Mapping of COs with POs and PSOs

Course Articulation Matrix (2014 Course)

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	1	Engineering Mathematics- I	C101		2.17	2.17	1.34	1.34	1.17	1.34	1.34	1.34	0.67	1	0.5	2.5	1	1.34
	1		C101.1	Solve the consistency of any type of systems.	2	2	2	1	1	2	2					3	1	1
	1		C101.2	Find the roots of equation using DeMoiver's theorem and to locate imaginary points using argand diagram.	2	2	2	2	2					2		2	1	1
	1		C101.3	Apply Leibnitz's rule to find nth derivative.	3	2		1		2	2	2				3	1	1
	1		C101.4	Test convergence and divergence of infinite series.	2	3		2		1	2	2		2		2	1	2
	1		C101.5	Compute total derivative.	2	2	2		2	2		2	2		2	2	1	1
	1		C101.6	Compute maxima and minima of any function of two variables.	2	2	2	2	2	1	2	2	2	2	1	3	1	2
2	1	Fundamentals of Civil Engineering	C102		2	0.67	0	0	0	0.34	0	0.34	0.34	2	0	1	2	1.67
	1		C102.1	Describe the scope of Civil Engineering and role of Civil Engineer in Construction project	2					2				2		1	2	1
	1		C102.2	Explain the use of surveying instruments for land survey	2	2							2	2		1	2	2
	1		C102.3	Explain the principles of building planning and bye laws	2							2		2		1	2	3
	1		C102.4	Describe types of foundations and their suitability	2	2								2		1	2	1
	1		C102.5	Explain methods of irrigation, types of dams , canals and water and sewage treatment process.	2									2		1	2	2

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					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	1		C102.6	Describe the components of infrastructure like roads, railways, bridges and airports	2									2		1	2	1
3	1	Engineering Graphics*	C103		2.17	0	0	0.5	0	0	0	0	1	0	0	0.34	1	0.84
	1		C103.1	underrstand Diffrent different engineering curves.	2								1			1	1	
	1		C103.2	Differentiate first angle and third angle projection method.	2			1					1			1	1	1
	1		C103.3	Interpret views of the object and to draw by using isometric projection method.	3			1					1				1	2
	1		C103.4	Understand projection of lines.	2								1				1	
	1		C103.5	Understand projection of planes.	2								1				1	
	1		C103.6	Understand projection and section of solids.	2			1					1				1	2
4	1	Engineering Physics	C104		2.5	0.67	0.34	2	2.5	2	1.67	1	1.17	1.84	0.5	2.34	2	1.17
	1		C104.1	To use the properties of charged particles to develop modern instruments and explain the mechanism of fusion and fission.	3	1		2	2	2	2		1	2		2	2	1
	1		C104.2	To understand the basics of semiconductor and its uses to develop devices such as diode. Students will be capable of applying knowledge of nanoscience to develop new electronic devices.	3			2	2	2	1		1	2		2	2	1
	1		C104.3	Apply knowledge of nanoscience to develop new electronic devices.	3	2	1	2	3	2	2		2	2		2	2	2
	1		C104.4	Associate the wave nature of light and apply it to measure stress, pressure and dimension etc.	2			2	3	2	1	2	2	2	1	3	2	1
	1		C104.5	To discuss the concept of transverse waves	2	1	1	2	2	2	2	2		2		2	3	
	1		C104.6	To judge the problems associated with architectural acoustics and give their	2			2	3	2	2	2	1	1	2	3	1	2

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					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				remedies and use ultrasonic as a tool in industry for Non Destructive Testing														
5	1	Fundamentals of Electrical Engineering	C105		1.5	1.34	1.34	1.17	1	1.17	2	1.34	1.17	1	1.34	1.34	1.84	1.5
	1		C105.1	Understand and apply knowledge of basic concepts of work, power, energy for electrical, mechanical and thermal systems	2	1	1	1	1	1	2	2	1	1	2	2	2	2
	1		C105.2	Understand and apply knowledge of Kirchoff's laws and network theorems to solve electrical networks.	1	1	1	1	1	1	2	1	1	1	1	1	1	
	1		C105.3	Describe construction, principle of operation, specifications and applications of capacitors and batteries.	1	1	1	1	1	1	2	1	1	1	1	1	2	2
	1		C105.4	Describe and apply fundamental concepts of magnetic and electromagnetic circuits for operation of single phase transformer	1	1	1	1	1	1	2	1	1	1	1	1	2	1
	1		C105.5	Define basic terms of single phase and three phase ac circuits and supply systems.	1	1	1	1	1	1	2	1	1	1	1	1	2	2
	1		C105.6	Know and use electrical safety rules.	3	3	3	2	1	2	2	2	2	1	2	2	2	2
6	1	Professional Skill Development-I	C106		1	0	0	0.17	1	1.5	1.17	1.5	2.5	3	0.84	1.84	1.84	0.34
	1		C106.1	Speak fluently in English without errors in tenses and hence present themselves as effective English communicators. They will be able to learn the 12 tenses and use them appropriately.	2				2	3	1	1	3	3		1	2	1
	1		C106.2	Differentiate between active and passive vocabulary and be able to use the 60 words discussed in class for their daily conversation and 40 words also given as assignments.	1					1		2	2	3		2	1	
	1		C106.3	Understand the process of developing					1	1	2	1	2	3		2	2	

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					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				thoughts The ability to process their ideas and thoughts (verbal communication) into written communication in an effective, coherent and logical manner within a stipulated time and specific word limit of 100-150 words for paragraph writing.														
	1		C106.4	Present them in a certain manner by using the 50-55 phrases discussed in class appropriately for group discussions, personal interviews during the campus recruitment process/competitive exams.	1				1	1	1	2	3	3	1	2	1	
	1		C106.5	Enhance their communication skills by acquainting with the 2 important aspects of communication and helping them to overcome the 10 most common barriers of communication. Learn the 7 different types of listening skills; differentiate effective listening skills and understand the importance of it through 5 activities held in class and implement them in professional life.	1				1	1	2	1	2	3	2	2	2	
	1