontroller	3	3	3	3	3	3					3			
304184.2	Analyze the features of PIC 18F XXXX	3	2												
304184.3	Describe the programming details in peripheral support.	3	3	3	3	3						2			
304184.4	Develop interfacing models according to applications.	3	3	3	3	2	1					2			
304184.5	Evaluate the serial communication details and interfaces.	3	3	3	2							1			
304184.6							1	S. MO							
304185	Elective - I (Computer Networks)					100	0	200	13						
304185.1	Design LAN using appropriate networking architecture, topologies, transmission media, and networking devices.	3	2	3	2	vaca	4	NE-45	80%		2		1		
304185.2	Understand the working of controlling techniques for flawless data communication using data link layer protocols.	3	2	3	2	3	33	PINE	1		2		1	 Senb	5/1

ruy

PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCIPAL
PRINCI

LESIM	Learn the functions of network layer, variousswitching rechniques and internet protocol	No. of Concession, Name of Street, or other Designation, or other	to be a second or the second o													
H185.4	Explore various interior and exterior, unicasting and multicasting protocols.	3	5		,	3				and the same of th	-		T		P	
4185.5	Analyse data flow using TCP/UDP Protocols, congestion control rechniques for QuS.	3	2	3	2	3					'		•	- Constitution of the Cons		
4185.6		3	2	,	,	,	To the last of the	THE RESERVE OF THE PARTY OF THE		THE RESIDENCE AND A SECOND	,		'			
	Illustrate the use of protocols at application layer.	3	,	3	2	,					,		ľ			
									-		,		,		N	
04192	Cellular Networks		_													Market Control
14192.1	Understand fundamentals of wireless communications.	3	3	3	3	3	,	-								
04192.2	Discuss and study OFDM and MIMO concepts.	3	2				-					,				
04192.3	Elaborate fundamentals mobile communication.	3	3	3	3	3						,				
04192.4	Describes aspects of wireless system planning.	3	3	3	3	2	,					,				
304192.5	Understand of modern and futuristic wireless networks architecture.	3	3	3	2							,				
304192.6	Summarize different issues in performance analysis	3	3	3	3	3	3					,				
	Second to be a second to the s															
304193	Project Management															
304193.1	Apply the fundamental knowledge of project management for effectively handling the projects.	2		2	1	2	3	2	3	3	3	3	2	3	2	2
304193.2	Identify and select the appropriate project based on feasibility study and undertake its effective planning	2		3	2	ı	1	1	1	2	2	3	ı	3	2	2
304193.3	Assimilate effectively within the organizational structure of project and handle project management related issues in an efficient manner.	2		2	1	2	6.8.	MÓZ	,	3	3	3	2	3	ı	2
304193.4	Apply the project scheduling techniques to create a Project Schedule Plan and accordingly utilize theresources to meet the project deadline.	2		3	2	(30) (30) (40)	1	-	13	3	2	3	1	2	ı	2
304193.5	Identify and assess the project risks and manage finances in line with Project Financial Management Process	2		2	2	ada	3 8	1	18	2	2	3	2	3	2	2
304193.6	Develop new products assessing their commercial viability and develop skillsetsfor becoming successful entrepreneurs while being fully aware of the legal issuesrelated to Product development and Entrepreneurship.	2		3	3	1/3	1	- 1	7	3	3	3	3	3	1	12 SOF

PRINCIPAL anrao Mozo College Balewadi, Puna - 41

25/1/3, Balen

1194.1 si	To differentiate based on the characteristic parameters among SCR, GTO, MOSFET & IGBT and identify suitability of the power device for certain applications and understand the		+-	+			-								
3	agrinicance of device ratings.	3	2	3	3	3	1	1				1	1	1	
	To design triggering / driver circuitsfor various power devices	2	2	2	2	1	1	1			1	1	1	,	
4194.3	To evaluate and analyze various performance parameters of the different converters and its topologies.	3	3	3	1	1	1	1			2	1	1	,	
	To understand significance and design of various protections circuitsfor power devices.	3	3	3	1	1	1	0			1	,	1	,	
04194.5	To evaluate the performance of uninterruptible power supplies, switch mode power supplies and battery.	3	3	3	3	3	1	0				1	1	1	
04194.6	To understand case studies of power electronics in applicationslike electric vehicles, solar systems etc.	2	2	2	2	1	1	0			0	1	1	,	
					1,00										
304195	Elective-II (Network Security)														
204194.1	Analyze attacks on computers and computer security.	3	3	3	3	3	3				3				
204194.2	Demonstrate knowledge of cryptography techniques	3	2												
204194.3	Illustrate various Symmetric and Asymmetric keys for Ciphers	3	3	3	3	3					2				
204194.4	Evaluate different Message Authentication Algorithms and Hash Functions	3	3	3	3	2	1				2				
204194.5	Get acquainted with various aspects of E-Mail Security	3	3	3	2						1				
2041946	Assimilate various aspects of Web Security	3	3	3	3	3	3	s. Mo			3				PRINC panrao M Balewa
						alewad)	1	POWE &	CONT.						PRINC

Cours	se	2.6.2. CO-	PO Attain	nent Matri	x (SE E&T	C) AY 18-	19 to 22-2:	3								
Code		POI	PO2	PO3	PO4	PO5	PO6	P07	PO8	P09	PO10	8044				
20418						-				107	POIO	PO11	PO12	PSO1	PSO2	PSO3
20418		3	2	2							1					
20418	Develop input output relationship for linear shift invariant system and understand the Convolution operator for continuous and discrete time system.			2	2	3		1					1	2	2	3
20418	Heatmander demain to be a Company of the Company of		3	2	1	3					1		2	2	2	1
	Understand and resolve the signals in frequency domain using Fourier series and	3		-		3					1		2	2	1	
	1 Fourier transforms. Understand the limitations of Fourier transform and need for Laplace transform.		3	3							1		1		2	
204182	Develop the ability to analyze the system in s-domain. Understand the basic concept of probability, random variables and random	3	- 2			3		1			1		2	2	1	2
204182	z signals	2	3	2	1	3					1		2	2	1	2
204182	Electronic Devices and Circuits		3		3	3										
204182	Comply and verify parameters after exciting devices by any stated method.	3	2	2	1	2	1	1		1			2			2
204182	Implement circuit and test the performance.	2	3	3	3	1	2	1					2		2	1
204182	Analyze small signal model of FET	2	3	2	2	1	2	2		1			1		1	2
204182	Explain behaviour of FET at low frequency.	2	3	3	3	1	2	1					2		1	3
204183	Analyze small signal model MOSFET.	2	1	3	1	2	2						1		2	1
204183	Design an adjustable voltage regulator circuits	2	3	3	3	1	2	1					2		1	3
204183	Electrical Circuits and Machines									Y 13.4						
204183	Analyze basic AC & DC circuit for voltage, current and power by using various circuit simplification techniques & network theorems.	3	2	2	1	2	1	1		1			2			2
204183	Explain working principle & different types of transformers.	2	3	3	3	1	2	1			375		2		2	1
04183	Explain the working principle of DC motor & different methods of speed control of DC motor	3	3	2	1	1	1									1
04183	Explain working principle, slip & torque equation of AC motor.	3	2	1	2		1									1
04184	Select motors for given application.	2	3	3	3	1	2	1					2		2	1
04184	Explain the construction and working principle of stepper motor and single phase induction motor.	3	3	2	1	1	1									1
	Data Structures and Algorithms				50 - T				S. MO							
4184	Discuss the computational efficiency of the principal algorithms such as sorting & searching.	3	2	3	2	1	2	(*)	0. 1110	3	1					2
4184	Write and understand the programs that use arrays & pointers in C	3	2	3	3	3	1	100		15	1					1

Genba Sonna Michael

nge

20418	Describe how arrays, records, linked structures are represented in memory and use them in algorithms.	3	3	2	1	1	1									1
	Implement stacks & queues for various applications.	3	2	1	2	0	1								Tel 11	1
204185	Understand various terminologies and traversals of trees and use them for various	2	2	1	2	1	2									2
204185	Understand various terminologies and traversals of graphs and use them for	3	3	2	2	3	1		,		200					1
204184	Digital Electronics															
204184	Use the basic logic gates and various reduction techniques of digital logic circuit in detail and design of combinational circuits	3	2	2	2	1.4.1	1		2	2			2		2	1
204184	Design sequential circuits and use of application		3	3			3	3	3				3	1		
204184	Conceptualize the State Machine		3	3		2	3	3	3				3		1	1
204184	Design Logic families and use of it		3	3	3	3	3	3	3	2					2	
204185	Design PLD and implement hardware circuit to test performance and application	3	3		2	3	3	3				3			2	2
204185	Understand the architecture and use of microcontrollers for basic operations and Simulate using simulation software	3	3	3	3	3	3	3	2							



Genba Schange Mosa College of Engg.
25/1/3, personal college of Engg.

207005	Engineering Mathematics -III															
	Solve higher order linear differential equation using appropriate techniques for	3	3	3	3	3				1	3	3				
07005	modeling and analyzing electrical circuits. Solve problems related to Fourier transform, Z-transform and applications to				-		-			<u> </u>						
07005	Communication systems and Signal processing.	3			3	3	1	1	1	1	3	3				
0/005	Obtain Interpolating polynomials, numerically differentiate and integrate	•	1		-	1		-			1				_	
07005	functions, numerical solutions of differential equations using single step and multi-	3		Contract of	3	3						2	3	2	3	1
	Perform vector differentiation and integration, analyze the vector fields and apply	3			3	3						2	3	1	2	3
07005	to Electro-Magnetic fields.															
207006	Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of electrostatics and signal processing.	2			2	2						2	3	2	1	3
04187	Integrated Circuits	p														
.04107	Understand the characteristics of IC and Op-Amp and identify the internal	2	1		2	1	1	1	1	3	3	3	3	3	1	2
04187	structure.	2	3	1	3	2	1	1		,	,		,		-	
04187	Understand and identify various manufacturing techniques.	2	2	2	2	2	2	2	2			2		1	3	2
	Derive and determine various performances based parameters and their	2							2	3	3	3	2	1		2
04187	significance for Op-Amp. Comply and verify parameters after exciting IC by any	-philipping		- continu	Same a	1							-			
	Analyze and identify the closed loop stability considerations and I/O limitations.	2	2										3		1	3
0418/	And linear and nonlinear applications of Op-Amp. Implement hardwired circuit to test performance and application for what it is		—													1
04188		See Jid	3	1	2		2							1	1	
204188	Understand and apply the functionalities of PLL to Frequency synthesizer, multiplier. FM. and AM demodulators	3	3			1			1		2	1	1	1	1	1
04188	Control Systems															
004100	Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
	Determine the (absolute) stability of a closed-loop control system.	3	2	2	1	2	1	1		1			2			2
204188	Perform time domain and frequency domain analysis of control systems required			+ -			1								-	
204188	for	2	3	3	3	1	2	1					2		2	1
204188	Perform time domain and frequency domain correlation analysis.	3	3	2	1	1	1	2844								1
04189	Apply root-locus, Frequency Plots technique to analyze control systems.	3	2	1	2	0	1									1
04189	Express and solve system equations in state variable form.	1	3	1	2	2	2	G. S. M.	1	1	1	1	1	1	1	1
04190	Analog Communications						10	G. C	Sec.	1						
04189	Understand and identify the fundamental concepts and various components of analogcommunication systems.	3	2	2	2		ewiad	380	2	2			2			
04189	Analyze the fundamental concepts and various components of analogcommunication systems.	3	2	1	2	0	1	£65		1						1
	Explain signal to noise ratio, noise figure and noise temperature for single and cascaded stages in a communication system.	3	3	3			3	3	3				3			
	Describe analog pulse modulation techniques and digital modulation technique.	3	3	3		2	3	3	3				3	2		2
1207	Develop the ability to compare and contrast the strengths and weaknesses of various communication systems.	3	3	3	3	3	3	3	3	5						100

Genba Sopanrao Moza College of Page

204190	Convert analog signals to digital format and describe Pulse and digital Modulation techniques	3	2	1	2	0	1						1		1
	The state of the s														
204190	Object Oriented Programming								-						
204190	Describe the principles of object oriented programming.	2	3		3	2	1	1	3	3	3		3	1	2
204190	Apply the concepts of data encapsulation, inheritance in C++.		2	2	2	2				3	-			3	2
04190	Understand basic program constructs in Java	2		2		3	1					2	1		2
04190	Apply the concepts of classes, methods and inheritance to write programs Java		2							1		3	2	2	
204191	Use arrays, vectors and strings concepts and interfaces to write programs in Java	2	2		2	2				2	2		2		
204191	Describe and use the concepts in Java to develop user friendly program			2		1		2	1	1		3	1		1
-	Note- SE (2015 Pattern) AY 19-20														
*64191	Signals and Systems														
204181	Understand mathematical description and representation of continuous and discrete time signals and systems.	3	2	2						1		1	2	2	3
	Develop input output relationship for linear shift invariant system and understand the Convolution operator for continuous and discrete time system.			2	2	3		1		1		2	2	2	1
204181	Use transform domain technique for analysis of linear shift invariant system.		3	2	1	3	1-6			1		2	2	1	
204181	Understand and resolve the signals in frequency domain using Fourier series and Fourier transforms.	3	3	3						1		1		2	
204182	Understand the limitations of Fourier transform and need for Laplace transform. Develop the ability to analyze the system in s- domain.	3	2			3		1		1		2	2	1	2
204182	Understand the basic concept of probability, random variables and random	2	3	2	1	3	d			1		2	2	1	2
	the contract of the properties of the page of the contract of	3 1		10		. (1									



rany

PRINCIPAL

Genba Sopanrac Moze College of Engg
25/1/3, Balewadi, Pune - 411 045

20-	4182 Electronic Devices and Circuits		T		1											
204	Comply and verify parameters after exciting devices by any stated method.								T	T		т—	_			
204		3	2	2	1	2	1	1		-						
2041	Analysis	2	3	3	3	1	2	1	-	1			2			2
2041	Dunkin L. L.	2	3	2	2	1	2		-				2		2	1
		2	3	3	3	1	The same	2		1			1		1	2
2041		2	1	3	1	-	2	1					2		1	3
2041	Design an adjustable voltage regulator circuits	2	3	3	-	2	2						1		2	1
				- 3	3	1	2	1					2		1	-
20418		-														3
20418	Analyze basic AC & DC circuit for voltage, current and power by using various circuit simplification techniques & network theorems.	s 3														
20418	Explain working principle & different types of transformers	-	2	2	1	2	1	1		1			2			
20418	Explain the working principle of DC motor & different methods of speed control of DC motor	2	3	3	3	1	2	1					2			2
20418	Evelsing	3	3	2	1	1	1						-	1	2	1
	Solort	3	2	1	2		1									1
20418	Explain the construction and working through the	2	3	3	3	1	2	1						1		1
20418	induction motor.	3	3	2	1	1	1	+-	1				2		2	1
204184	Data Structures and Algorithms															1
204184	Discuss the computational efficiency of the principal algorithms and a second															
		3	2	3	2	1	2	3 3 3								
04184	and and the programs that use arrays & pointers in C	3	2	3	3	3	1		1 2 3							2
04184	Describe how arrays, records, linked structures are represented in memory and use them in algorithms.	3	3	2	1	1	1									1
04184	stacks & queues for various applications.	3	2	1	2	-										1
04185	Understand various terminologies and traversals of trees and use them for various applications.					0	1									1
04185	Understand various terminologies and traversals of graphs and use them for	2	2	1	2	1	2	ge eye								2
	various applications	3	3	2	2	3	1									1
4184	Digital Electronics								G.S. A							
4184	Use the basic logic gates and various reduction techniques of this L.L.							18		160	1					
	in detail and design of combinational circuits Design sequential circuits and use of application	3	2	2	2		1	12/	2	2	1		2		2	1
_	Conceptualize the State Machine		3	3			3	3	3				3	1		
			3	3		2	3	1/3#	3	1	1		3		1	
	Design Logic families and use of it		3	3	3	3	3	3	7.0	13.3	/		•			1
185	Design PLD and implement hardware circuit to test performance and application	3	3	-			-	A CONTRACTOR OF THE PARTY OF TH	3	2					2	
		3	3		2	3	3	3				3			2	2

_ lowy

204185	Understand the architecture and use of microcontrollers for basic operations and Simulate using simulation software	3	3	3	3	3	3	3	2		I	T	Γ			
207005	Engineering Mathematics -III									-						
207005	Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.	3	3	3	3	3	-		-							
207005	Solve problems related to Fourier transform, Z-transform and applications to Communication systems and Signal processing.	3			2	3		-	-	1	3	3				
1	Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-	3			3	3	1	1	1	1	3	3				
	Perform vector differentiation and integration, analyze the vector fields and apply to Electro-Magnetic fields.	3	8		3	3						2	3	2	3	1
	Analyze conformal mappings, transformations and perform contour integration of	2										2	3	1	2	3
07000	complex functions in the study of electrostatics and signal processing.	-			2	2						2	3	2	1	3
						The Mary										

semy

PRINCIPAL

Genba Sopanrao Moze College of Engg.
25/1/3, Balewadi, Pune - 411 045



20418	7 Integrated Circuits									1						
	Understand the characteristics of IC and Op-Amp and identify the internal structure.	2	3	1	3	2	1	1	1	3	3	3	3	3	1	2
20418	Understand and identify various manufacturing techniques	2	2	2	2	2	2	2	2	1		2	-	1	3	2
	Derive and determine various performances based parameters and their significance for Op-Amp. Comply and verify parameters after exciting IC by any	2		2900	12000	1900	2.36	2-10	2	3	3	3	2	1	3	2
204187	Analyze and identify the closed loop stability considerations and I/O limitations. And linear and nonlinear applications of Op-Amp.	2	2										3		1	3
204188	Implement hardwired circuit to test performance and application for what it is being		3	1	2		2							1	1	1
204188	Understand and apply the functionalities of PLL to Frequency synthesizer, multiplier. FM. and AM demodulators	3	3			1			1		2	1	1	1	1	1
004199	Control Systems															
	Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1
204188		3	2	2	1	2	1	1		1			2			2
204188	Perform time domain and frequency domain analysis of control systems required for	2	3	3	3	1	2	1					2		2	1
204188	Perform time domain and frequency domain correlation analysis.	3	3	2	1	1	1									1
204189	Apply root-locus, Frequency Plots technique to analyze control systems.	3	2	1	2	0	1									1
204189	Express and solve system equations in state variable form.	1	3	1	2	2	2	2	1	1	1	1	1	1	1	1
204189	Analog Communications	y /														
204189	analogcommunication systems.	3	2	2	2		1		2	2			2			
204189		3	2	1	2	0	1									1
204189	Explain signal to noise ratio, noise figure and noise temperature for single and cascaded stages in a communication system.	3	3	3			3	3	3				3			
	Describe analog pulse modulation techniques and digital modulation technique.	3	3	3		2	3	3	3				3	2		2
204190	Develop the ability to compare and contrast the strengths and weaknesses of variouscommunication systems.	3	3	3	3	3	3	3	3	5						
	Convert analog signals to digital format and describe Pulse and digital Modulation techniques	3	2	1	2	0	1		-					1		1
								G.S.	MOS							
04190	Object Oriented Programming						1/2		1 st	1						
04190	Describe the principles of object oriented programming.	2	3		3	2	18	1 5	3	F	3	3		3	1	2
04190	Apply the concepts of data encapsulation, inheritance in C++.		2	2	2	2	113	(&		0	3				3	2
4190	Understand basic program constructs in Java	2		2		3	1/3	2	15	*			2	1		2
4190	Apply the concepts of classes, methods and inheritance to write programs Java		2				1	MEE	ONT	•	1		3	2	2	
4191	Use arrays, vectors and strings concepts and interfaces to write programs in Java	2	2		2	2		ter wa			2	2		2		
						-									L	PRIM

204191	Describe and use the concepts in Java to develop user friendly program			2		1		2		1	1		3	1		1
10.5	Note- SE (2019 Pattern) AY 20-21															
urse Co	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PS03
	Engineering Mathematics III															
207005	Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems	3	2	2										2	2	3
207005	Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication			2	2	3								2	2	1
207005	Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi- Perform vector differentiation & integration, analyze the vector fields and apply to		3	2	1	3								2	1	
207005	electro- magnetic fields & wave theory.	3	3	3											2	
207006	Analyze Complex functions, Conformal mappings, Contour integration applicable to electrostatics, digital filters, signal and image processing.	3	2			3								2	1	2
204181	Electronic Circuits															
	Assimilate the physics, characteristics and parameters of MOSFET towards its application as amplifier.	3	2	2	1	2	1	1		1			2	2	2	1
204181	Design MOSFET amplifiers, with and without feedback, & MOSFET oscillators, for given specifications	3	2	2	1	2	1	1		1			2			2
	Analyze and assess the performance of linear and switching regulators, with their variants, towards applications in regulated power supplies.	2	3	3	3	1	2	1					2		2	1
204181	Explain internal schematic of Op-Amp and define its performance parameters.	2	3	2	2	1	2	2		1			1		1	2
	Design, Build and test Op-amp based analog signal processing and conditioning circuits towards various real time applications.	2	3	3	3	1	2	1					2		1	3
	Understand and compare the principles of various data conversion techniques and PLL with their applications.	2	1	3	1	2	2						1		2	1
204182	FLL with their applications.				4										1	

roug

204182	Digital Circuits			-		-				1	2	2	2	1
	Identify and prevent various hazards and timing problems in a digital design	3	2	2	1	2	1	1		1				
04182	Use the basic logic gates and various reduction techniques of digital logic circuit.	3	2	2	1	2	1	1		1	2			2
04182	Analyze, design and implement combinational logic circuits.	2	3	3	3	1	2	1			2		2	1
04182	Analyze, design and implement sequential circuits.	3	3	2	1	1	1							1
04182	Manh and Moore machines	3	2	1	2	0	1		, ,					1
	Differentiate between Mealy and Moore machines. Analyze digital system design using PLD.		2	1	2	1	2							2
04183	Analyze digital system design doing 1 22.	2	2	1										
04183	Electrical Circuits													1
	Analyze the simple DC and AC circuit with circuit simplification techniques.	3	3	2	2	3	1							
04183	Formulate and analyze driven and source free RL and RC circuits.	3	2	3	2	1	2							2
04183	Formulate & determine network parameters for given network and analyze the	3	2	3	3	3	1	1-11-		100				1
04183	given network Explain construction, working and applications of DC Machines / Single Phase &	3	3	2	1	1	1							1
04183	Three Explain construction, working and applications of special purpose motors &	3	2	1	2	0	1		3					1
204184	understand Analyze and select a suitable motor for different applications.	2	2	1	2	1	2							2
204184	Data structures				VI									
04184	Solve mathematical problems using C programming language	3	3	3	3	3					3			
04184	Implement sorting and searching algorithms and calculate their complexity	3	2	2	2		1		2	2	2			
	Develop applications of stack and queue using array	3	3	3	pop-almost	10.00	3	3	3		3			
04184	Demonstrate applicability of Linked List.	3	3	3	10.00	2	3	3	3		3			
04185	Demonstrate applicability of nonlinear data structures - Binary Tree with respect	3	3	3	3	3	3	3	3	2				
04185	to its time complexity Approvine knowledge or graph for sorving the proofens of spanning tree and shortest path algorithm.	2	2	2	2		2				2			

PRINCIPAL

Genba Sopanrao Moze College of Engg.
25/1/3, Balewadi, Pune - 411 845

20419	Signals & Systems															
20419	Identify, classify basic signals and perform operations on signals.	3			1	3								1	1	3
	Identify, Classify the systems based on their properties in terms of input output	3	2	1	2	3					3					3
	relation and in Analyze and resolve the signals in frequency domain using Fourier series and	3	3	3	3	3					3					3
204191	Fourier Transform Resolve the signals in complex frequency domain using Laplace Transform, and	3			3	3					3					3
204191	will be able to Define and Describe the probability, random variables and random signals.	3	561.19		3	3					1				Ploste	1
204192	Compute the Compute the mean, mean square, variance and standard deviation for given		-	-					-		2	2	3	1	2	3
204192	random variables	3	3	3	3	3						_			j.	
204192	Control Systems														1	3
	Determine and use models of physical systems in forms suitable for use in the analysis and	3	1 - 30		1	3	100						-	1	1	3
04192	Determine the (absolute) stability of a closed-loop control system	3	2	1	2	3	2	2	1	2	3	3	3	1		
	Perform time domain analysis of control systems required for stability analysis.	3	3	3	3	3				1	3	3	3	1	1	3
204192	Perform frequency domain analysis of control systems required for stability	3	3	3	3	3	1	1	1	1	3	3	3	1	1	3
204192	analysis. Apply root-locus, Frequency Plots technique to analyze control systems. Express and solve system equations in state variable form	3	3	3	3	3	1	2	2	2	2	2	3	1	2	3
204193	Differentiate between various digital controllers and understand the role of the	3	3	3	3	3	1	1	1	1	3	3	3	1	1	3
204193	controllers in							1000								
204193	Principles of Communication Systems					1	2	3	3	3	3	2	2	1	2	3
	To compute & compare the bandwidth and transmission power requirements by	2	2	3	2				-		3	3	3	3	1	2
	analyzing time and irequested domain section, transmission and reception of Describe and analyze the techniques of generation, transmission and reception of Amplitude	2	3	1	3	2	1	1	1	3		2	1	1	3	2
	Explain generation and detection of FM systems and compare with AM systems	2	2							2	3				3	2
04193	Exhibit the importance of Sampling Theorem and correlate with Pulse Modulation	2	1				AL RE			3	3	3	2	1		
04193	technique (PAM, PWM, and PPM) Characterize the quantization process and elaborate digital representation	2	2							2	1	2	3	2	2	3
04194	techniques (PCM, DPCM, DM and ADM) Illustrate waveform coding, multiplexing and synchronization techniques and	2	2							2	2	2	3	2	1	3
	articulate their															
04194	Object Oriented Programming							¥ G	S. MO	11		1	1	1	1	1
4194	Describe the principles of object oriented programming.	1	3	1	2	2	-	130/	0	131						
	Apply the concepts of data encapsulation, inheritance in C++.	3	3	2	1	1	1	8/	U.E.	1						
4174	Understand Operator quarloading and friend functions in C++.	3	3	3	2	1	1		3	18		-		3	V 7 3 103	
4174	Apply the concepts of classes, inchoos finicitative and polymorphism to write	3	3	2	2	1	2	10	-	189						
4194	programs C++. Apply Templates, Namespaces and Exception Handling concepts to write	3	3	2	1	1	1	10	GINEC	30			<u> </u>			P

PRINCIPAL
Genba Sopanrao Moze College of Eng.
25/1/3, Balewadi, Pune - 441 045

1	Describe and use of File handling in C++.	3	1	2		1			1							
204194	6						1	Maria de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de								
			1 620 -													
												-				
							in the same of									
				1												
				-		-			-							
			100					Acressia	10							
ourse Co	Name of Course : SE (2019 Pattern) AY 21-22	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
207005	Engineering Mathematics III		Lingue II.				1									
	Solve higher order linear differential equation using appropriate techniques for	777		-										_		
207005	modelling, analyzing of electrical circuits and control systems	3	2	2		1	Jan. 1964	Contract of						2	2	3
1	Apply concept of Fourier transform & Z-transform and its applications to				7				-							
207005	continuous & discrete systems, signal & image processing and communication			2	2	3	and the		6 - 4 - 4			and the same of		2	2	1
	Obtain Interpolating polynomials, numerically differentiate and integrate								-							
207005	functions, numerical solutions of differential equations using single step and multi-		3	2	1	3	fireform	127-	go milit		(h			2	1	
	Perform vector differentiation & integration, analyze the vector fields and apply to	•														
207005	electro- magnetic fields & wave theory.	3	3	3								to the same of			2	
	Analyze Complex functions, Conformal mappings, Contour integration applicable	3	1				N - A									-
207006	to electrostatics, digital filters, signal and image processing.	3	2			3								2	1	2
			Topic II			W. 10. 10.										
														100		



rough

PRINCIPAL

Genba Sopanrao Moze College of Engg.
25/1/3, Balewadi, Fune - 411 045

.181	Explain internal schematic of Op-Amp and define its performance parameters.	2	3	2	2	1	2				2		2	1
4104	Design, Build and test Op-amp based analog signal processing and conditioning circuits towards various real time applications.	2	3	3	3	1	-	2		1	1		1	2
	Understand and compare the principles of various data conversion techniques and PLL with their applications.	2	1	-		-	2	1			2		1	3
	The will their applications.		1	3	1	2	2				1		2	1
182	Digital Circuits													
182	Identify and prevent various hazards and timing problems in a digital design	3	2	2	1	2	1							
182	Use the basic logic gates and various reduction techniques of digital logic circuit.	3	2	2			-	1		1	2	2	2	
182	Analyze, design and implement combinational logic circuits.	2	3	3	1	2	1	1		1	2			
182	Analyze, design and implement sequential circuits.	3	3	2	3	1	2	1			2		2	
183	Differentiate between Mealy and Moore machines.	3	2		1	1	1							
183	Analyze digital system design using PLD.	2	2	1	2	0	1							
			-	1	2	1	2							
183	Electrical Circuits		- 1											
1183	Analyze the simple DC and AC circuit with circuit simplification techniques.	3	3	2	2	3	1							
183	Formulate and analyze driven and source free RL and RC circuits.	3	2	3	2	1	2							
1183	Formulate & determine network parameters for given network and analyze the	3	2	3	3	3	1							
	Explain construction, working and applications of DC Machines / Single Phase & Three	3	3	2	1	1	1	WALL TO STATE OF						
	Explain construction, working and applications of special purpose motors & understand	3	2	1	2	0	1	Loy in the second						
4184	Analyze and select a suitable motor for different applications.	2	2	1	2	1	2							
							2							
4184	Data structures													
1184	Solve mathematical problems using C programming language	3	3	3	3	3		G	S. MO					
	Implement sorting and searching algorithms and calculate their complexity	3	2	2	2	-		N X			3			
	Develop applications of stack and queue using array	3	3	3			1		2	12-	2			
184	Demonstrate applicability of Linked List.	3					3	va B	13	18.1	3			
185	Demonstrate applicability of nonlinear data structures - Binary Tree with respect to its time complexity		3	3		2	3	13	ට් 3	191	3			
	13 Hally WillDICARY	3	3	3	3	3	3	WIN S	POINEE	3				

PRINCIPAL
Genba Sopanrao Moze College of Engg
25/1/3, Balewadi, Pune - 411 945

04185 sho	ortest path algorithm.	2	2	2	2		2	1	T	T	T			-		
										-			2			
91 Sigi	nals & Systems					1	-	-		-						
Iden	tify, classify basic signals and perform operations on signals.	3			1	3	-	-	-	-						
1 relat	ntify, Classify the systems based on their properties in terms of input output	3	2	1	2	-	-		-	-				1	1	3
1 rour	yze and resolve the signals in frequency domain using Fourier series and ier Transform	3	3	3		3	2		-	-		3	3	1	1	3
Reso	lve the signals in complex frequency domain using Laplace Transform, and	3	3	3	3	3						3	3	1	1	3
Defin	ne and Describe the probability, random variables and random signals.	3	3	-	3	3	1		-			3	3	1	f	3
Com	pute the mean, mean square, variance and standard deviation for given	3	3	3	3	3	1					2	3	2	3	1
	THE THE INVESTIGATION OF THE I	3		3	3	3	1					2	3	1	2	3
Cont	rol Systems															
Deter	mine and use models of physical systems in forms suitable for use in the	3				3										
Dete	rmine the (absolute) stability of a closed-loop control system	3	2	1	2	3								1	1	3
Perfo	rm time domain analysis of control systems required for stability analysis.	3	3	3	3		2	2	1	2	3	3	3	1	1	3
Perfo	rm frequency domain analysis of control systems required for stability sis. Apply root-locus, Frequency Plots technique to analyze control systems.	3	3	3	3	3				1	3	3	3	1	1	3
	ess and solve system equations in state variable form	3	3	3	3	3	1	1	1	1	3	3	3	1	1	3
Diffe	erentiate between various digital controllers and understand the role of the	3	3	3	3	3	1	2	2	2	2	2	3	1	2	3
John	VIANO III		-	3	3	3	1	1	1	1	3	3	3	ı	1	3



PRINCIPAL

Genba Sopanrao Moze College of Engg
25/1/3, Balewadi, Pune - 411 045

1	To compute & communication systems To compute & compare the bandwidth and transmission power requirements by												1		[
20419.		2	2	3	2					-						
204193	, mentac	2	3	1	3			-	-	-			2	1	2	3
04193	Explain generation and detection of FM systems and compare with AM systems	2	2	2	-		-	-	-				3	3	1	2
04193	Exhibit the importance of Sampling Theorem and correlate with Pulse Modulation technique (PAM_PWM_and PPM_)	n	+ -	2	3				-					1	3	2
04194	Characterize the quantization process and elaborate digital representation techniques (PCM, DPCM, DM, and ADM)	2	2	2	2				-	-			2	1	3	2
04194	Illustrate waveform coding, multiplexing and synchronization techniques and articulate their	2	2	2	2								3	2	1	3
04194	Object Oriented Programming															
4194	Describe the principles of object oriented programming.			7												
	Apply the concepts of data encapsulation, inheritance in C++.	1	3	1	2	2	2	2	1	1	1	1	1	1	1	1
	Understand Operator overloading and friend functions in C++.	3	3	2	1	1								1	1	1
	Appry the concepts of classes, methods innertained and polymorphism to write- programs C++.	3	3											1	1	1
	Apply Templates, Namespaces and Exception Handling concepts to write	3	3											1	1	1
4175	programs in C++. Describe and use of File handling in C++.	3	3	2	1	1								1	1	1
1946	and the second s	3	1	2	1	1	1	1	2	1	1	1	2	1	1	1
se Co	Name of Course: SE (2019 Pattern) AY 22-23	PO1	PO2	PO3	PO4	PO5	PO6	PO7	POS							
	Engineering Mathematics III	The state of				100	100		PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
S	Solve higher order linear differential equation using appropriate techniques for		10.0													
	inductifies, alialyzing of electrical circuits and control austonia	3	2	2		200								-		3
7005 C	Apply concept of Fourier transform & Z-transform and its applications to ontinuous & discrete systems signal & image processing the systems.	3	2	2	2	3								2	2	
7005 c	Apply concept of Fourier transform & Z-transform and its applications to ontinuous & discrete systems, signal & image processing and communication obtain Interpolating polynomials, numerically differentiate and integrate unctions, numerical solutions of differential countries and communication of differential countries are signal.	3	3		2	3								2	2	1
7005 c	Apply concept of Fourier transform & Z-transform and its applications to ontinuous & discrete systems, signal & image processing and communication obtain Interpolating polynomials, numerically differentiate and integrate unctions, numerical solutions of differential equations using single step and multierform vector differentiation & integration, analyze the vector fields and apply to lectro-magnetic fields & wave theory.	3		2												1
7005 cc 7005 ft 7005 el	Apply concept of Fourier transform & Z-transform and its applications to ontinuous & discrete systems, signal & image processing and communication obtain Interpolating polynomials, numerically differentiate and integrate unctions, numerical solutions of differential equations using single step and multi-efform vector differentiation & integration, analyze the vector fields and apply to lectro-magnetic fields & wave theory.		3	2										2	2 1 2	`
7005 cl P/7005 cl A/006 to	Apply concept of Fourier transform & Z-transform and its applications to ontinuous & discrete systems, signal & image processing and communication obtain Interpolating polynomials, numerically differentiate and integrate unctions, numerical solutions of differential equations using single step and multi-erform vector differentiation & integration, analyze the vector fields and apply to lectro-magnetic fields & wave theory, nalyze Complex functions, Conformal mappings, Contour integration applicable relectrostatics, digital filters, signal and image processing.	3	3	2		3								2	2	
0005 fi 0005 fi 0005 el A 0006 to	Apply concept of Fourier transform & Z-transform and its applications to ontinuous & discrete systems. Signal & image processing and communication obtain Interpolating polynomials, numerically differentiate and integrate unctions. numerical solutions of differential equations using single step and multiperform vector differentiation & integration, analyze the vector fields and apply to lectro-magnetic fields & wave theory. Inalyze Complex functions, Conformal mappings, Contour integration applicable a electrostatics, digital filters, signal and image processing.	3	3	2		3								2	2 1 2	`
005 c 005 ft 005 el A 006 to	Apply concept of Fourier transform & Z-transform and its applications to ontinuous & discrete systems, signal & image processing and communication obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multiperform vector differentiation & integration, analyze the vector fields and apply to lectro-magnetic fields & wave theory, analyze Complex functions, Conformal mappings, Contour integration applicable a electrostatics, digital filters, signal and image processing.	3	3	2		3	1	1		MOZ				2 2 2	2 1 2 1	2
005 c 005 ft 006 to 81 El 81 ap	Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication obtain Interpolating polynomials, numerically differentiate and integrate unctions, numerical solutions of differential equations using single step and multi-erform vector differentiation & integration, analyze the vector fields and apply to lectro-magnetic fields & wave theory. Inalyze Complex functions, Conformal mappings, Contour integration applicable of electrostatics, digital filters, signal and image processing. Idectronic Circuits Sissimilate the physics, characteristics and parameters of MOSFET towards its polication as amplifier. Signi MOSFET amplifiers, with and without feedback, & MOSFET oscillators, and processing the processing of the physics of the processing of the physics of the phys	3	3 3 2	2 2 3	1	3	1			M _O 2			2	2	2 1 2	2
81 EI 81 As 81 Ap 1006 to 81 For An 1007 An 1008 An 10	Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication obtain Interpolating polynomials, numerically differentiate and integrate unctions, numerical solutions of differential equations using single step and multi-erform vector differentiation & integration, analyze the vector fields and apply to lectro-magnetic fields & wave theory. Inalyze Complex functions, Conformal mappings, Contour integration applicable of electrostatics, digital filters, signal and image processing. Idectronic Circuits Sissimilate the physics, characteristics and parameters of MOSFET towards its oblication as amplifier. Sign MOSFET amplifiers, with and without feedback, & MOSFET oscillators, aligned assess the performance of linear and switching regulators, with their rights, towards applications in regulated power supplies.	3 3	3 3 2 2 2	2 2 3	1	3	1	1	* S C C C C C C C C C C C C C C C C C C	Moz	Contraction		2	2 2 2	2 1 2 1 2	1 2
005 cl 005 fi P 006 to 006 to 006 to 006 to 006 fi A A 006 to	Apply concept of Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication obtain Interpolating polynomials, numerically differentiate and integrate unctions, numerical solutions of differential equations using single step and multi-erform vector differentiation & integration, analyze the vector fields and apply to lectro-magnetic fields & wave theory. Inalyze Complex functions, Conformal mappings, Contour integration applicable of electrostatics, digital filters, signal and image processing. Idectronic Circuits Sissimilate the physics, characteristics and parameters of MOSFET towards its polication as amplifier. Signi MOSFET amplifiers, with and without feedback, & MOSFET oscillators, and processing the processing of the physics of the processing of the physics of the phys	3 3 3 3	3 3 2 2 2 2	2 2 3	1 1	3 3 2 2 2			* Stephan	Moz	Contraction of the contraction o			2 2 2	2 1 2 1	`

PRINCIPAL

Genba Sopanrao Moze College of Em

25/1/3; Balewadi, Pune - 411 649

204182	Understand and compare the principles of various data conversion techniques and PLL with their applications.	2	1	3	1	2	2					1		2	1
4182	Digital Circuits														
4182	Identify and prevent various hazards and timing problems in a digital design	3	2	2	1	2	1	1		1		2	2	2	1
	Use the basic logic gates and various reduction techniques of digital logic circuit.	3	2	2	1	2	1	1		1		2			2
4182	Analyze, design and implement combinational logic circuits.	2	3	3	3	1	2	1				2		2	1
4182	Analyze, design and implement sequential circuits.	3	3	2	1	1	1		1 1						1
	Differentiate between Mealy and Moore machines.	3	2	1	2	0	1	1		7 - 1					1
4183	Analyze digital system design using PLD.	2	2	1	2	1	2								2
4183	Electrical Circuits									1719					
4183	Analyze the simple DC and AC circuit with circuit simplification techniques.	3	3	2	2	3	1								2
4193	Formulate and analyze driven and source free RL and RC circuits.	3	2	3	2	1	2								
4102	Formulate & determine network parameters for given network and analyze the given network	3	2	3	3	3	1								
4192	Explain construction, working and applications of DC Machines / Single Phase &	3	3	2	1	1	1								
	Explain construction, working and applications of special purpose motors & understand	3	2	1	2	0	1								1
14184	Analyze and select a suitable motor for different applications.	2	2	1	2	1	2								2



PRINCIPAL

Genba Sopanrao Moze College of Engg.
25/1/3, Balewadi, Pune - 411 045

1184 I	Data structures															
-																
	olve mathematical problems using C programming language	3	3	3	3	3										
184 I	mplement sorting and searching algorithms and calculate their complexity	3	2	2	2		1		2	2			3			
_	Develop applications of stack and queue using array	3	3	3			3	3	3	2			2			
104	Demonstrate applicability of Linked List.	3	3	3		2	3	3	3				3			
185	Demonstrate applicability of nonlinear data structures - Binary Tree with respect o its time complexity	3	3	3	3	3	3	3	3	2			3			
1185	o its time complexity Apply the knowledge of graph for solving the proofens of spanning tree and shortest path algorithm.	2	2	2	2		2	3	,	2			2			
-																
4191	Signals & Systems			3												
4191	Identify, classify basic signals and perform operations on signals.	3			1	3								1	1	3
04191	Identify, Classify the systems based on their properties in terms of input output relation and in	3	2	1	2	3	2	2	1				3	1	1	3
04191		3	3	3	3	3							3	1	1	3
04191	Resolve the signals in complex frequency domain using Laplace Transform, and will be able to	3	3											and the same	1	3
204192	Define and Describe the probability, random variables and random signals. Compute the	3	3	3	3	3	1	2	3				3	2	3	1
204192	Compute the mean, mean square, variance and standard deviation for given random variables	3	3	3	3	3	1	2	2				3	1	2	3
20419	2 Control Systems															
20419	Determine and use models of physical systems in forms suitable for use in the analysis and	3			1	3								1	1	3
2041	Determine the (absolute) stability of a closed-loop control system	3	2	1	2	3	2	2	1	2	3	3	3	1	1	3
2041	Perform time domain analysis of control systems required for stability analysis.	3	3	3	3	3		100 Mg		1	3	3	3	1	1	3
2041	Perform frequency domain analysis of control systems required for stability analysis. Apply root-locus. Frequency Plots technique to analyze control systems.	3	3	3	3	3	1	1	1	1	3	3	3	1	ł	3
204	Express and solve system equations in state variable form	3	3	3	3	3	1	2	NOZE	2	2	2	3	1	2	3
204	Differentiate between various digital controllers and understand the role of the controllers in	3	3	3	3	3	1	9.5	-	13	3.	3	3	1	1	3
204	Principles of Communication Systems							1	Ž.	100						
	To compute & compare the bandwidth and transmission power requirements by analyzing time and frequency domain spectra of signal required for modulation	2	2	3	2			12	in	8	3	2	2	1	2	3
	Describe and analyze the techniques of generation, transmission and reception of Amplitude	2	3	1				SMIS	GINEE				3	3	1	2
	4193 Explain generation and detection of FM systems and compare with AM systems	2	2	2				-	No.				1		3	2
	Exhibit the importance of Sampling Theorem and correlate with Pulse Modulation technique (PAM, PWM, and PPM)	2	1	2									2		3	2

PRINCIPAL

Benba Sepantae Man Sellings of Engl

Laura	Characterize the quantization process and elaborate digital representation	2	2	2	2	2	2	2	1	2	1	2	3		2	3
	4 techniques (PCM, DPCM, DM_ and ADM)	2	2	2	2	2					2	2	3	2	1	3
204194	Object Oriented Programming															
204194	Describe the principles of object oriented programming.	1	3	1	2	2	2	2	1	1	1	1	1	1	1	1
204194	Apply the concepts of data encapsulation, inheritance in C++.	3	3	2	1	1								1	1	1
	Understand Operator overloading and friend functions in C++.	3	3											1	1	1
04194	rappy the concepts of classes, frections inheritance and polymorphism to write programs C++.	3	3											1	1	1
1	Apply Templates, Namespaces and Exception Handling concepts to write programs in C++.	3	3	2	1	1								1	1	1
041946	Describe and use of File handling in C++.	3	1	2	1	1	1	1	2	1	1	1	2	1	1	1
		17.0														



RILL

PRINCIPAL

Genba Sopania - M. na College of Engg.
25/1/3, Dalewadi, Pune - 411 045



"EMPOWERMENT THROUGH TECHNOLOGICAL EXCELLENCE" GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

Department of Computer Engineering Academic Year 2018-19

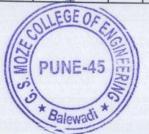
Sr. No.	Course C	ode Course Name
		Semester - III
1	210241	DiscreteMathematics
2	210242	Digital Electronics and Logic Davi
3	210243	Data Structures and Algorithms
4	210244	Computer Organization and Architecture
5	210245	Object Oriented Programming
		Semester - IV
6	207003	Engineering Mathematics III
7	210251	Computer Graphics
8	210252	Advanced Data Structures
9	210253	Microprocessor
10	210254	Principles of Present
		Principles of Programming Languages Semester - V
11	310241	
12	310242	Theory of Computation
13	310243	Database Management Systems
14	310244	Software Engineering and Project Management
15	310245	Intormation Systems and Engineering Economics
eges.	DIOZ45	Teomputer Networks
16	310250	Semester - VI
17	310251	Design and Analysis of Algorithms
18	310252	Systems Programming and Operating System
19	310253	Embedded Systems and Internet of Things
20	310254	Software Modeling and Design
11252.012	310234	Web Technology
20	410241	Semester – VII
21	410241	High Performance Computing
22		Artificial Intelligence and Robotics
23	410243	Data Analytics
24	410244(C)	Pervasive & Ubiquitous Computing
- Side Side Side Side Side Side Side Side	410245(B)	Software Testing and Quality Assurance
5		Semester – VIII
25	410250	Machine Learning
27	410251	Information and Cyber Security
8	410232(C)	Embedded & Real Time Operating System
5	410253(C)	Cloud Computing



Academic Year 2018-19

SE

rse Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO1	PO1 2	PSO1	PSO2	PSO3
10241	DiscreteMathematics							Par					-			
10241.1	Solve real world problems logically using appropriate set, function, and relation models and interpret the associated operations and terminologies in context.	3	3	3	2		-				•	-		1	1	1
10241.2	Analyze and synthesize the real world problems using discrete mathematics.	3	3	-	2	-	-							1	1	1
10241.3	Associate the applications of Graph theory models and data structures.		3	3	2		7.	- 1						1	1	1
10241.4	Describe the concepts and properties of algebraic structures such as groups, rings and fields.	3	-	3				-					-	1	1	1
10241.5	Extend the concepts of Boolean algebra in the area of lattices.	3	3	3	2	_						-		1	1	1
10241.6	Apply the knowledge of argumental discrete mathematical problems.	3	3	3	2	-	- 1	-		-		-	-	1	1	1
10242	Digital Electronics and Logic Design															
0242.1	Realize and simplify Boolean Algebraic assignments for designing digital circuits using K- Maps.	2	-	2		-		-	-					1	1	1
0242.2	Design and implement Sequential and Combinational digital circuits as per the specifications	2	1	2	-			-	-	-				1	1	1
0242.3	Apply the knowledge to appropriate IC as per the design specifications	-	1	2	-					-		-		1	1	1
0242.4	Design simple digital systems using VHDL.	2	-	2	1	-								1	1	1
0242.5	Develop simple embedded system for simple real world application.	2	2		-	-		-		-	-			1	1	1
0242.6	Compare various digital logic families based on power, speed and nterfacing characteristics	2		-		2	-	-			-	-		1	1	1



210243	Data Structures and Algorithms		T	1		1				1	_	T				
10243.1	To discriminate the usage of various structures in approaching the problem solution.	2	1	2	1	-		-			-					
10243.2	To design the algorithms to solve the programming problems.	1	2					1.			-	i.	<u> </u>	1	1	1
10243.3	To use effective and efficient data structures in solving various Computer Engineering domain problems.	2	-	1					-	-	1			1	1	1
10243.4	To analyze the problems to apply suitable algorithm and data structure.	1	2		1										1	1
10243.5	To use appropriate algorithmic strategy for better efficiency	1		1	1							-		1	1	1
10243.6	Understand the concepts of Hashing, Files and their Organization and Sorting Algorithms.	2	1	1	1							-		1	1	1
10244	Computer Organization and Architecture															
10244.1	Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os	2	1	1										1	1	1
0244.2	Analyze the principles of computer architecture using examples drawn from commercially available computers.	3	-	1	1	-		-						1		
0244.3	Evaluate various design alternatives in processor organization.	1	2		1									1	1	1
0244.4	Understand the basics of memory systems and cache Memories.	2	1		2			-	-			2		1	1	1
0244.5	Design arithmetic and logical operations with integer and floating-point operands.	1		1	1		-			•		-		1	1	1
0244.6	Understand the basic processing unit, embedded and other large computing systems.	2	1	1		-	-			-				1	1	1
10245	Object Oriented Programming															1
0245.1	Analyze the strengths of object oriented programming	2		2	-	-										
245.2	Design and apply OOP principles for effective programming	2	1	2							-		-	1	1	1
245.3	Develop programming application using object oriented programming language C++	2	1	2							-		-	1	1	1
245.4	Percept the utility and applicability of OOP	2		2	1						15.0	-	-	1	1	1
245.5	Relate Java applications with threads and generics classes	1								-	-		-	1	1	1
245.6	Demonstrate simple Graphical User Interfaces	1	2				(EC	EON		-	-	-	-	1	1	1
IO E O						1	TEO	EOF		-	-	-	-	1	1	1
						1/29		-	11301							1

PUNE-45

PRINCIPAL

207003	Engineering Mathematics III											1				
207003.1	Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.	3	2	3	2	2	2	2	1	1	1	1				
207003.2	Solve problems related to Fourier transform, Z-Transform and applications to Signal and Image processing.	2	3	3	1	1	1	1	1	1	1	1	1	1	1	1
207003.3	Apply statistical methods like correlation, regression analysis and probability theory for analysis and prediction of a given data as applied to machine intelligence.	3	2	3	3	3	1	1	1	1	1	1	1	1	1	1
07003.4	Perform vector differentiation and integration to analyze the vector fields and apply to compute line, surface and volume integrals.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
07003.5	Analyze conformal mappings, transformations and perform contour integration of complex functions required in Image processing, Digital	2	3	2	3	1	1	1	1	1	1	1	,			
07003.6	Determine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.	2		•							-	-	-	1	1	1
210251	Computer Graphics															
10251.1	Apply mathematics and logic to develop Computer programs for elementary graphic operations	2	1	2	1		_			1000						
10251.2	Develop scientific and strategic approach to solve complex problems in the domain of Computer Graphics	1	2		-									1	1	1
10251.3	Develop the competency to understand the concepts related to Computer Vision and Virtual reality	2	-		-									1	1	1
10251.4	Apply the logic to develop animation and gaming programs	-	2		- 1									1	1	
10251.5	Design Geometric transformations on 3D objects, 2D clipping and color models.	2	1	1				-		-				1	1	1
0251.6	Demonstrate visible surface detection methods and different types of projections.	1						-	-	-	-	-	-	1	1	1
10252	Advanced Data Structures															
0252.1	To apply appropriate advanced data structure and efficient algorithms to approach the problems of various domain.		2	-									100			
0252.2	To design the algorithms to solve the programming problems.	1	-	-			2	2	2				-	1	1	1
0252.3	To use effective and efficient data structures in solving various Computer Engineering domain problems.	-	-	2	-		2		_		-	-	-	1	1	1
0252.4	To analyze the algorithmic solutions for resource requirements and optimization	-	2	2			-//	STIFE	GEOA	100				1	1	1
							MOZ	PUI	NE-4	S EN				•		PRIN

10252.5	To use appropriate modern tools to understand and analyze the functionalities confined to the data structure usage		2	2					1.0	Ι.				1	1	1
10252.6	Understand the concepts of Hashing, Files and their organization and sorting algorithms.	3	-	-			-	-	-	-				1	1	1
210253	Microprocessor						7.115									
10253.1	To apply the assembly language programming to develop small real life embedded application.	2	2	2	2		-							1	1	1
10253.2	To understand the architecture of the advanced processor thoroughly to use the resources for programming	2	-	1	-									1	1	1
10253.3	To understand the higher processor architectures descended from 80386 architecture	2	-	2							-		-	1	1	1
10253.4	Apply 8086 assembly language code to handle strings and overflow conditions and I/O programming interface using 8255 PPI	2	1	1	-	-					-	-	2	1	1	1
10253.5	Understand the architecture and features of ARM Embedded system	1	1	1	-	35	-						1	1	1	1
10253.6	Apply arm assembly code to solve problems related to Embedded systems	2	1	1			-		-	-	-		2	1	1	1
10254	Principles of Programming Languages					2000										
10254.1	To analyze the strengths and weaknesses of programming languages for effective and efficient program development	2	2	2	2				-					1	1	1
0254.2	To inculcate the principles underlying the programming languages enabling to learn new programming languages	2	-	1		-					-			1	1	1
0254.3	To grasp different programming paradigms	2	-	2		-								1	1	1
0254,4	To use the programming paradigms effectively in application development.	2	-	2		-		-			-			1	1	1
0254.5	Design to program in different language paradigms and evaluate their	1	1			-	-									
0254.6	Knowledge to compare the features of various programming languages	1						-			-	•		1	1	1



Course		F (Franchis			TE											
Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	POL	PSOI	PSO2	PSO
310241	Theory of Computation												-	1.00.	1302	130
310241.1	Turning machine for all inputs and all outputs	2	2	3	1				1				3			
310241.2	Subdivide problem space based on input subdivision using constraints	2	2	3			2			3				1	1	1
310241.3	Apply linguistic theory		2	3						3	-	2	3	1	1	1
310241.4	Apply Turing machine to propose computation solutions	1	-			1	-	3	-	-	1		3	1	1	1
310241.5	Interpret whether a problem is decidable or not	1	2		2	-	-	-	2	-	-	1	2	1	1	1
310241.6	Interpret NP class problems	1	2			3	2	1	3	1	2		2	1	1	1
		1				-	-	-	-	-	-	-	2	1	1	1
310242	Database Management Systems															
310242.1	Design E-R Model for given requirements and convert the same into database tables.	3	3	2	2	1	2	-					2	1		
310242.2	Use database techniques such as SQL & PL/SQL.	3	3	2	2								-	1	1	1
310242.3	Use modern database techniques such as NOSQL.	2	3	2	2	1	-	1	-	1	-	1	1	1	2	1
310242.4	Explain transaction Management in relational database System	3	2	1	1	1	-	-	-	-	2	-	1	1	1	1
310242.5	Describe different database architecture and analyses the use of appropriate architecture in real time environment.	3	3	3	2	1	1	2	1	-	-	2	1	2	1	1
310242.6	Use advanced database Programming concepts	3	3	3	3	1		-	1	2	1	-	2	1	1	2
310243	Software Freis	Pasal				1	-	-	-	-	-	-	1	1	1	1
	Software Engineering and Project Management													-	-	
710243.1	Decide on a process model for a developing a software project	2	2	2	1	-	-	-	-		-					
10243.2	Classify software applications and Identify unique features of various domains	2	2	1	2			1						1	1	1
10243.3	Design test cases of a software system.	2	2	1									-	1	2	1
	Understand basics of IT Project management.	2	1		1	2	-	-	2	-	1	-	-	2	1	1
	Plan, schedule and execute a project considering the risk management.	2	2	2	2	-	1			2	-	2	-	1	1	1
	Apply quality attributes in software development life cycle.		-	-			1		-	-	-	-	-	1	1	2
	acronopinent ine cycle.	2	1.	2	1	-	-	2	-	-	2		2		,	



310244	Information Systems and Engineering Economics	Trin taling						T		T		1	_		-	
310244.1	Understand the need, usage and importance of an Information System to an organization.	1	Amount	1	2	2	1	-	1	-		1		1		
310244.2	Understand the activities that are undertaken while managing, designing, planning, implementation, and deployment of computerized information system in an organization.	1	1	1	1	1		1			1		1	1	1	
310244.3	Further the student would be aware of various Information System solutions like ERP, CRM, Data warehouses and the issues in successful implementation of these technology solutions in any organizations	3	1	2	1	2	2	2	2	2	-	2	1	1	1	
310244.4	Outline the past history, present position and expected performance of a company engaged in engineering practice or in the computer industry.	1	2	1	2	2	-			-	-	1	1	1	1	
310244.5	Perform and evaluate present worth, future worth and annual worth analyses on one of more economic alternatives.	1	3		1	1	-	1	1	1	2			1	1	+
310244.6	Be able to carry out and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives.	1		2	1		1						1	1		1
310245	Computer Networks												1	1	1	1
310245.1	Analyze the requirements for a given organizational structure to select the most appropriate networking architecture, topologies, transmission mediums, and technologies	3	1	1	2				-	1		1		1	1	,
310245.2	Demonstrate design issues, flow control and error control	3	2	1	1	-			_							
310245.3	Analyze data flow between TCP/IP model using Application, Fransport and Network Layer Protocols.	2	3	3	3	2	3	1		2	-	- 1	-	1	1	-
310245.4	Illustrate applications of Computer Network capabilities, selection and usage for various sectors of user community.	1	2	2	2	3	3	1		2	1	2	2	1	1	1
10245.5	Illustrate Client-Server architectures and prototypes by the means of correct standards and technology.	2	2	2	3	3	3			2	1	2	2	1	1	
10245.6 E	Demonstrate different routing and switching algorithms	2	2	1	2	2	2	-	1	1		1			1	1
210250 5									•	-	-	1	1	1	-	1
310250 D	Design and Analysis of Algorithms		241648							-				-	11/01	
	ormulate the problem	1	3	2	1	-		-	1	1						
10250.2 A	analyze the asymptotic performance of algorithms.	1	2	1	2		1		-	1	-	•	1	1	1	1
10250.3 D	Decide and apply algorithmic strategies to solve given problem	2	1	2	1		1		-	1	-	-	1	1	1	1
10250.4 F	ind optimal solution by applying various methods	1	2	2	2	2	-	-	-	1	1	-	1	1	1	1
10250.5 Jus	nalyze the performance of merge sort and quick sort algorithms sing divide and conquer technique.	1	1	2	1	-	-	1		-	-		1	1	1	1
10250.6 m	esign algorithms using dynamic programming and back tracking ethods.	1	2	2	2	-	-	-					1	1		1
			Section 1			and the last of			117-11		-	-	1	1	1	1

PUNE-45

PRINCIPAL

310251	Systems Programming and Operating System				1	T	T	T	_		1	1	_	_		
310251.1		1	1	2	1	1	-									
310251.2	Use tools like LEX & YACC.		2	1	3	+ -	-	-	1		-	-		1	1	1
310251.3		2	2	2	1	1	1:	2	-	1	-	-	-	1	1	- 1
310251.4	Understand the concepts related to deadlock and memory management.	1	1	-	-		1		2	-	-	1	2	1	1	1
310251.5		1	1	-			-	1		2	1	2	2	1	1	1
310251.6	Understand the concepts of secondary storage structure, protection and case study of Linux operating system.	1	1			-	7	-	-	-	-		2	1	1	1
310252	Embedded Systems and Internet of Things											THE STATE OF				
310252.1		1	2	2	1	-	-	1	3		2			1	1	1
310252.2	Solve the given societal challenge using IoT	1	3	3	2	3	1		3	1	2			1	1	1
310252.3	Choose between available technologies and devices for stated IoT challenge	3	2	2	2	1	1	1	3	-	2			1	1	1
310252.4	Understand device drivers and interrupt service mechanism.	2	-								-				1	1
310252.5	Apply threads, tasks, process, semaphores and RPC for IPC.	2			-	-	-	-	-	-	-	-	2	1	1	1
310252.6	Develop embedded systems modules using RTOS	2				-	-	-	-	-		-	2	1	1	1
310253	Software Modeling and Design															
310253.1	Analyze the problem statement (SRS) and choose proper design	1	2	1					4							
310253.2	Design and analyze an application using UML modeling as	1	2	1		-		-	-	-		-	-	1	1	1
310253.3	Apply design patterns to understand reusability in OO design	1	2	1		2	-	-	*	-	-	-	-	1	1	1
310253.4	Decide and apply appropriate modern tool for designing and	1	2	2	1	- 4	-	-	-	-	-	*		1	1	1
310253.5	Decide and apply appropriate modern testing tool for testing web-	1	2	2	-		-	-	-	-	-	-	-	1	1	1
310253.6	Apply their knowledge of modelling and design to solve	1	2	2	-		-	-	-	-	-	-		1	1	1
310254	Web Technology														7 (11)	
310254.1	Analyze given assignment to select sustainable web development	1	2	2	1		-		-			- W 1 (a)			1310	
310254.2	Develop web based application using suitable client side and	1	3	3	2	3	1	1	3	-	2		*	1	2	1
310254.3	Develop solution to complex problems using appropriate method, technologies, frameworks, web services and content management	3	2	2	2	1	1	1	3	1	2		-	1	1	1
	Develop Client-Side programs using JavaScript and Server-Side	1	7	2			-		-	-	-	1	2	2		
	Outline Object Oriented Programming capabilities of PHP.	1	-	1	-	1	-	-		-		-	2	2	1	1
310254.6	Examine JavaScript frameworks such as jQuery and Backbone.	1		2		-			-	IN S			2	1	1	2

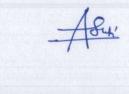


Course Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1			PS	PS	PS
410241	High Performance Computing										0	11	12	01	02	0.
410241.1	Describe different parallel architectures, inter-connect networks, programming models	3	2	3	2	2	2	2	1	1	1	1	1	1	1	1
410241.2	Develop an efficient parallel algorithm to solve given problem	2	3	3	1	1	1	1	1	1	1	1	1	1	1	,
410241.3	Analyze and measure performance of modern parallel computing systems	3	2	3	3	3	1	1	1	1	1	1	1	1	1	1
410241.4	Build the logic to parallelize the programming task	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
410242	Artificial Intelligence and Robotics			de la constante							14-11					
410242.1	Identify and apply suitable Intelligent agents for various AI applications	2	3	2	3	3	2	2	1	1	1	1	1	1	1	1
410242.2	Design smart system using different informed search / uninformed search or heuristic approaches.	3	3	2	2	1	3	1	1	1	1	1	1	1	1	
410242.3	Identify knowledge associated and represent it by ontological engineering to plan a strategy to solve given problem.	3	3	2	2	2	1	1	1	1	1	1	2	1	1	_
410242.4	Apply the suitable algorithms to solve AI problems	2	2	3	1	2	1	2	1	1	1	1	1	1	1	-]
410243	Data Analytics															in a
410243.1	Write case studies in Business Analytic and Intelligence using mathematical models	3	2	2	3	1	2	2	1	3	1	1	2	1	1	1
11021012	Present a survey on applications for Business Analytic and Intelligence	3	3	2	2	1	3	1	2	1	1	1	1	1	1	1
410243.3	Provide problem solutions for multi-core or distributed, concurrent/Parallel environments	1	3	2	2	2	1	1	2	1	2	1	2	1	1	1
410244(C)	Pervasive & Ubiquitous Computing					+	-	-	-		-	-	-	-	-	
410244(C).1	Design and implement primitive pervasive applications	3	3	2	3	3	2	2	3	1	1	1	1	1	,	_
10211(0).2	Analyze and estimate the impact of pervasive computing on future computing applications and society	2	2	2	2	1	3	1	1	2	2	1	1	1	1	1
110244(C).3	Develop skill sets to propose solutions for problems related to pervasive computing system	3	3	2	2	VZE G	Eloz	1	1	1	1	1	2	1	1	1

410244(C).4	Design a preliminary system to meet desired needs within the constraints of a particular problem space	1	1	3	1	2	3	2	2	1	1	1	3	1	1	1
410245(B)	Software Testing and Quality Assurance				-	-										-
410245(B).1	Describe fundamental concepts in software testing such as manual testing, automation testing and software quality	2	3	2	3	3	2	2	3	1	1	1	1	1	1	1
410245(B).2	Design and develop project test plan, design test cases, test data, and conduct test operations	2	2	2	2	1	3	1	1	2	2	1	2	1	1	1
410245(B).3	Apply recent automation tool for various software testing for	3	3	2	2	2	1	3	2	1		1	-			-
410245(B).4	Apply different approaches of quality management, assurance, and quality standard to software system	3	1	3	1	3	3	2	2	1	1	1	3	1	1	1
410245(B).5	Apply and analyze effectiveness Software Quality Tools	2	3	2	3	2	1	1	1	1	2	1	1	1	1	1
410250	Machine Learning								100							
410250.1	Distinguish different learning based applications	3	2	3	2	2	2	2	1	1	1	1	,			
410250.2	Apply different preprocessing methods to prepare training data set for machine learning.	2	3	3	1	1	1	1	1	1	1	1	1	1	1	1
410250.3	Design and implement supervised and unsupervised machine	3	2	3	3	3	1	1	1	1	1	1	1	1	1	-
410250.4	Implement different learning models	3	3	3	1	1	1	2	1	1	1	-		1	1	1
410250.5	Learn Meta classifiers and deep learning concepts	2	3	3	3	1	1	2	1	1	1	1	1	1	1	1
410251	Information and Cyber Security							100								
410251.1	Gauge the security protections and limitations provided by today's	3	2	3	2	2	2	2	1	2	1	2	1	1	1	-
410251.2	Identify information security and cyber security threats.	2	3	3	2	1	1	1	1	1	1		1	1	1	1
410251.3	Analyze threats in order to protect or defend it in cyberspace from	3	3	3	3	3	1	2	1	1	1	1	1	1	1	1
410251.4	Build appropriate security solutions against cyber-attacks.	3	3	3	1	1	1	3	2	1	2	1	2	1	1	1
410252(C)	Embedded & Real Time Operating System	4-11		T Unit												
410252(C).1	Recognize and classify embedded and real-time systems.	3	2	3	2	2	2	2	1		,					_
410252(C).2	Explain communication bus protocols used for embedded and real-time systems.	2	3	3	1	1	1	2	2	1	1	2	1	1	1	1
410252(C).3	Classify and exemplify scheduling algorithms.	3	2	3	3	2	-5		1	,						
410252(C) 4	Apply software development process to a given RTOS application.	3	2	3	3	3	2C	0/2		1	1	1	3	1	1	1

410252(C).5	5 Design a given RTOS based application.	3	3	3	3	1	1	2	3	1	3	1	1	1	1	1
410253	Cloud Computing														inite)s	
410253.1	To install cloud computing environments.	3	2	3	2	2	2	2	2	2	2	1	2	1	1	1
410253.2	To develop any one type of cloud.	3	3	3	2	1	1	3	2	1	1	2	1	1	1	1
410253.3	To explore future trends of cloud computing.	3	2	2	3	3	3	1	1	2	3	1	2	1	1	1







" EMPOWERMENT THROUGH TECHNOLOGICAL EXCELLENCE " GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

Department of Computer Engineering Academic Year 2019-20

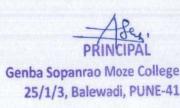
Sr. No.	Course Code	Course Name
2016		Semester - III
1	210241	DiscreteMathematics
2	210242	Digital Electronics and Logic Design
3	210243	Data Structures and Algorithms
4	210244	Computer Organization and Architecture
5	210245	Object Oriented Programming
		Semester - IV
6	207003	Engineering Mathematics III
7	210251	Computer Graphics
8	210252	Advanced Data Structures
9	210253	Microprocessor
10	210254	Principles of Programming Languages
-		Semester - V
11	310241	Theory of Computation
12	310242	Database Management Systems
13	310243	Software Engineering and Project Management
14	310244	Information Systems and Engineering Economics
15	310245	Computer Networks
		Semester - VI
16	310250	Design and Analysis of Algorithms
17	310251	Systems Programming and Operating System
18	310252	Embedded Systems and Internet of Things
19	310253	Software Modeling and Design
20	310254	Web Technology
		Semester – VII
20	410241	High Performance Computing
21	410242	Artificial Intelligence and Robotics
22	410243	Data Analytics
23	410244(C)	Pervasive & Ubiquitous Computing
24	410245(B)	Software Testing and Quality Assurance
		Semester – VIII
25	410250	Machine Learning
26	410251	Information and Cyber Security
27	410252(C)	Embedded & Real Time Operating System
28	410253(C)	Cloud Computing



PRINCIPAL

SE

Course Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1	PO1 2	PSO1	PSO2	PSO:
210241	DiscreteMathematics								100						Novel	
210241.1	Solve real world problems logically using appropriate set, function, and relation models and interpret the associated operations and terminologies in context.	3	3	3	2	-	-	-	2	-	-	3	-	1	1	1
210241.2	Analyze and synthesize the real world problems using discrete mathematics.	3	3	-	2	-		2	-1		1	-		1	1	1
210241.3	Associate the applications of Graph theory models and data structures.	-	3	3	2	3	-	-	-	-	-	-	2	-	1	1
210241.4	Describe the concepts and properties of algebraic structures such as groups, rings and fields.	3		3		-	-	-	-	2	-	-		1	1	1
210241.5	Extend the concepts of Boolean algebra in the area of lattices.	3	3	3	2	-	1	-	3	-	2	1	-	1	1	2
210241.6	Apply the knowledge of argumental discrete mathematical problems.	3	3	3	2	-	-	1	-	-	-	-		1	2	1
210242	Digital Electronics and Logic Design															
210242.1	Realize and simplify Boolean Algebraic assignments for designing digital circuits using K- Maps.	2	-	2	-	-			-	-	-	-	-	1	1	1
210242.2	Design and implement Sequential and Combinational digital circuits as per the specifications	2	1	2	•	-	3		3	-	3	-	-	1	-	1
210242.3	Apply the knowledge to appropriate IC as per the design specifications	3	1	2	-	2		-		-	-	1	-	1	1	1
210242.4	Design simple digital systems using VHDL.	2	-	2	1	-		1	-	1	1	-	3	-	1	1
210242.5	Develop simple embedded system for simple real world application.	2	2	-	-	-		-	2	-	-	2		1	1	-
210242.6	Compare various digital logic families based on power, speed and interfacing characteristics	2	-	1	-	-		-	-	2	-	3		1	2	2



210243	Data Structures and Algorithms			400												
10243.1	To discriminate the usage of various structures in approaching the problem solution.	2	1	2	1	-	-	-	3	-	-	-	-	1	1	1
10243.2	To design the algorithms to solve the programming problems.	1	2	-	10125	2	-	1	-	2	-	-	3	1		1
10243.3	To use effective and efficient data structures in solving various Computer Engineering domain problems.	2	-	1	2	-	1	-	2	3	-	3	-	1	1	1
10243.4	To analyze the problems to apply suitable algorithm and data structure.	1	2		1	3	-	2	-	-	-	-	1	-	1	
10243.5	To use appropriate algorithmic strategy for better efficiency	1		1	1	-	-	-	-	1	2	•	-	1	1	
210243.6	Understand the concepts of Hashing, Files and their Organization and Sorting Algorithms.	2	1	1	1		3	-	-	-	•	-	2	1	2	-
210244	Computer Organization and Architecture								Alike)	14.4		100				
210244.1	Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os	2	1	1	•	-	-	2	-	3		3	AN76	1	1	
210244.2	Analyze the principles of computer architecture using examples drawn from commercially available computers.	3	-	1	1	1	-	•	1	-	1	-	1	1	1	-
210244.3	Evaluate various design alternatives in processor organization.	1	2	-	1	-	3	2		1	2	1	2	1	1	\vdash
210244.4	Understand the basics of memory systems and cache Memories.	2	1	-	2	2	-	1	3	-	-	-	-	1	1	+
210244.5	Design arithmetic and logical operations with integer and floating-point operands.	1	-	1	1		1	-	-	-	2	2	3	-	1	+
210244.6	Understand the basic processing unit, embedded and other large computing systems.	2	1	1	-	-	-	-	•	•	-	-	-	1	2	-
210245	Object Oriented Programming															+
210245.1	Analyze the strengths of object oriented programming	2		2	-	3	-	2	-	2		-		1	1	+
210245.2	Design and apply OOP principles for effective programming	2	1	2	2	-		-	1	-	-	3	-	1	1	+
210245.3	Develop programming application using object oriented programming language C++	2	1	2	-	1	2	-	-	3	2	-	2	-	1	+
210245.4	Percept the utility and applicability of OOP	2	-	2	1	-	-	3	3	-	-	-	-	1	1	+
210245.5	Relate Java applications with threads and generics classes	1	-	-	-		3	1	EGE (1	-	-	1	1	1	+
210245.6	Demonstrate simple Graphical User Interfaces	1	2	3	-	-	- /	(3)	-	(5)	-	-	-	1	2	

Genba Sopanrao Moze C 25/1/3, Balewadi, PU

207003	Engineering Mathematics III							-		-						
207003.1	Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.	3	2	3	2	2	2	2	1	1	1	1	1	1	1	1
207003.2	Solve problems related to Fourier transform, Z-Transform and applications to Signal and Image processing.	2	3	3	1	1	1	1	1	1	1	1	1	1	1	1
207003.3	Apply statistical methods like correlation, regression analysis and probability theory for analysis and prediction of a given data as applied to machine intelligence.	3	2	3	3	3	1	1	1	1	1	1	1	1	1	1
207003.4	Perform vector differentiation and integration to analyze the vector fields and apply to compute line, surface and volume integrals.	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
207003.5	Analyze conformal mappings, transformations and perform contour integration of complex functions required in Image processing, Digital	2	3	2	3	1	1	1	1	1	1	1	1	1	1	1
207003.6	Determine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.	2	•	•				-	-	-159 -159			-	1	1	1
210251	Computer Graphics									THE STATE OF						
210251.1	Apply mathematics and logic to develop Computer programs for elementary graphic operations	2	1	2	1	-		3	-			3	-	1	1	
210251.2	Develop scientific and strategic approach to solve complex problems in the domain of Computer Graphics	1	2	-					3	2	-	-	-	1	1	
210251.3	Develop the competency to understand the concepts related to Computer Vision and Virtual reality	2	-	-	-	3	-	•		-	2	-	-		1	
210251.4	Apply the logic to develop animation and gaming programs		2	-	1	-	2	2	-	1	-	-	2	1	1	
210251.5	Design Geometric transformations on 3D objects, 2D clipping and color models.	2	1	1			-	-	1	-	-		-	1	2	
210251.6	Demonstrate visible surface detection methods and different types of projections.	1	-	-		-			-	-	1	-		1	1	
210252	Advanced Data Structures															
210252.1	To apply appropriate advanced data structure and efficient algorithms to approach the problems of various domain.	-	2		3	-	-	-	-	3	3	-	·	1	1	-
210252.2	To design the algorithms to solve the programming problems.	1	-		-	3	2	2	2	-	-	-	3	1	1	-
210252.3	To use effective and efficient data structures in solving various Computer Engineering domain problems.	-		2	2		12/5	PILE	EOF	1		1	-	1	1	-
210252.4	To analyze the algorithmic solutions for resource requirements and optimization	-	2	2	-	-	100	PUNI	F-AE		2		2	-	1	

Genba Sopanrao Moze Co 25/1/3, Balewadi, PUN

210252.5	To use appropriate modern tools to understand and analyze the functionalities confined to the data structure usage	-	2	2	-	1	-	1		-	-	-	-	1	1	1
210252.6	Understand the concepts of Hashing, Files and their organization and sorting algorithms.	3	-		-	-	22	-	-	-	-	-	-	1	2	1
210253	Microprocessor		1000													
210253.1	To apply the assembly language programming to develop small real life embedded application.	2	2	2	2	-	3	-	3	-	-	3	3	1	1	1
210253.2	To understand the architecture of the advanced processor thoroughly to use the resources for programming	2	-	1	12.5	-		2	-		3	-	-	1	1	1
210253.3	To understand the higher processor architectures descended from 80386 architecture	2	-	2	-	2	-	-	-	2	-	2	-	1	1	1
210253.4	Apply 8086 assembly language code to handle strings and overflow conditions and I/O programming interface using 8255 PPI	2	1	1	1	-	-	-	-	1.74	-	-	2	-	1	1
210253.5	Understand the architecture and features of ARM Embedded system	1	1	1	4	144		1	1	-	2	-	1	1	-	1
210253.6	Apply arm assembly code to solve problems related to Embedded systems	2	1	1	-	-	-	-		1	-	3	2	1	2	2
210254	Principles of Programming Languages			1200					1/2 0							
210254.1	To analyze the strengths and weaknesses of programming languages for effective and efficient program development	2	2	2	2	3	3	3	3	3	-	3	3	1	1	1
210254.2	To inculcate the principles underlying the programming languages enabling to learn new programming languages	2	-	1	-	-	-	-	-	-	3		2	1	1	1
210254.3	To grasp different programming paradigms	2	1	2	1	-	2		2	-	2	1.		1	1	1
210254.4	To use the programming paradigms effectively in application development.	2	-	2	-	2		2	-	2	-	2	-	-	1	1
210254.5	Design to program in different language paradigms and evaluate their relative benefits	1	1	-	-	-	1	-			2	-	-1	1	2	1
210254.6	Knowledge to compare the features of various programming languages	1		-		- 1	-	-	- 44	1				1	1	2



Course	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO:
310241	Theory of Computation															
310241.1	Design deterministic Turing machine for all inputs and all outputs	2	2	3	1	-	-	-	1	-	1	-	3	1	1	1
310241.2	Subdivide problem space based on input subdivision using constraints		2	3	-	-	2	-	-	-	-		3	1	1	1
310241.3	Apply linguistic theory	Told Park In	2	3	-	1	-	-	2	-	-	-	3	1	1	1
310241.4	Apply Turing machine to propose computation solutions	1		-	-		-	1	-	-	-	1	2	1	1	1
310241.5	Interpret whether a problem is decidable or not	1	1- 1	-	-			3	-	1	-		2	1	1	1
310241.6	Interpret NP class problems	1	-	-	-	-	-	-	-	-	-	-	2	1	1	1
310242	Database Management Systems															
310242.1	Design E-R Model for given requirements and convert the same into database tables.	3	3	2	1	1			-		-	2	2	1	1	1
310242.2	Use database techniques such as SQL & PL/SQL.	3	2	2	2	1	-	-	-	-	1	14	1	1	1	1
310242.3	Use modern database techniques such as NOSQL.	3	3	1	2	1		2	-	2	-	12-01	1	1	1	1
310242.4	Explain transaction Management in relational database System.	2	3	2	2	1	-		2	-	2		1	1	1	1
310242.5	Describe different database architecture and analyses the use of appropriate architecture in real time environment.	3	3	3	2	1	2		-	-	-	1	2	2	1	2
310242.6	Use advanced database Programming concepts	3	3	3	3	1	-	1	-	-	-	-	1	1	1	1
310243	Software Engineering and Project Management															
310243.1	Decide on a process model for a developing a software project	2	2	2	1	1	2	3	-	-	3	-	-	1	1	1
310243.2	Classify software applications and Identify unique features of various domains	1	2	1	2	-	-	-	-	-		3	-	1	1	1
310243.3	Design test cases of a software system.	2	2	1	1	2	-	-	-	2	2	-	1	1	1	1
310243.4	Understand basics of IT Project management.	2	1	2	1	-	-		2	-	-	70.0	-	1	1	1
310243.5	Plan, schedule and execute a project considering the risk management.	2	2	1	2	-	-	-	-	-	-	2	-	2	1	-
310243.6	Apply quality attributes in software development life cycle.	2	1	2	1	-					1		-	1	1	1



PRINCIPAL

Genba Sopanrao Moze Colleg

25/1/3, Balewadi, PUNE-2

310244	Information Systems and Engineering Economics	SAME	Tona Co			T	T		T				T	T		_
310244.1	Understand the need, usage and importance of an Information System to an organization.	1	-	1	2	2	1	-	-	-	-	1	1	1	1	
310244.2	Understand the activities that are undertaken while managing, designing, planning, implementation, and deployment of computerized information system in an organization.	1	1	1	1	1	-	1			1			1	1	1
310244.3	Further the student would be aware of various Information System solutions like ERP, CRM, Data warehouses and the issues in successful implementation of these technology solutions in any organizations	3	1	2	1	2	-	-	-	2	-		1	1	1	
310244.4	Outline the past history, present position and expected performance of a company engaged in engineering practice or in the computer industry.	1	2	1	2	2			-		-	1	1	1	1	
310244.5	Perform and evaluate present worth, future worth and annual worth analyses on one of more economic alternatives.	1	3		-	1	-	1	1	-		-	-	1	1	1
310244.6	Be able to carry out and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives.	1		2	1	-	1		-	-			1	1	1	1
310245	Computer Networks			00000												-
310245.1	Analyze the requirements for a given organizational structure to select the most appropriate networking architecture, topologies, transmission mediums, and technologies	3	1	1	2				•	1	-	1	-	1	1	1
310245.2	Demonstrate design issues, flow control and error control	3	2	1	2	1	-	-	-			-		1	1	-
310245.3	Analyze data flow between TCP/IP model using Application, Transport and Network Layer Protocols.	2	3	3	3	2	3	2		2		1		1	1	1
310245.4	Illustrate applications of Computer Network capabilities, selection and usage for various sectors of user community.	1	2	2	2	3	3			2	1	2	2	1	1	1
310245.5	Illustrate Client-Server architectures and prototypes by the means of correct standards and technology.	2	2	2	3	3	3		-	2	1	2	2	1	1	1
310245.6	Demonstrate different routing and switching algorithms	2	2	1	2	2	2	-	1	1		1	1	1	1	1
310250	Design and Analysis of Algorithms															
310250.1	Formulate the problem	1	3	2	1	-		-	1	1		-	1	1	1	1
310250.2	Analyze the asymptotic performance of algorithms.	1	2	1	2		1	-	-	1	-		1	1	1	1
310250.3	Decide and apply algorithmic strategies to solve given problem	2	1	2	1	-	1	2	-	1	-	2	1	1	1	1
310250.4	Find optimal solution by applying various methods	1	2	2	2	2	-	-	-	1	1	-	1	1	1	1
310250.5	Analyze the performance of merge sort and quick sort algorithms using divide and conquer technique.	1	1	2	1	-	-	-	-	-	-		1	1	1	1
310250.6	Design algorithms using dynamic programming and back tracking methods.	1	2	2	2	-	-		-	-	-	-	1	1	1	1
MAN CONTRACTOR		Service College				11	200	-	-	_	_					

PRINCIPAL

Genba Sopanrao Moze Coll.
25/1/3, Balewadi, PUNE

310251	Systems Programming and Operating System			NAOHO.	1		T	T	T	T	T			T	_	1
310251.1	Analyze and synthesize system software	1	1	2	1	1	-	-	-	-			-	-		+
310251.2	Use tools like LEX & YACC.		2	1	3	1	-	-	-	-	-		-	1	1	1
310251.3	Implement operating system functions.	2	-	2	1	-	1		1	1	-	-	-	1	1	1
310251.4	Understand the concepts related to deadlock and memory management.	1	1	-	-	-	-	1	-	-	1	1	2	1	1	1
310251.5	Understand the concepts of virtual memory management, file system	1	1		-	-	-	-	-	-			2	1	1	1
310251.6	Understand the concepts of secondary storage structure, protection and case study of Linux operating system.	1	1	-		-	-	-	-	1	-	-	2	1	1	-
310252	Embedded Systems and Internet of Things	T. P.														
310252.1	Implement an architectural design for IoT for specified requirement	1	2	2	1	-	-	1	3		2	2		1	1	1
310252.2	Solve the given societal challenge using IoT	1	3	3	2	3	1	-	3	1	2			1		1
310252.3	Choose between available technologies and devices for stated IoT challenge	3	2	2	2	1	1	1	-	-	2		-	1	1	1
310252.4	Understand device drivers and interrupt service mechanism.	2				-								-	*	1
310252.5	Apply threads, tasks, process, semaphores and RPC for IPC.	2	-		1		-	-	-	-	-	-	2	1	1	1
310252.6	Develop embedded systems modules using RTOS	2	-	-	-	-	-	-	-	-	-	-	2	1	1	1
310253	Software Modeling and Design					11/1/	de									
310253.1	Analyze the problem statement (SRS) and choose proper design	1	2	1	-	-										
310253.2	Design and analyze an application using UML modeling as	1	2	1	-		1	-	-	-	-	-	-	1	1	1
310253.3	Apply design patterns to understand reusability in OO design	2	2	1	-	2	-	-	1	-	1	-	-	1	1	1
310253.4	Decide and apply appropriate modern tool for designing and	1	2	2	1	-			-	1	-	•	1	1	1	1
310253.5	Decide and apply appropriate modern testing tool for testing web-	1	2	2	-		2	1	-	1	-	-	-	1	1	1
310253.6	Apply their knowledge of modelling and design to solve	1	2	2	-	2	-	-	-	-	2	2	2	1	1	1
310254	Web Technology							TAIR				1-61	1424			
310254.1	Analyze given assignment to select sustainable web development	1	2	2	1	-	-	1	3		2					
310254.2	Develop web based application using suitable client side and	1	3	3	2	3	1	1	3	-	2	•	-	1	1	-
310254.3	Develop solution to complex problems using appropriate method, technologies, frameworks, web services and content management	3	2	2	2	1	1	1		-	2	1		1	1	1
310254.4	Develop Client-Side programs using JavaScript and Server-Side	1	-	2	_	-	-		-	-			2	1		1
310254.5	Outline Object Oriented Programming capabilities of PHP.	1		2			-	-	-	-	-		_	1	-	1
310254.6	Examine JavaScript frameworks such as jQuery and Backbone.	1		2	-				-	-	-	-	2	1	1	1



Course Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9		A 20 22 2	PO	PS	PS	P
410241	High Performance Computing										0	11	12	01	02	0
410241.1	Describe different parallel architectures, inter-connect networks, programming models	3	2	3	2	2	2	2	1	1	1	1	1	1	1	
410241.2	Develop an efficient parallel algorithm to solve given problem	2	3	3	1	1	1	1	1	1	1	1	1	1	1	
410241.3	Analyze and measure performance of modern parallel computing systems	3	2	3	3	3	1	1	1	1	1	1	1	1	1	
410241.4	Build the logic to parallelize the programming task	3	3	3	1	1	1	2	1	1	1	1	1	1	1	
410242	Artificial Intelligence and Robotics							1000								
410242.1	Identify and apply suitable Intelligent agents for various AI applications	2	3	2	3	3	2	2	1	1	1	1	1	1	1	
410242.2	Design smart system using different informed search / uninformed search or heuristic approaches.	3	3	2	2	1	3	1	1	1	1	1	1	1	1	
410242.3	Identify knowledge associated and represent it by ontological engineering to plan a strategy to solve given problem.	3	3	2	2	2	1	1	1	1	1	1	2	1	1	
410242.4	Apply the suitable algorithms to solve AI problems	2	2	3	1	2	1	2	1	1	1	1	1	1	1	
410243	Data Analytics															
410243.1	Write case studies in Business Analytic and Intelligence using mathematical models	3	2	2	3	1	2	2	1	3	1	1	2	1	1	
410243.2	Present a survey on applications for Business Analytic and Intelligence	3	3	2	2	1	3	1	2	1	1	1	1	1	1	
410243.3	Provide problem solutions for multi-core or distributed, concurrent/Parallel environments	1	3	2	2	2	1	1	2	1	2	1	2	1	1	1
410244(C)	Pervasive & Ubiquitous Computing												-	34.1		
410244(C).1	Design and implement primitive pervasive applications	3	3	2	3	3	2	2	3	1	1	1	1	1	1	1
410244(C).2	Analyze and estimate the impact of pervasive computing on future computing applications and society	2	2	2	2	1	3	1	1	2	2	1	1	1	1	1
410244(C).3	Develop skill sets to propose solutions for problems related to pervasive computing system	3	3	2	33	2/		1	1	1	1	1	2	1	1	1

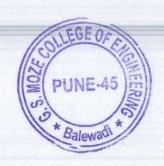
PRINCIPA Genba Sopanrao Moze Co 25/1/3, Balewadi, PUI

410244(C).4	Design a preliminary system to meet desired needs within the constraints of a particular problem space	1	1	3	1	2	3	2	2	1	1	1	3	1	1	
410245(B)	Software Testing and Quality Assurance															+
410245(B).1	Describe fundamental concepts in software testing such as manual testing, automation testing and software quality	2	3	2	3	3	2	2	3	1	1	1	1	1	1	
410245(B).2	Design and develop project test plan, design test cases, test data, and conduct test operations	2	2	2	2	1	3	1	1	2	2	1	2	1	1	
410245(B).3	Apply recent automation tool for various software testing for	3	3	2	2	2	1	3	2	1	1	3	2	1	1	T
410245(B).4	Apply different approaches of quality management, assurance, and quality standard to software system	3	1	3	1	3	3	2	2	1	1	1	3	1	1	
410245(B).5	Apply and analyze effectiveness Software Quality Tools	2	3	2	3	2	1	1	1	1	2	1	1	1	1	I
410250	Machine Learning															H
410250.1	Distinguish different learning based applications	3	2	3	2	2	2	2	1	1	1	1	1	1	1	+
410250.2	Apply different preprocessing methods to prepare training data set for machine learning.	2	3	3	1	1	1	1	1	1	1	1	1	1	1	T
410250.3	Design and implement supervised and unsupervised machine	3	2	3	3	3	1	1	1	1	1	1	1	1	1	t
410250.4	Implement different learning models	3	3	3	1	1	1	2	1	1	1	1	1	1	1	T
410250.5	Learn Meta classifiers and deep learning concepts	2	3	3	3	1	-1	2	1	1	1	1	1	1	1	T
410251	Information and Cyber Security															+
410251.1	Gauge the security protections and limitations provided by today's	3	2	3	2	2	2	2	1	2	1	2	1	1	1	t
410251.2	Identify information security and cyber security threats.	2	3	3	2	1	1	1	1	1	1	1	1	1	1	t
410251.3	Analyze threats in order to protect or defend it in cyberspace from	3	3	3	3	3	1	2	1	1	1	2	1	1	1	t
410251.4	Build appropriate security solutions against cyber-attacks.	3	3	3	1	1	1	3	2	1	2	1	2	1	1	t
410252(C)	Embedded & Real Time Operating System													2.00		+
410252(C).1	Recognize and classify embedded and real-time systems.	3	2	3	2	2	2	2	1	1	1	1	1	1	1	+
410252(C).2	Explain communication bus protocols used for embedded and real-time systems.	2	3	3	1	1	1	2	2	1	1	2	1	1	1	1
410252(C).3	Classify and exemplify scheduling algorithms.	3	2	3	3	3	2.//	010	1	1	1	1	1	1	1	t
410252(C).4	Apply software development process to a given RTOS application.	3	2	3	3	2	1	2	2/1	1	1	1	3	1	1	T

PRINCI

Genba Sopanrao Moze 25/1/3, Balewadi, F

410252(C).5	Design a given RTOS based application.	3	3	3	3	1	1	2	3	1	3	1	1	1	1	1
410253	Cloud Computing															
410253.1	To install cloud computing environments.	3	2	3	2	2	2	2	2	2	2	1	2	1	1	-
410253.2	To develop any one type of cloud.	3	3	3	2	1	1	3	2	1	1	2	1	1	1	-
410253.3	To explore future trends of cloud computing.	3	2	2	3	3	3	1	1	2	3	1	2	1	1	-



" EMPOWERMENT THROUGH TECHNOLOGICAL EXCELLENCE " GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

Department of Computer Engineering

	The state of the s	Academic Year 2020-21
Sr. No.	Course Code	Course Name
31.110.		Semester - III
1	210241	Discrete Mathematics
2	210242	Fundamentals of Data Structures
3	210243	Object Oriented Programming(OOP)
4	210244	Computer Graphics
5	210245	Digital Electronics and Logic Design
	Bally Section	Semester - IV
6	207003	Engineering Mathematics III
7	210252	Data Structures and Algorithms
8	210253	Software Engineering
9	210254	Microprocessor
10	210255	Principles of Programming Languages
10	minutes and a few	Semester - V
11	310241	Theory of Computation
12	310242	Database Management Systems
13	310243	Software Engineering and Project Management
14	310244	Information Systems and Engineering Economics
15	310245	Computer Networks
2000 000000	aya sa la la la	Semester - VI
16	310250	Design and Analysis of Algorithms
17	310251	Systems Programming and Operating System
18	310252	Embedded Systems and Internet of Things
19	310253	Software Modeling and Design
20	310254	Web Technology
OTAL MEDIAN	AND STATE OF THE SECOND	Semester – VII
20	410241	High Performance Computing
21	410242	Artificial Intelligence and Robotics
22	410243	Data Analytics
23	410244(C	Pervasive & Ubiquitous Computing
24	410245(B	The state of the Assurance
seutorar a	Contract Contract	Semester - VIII
25	410250	Machine Learning
26	410251	Information and Cyber Security
27	410252(C	- Custom
28	410253(0	
20		



PRINCIPAL

Genba Sopanrao Moze College o
25/1/3, Balewadi, PUNE-411

					SE	acime i										T	2002
		po1	PO2	PO3	PO4	POS	PO6	PO7	PO8	PO9	PO10	P	011	PO12	PSO1	PSO2	PSO3
rse Code	Name of Course	PO1	102	100		-											
	Discrete Mathematics		-			+	+	+									1
	Design and analyze real world engineering problems by applying set theory, propositional logic and mathematical induction	1	1	2	1										1	1	
					2	1.									1	1	1
210241.2	Develop skill in expressing mathematical properties of relation and function	1	2	-	-			-	-							2	1
210241.3	Identify number of logical possibilities of events to design professional engineering Solutions	2	1	2	1			-	1	-	-						
210241.4	Model and solve computing problem using tree and graph Analyze the properties of binary operations and evaluate the algebraic structure	1	2		2										1	1	1
				2											1	1	
210241.5	Apply abstract algebra in combinatorics, coding theory and questions regarding geometric constructions					2			-						1	2	1
210241.6	Analysis concept of Algebric structures	-	2	1		2											
210242	Fundamentals of Data Structures			-	+			-	+				6.44			1	1
210242.1	Design the algorithms to solve the programming problems, identify appropriate algorithmic strategy for specific application, and analyze the time and space complexity.	2		2	1	2	-	-	7	-	-	-		*	1		
210242.2	Discriminate the usage of various structures, Design/Program/Implement the appropriate data structures; use them in implementations of abstract data types and Identity the appropriate data structure in approaching the problem solution.	1	1	2	2	1			-		-			-	1	1	1
			1	1	1		-	-	-				-		1	1	1
210242.3	Demonstrate use of sequential data structures- Array and Linked lists to store and process data.	-			1		W. I						-	-	1	1	
210242.4	Understand the computational efficiency of the principal algorithms for searching a sorting and choose the most efficient one for the application.		1		-				-						1	1	
210242.5			1	1		1	1						-		1	1	
210242.6	Understand, Implement and apply principles of data structures-stack and queue to solve computational problems.		1	1	1	1	/	F05	ON			A LUCY	2010				

Genba Sopanrao Moze 25/1/3, Balewadi, Pl

		- 1	1	1					1	1						
10243	Object Oriented Programming(OOP)															
0243.1	Apply constructs- sequence, selection and iteration; classes and objects, inheritance, use of predefined classes from libraries while developing software	2	1	1	1	-	-	-	-					1	1	1
10243.2	Design object-oriented solutions for small systems involving multiple objects	1	2	1	1						-			1	1	1
0243.3	Use virtual and pure virtual function and complex programming situations.	2	1	2	2	-		-	1				1	1	1	1
10243.4	Apply object-oriented software principles in problem solving.	2	1	2	1	-					-			1	1	1
10243.5	Analyze the strengths of object-oriented programming.	*	1		1		-	1		-	•			1	1	1
10243.6	Develop the application using object oriented programming language(C++).	•		1	-	-	-			•	-	-	1	1		
210244	Computer Graphics						-		+	+						
210244.1	Identify the basic terminologies of Computer Graphics and interpret the mathematical foundation of the concepts of computer graphics.	2	1	1						-				1	1	1
210244,2	Apply mathematics to develop Computer programs for elementary graphic	3		1	1					-				1		
210244.3	Apply mathematics to develop Computer problem solution. Illustrate the concepts of windowing and clipping and apply various algorithms to fill	1	2		1			-	-					1	1	1
	and clip polygons.	2	1	1	1			-		•				1	1	1
210244.4	Understand and apply the core concepts of computer graphics, including transformation in two and three dimensions, viewing and projection.			-										1	1	
210244.5	Understand the concepts of color models, lighting, shading models and hidden surface elimination.		-	1										1	1	
210244.6	Create effective programs using concepts of curves, fractals, animation and gaming.		2	2		-										



Genba Sopanrao Moze Colleg 25/1/3, Balewadi, PUNE-4

				_			-	-	-				1					
	Digital Electronics and Logic Design				Page 1		-	+	-	-			-		-	1	1	1
William Control	Simplify Boolean Expressions using K Map.	2	-	2		-	-	-	-	-			1			1	1	1
	Design and implement combinational circuits.	2	1	2	•	-	+	-	•	-	-		1 -		-	1	1	1
- N. C. C. C. C. C. C. C. C. C. C. C. C. C.	Design and implement sequential circuits	2	1	2	•	-	-	-	+	-	-		-		-	1	1	1
	Develop simple real-world application using ASM and PLD	2	-	2	1	-		-		-						1	1	1
	Differentiate and Choose appropriate logic families IC packages as per the given	2	2	+	•	1		-	-	-	-		-	-		1	1	1
210245.5	design specifications. Explain organization and architecture of computer system	2	-		-	+	-	-	-	•	-							7/4(30)
207003	Engineering Mathematics III								•		-					1	1	1
207003.1	Solve Linear differential equations, essential in modelling and design of computer- based systems.	3	2	3	2		2	2	2							1	1	1
207003.2	Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing.	2	3	3	1		1	1	1	•	-					1	1	1
207003.3	Apply Statistical methods like correlation and regression analysis and probability theory for data analysis and predictions in machine learning.	3	2	3	3		3	1	1	-	-					1	1	1
207003.4	Solve Algebraic and Transcendental equations and System of linear equations using numerical techniques.	3	3	3	1		1	1	2	-	-					1	1	1
207003.5	Obtain Interpolating polynomials, numerical differentiation and integration, numerical solutions of ordinary differential equations used in modern scientific computing.	2	3	2		3	1	1	1		-					1	1	1
210252.6	Use appropriate modern tools to understand and analyze the functionalities confined to the secondary storage.	3	1	3	-	1	3	1	1	-	-			Te an				
	Construct and Algorithms								-						-	1	1	1
210252	Identify and articulate the complexity goals and benefits of a good hashing scheme to	2		1 2	2	1			1	+	+				-	1	1	1
210252.1	real- world applications.	1		2	-	•		+	+					77.55		1	1	1
210252.3	Design and specify the operations of a nonlinear-based abstract data type and	2			-		1	-		-	-					1	1	
210252.4	to the algorithmic solutions for resource requirements and optimization			2	-	1	-	-	+							1	1	
210252.5	Use efficient indexing methods and multiway search techniques to store and maintain	in 1		1	1	1		-	-	1	EU	OFE	4.		-	1	1	

PRINCIPAL enba Sopanrao Moze Co

Genba Sopanrao Moze Co 25/1/3, Balewadi, PUN

210253	Software Engineering											AL				
210255	Software Engineering					-										
210253,1	Analyze software requirements and formulate design solution for a software.	4 107.50	2	-	100	-	-				7000			1	1	1
210253.2	Design applicable solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal and economic concerns.	1	-			-	2	2	2				•	1	1	1
210253.3	Apply new software models, techniques and technologies to bring out innovative and novelistic solutions for the growth of the society in all aspects and evolving into their continuous professional development.		-	2	1.40	-			4		-			1	1	1
210253.4	Model and design User interface and component-level.		2	2	-		-		-	-	EV (= 04)			1	1	1
210253.5	Identify and handle risk management and software configuration management.	- 1	2	2		-					-			1	1	1
210253.6	Utilize knowledge of software testing approaches, approaches to verification and validation.		2	2		-		-	-				-	1	1	1
210253.7	Construct software of high quality – software that is reliable and that is reasonably easy to understand, modify and maintain efficient, reliable, robust and cost-effective software solutions.	1		1	1								-	1	1	1
210254	Microprocessor															
210254.1	Exhibit skill of assembly language programming for the application.	2														
210254.2		_	2	2	2	-	*			-	- 1	-	-	1	1	1
210254.2	Classify Processor architectures.	2		1		-	-	-		-	*	-		1	1	1
The state of the s	Illustrate advanced features of 80386 Microprocessor.	2	-	2		-		*				100		1	1	1
210254.4	Compare and contrast different processor modes.	2	-	2		-	-	-		-		-	-	1	1	1
210254.5	Use interrupts mechanism in applications	2	-	2		1.2		-		-			-	1	1	1
210254.6	Differentiate between Microprocessors and Microcontrollers.	2	1	-		-	-	-					-	1	1	1
210254.7	Identify and analyze the tools and techniques used to design, implement, and debug microprocessor-based systems.	2	1	1	1		•						-	- 1	1	1
210255	Principles of Programming Languages							-								
210255.1	Describe project life cycle and the domains of Project ManagementDescribe project life cycle and the domains of Project Management	2	2	2	2	-				-				1	1	1
210255,2	Explain networking methods and their applications in planning and management	2		1						-				1	1	1
210255,3	Categorize the materials as per their annual usage and also Calculate production rate of construction equipment	2	-	2		-	-	-					-	1	1	1
210255.4	Demonstrates resource allocation techniques and apply it for manpower planning.	2	-	2	0.0	-	-	-		-	7	-	-	1	1	1
210255.5	Understand economical terms and different laws associated with project management	2		2				1	TTE	GE	200			1	1	1
210255.6	Apply the methods of project selection and recommend the best economical project	2	1					1/5	0	-	11:00			1	1	1

PRINCIPAL

Genba Sopanrao Moze Coll
25/1/3, Balewadi, PUNE

Course	VINERAL CONTRACTOR OF THE PROPERTY OF THE PROP				TE											
Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
310241	Theory of Computation													1501	1302	130
310241.	and all outputs	2	2	3	1				1							
310241.2	constraints		2	3				-		-	-	-	3	1	1	-
310241.3	Apply linguistic theory				-	-	2	-	-	-	-	-	3	1	1	1
310241.4		1	2	3	•	1	-		-	-	-	-	3	-	1	1
310241.5		1		1-27/11	-	•	-	-	•	-	-	-	2	1	1	1
310241.6	Interpret NP class problems	1	-		-		-	-		-	-	-	2	1	1	1
310242	Database Management Systems												-		1	
310242.1	Design E-R Model for given requirements and convert the same into database tables.	3	3	2	2	1	-	-	-		-		2	1	1	
310242.2	Use database techniques such as SQL & PL/SQL.	3	3	2	2	1	-		_				-			
310242.3	Use modern database techniques such as NOSQL.	2	2	3		2	-	-	-	-	-	-	1	1	1	1
310242.4	Explain transaction Management in relational database System	3	3	2	2 3	2	-	-	-	-	-	-	1	-	1	1
310242.5	Describe different database architecture and analyses the use of appropriate architecture in real time environment.	2	3	3	2	1	-					•	2	1	1	1
310242.6	Use advanced database Programming concepts	3	3	3	3	1	-	-	-	-	-		1	1	1	1
310243	Software Engineering and Project Management			72 44 9									1	1	1	
310243.1	Decide on a process model for a developing a software project	2	2	2	,	-									N. Y.	TV
310243.2	Classify software applications and Identify unique features of various domains		No train		1	-	-	-	-	-	-	-	-	1	•	1
310243.3	Design test cases of a software system.	2	2	1	2	-	-	-	-	-	-	-	-	1	1	1
310243.4	Understand basics of IT Project management.	2	2	1	1	-	-	-	-	-	-	-	-	1	1	1
10243.5	Plan, schedule and execute a project considering the risk management.	3		2	1	-	-	-	-	-	-	-	-	-	1	1
310243.6	Apply quality attributes in software development life cycle.	2	2	1	2	-	-	-	-	-	-	-	-	1	1	1
	and a supplied the cycle.	4	1	2	1	-	-	-	-	-	-	-	1-0	1	1	-



PRINCIPAL
Genba Sopanrao Moze Colle
25/1/3, Balewadi, PUNE

310244	Information Systems and Engineering Economics		T		_	_			_							
1	Understand the need, usage and importance of an Information			-		+		-								T
310244.1	System to an organization.	1	-	1	2	2	1	-	-			1	1	1	١,	
310244.2	1 an organization	1	1	1	1	1		1			1	-	-	1	1	+
310244.3	Further the student would be aware of various Information System solutions like ERP, CRM, Data warehouses and the issues in successful implementation of these technology solutions in any organizations	3	1	2	1	2	-	-	-	-			1	1	1	
310244.4	Outline the past history, present position and expected performance of a company engaged in engineering practice or in the computer industry.	1	2	1	2	2	-		-			1	1	1		
310244.5	Perform and evaluate present worth, future worth and annual worth analyses on one of more economic alternatives.	1	3	-	1.	1	-	1	1					1	-	-
310244.6	Be able to carry out and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives.	1		2	1	1	1								1	
310245	Computer Networks	1/2-1					1			-	-	-	1	1	1	
310245.1	Analyze the requirements for a given organizational structure to select the most appropriate networking architecture, topologies, transmission mediums, and technologies	3	1	1	2	-				1		1		1	1	
310245.2	Demonstrate design issues, flow control and error control	3	2								i de dins			1	1	1
310245.3	Analyze data flow between TCP/IP model using Application, Transport and Network Layer Protocols.	2	3	3	3	2	3		-	-	-	-	-	1	1	1
10245.4	Illustrate applications of Computer Network capabilities, selection and usage for various sectors of user community.	1	2	2	2	3	3	-	-	2	1	1	-	-	1	1
10245.5	Illustrate Client-Server architectures and prototypes by the means of correct standards and technology.	2	2	2	3	3	3					2	2	1	1	1
10245.6	Demonstrate different routing and switching algorithms	2	2	1	2	2	2	-	1	2	1	2	2	1	•	1
310250	Design and Analysis of Algorithms		in street						-	1	-	1	1	1	1	1
10250.1 F	Formulate the problem			Wat Inter											16-70	
	Analyze the asymptotic performance of algorithms.	1	3	2	1	-	-	-	1	1	-		1	1		-
0250.3 I	Decide and apply algorithmic strategies to solve given problem	1	2	1	2	-	1	-	-	1	-		1	1	1	1
0250.4 F	Find optimal solution by applying various methods	2	1	2	1	-	1	-	-	1	-	-	1	1	1	-
A	Analyze the performance of merge sort and quick sort algorithms	1	2	2	2	2	-	-	-	1	1	-	1	-	1	1
OTTOTAL CI	sing divide and conquer technique	1	1	2	1	-	-	-	-	-	-		1	1	1	1
0250.6	Design algorithms using dynamic programming and back tracking nethods.	1	2	2	2			-	-	-	-		1	1	-	1
					(5)	OF A P	-					and a second		1	- 7	1

PUNE-45

Genba Sopanrao Moze College 25/1/3, Balewadi, PUNE-2

310251	The state of the s		T	1	1	1			-					44		
310251.	Analyze and synthesize system software	1		-	-											
310251.2		-	1	2	1	1	-	-	-	-	-	-	-	1	1	1
310251.3		2	2	1	3	1	-	-	-	1	-	-	-	-	1	
310251.4	Understand the concepts related to deadlock and memory	1	1	2	1	-	1	-	·	-	-	1	-	1	1	1
310251.5	Understand the concepts of virtual memory management, file system	1	1		+	-	+		-	-		-	2	1	1	1
310251.6	Understand the concepts of secondary storage structure, protection and case study of Linux operating system.	1	1	-	-	-	-	-	-	-	-	-	2	1	1	1
310252	Embedded Systems and Internet of Things															
310252.1	Implement an architectural design for IoT for specified requirement	1	2	2	1	-	-	1	3		2					-
310252.2	great Societal Chancing using 101	1	3	3	2	2	1						-	1	-	1
310252.3	Choose between available technologies and devices for stated IoT	3	2	2	2	1	1	1	3	1	2	-	-	1	1	1
310252.4	Understand device drivers and interrupt service mechanism.	2				1	1	1	-	-	2		-	-	1	1
310252.5	Apply threads, tasks, process, semaphores and RPC for IPC.	2	-	-	-	-	-	-	-	-	-	-	2	1	1	1
310252.6	Develop embedded systems modules using RTOS	2	-	-	-	-	-	-	-	-	-	-	2	1	1	1
310253	Software Modeling and Design	1 7 0 1											-	1	1	-
310253.1	Analyze the problem statement (SRS) and choose proper design	3	2													
310253.2	Design and analyze an application using UML modeling as	1	2	1	-	-	-	-	-	-	-	-	-	1	1	1
310253.3	Apply design patterns to understand reusability in OO design	1	2	1	-	-	-	-	-		-		-		1	-
310253.4	Decide and apply appropriate modern tool for designing and	3		1	-	2	-	-	-	-	-		-	1	1	1
310253.5	Decide and apply appropriate modern testing tool for testing web-	1	3	2	1	-	-	•	-	-	-	-		1	1	1
310253.6	Apply their knowledge of modelling and design to solve	1	2	2	-	-	-	-	-	-	-	-	-	1	1	1
310254	Web Technology													1		1
310254.1	Analyze given assignment to select sustainable web development	1	2	•		1							404		LILE A	
310254.2	Develop web based application using suitable client side and	1	3	2	1	-	-	1	3	-	2	-	-	1	1	1
310254.3	Develop solution to complex problems using appropriate method, technologies, frameworks, web services and content management	3	2	2	2	3	1	1	3	1	2	-	-	1	-	1
102514	Develop Client-Side promains using JavaScript and Server-Side	,			-		1	1			2	-	-	1	1	1
	The state of the s		-	2	-	-	-	-	-	-	-	-	2	-	1	1
	his souther desease out they associal southers (Others and Tarkhone.	3		1	-	-	-	-	-	-	-	-	2	1	1	1
	and the state of t		-	2	-	-	-	-	-	-	-	-	2	1	1	-



Genba Sopanrao Moze College 25/1/3, Balewadi, PUNE-41

Course Coc 410241	de Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1				PS	PS
410241	High Performance Computing										0	11	12	01	02	0
410241.1	Describe different parallel architectures, inter-connect networks, programming models	3	2	3	2	2	2	2	1	1	1	,			357	
410241.2	Develop an efficient parallel algorithm to solve given problem	2	3	3	1	1	1	1	1		1		1	1	1	1
410241.3	Analyze and measure performance of modern parallel computing systems	3	2	3	3	3	1	1	1	1	1	1	1	1	1	
410241.4	Build the logic to parallelize the programming task	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
410242	Artificial Intelligence and Robotics												1	1	1	
410242.1	Identify and apply suitable Intelligent agents for various AI applications	2	3	2	3	3	2	2	1	1	1	1	1	1		
410242.2	Design smart system using different informed search / uninformed search or heuristic approaches.	3	3	2	2	1	3	1	1	1	1	1	1	1	1	1
410242.3	Identify knowledge associated and represent it by ontological engineering to plan a strategy to solve given problem	3	3	2		2	1	1	1	1			1	1	1	1
410242.4	Apply the suitable algorithms to solve AI problems	2	2	3		2	1	2	1	1		1	2	1	1	2
410243	Data Analytics													-	1	
	Write case studies in Business Analytic and Intelligence using mathematical models	3	2	2	3	1	2	2	1	3	1	1	2			
	Present a survey on applications for Business Analytic and Intelligence	3	3	2		1	3	1	2				+	-	1	1
410243.3	Provide problem solutions for multi-core or distributed, concurrent/Parallel environments	1	3	2	2	2	1	1	2			+		-	1	1
410244(C)	Pervasive & Ubiquitous Computing			100											+	
10244(C).1	Design and implement primitive pervasive applications													90		
10244(0) 2	Analyze and estimate the impact of pervasive computing on future computing applications and society	2	2		3 3			2	3							1
10244(C) 3	Develop skill sets to propose solutions for problems related to pervasive computing system	3			2 2	+	1			2	2 1		1 1 1 2 1	1	1	1



Genba Sopanrao Moze Coll 25/1/3, Balewadi, PUNE

410244(C).	Design a preliminary system to meet desired needs within the constraints of a particular problem space	1	1	3	1	2	3	1 2	2	1	Τ,	Τ.	Τ.	T	T	Т
		-		-	-		-	-		1	1	1	3	1	1	
410245(B)	danty Assurance	+	+	+	+	_	_									†
410245(B).	Describe fundamental concepts in software testing such as manual testing, automation testing and software quality.	2	3	2	3	3	2	1					-		-	#
410245(B).2	2 Design and develop project test plan, design test cases, test data, and conduct test operations	2	2	2	2	+		2	3	1	1	+	1	1	1	1
410245(B).3	Apply recent automation tool for various software to still		-		-	1	3	1	1	2	2	1	2	1	1	
410245(B).4	Apply different approaches of quality management, assurance, and quality standard to software system	3	3	3	2		1	3	2	1	1	3	2	1	1	#
410245(B).5	Apply and analyze effectiveness Software Quality Tools	2	3	2	3	2	3	2	2	1	1	1	3	1	1	
410250	W. D.				-	1-	1	1	1	1	2	1	1	1	1	
	Machine Learning					-										
410250.1	Distinguish different learning based applications	3	2	3	1 2	1								- 15		
410250.2	Apply different preprocessing methods to prepare training data set for machine learning.	2	3	3	2	1	2	2	1	1	1	1	1	1	1	1
410250.3	Design and implement supervised and unsupervised machine				1	1		1	1	1	1	1	1	1	1	1
410250.4	Implement different learning models	3	2	3	3	3	1	1	1	1	1	1	1	1	1	1
410250.5	Learn Meta classifiers and deep learning concepts	3	3	3	1	1	1	2	1	1	1	1	1	1	1	1
A STATE OF	deep rearring concepts	2	3	3	3	1	1	2	1	1	1	1	1	1	1	1
410251	Information and Cyber Security	111111			1		BULLEY		2.7				1	1	1	1
410251.1	Gauge the security protections and limitations provided by today's		Butte	1						HV.						
410251.2	Identify information security and cyber security threats.	3	2	3	2	2	2	2	1	2	1	2	1	2	1	
410251.3	Analyze threats in order to protect and cyber security threats.	2	3	3	2	1	1	1	1	1	1	1	1	2	1	1
410251.4	Analyze threats in order to protect or defend it in cyberspace from Build appropriate security solutions against cyber-attacks.	3	3	3	3	3	1	2	1	1	1	2	1	1	1	1
	appropriate security solutions against cyber-attacks.	3	3	3	1	1	1	3	2	1	2	1	2	2	1	1
410252(C)	Embedded & Paul Time O									1	-	1	4	1	1	1
	Embedded & Real Time Operating System Recognize and classify embedded and real-time systems.		Mar.										+	-	-	
	Explain communication has a real-time systems.	3	2	3	2	2	2	2	1	1	1	,	,			
	Explain communication bus protocols used for embedded and real-time systems.	2	3	3	1	1	1	2	2	1	1	2	1	1	1	2
10252(C).3	Classify and exemplify scheduling algorithms.	3	2	3	2	2	2				1	-	1	1	1	1
0252(C).4	Apply software development process to a given RTOS application.	3	2/2	(JEC)	3 QF	3	2	2	1	1	1	1	1	1	2	1
			1						1	1	1	1	3	1	1	1
			S. MOZ	PUN	=-45	EERIM								Ger	ba S	On

PRINCIP Genba Sopanrao Moze 25/1/3, Balewadi, P

	5 Design a given RTOS based application.	3	3	3	3	1	1	2	3	1	3	1	1	1	1	1
410253	Cloud Computing			-			- 6.1									
410253.1	To install cloud computing environments.	2	2	1	-	-										
	To develop any one type of cloud.	3	2	3	2	2	2	2	2	2	2	1	2	1	1	2
	To explore future trends of cloud computing.	3	3	3	2	1	1	3	2	1	1	2	1	3	2	1
	1 croud computing.	3	2	2	3	3	3	1	1	2	3	1	2	1	2	,



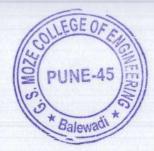
PRINCIPAL

Genba Sopanrao Moze College
25/1/3, Balewadi, PUNE-41:

"EMPOWERMENT THROUGH TECHNOLOGICAL EXCELLENCE" GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

Department of Computer Engineering Academic Year 2021-22

Sr. No.	Course Co	Academic Year 2021-22
	Harry Folker	Course Name Semester - III
1	210241	DiscreteMathematics
2	210242	Fundamentals of Data Structures
3	210243	Object Oriented Programs (O.C.P.)
4	210244	Object Oriented Programming (OOP) Computer Graphics
5	210245	Digital Electronics and I is Dis
		Digital Electronics and Logic Design Semester - IV
6	207003	
7	210252	Engineering Mathematics III
8	210253	Data Structures and Algorithms Software Engineering
9	210254	Microprocessor
10	210255	Principles of Programs
Transition of	210233	Principles of Programming Languages
11	310241	Semester - V
12	310242	Database Management Systems
13	310243	Theory of Computation
14	310244	Systems Programming and Operating System
15	310245(A)	Computer Networks and Security
	310213(A)	Internet of Things and Embedded Systems
31	310251	Semester - VI
17	310252	Data Science and Big Data Analytics
18	310253	Web Technology
19	310254(C)	Artificial Intelligence
	310234(C)	Cloud Computing
20	410241	Semester - VII 2015 pattern
21	410242	High Performance Computing
22	410243	Artificial Intelligence Data Analytic
23	410244(C)	Data Analytic
24	410245(B)	Pervasive & Ubiquitous Computing
Do Harri	410243(B)	Software Testing and Quality Assurance
25	410250	Semester - VIII 2015 pattern
26	410251	Machine Learning
27	410252(C)	Information and Cyber Security
28		Embedded & Real Time Operating System
	110233	Cloud Computing



Genba Sopanrao Moze College 25/1/3, Balewadi, PUNE-41:

Academic Year 2021-22

Course Cod	e Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	I non							
210241	Discrete Mathematics					100	100	PO/	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO:
210241.1	Design and analyze real world engineering problems by applying set theory, propositional logic and mathematical induction	3	3	3	2	-			•	•				1	1	1
210241.2	Develop skill in expressing mathematical properties of relation and function	3	3	3	2	-										
210241,3	Identify number of logical possibilities of events to design professional engineering Solutions	3	3	3	2					Tes				1	1	1
210241.4	Model and solve computing problem using tree and graph Analyze the properties of binary operations and evaluate the algebraic structure	3	3	3	2									1	1	1
210241,5	Apply abstract algebra in combinatorics, coding theory and questions regarding geometric constructions	3	3	3	2	-										
210241.6	Analysis concept of Algebric structures	3	3	3	2	-								1	1	1
210242	Fundamentals of Data Structures												-	1	1	1
210242.1	Design the algorithms to solve the programming problems, identify appropriate algorithmic strategy for specific application, and analyze the time and space complexity.	2	2	1	2		-	-	-	-				1	1	1
210242.2 I	Discriminate the usage of various structures, Design/Program/Implement the ppropriate data structures; use them in implementations of abstract data types and dentity the appropriate data structure in approaching the problem solution.	1	2	2	1	-	-	-	-		-			1	1	1
210242.3 D	demonstrate use of sequential data structures- Array and Linked lists to store and rocess data.	1	1	1												
210242.4 U	nderstand the computational efficiency of the principal algorithms for searching and choose the most efficient one for the application.	1	-	1								•	•	1	1	1
	ompare and contrast different implementations of data structures (dynamic and atic).	1	1		1		+						•	1	1	1
10242.6 Ur sol	nderstand, Implement and apply principles of data structures-stack and queue to live computational problems.	1	1	1	1	1 .			000			-		1	1	1
					min R	11	(9)	-	1	10			-	1	1	1

PUNE-45

* Balewadi *

PRINCIPAL²

Genba Sopanrao Moze College of Engg. 25/1/3, Balewadi, PUNE-411 045

210243	Object Oriented Programming(OOP)			1	1	1		1	1	1	1	1	1				
210243.1	Apply constructs- sequence, selection and iteration; classes and objects, inheritance, use of predefined classes from libraries while developing software	2	1	1	1												
210243.2	Design object-oriented solutions for small systems involving multiple objects	1	2	1	1											1	1
210243.3	Use virtual and pure virtual function and complex programming situations.	2	1	2	2		-	-	-	-	-	-	-	1	1	1	1
210243.4	Apply object-oriented software principles in problem solving.	2	1	2	1				-	-					1	1	1
210243.5	Analyze the strengths of object-oriented programming.		1	-	, i		-	-		-		-	-	1	1	1	1
210243.6	Develop the application using object oriented programming language(C++).		1	1	1	-	-			-	-	-	-	-	1	1	1
210244	Computer Graphics			1	-		-	-	*		-	*		1	1	1	1
210244.1	Identify the basic terminologies of Computer Graphics and interpret the mathematical foundation of the concepts of computer graphics.	2	1	1					•						1	1	1
210244.2	Apply mathematics to develop Computer programs for elementary graphic operations.structure in approaching the problem solution.	3	**	1	1										1	1	1
210244,3	Illustrate the concepts of windowing and clipping and apply various algorithms to fill and clip polygons.	1	2	001	1										1		
10244.4	Understand and apply the core concepts of computer graphics, including ransformation in two and three dimensions, viewing and projection.	2	1	1	1					-					1		
102445	Understand the concepts of color models, lighting, shading models and hidden surface limination.	1		1						-							
0244.6	reate effective programs using concepts of curves, fractals, animation and gaming.	-	2	2	1		-				-				1	1	1



Genba Sopanrao Moze College 25/1/3, Balewadi, PUNE-41

								S. MOZA	1	NE-	1	NEERWA				Ge	nba Sop 25/1/3
	Strang Strange.							1/s	ON	EUE	VA E						1
10252 6	Use appropriate modern tools to understand and analyze the functionalities confined to the secondary storage.	2	1	1	1			-	-	-				-	1	1	1
10252.5	Analyze the algorithmic solutions for resource requirements and optimization Use efficient indexing methods and multiway search techniques to store and maintain data.	1	-	1	1		-	-	-	-	-				1	1	
10252,4	anguage.	-	2	-	1		-	-	-	-	-				1	1	1
210252.3	Design and specify the constations of	2	-	-	-		-	-	-	-	-		-	-	1	1	1
210252.2	real- world applications. Apply non-linear data structures for solving problems of various domain.	1	2	-			-	*			-				1	1	1
210252.1	Data Structures and Algorithms Identify and articulate the complexity goals and benefits of a good hashing scheme for real- world applications.	2	1	2	1		-	-	-	-							
210252	Data St	100						-		-	-						
210252,6	Use appropriate modern tools to understand and analyze the functionalities confined to the secondary storage.											1	1	1	1	1	1
207003.5	Obtain Interpolating polynomials, numerical differentiation and integration, numerical solutions of ordinary differential equations used in modern scientific computing.	3	1	3		1	3	1	1	1	1	1	1	1	1	1	1
207003,4	Solve Algebraic and Transcendental equations and System of linear equations using numerical techniques.	2	3	2		3	1	1	1	1	1	1	1		1	1	1
207003.3	Apply Statistical methods like correlation and regression analysis and probability theory for data analysis and predictions in machine learning.	3	3	3		1	1	1	2	1	1	,				1	1
207003.2	Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing.	3	2	3		3	3	1	1	1	1	1	1	1	1	1	1
207003.1	Solve Linear differential equations, essential in modelling and design of computer- based systems.	2	3	3		1	1	1	1	1	1	1	1	1	1	1	1
207003	Engineering Mathematics III	3	2	3	-	2	2	2	2	1	1						
210245,6	Explain organization and architecture of computer system	886									-			-	1		
210245.	design specifications.	2							-	-	-	-	-		1	-	-
210245.	A Develop simple real-world application using ASM and PLD	2		2 .	2	1		-	-	-	-	-	- 1	-	1	-	
210245	.3 Design and implement sequential circuits	2	-		2	-	-		-	-	-			-	1		
210245		2	-		2	•	-	-	-	-	-				1	-	
210245		2	-	•	2			-							1	1	
21024	Digital Electronics and Logic Design				-		-	-				A CONTRACTOR		T			-

PRINCIPAL

Genba Sopanrao Moze Colle 25/1/3, Balewadi, PUNE

210253	Software Engineering		+		-	-	-									
210253.1	At	-	2	-			-		-	-	-			1	1	-
210233,1	Analyze software requirements and formulate design solution for a software.	1		-			2	2	2							1
210253.2	Design applicable solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal and economic concerns.			2			2		1.	1.				1	1	1
210253.3	Apply new software models, techniques and technologies to bring out innovative and novelistic solutions for the growth of the society in all aspects and evolving into their continuous professional development.		2	2	-					-				1	1	1
210253.4	Model and design User interface and component-level.		2	2		-								1		1
210253.5	Identify and handle risk management and software configuration management.		2	2		-	-	+		-	DIN (* 8)			1	1	1
210253.6	Utilize knowledge of software testing approaches, approaches to verification and validation.	1	1.	1	1	1	-	1	-	-			-	1	1	1
210253,7	Construct software of high quality – software that is reliable and that is reasonably easy to understand, modify and maintain efficient, reliable, robust and cost-effective software solutions.												-	1	1	1
210254	Microprocessor	Man C														
210254.1		2	2	2	2	-		Ι.	Ι.							
210254.2	Exhibit skill of assembly language programming for the application.	2		1									-	1	1	-
210254.2	Classify Processor architectures.	2		2		-		-	-		-			1	1	
210254.3	Illustrate advanced features of 80386 Microprocessor.	2	-			-			-	-			-	1	1	
210254.4	Compare and contrast different processor modes.		-	2	-	-	-	-					100 2/100	1	1	
210254.5	Use interrupts mechanism in applications	2	-	2	•	-	*	-	-		444			1	1	
210254.6	Differentiate between Microprocessors and Microcontrollers.	2	- /	-	-		-		-	-			-	1	1	
210254.7	Identify and analyze the tools and techniques used to design, implement, and debug microprocessor-based systems.	2	1	1	1	•		-	-	-		-	-	1	1	
210255	Principles of Programming Languages										Service of	5.44				
		2	2	2	2										Name of the last	M. August
210255,1	Describe project life cycle and the domains of Project ManagementDescribe project life cycle and the domains of Project Management	2	-	1	12-1			-						1	-1	1
210255.2	Explain networking methods and their applications in planning and management	2		2										1	1	1
	Categorize the materials as per their annual usage and also Calculate production rate of construction equipment	2		2	-			-	-	-		-	-	1	1	1
10255,4	Demonstrates resource allocation techniques and apply it for manpower planning.	2		2	-			-	-	-	-	1.5.6		1	1	1
10255,5 U	Inderstand economical terms and different laws associated with project management	2	1	-				-		-	-	* 0	- 1	1	1	1
	apply the methods of project selection and recommend the best economical project	2	1				1/2	EG	EOF	K		-	-	1	1	1
		0				1	3	-	- 1	(0)	1			1	1	1
							ZOW 'S'	UN	E-4!	EERIIG					Ge	enba So
							1	Bale	wadi	*//						25/1/3

PRINCIPAL

Genba Sopanrao Moze Coll 25/1/3, Balewadi, PUNE

Course		Doc	non	T	TE											
Code	Name of Course	PO1	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
310241	Database Management Systems															
310241.1	Analyze and design Database Management System using ER model	2	2	3	1	-	-	-	1	-			3	1	1	1
310241.2	Implement database queries using database languages	-	2	3			2			,			1 552			1
310241.3	Normalize the database design using normal forms deadlock.	-	2	3	-	1	-		-	1	-	-	3	1	1	1
310241.4	Apply Transaction Management concepts in real-time situations	2		2	2				1		1		3	1	1	1
310241.5	Use NoSQL databases for processing unstructured data	-	2	3		-	2	-					3		1	1
310241.6	Differentiate between Complex Data Types and analyze the use of appropriate data types	2	2	-		-	-	-	-	1		1	3	1	1	1
310242	Theory of Computation										Mean					
310242.1	Understand formal language, translation logic, essentials of translation, alphabets, language representation and apply it to design Finite Automata and its variants	3	3	2	2	1	-	-	-	-		-	2	1	1	1
310242.2	Construct regular expression to present regular language and understand pumping lemma for RE	3	2	2	2	1			-	-	-	-	1	1	1	1
310242.3	Design Context Free Grammars and learn to simplify the grammar	3	3	2	2	1	2	-		-	1		1	1	1	1
310242.4	Construct Pushdown Automaton model for the Context Free Language	3	2	-	2	1	-	-	2	1	-	-	1	1	1	1
310242.5	Devise Turing Machine for the different requirements outlined by theoretical computer science	2	3	3	2	1	-	1	-	-	-	2	2	1	1	1
310242.6	Analyze different classes of problems, and study concepts of NP completeness	3	3	3	3	1	-	-	-	-	-	-	1	1	1	1
310243	Systems Programming and Operating System															
310243.1	Analyze and synthesize basic System Software and its functionality.	2	2	2	1	-	-	-	-	-	-	-				
310243.2	Identify suitable data structures and Design & Implement various System Software	2	2	1	2		-	-	-	-	-	-		1	1	1
310243.3	Compare different loading schemes and analyze the performance of linker and loader	1	2	I	10		4			1		1		1	1	1

PUNE-45 E

PRINCII Genba Sopanrao Moze 25/1/3, Balewadi, I

310243.4	Implement and Analyze the performance of process scheduling algorithms	2	1	1 2	,	1	.	,			_			7		
310243.5	i i i i i i i i i i i i i i i i i i i	2		1			-		1	-	-	-	1	1	1	
310243.6	Demonstrate memory organization and memory management policies	2	1	2	-					-	1	-	-	-	1	
310244	Computer Networks and Security									-	-	-	-	1	1	+
310244.1	Summarize fundamental concepts of Computer Networks architectures, protocols and technologies	, 1	1	1	2	2										
310244.2	Illustrate the working and functions of data link layer	1	1	-				-	-	-	-	1	1	1	-	1
310244.3	Analyze the working of different routing protocols and	3	1	2	1	2					1	-	-	1	1	1
310244.4		1	2	1	2				-	-	-	-	1	1	1	1
310244.5	Illustrate role of application layer with its protocols, client- server architectures	1	3	1		2		-	-	-	-	1	1	-	1	-
310244.6	Comprehend the basics of Network Security	1	-	2	1	1	-	1	1	-		-	6-	1	1	1
310245(A)	Internet of Things and Embedded Systems				1	-	1	-	-	-	-	-	1	1	1	1
	Understand the fundamentals and need of Embedded		10000													-
	Systems for the Internet of Things	3	1	1	2	-		-	-	1		1		1	,	
310245(A).2		3	2	1	2	1		-				1		1	1	1
310245(A).3	Apply design methodology for designing and implementing IoT applications	2	3	3	3	2	3			-		-		1	1	1
	CO4: Analyze IoT protocols for making IoT devices communication	1	2	2	2	3				2		1	7.5	1	1	1
310245(A).5	Design cloud based IoT systems	2	-			-	3	-	-	2	1	2	2	1	1	1
310245(A).6	Design and Develop secured IoT applications	2	2	2	3	2	2	-	-	2	1	2	2	1	1	1
310251	Data Science and Dir. D					-	1 -	-	1	1	-	1	1	1	1	1
	Data Science and Big Data Analytics Analyze peods and alegerates		ecu.		10.00									1		CU T
310251.1	Analyze needs and challenges for Data Science Big Data Analytics	1	3	2	1		-		1	1						
310251.2	Apply statistics for Big Data Analytics	1	2	,					1	1	-	-	1	1	1	1
310251.3	Apply the lifecycle of Big Data analytics to real world	2	1	1	2	-	1	-	-	1	-	-	1	1	1	1
310251.4	Implement Big Data Analytics using Python programming	1	2	2	1	-	1	-	-	1	-	-	1	1	1	1
1	Implement data visualization using visualization tools in Python programming	1	2	2	2	2		-	-	1	1		1	1	1	1
					(0)	EBE	UFF	1	-	1	-	1	1	1	1	1

PRINCIPAL

Genba Sopanrao Moze Coll

25/1/3, Balewadi, PUNE

310251.	Design and implement Big Databases using the Hadoop ecosystem	1	2		1	2	2		Τ.	T	T	-	_				
24025			-	-		-	-	-	1		1	-	1	1	1	1	1
310252		_	-	-	-	-										-	+
310252.		1	1		,	1	1										
310252.	Apply the client side technologies for web development	-	-			1	1	-	-	-	-	-	-	-	1	1	1
310252.3	Analyze the concepts of Servlet and JSP	-	~	1		3	1	-	-	-	1	-	-	-	-	-	1
310252.4	Analyze the Web services and frameworks	2	-	2		1	-	1	1 -	1 .	1		-	-	1	1	1
310252.5	Apply the server side technologies for web development	1	3	1	1	2	2	1	-	1	-	-	1	-	1	1	1
The state of	Create the effective and the composition with the composition of the composition and t	1	1	2			3	-	1			-	-	1	1	1	1
310252.6	Create the effective web applications for business functionalities using latest web development platforms	2	1		2		1	1	-	1	-	1	-	-	1	1	1
310253	Artificial Intelligence									-			-	-	1	1	1
310253.1	Identify and apply suitable Intelligent agents for various AI applications	1	2	2	1				1	3							
310253.2	Build smart system using different informed search / uninformed search or heuristic approaches	1	3	3	2		3	1		3		2	-	-	1	1	1
310253.3	ontological engineering to plan a strategy to solve give	3	2	2	2	-	-			3	1	2	-	•	1	1	1
310253.4	Apply the suitable algorithms to solve AI problems	1	-		-			1	1	-	-	2	-	-	1	1	1
310253.5	systems	-	2	2	1	-		-	2	1	3	2	-		1	-	1
310253.6	Represent complex problems with expressive yet carefully constrained language of representation	1	2	2	1	-		-	2	3	1	2	-	-	1	1	1
	representation	1017			1	1			1	3	1	2	-	-	1	1	1
310254(C)	Cloud Computing			-						6							
310254C.1	Understand the different Cloud Computing environment	1	2	1		1	+	+	-		and .						
	Use appropriate data storage technique on Cloud, based on Cloud application	1	1	1			-	+	-	-	-	-	-	-	1	1	1
10254C.3	Analyze virtualization technology and install virtualization software	1	2			-	-	-	-	-	-	-	-	-	1	1	1
	Develop and deploy applications on Cloud		-	1		2	-		-	-	-	-	-	-	1		1
10254C.5	Apply security in cloud applications	1	2	2	1	-	-	-		-		-	-				1
	Use advance techniques in Cl. 1.8	2	1	2	2	-		-		_	-	-	-	-	-	1	1
	Use advance techniques in Cloud Computing	1	2	2	1	-	SEC	IF C		-	-	-	-	-	1	1	1
			DAY.		11.	00	1	57				-			1	1	-

PUNE-45 PUNE-45 Balewadi *

PRINCIPAL Genba Sopanrao Moze Co 25/1/3, Balewadi, PUN

	Name of Course	POI	PO2	PO3	POA	POS	POC	DO.	PO8		PO1	PO	PO	DC	TP:C	T
410241	High Performance Computing	-		- 00	104	1 03	106	PO7	PO8	PO9	0	11		PS O1	PS O2	
410241.1	Describe different parallel architectures, inter-connect networks, programming models	3	2	3	2	2	2	2					12	01	02	
410241.2	Develop an efficient parallel algorithm to solve given problem	1 2	3		1		2	2	-	-	-	•	-	1	1	1
410241.3	Analyze and measure performance of modern parallel computing systems	3	2	3	3	1	1	1	-	-	-	-	-	1	1	1
410241.4	Build the logic to parallelize the programming task	3	3	1	1	3	1	2	-	-	-	-	-	1	1	1
410242	Artificial Intelligence and Robotics						1	2	-	-	-	-	-	1	1	1
4102421	Identify and apply suitable Intelligent agents for various AI applications	2	3	2	2	2										
	Design smart system using different informed search / uninformed search or heuristic approaches.	3	3	2	3	3	2	2		-	-	-	-	1	1	1
410242.2	Identify knowledge associated and represent it by ontological engineering to plan a strategy to solve given problem.	3	3	2	2	1	3	1	-	-	-	-	-	1	-	1
410242.4	Apply the suitable algorithms to solve AI problems	2	2	3		2	1	2	-	-	•	-	-	1	1	1
	Data Analytics		200					-	+		-	-	+	1	1	2
	Write case studies in Business Analytic and Intelligence using nathematical models	3	2	2	3	1	2	2				1	+	1		
AL.	resent a survey on applications for Business Analytic and ntelligence	3	3	2		+	-	2		3	1	1 3	2 1		1	1
410243.3 Pi	rovide problem solutions for multi-core or distributed, oncurrent/Parallel environments	1	3		2 2	+	3	-	2	-	1 1	1	2	1		1
				-	2 2	+	1	1	2	- 2	2 1	2	2	1	1	1
	ervasive & Ubiquitous Computing				-	+	-	-								
410244(C).2 At	esign and implement primitive pervasive applications nalyze and estimate the impact of pervasive computing on	3	3	-	3 3	2	2 2	2 1	3 1	1 1	1	1	-	-		
14	ture computing applications and cociety	2	2	2	2 1	3			. 2			1	2	-	1	+
110244(C).3 per	evelop skill sets to propose solutions for problems related to rvasive computing system	3	311	EF	2	1		1	1	1	1	2	1	1	1	+
		MOZE	ó	NE-4	(5)								Ge	enba 25/	Sopa	anı

PRINCIPA Genba Sopanrao Moze C 25/1/3, Balewadi, PU

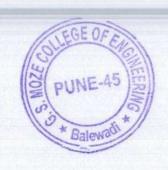
410244(C).4 Design a preliminary system to meet desired needs within the constraints of a particular problem space		1	1	T	, T	. 1	T		1								
				1	1	3	1	2	3	2	2	1	-	1	3	1		
410245(The state of the s		LTA					1	1	-	-		-	1	1	1	1	
410245(B	1 Describe fundamental concents:			UT T				+	-	-								
120245(E	manual testing, automation testing and software quality		2		1	+	-	+	-									+
410245(B			2	3	2		3	3	2	2	3							+
	and conduct test operations	1,	_			+	+	+	-	-			_	-	-	1	-	1
410245(B	Apply recent automation tool forms		2	2	2		2	1	3	1	1	2	2	1	1			+
410245(B)		3	3	3	2	+	2	2	1	-			-	1	2	1	1	1
	and quality standard to software system		,]			1	-	-	1	3	2	1	1	3	2	-	-	1
410245(B)	.5 Apply and analyze effectiveness Software Quality Tools	3	,	1	3	1	. 3	3	3	2	2	_						1
	Tools Software Quality Tools	2	2	3	2	3	2		+	-					-	1	1	1
410250	Machine Learning		1	T II		1	1	+	-	-	1	1	2	1	1	1	-	1
410250.1	Distinguish ties		+			+	+	-	-									-
	Distinguish different learning based applications	3	+	2	-	+			1									-
410250.2	Apply different preprocessing methods to prepare training data set for machine learning.	1 3	+	2	3	2	2	2		2	1	1	1	1	1	1		-
410250.2		2	1	3	3	1	1	1.					1	1	1	1	1	1
410250.3	Design and implement supervised and unsupervised machine	+	+			1	1	1	1			1	1	1	1	1	1	1
410250.4	The different learning models	3		2	3	3	3	-		1.	-	+	-	-	1			•
410250.5	Learn Meta classifiers and deep learning concepts	3		3	3	-	-	-	1	-	-	-	-	-	-	1	1	1
	concepts tearing concepts	2		3	3		1		+	-	-	+	-	-	-	1	1	1
410251	Information and Cyber Security						-	-	-	-	-		-	-	-	1	1	1
410251.1	Gauge the security protection	17					-		-	-								
410251.2	Gauge the security protections and limitations provided by today's	3	-	2	3	_											+	
410251.3	I Security and cyber are the	2	+	3	-	2	2	2	2	1	2		1 :	2	1	2	1	1
410251.4	relative threats in order to protect or defend it :	3	-		3	2	1	1	1	1	1			_	_	-		_
410231.4	Build appropriate security solutions against cyber-attacks.		-		3	3	3	1	2	1	1	-	-		-		-	1
4404		3	3		3	1	1	1	3	2	1	1 2	_	_	_	2	-	1
410252(C)	Embedded & Real Time Operating System									-	1	+	1	2				1
410252(C).1	Recognize and classify embedded and real time	and the second			len l						-	-	-	-				
4111757/63 31	Tam communication bus protocol-	3	2		3	2	2	2	2		-	-						
(C).2	real-time systems.	2					-	4	2	1	-	-	1	-	1	-	2	
410252(C).3	Classify and exemplify scheduling algorithm	2	3	3	3	1	-		2	2	-	-	2					-
110252(0) 41	apply software development process to	3	2	3		3	2	2					1	-	1	1	-	
(C).4	application.	2		1	avu	CCF	0	2	1	-	-	-	1	-	1	2	1 -	1
Della della della	No. of the second secon	3	2	1/3	S	-	3	1/13	100							1	+	-

PUNE-45 PRINCIPA

Genba Sopanrao Moze C

25/1/3, Balewadi, PU

410253 Cloud Computing 410253.1 To install cloud computing environments. 410253.2 To develop any one type of cloud. 410253.3 To explore future trends of cloud computing. 3 2 3 2 2 2 2 2 2 2 2 2 2 2 - 2 - - 2 -		5 Design a given RTOS based application.	3	3	3	3	1	1	-	3	1	3	1		1		_
#10253.1 To install cloud computing environments. 3 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	410253	Cloud Computing										1	1	-	1	1	+
10253.2 To develop any one type of cloud.																	+
0253.3 To explore future trends of cloud computing. 3 3 3 - 1 1 3 2 2 - 3 2	0253.2	To develop any one type of cloud	3	2	3	2	2	2	2	2	2	2					╀
3 2 2 2 3 3 2 2 - 3 2	0253.3	To explore future trends of cloud come	3	3	3	-	1	1	3	2	- 4	- 4	-	2	-	-	L
		The state dends of cloud computing.	3	2	2	2	2	2	-	4	-	-		-	3	2	



PRINCIPAL

Genba Sopanrao Moze College of Engg.
25/1/3, Balewadi, PUNE-411 045

" EMPOWERMENT THROUGH TECHNOLOGICAL EXCELLENCE " GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING



Department of Computer Engineering Academic Year 2022-23

Sr. No.	Course Code	Course Name
		Semester - III
1	210241	Discrete Mathematics
2	210242	Fundamentals of Data Structures
3	210243	Object Oriented Programming(OOP)
4	210244	Computer Graphics
5	210245	Digital Electronics and Logic Design
		Semester - IV
6	207003	Engineering Mathematics III
7	210252	Data Structures and Algorithms
8	210253	Software Engineering
9	210254	Microprocessor
10	210255	Principles of Programming Languages
		Semester - V
11	310241	Database Management Systems
12	310242	Theory of Computation
13	310243	Systems Programming and Operating System
14	310244	Computer Networks and Security
15	310245(A)	Internet of Things and Embedded Systems
		Semester - VI
16	310251	Data Science and Big Data Analytics
17	310252	Web Technology
18	310253	Artificial Intelligence
19	310254(C)	Cloud Computing
		Semester - VII
20	410241	Design and Analysis of Algorithms
21	410242	Machine Learning
22	410243	Blockchain Technology
23	410244(A)	Pervasive Computing
24	410245(D)	Software Testing and Quality Assurance
		Semester - VIII
25	410250	High Performance Computing
26	410251	Deep Learning
27	410252(A)	Natural Language Processing
28	410253(C)	Business Intelligence



PRINCIPAL PARTE OF THE PARTE OF

Genba Sopanrao Moze College of 25/1/3, Balewadi, PUNE-411 0

Academic Year 2022-23

	Name of Course	US IN INS	1		SE											
Course Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	POII	PO12	PSO1	PSO2	PSO
210241	Discrete Mathematics	1.110													1002	130
210241.1	Design and analyze real world engineering problems by applying set theory, propositional logic and mathematical induction	3	3	3	2									1	1	1
210241.2	Develop skill in expressing mathematical properties of relation and function	3	3	3	2		-			-		II CHE		1	1	1
210241.3	Identify number of logical possibilities of events to design professional engineering Solutions	3	3	3	2					-				1	1	1
210241.4	Model and solve computing problem using tree and graph Analyze the properties of binary operations and evaluate the algebraic structure	3	3	3	2	-			-	-	-	•	-	1	1	1
210241.5	Apply abstract algebra in combinatorics, coding theory and questions regarding geometric constructions	3	3	3	2	-				-				1	1	1
210241.6	Analysis concept of Algebric structures	3	3	3	2	-		-	-					1	1	1
210242	Fundamentals of Data Structures															
210242.1	Design the algorithms to solve the programming problems, identify appropriate algorithmic strategy for specific application, and analyze the time and space complexity.	2	2	1	2		-			-				1	1	1
210242.2 i	Discriminate the usage of various structures, Design/Program/Implement the appropriate data structures; use them in implementations of abstract data types and Identity the appropriate data structure in approaching the problem solution.	1	2	2	1	,	-	•	1-	-				1	1	1
210242.3 I	Demonstrate use of sequential data structures- Array and Linked lists to store and process data.	1	1	1	-	-										
-1024E.4	Understand the computational efficiency of the principal algorithms for searching and sorting and choose the most efficient one for the application.	1		1	-	-			-					1	1	1
(0	Compare and contrast different implementations of data structures dynamic and static).	1	1	-	1	-								4		
210242.6	Understand, Implement and apply principles of data structures-stack and queue to solve computational problems.	1	1	1	1	1								1	1	1

Genba Sopanrao Moze College of Engg. 25/1/3, Balewadi, PUNE-411 045

210243	Object Oriented Programming(OOP)	N/ON										1		1	1	
210243.1	Apply constructs- sequence, selection and iteration; classes and objects, inheritance, use of predefined classes from libraries while developing software	2	1	1	1							-		1	1	1
210243.2	Design object-oriented solutions for small systems involving multiple objects	1	2	1	1	1.							1	1	1	,
210243.3	Use virtual and pure virtual function and complex programming situations.	2	1	2	2		-		-			-	-	1	1	1
210243.4	Apply object-oriented software principles in problem solving.	2	1	2	1	-			-	-		-	1	1	1	1
210243.5	Analyze the strengths of object-oriented programming.	75	1		1					-				1	1	1
210243.6	Develop the application using object oriented programming language(C++).		-	1									1	1	1	1
210244	Computer Graphics													No.		
210244.1	Identify the basic terminologies of Computer Graphics and interpret the mathematical foundation of the concepts of computer graphics.	2	1	1										1	1	1
210244.2	Apply mathematics to develop Computer programs for elementary graphic operations.structure in approaching the problem solution.	3		1	1	-						•		1	1	1
210244.3	Illustrate the concepts of windowing and clipping and apply various algorithms to fill and clip polygons.	1	2		1							-		1	1	1
210244.4	Understand and apply the core concepts of computer graphics, including transformation in two and three dimensions, viewing and projection.	2	1	1	1			*						1	1	1
10244.5	Understand the concepts of color models, lighting, shading models and hidden surface elimination.	1		1				-		-				1	1	1
10244.6	Create effective programs using concepts of curves, fractals, animation and gaming.		2	2	1			-			30.14			1	1	1



PRINCIPAL
Genba Sopanrao Moze College
25/1/3, Balewadi, PUNE-411

210245	Digital Electronics and Logic Design	2							-						T			_
210245,	Simplify Boolean Expressions using K Map.	-	+		2	•	•					-			-	1		+
210245.		2	-	1 2	2	-		-	-	-	-				-	1		+
210245		2		1 2	2		•		-	-	-				-	1		+
210245.4		2	-	- 2		1		-	-	-			-			1		+
210245.5	Differentiate and Choose appropriate logic for its 10	2	2	-		-		-					1.			1		+
	gar opectifications.	2		-							1.		1.	+				+
210245.6	Explain organization and architecture of computer system									-			+		-	1		
207003	Engineering Mathematics III												-	+				_
207003.1	Solve Linear differential equations according	3	2	3	3	2	2	2	2	1	1	1	1	1		1	1	
	of computer-based systems.	2	3	3	1		1	1	1	1	1	1	1	1.				
207003.2	Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing.	3	2	3	3		3	1					1	1	-	1	1	
207003.3	Apply Statistical methods like correlation and regression analysis and probability theory for data analysis and predictions in machine learning.	3	3	3	1		1	1	2	1	1	1	1	1		1	1	
207003,4	Solve Algebraic and Transcendental equations and System of linear equations using numerical techniques.	2	3	2	3			1			1	1	1	1		1	1	
207003.5	Obtain Interpolating polynomials, numerical differentiation and integration, numerical solutions of ordinary differential equations used in modern scientific computing.	3	1	3	1		3	1	1	1	1	1	1	1			1	
210252.6	Use appropriate modern tools to understand and analyze the functionalities confined to the secondary storage.														1		1	1
210252	Data Structures and Algorithms															+	+	
210252.1	Identify and articulate the complexity goals and benefits of a good hashing scheme for real- world applications.	2	1	2	1	-		-		-	-	112		,	1		1	1
10252.2	Apply non-linear data structures for solving problems of various domain.		2	-	-	-				-	-	-	-		1		1	1
10252.3	Design and specify the operations of a seek	2	-		٠	-	-	-	-	-	-	-			1		1	1
10252	a mga lever programming language.		2		1	-				-		1			1			
10252,4	Analyze the algorithmic solutions for resource requirements and optimization	1	-	1	1	1.		-							'	1		1
10252.5	Use efficient indexing methods and multiway search techniques to store and maintain data.	2	1	1	1	-		-	-	•	-	-		*	1	1		1
10252.6	Use appropriate modern tools to understand and analyze the functionalities confined to the secondary storage.			7		-	-	-	-		•		-		1	1		1





Genba Sopanrao Moze College 25/1/3, Balewadi, PUNE-411

210253	Software Engineering	T	1		-		_											
210253,	A-1	1	- 2	2	-		-			-	-			-	-	1	1	
	Design applicable solutions in one or more application domains using software engineering approaches that increases	1			-		-	2		2	2 .					1		
210253,2	software engineering approaches that integrate ethical, social, legal and	d -			2			2						-			1	
210253.3	Apply new software models, techniques and technologies to bring out innovative and novelistic solutions for the growth of the society in all aspects and evolving into their continuous professional development.	-	2		2											1	1	
210253.4	Model and design User interface and component-level		-	-			-									1	1	
210253.5	Identify and handle risk management and software confirmation	-	2	1	2	•	-	-	-		-					1	. +	_
210253.6	Utilize knowledge of software testing approach		2	1	2												1	
	Tandation,	1	-	1		1					1.							1
210253.7	Construct software of high quality – software that is reliable and that is reasonably easy to understand, modify and maintain efficient, reliable, robust and cost-effective software solutions.																1	1
210254	Microprocessor			-	_													
210254.1	Exhibit skill of assembly language programming for the application.	2	2	2	1	2	-		1 -	1.			1 -					
210254.2	Classify Processor architectures.	2	-	1		-			-	-				-	1	1		
210254.3	Illustrate advanced features of 80386 Microprocessor.	2	-	2						-					- 1	1		-
210254.4	Compare and contrast different processor modes.	2		2			-		-	1	1		-		1	1		
210254.5	Use interrupts mechanism in applications	2		2			-							-	1	1		
210254.6		2		-											1	1		
210254.7	Differentiate between Microprocessors and Microcontrollers.	2	1	1		1					107			-	1	1		
	Identify and analyze the tools and techniques used to design, implement, and debug microprocessor-based systems.	Black										Ti li elle		-	1	1	-	-
210255	Principles of Programming Languages				+		-											
	Describe project life cycle and the days in the	2	2	2		2												
210255.1	ManagementDescribe project life cycle and the domains of Project Management Management	2		1					NHII!				-	-	1	1	1	
210255.2	Explain networking methods and their applications in planning and management	2					-						•	*	1	1	1	
210255,3	Categorize the materials as per their annual usage and also Calculate production rate of construction equipment	2		2			-	-	-	-					1	1	1	
210255.4	Demonstrates resource allocation techniques and apply it for manpower planning.	2	-	2			-	-	•	•	•				1	1	1	
210255.5	Understand economical terms and different laws associated with project management			2	-			-	-	•	•			-	1	1	1	
10255 6	Apply the methods of project selection and recommend the best conomical project		1					-	•		-				1	1	1	
	Project	2	1															



Genba Sopanrao Moze College 25/1/3, Balewadi, PUNE-41

TE

Course Code	Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	POP	POO	DO10	no.	PO12	noo.		T
310241	Database Management Systems						100	107	100	109	POI	POI	PO12	PSO1	PSO2	PSO
310241.1	Analyze and design Database Management System using ER model	2	2	3	1	-	-	-	1				3	1	1	
310241.2	Implement database queries using database languages	-	2	3			2		-		7		- 50	1	1	1
310241.3	Normalize the database design using normal forms deadlock.	-	2	3		1	2	-	-	1		-	3	1	1	1
310241.4	Apply Transaction Management concepts in real-time situations	2		2	2		_		1		1		3		1	1
310241.5	Use NoSQL databases for processing unstructured data	-	2	3	-		2	- 1					3	1	1	1
310241.6	Differentiate between Complex Data Types and analyze the use of appropriate data types	2	2			-	-			1	-	1	3	1	1	1
310242	Theory of Computation		Tibe (4615		
310242.1	Understand formal language, translation logic, essentials of translation, alphabets, language representation and apply it to design Finite Automata and its variants	3	3	2	2	1	-	-		-	-	-	2	1	1	1
310242.2	Construct regular expression to present regular language and understand pumping lemma for RE	3	2	2	2	1	-					-	1	1	1	1
310242.3	Design Context Free Grammars and learn to simplify the grammar	3	3	2	2	1	2	-			1	-	1	1	1	1
310242.4	Construct Pushdown Automaton model for the Context Free Language	3	2	-	2	1	-	-	2	1		-	1	1	1	1
310242.5	Devise Turing Machine for the different requirements outlined by theoretical computer science	2	3	3	2	1	-	1	_	-	-	2	2	1	1	1
	Analyze different classes of problems, and study concepts of NP completeness	3	3	3	3	1	-	-	-	-		-	1	1	1	1
310243	Systems Programming and Operating System															
310243.1	Analyze and synthesize basic System Software and its unctionality.	2	2	2	1	-	-		-	-		-				
310243.2 V	dentify suitable data structures and Design & Implement various System Software	2	2	1	2		-	-	-			-		1	1	1
310243.3 p	Compare different loading schemes and analyze the erformance of linker and loader	1	2	1	1	-	-		-	1		1		1	1	1



310243.4	Implement and Analyze the performance of process scheduling algorithms	2	1	2	1		1	-	1	-			1	1.	١.	1.
310243.5	Identify the mechanism to deal with deadlock and concurrency issues	2	2	1	2	-	-	-	-		1	-	-	-	1	1
310243.6	Demonstrate memory organization and memory management policies	2	1	2	1	-	-	-	-	-	-	-	-	1	1	1
310244	Computer Networks and Security														100	
310244.1	Summarize fundamental concepts of Computer Networks, architectures, protocols and technologies	1	-	1	2	2	1	-	-	-	-	1	1	1		1
310244.2	Illustrate the working and functions of data link layer	1	1	1	1	1		1			1			-		
310244.3	Analyze the working of different routing protocols and mechanisms	3	1	2	1	2		-	-	-	-	-	1	1	1	1
310244.4	Implement client-server applications using sockets	1	2	1	2	2						1	4			
310244.5	Illustrate role of application layer with its protocols, client- server architectures	1	3		-	1	-	1	1	-			1	1	1	1
310244.6	Comprehend the basics of Network Security	1	-	2	1	-	1	-	2	-	-	-	1	1	1	1
310245(A)	Internet of Things and Embedded Systems			1.000	T/E											
310245(A).1	Understand the fundamentals and need of Embedded Systems for the Internet of Things	3	1	1	2	-	-	-	-	1		1	-	1	1	1
310245(A).2	systems	3	2	1	2	1							J. V. S. A.			
310245(A).3	Apply design methodology for designing and implementing IoT applications	2	3	3	3	2	3	-		2		1	-	1	1	1
310245(A).4	CO4: Analyze IoT protocols for making IoT devices communication	1	2	2	2	3	3	-		2	1	2	2	1	1	1
310245(A).5	Design cloud based IoT systems	2	2	2	3	3	3		-	2	1	2	2	1	1	1
310245(A).6	Design and Develop secured IoT applications	2	2	1	2	2	2	-	1	1	-	1	1	1	1	1
310251	Data Science and Big Data Analytics			99.6												
310251.1	Analyze needs and challenges for Data Science Big Data Analytics	1	3	2	1				1	1			1	1	1	1
310251.2	Apply statistics for Big Data Analytics	1	2	1	2		,									,
310251.3	Apply the lifecycle of Big Data analytics to real world	2	1	2	1	-	1	-	-	1	-	-	1	1	1	1
310251.4	Implement Big Data Analytics using Python programming	1	2	2	2	2	-	-	-	1	-	-	1	1	1	1
310251.5	Implement data visualization using visualization tools in Python programming	1	2	2	1	2		-		1	1	1	1	1	1	1



310251.6	Design and implement Big Databases using the Hadoop ecosystem	1	2	1	2	2	-	1		1	-	1	1	1	1	
310252	Web Technology															+
	Implement and analyze behavior of web pages using	1	1	1		-										
310252.1 310252.2	HTML and CSS	1	1	2	1	1	-	-	-	-	-	-	-	1	1	1
310252.2	Apply the client side technologies for web development	-	2	1	3	1	-	1.4	-	1	-	-	-	1	1	1
310252.4	Analyze the concepts of Servlet and JSP	2	-	2	1	-	1	-	-	-	-	1	-	1	1	
310252.5	Analyze the Web services and frameworks	1	3	1	2	2	1	-	1	-	-	-	1	1	1	1
310232.3	Apply the server side technologies for web development	1	1	2	-	3	-	1	1	-	1		-	1	1	1
310252.6	Create the effective web applications for business functionalities using latest web development platforms	2	1	-	2	1	1	-	1	-	-	-	-	1	1	1
310253	Artificial Intelligence				1				-	-						+
310253.1	Identify and apply suitable Intelligent agents for various AI applications	1	2	2	1	-	,	1	3		2			1	1	1
310253.2	Build smart system using different informed search / uninformed search or heuristic approaches	1	3	3	2	3	1		3	1	2			1	1	1
310253.3	Identify knowledge associated and represent it by ontological engineering to plan a strategy to solve given	3	2	2	2	1	1	1	-		2	-		1	1	1
310253.4	Apply the suitable algorithms to solve AI problems	1	2	2	1			2	1	2	-				1	1
310253.5	systems	1	2	2	1			2		3	2	-	-	1	1	1
310253.6	Represent complex problems with expressive yet carefully constrained language of representation	1	2	2	1			1	3	1	2	-		1	1	1
310254(C)	Cloud Computing						m) 501	1-12-1			7772					
310254C.1	Understand the different Cloud Computing environment	1	2	1			14.11							2.41.200		
310254C.2	Use appropriate data storage technique on Cloud, based on Cloud application	1	1	1	-	-		-		-	1	-	-	1	1	1
310254C.3	Analyze virtualization technology and install virtualization software	1	2	1	-	2		-						1		1
310254C.4	Develop and deploy applications on Cloud	1	2	2	1									1	2701	1
310254C.5	Apply security in cloud applications	2	1	2	-	-	-	-	-	-	-	-	-	-	1	1
310254C.6	Use advance techniques in Cloud Computing	1	2	2	2	1	-	-	-	-	-	-	-	1	1	1
	Control of the second s		-	-	. 4	1						Aura I	1000	1	1	-



	de Name of Course	PO1	PO2	PO3	PO4	PO5	PO6	DO7	DOG	noo	2010	2011				
410241	Design and Analysis of Algorithms				101	103	100	FU/	PUs	PO9	PO10	PO11	PO12	PSO1	PSO	2
410241.1	Formulate the problem	1	2				-									
410241.2	Analyze the asymptotic performance of algorithms	2	3	-		-		-	-	-	-	-	2	1	1	
410241.3	Decide and apply algorithmic strategies to solve given problem	2	3	2		-		-	-	-			3	1		
410241.4	Find optimal solution by applying various methods	2	3	3	2	-	-	-		-	-	-	3	1	1	
410241.5	Analyze and Apply Scheduling and Sorting Algorithms.	2	2	2	2	-	-		_				3			
410241.6	Solve problems for multi-core or distributed or concurrent environments	2	2	1	2	-	-	-	-	-	-	-	-	1	1	
410242	Machine Learning															
11024201	Identify the needs and challenges of machine learning for real time applications.	2		-	2			1	1	1	1	1	1	1	-	
110242.2	Apply various data pre-processing techniques to simplify and speed up machine learning algorithms	2	1	-	1	1	1	1	1	1	1	1	1	2	1	
10242.3	Select and apply appropriately supervised machine learning algorithms for real time applications. Implement variants of multi-class classifier and	2	2	2	1	1	1	1	1	1	1	1	1	1	1	
10242.4	measure its performance.	2	2	2	1	1	1	1	1	1	1	1	1		1	
10242.5	algorithms.	2	2	2	1	1	1		-					1	2	
10242.6	Design a neural network for solving engineering problems.	2	-	2	1	1	1	1		1	1	1	1	1	1	
410243	Blockchain Technology												-	1	1	
10243.1	Interpret the fundamentals and basic concepts in Blockchain	3	-	-	-		GE OF	-		-				1		

PUNE-45 PUNE-45

PRINCIPA Genba Sopanrao Moze C 25/1/3, Balewadi, PU

410243.2	Compare the working of different blockchain platforms	3	-	1.					-	-		-		1		Т
410243.3	Use Crypto wallet for cryptocurrency based transactions	3	-	2	2	-		-	-	-	-	-	-	1		
410243.4	Analyze the importance of blockchain in finding the solution to the real-world problems	3	-	2		2	-	-	-	-	-	-	-	1	-	-
410243.5	Illustrate the Ethereum public block chain platform	3	3	2	-					-			2	1		+
410243.6	Identify relative application where block chain technology can be effectively used and	2	2	2	2			-	-	-	-	-	-	2	1	
410244(A)	Pervasive Computing															
410244(A).1	Demonstrate fundamental concepts in pervasive computing.	2	2	-		-	-	-		-	1		-	1	1	
410244(A).2	Explain pervasive devices and decide appropriate one as per the need of real time applications.	2	3	2	2	-	-	-	-	-	-	-	-	2	1	
110244(A).3	Classify and analyze context aware systems for their efficiency in different ICT Systems.	3	3	3	3		-	-		-			-	1	1	
110244(A).4	Illustrate intelligent systems and generic intelligent interactive applications.	3	2	3	3		-	1/2		-			_	1	1	
110244(A).5	Design HCI systems in pervasive computing environment.	3	3	3	3		The second	-		-		-	-	1	1	
10244(A).6	Explore the security challenges and know the role of ethics in the context of pervasive computing.	1	2	-	3	-				-	-		-	1	1	
410245(D)	Software Testing and Quality Assurance															
110245(D).1	Describe fundamental concepts in software testing such as manual testing, automation testing and software	3	1	1	2	2	-	-	1	2	1	2	1	2	1	2
110245(D).2	Design and Develop project test plan, design test cases, test data, and conduct test operations.	1	3	3	2	1	-		1	2	1	2		1	2	1
	Apply recent automation tool for various software testing for testing software.	1	-	1	2	3	-	-		2	1	1	-	1	1	2



PRINCIPAl Genba Sopanrao Moze C 25/1/3, Balewadi, PU

ACMIE CONTRACTOR						_	1	1	_	_						_
	Apply different approaches of quality management, assurance, and quality standard to software system.	1	1	2	3	1	1	1	2	2	2	2		2	1	
110245(D).5	Apply and analyze effectiveness Software Quality Tools.	1	2	1	2	3	1	-	-	1	1	2	-	1	2	
110245(D).6	Apply tools necessary for efficient testing framework.	1	2	3	2	3	1			2	1	1	-	2	1	
410250	High Performance Computing															-
410250.1	Understand various Parallel Paradigm	2	1	-		-		-		-		-		1		1
410230.2	Design and Develop an efficient parallel algorithm to solve given problem	2	1	-	-	-		-		-		-	-	1	-	
410250.5	Illustrate data communication operations on various parallel architecture	2	1	-		-	-	-	7.	-	-	-	-	1	-	
	Analyze and measure performance of modern parallel computing systems	1	2	-	2	-	-	-	-	-	-	-	-	1	1	
410250.5	Apply CUDA architecture for parallel programming	1	2	-	2	-		-		-			1	1	-	
410250.6	Analyze the performance of HPC applications	2	2	-	2	-	-	-		-		•	1	1		-
410251	Deep Learning															
	Understand the basics of Deep Learning and apply the tools to implement deep learningapplications.	3	3	-		3	-	-		-			2	1	1	
410251.2	(e.g., with respect to the bias-variance tradeoff, overfitting and underfitting, estimation of test	3	2	2	2	1	-	-		-	-		1	1	1	
410251.3	To apply the technique of Convolution (CNN) and Recurrent Neural Network (RNN) forimplementing	3	2	2	2	2	-	1		1	-	-	1	2	1	
410251.4	To implement and apply deep generative models.	1	2	1	1	2	-	1		-	-	1	1	1	2	
	Construct and apply on-policy reinforcement learning algorithms.	2	2	3	2	2	-	-		-	-		1	1	2	
410251.6	To Understand Reinforcement Learning Process.	1	2	2	2	2	(0)	GFO	-	-	-	2	1	1	1	

PRINCIPAL

Genba Sopanrao Moze Col 25/1/3, Balewadi, PUN

410252(A)	Natural Language Processing	Total Par					7727								ATT AT SE	
#1U434(A).1 1	Describe the fundamental concepts of NLP, challenges and issues in NLP	2	2	1	1	1	1	1	1	1	1	1	1	1	1	
410252(A).2	Analyze Natural languages morphologically, syntactical and semantically OR Describe the concepts of morphology, syntax, semantics of natural language	3	3	2	2	2	1	1	1	1	1	1	1	2	1	
410252(A).3	Illustrate various language modelling techniques	2	3	3	2	2	1	1	1	1	1	1	2	1	2	1
41U4J41A1.4	Integrate the NLP techniques for the information retrieval task	2	2	3	3	3	1	2	2	1	1	1	3	2	1	1
AIUZDZIAI.5	Demonstrate the use of NLP tools and techniques for text-based processing of natural languages	2	2	3	3	3	1	1	1	1	1	1	3	1	2	1
410252(A).6	Develop real world NLP applications	3	3	3	3	3	2	1	1	1	1	1	3	2	1	-
410253(C)	Business Intelligence	F== (8)				1									21272	
104551 ().1	Differentiate the concepts of Decision Support System & Business Intelligence	1	2	1	1	2	-	-	-	-	-	-		1	1	1
10253(C).2	Use Data Warehouse & Business Architecture to design a BI system.	1	1	1	1	1	-	-		-	-		-	1	1	
10253(C).3	Build graphical reports	1	2	1	1	1	-	-	-	-	-	-	-	1	1	
10253(C).4	Apply different data preprocessing techniques on dataset	2	2	2	1	1		-			-			1	1	
10253(C).5	Implement machine learning algorithms as per business needs	2	2	2	2	1		-		-	•		-	1	1	
10253(C).6	Identify role of BI in marketing, logistics, and finance and telecommunication sector		1	-	1	1	-	-	-	-	-	-	-	1	1	



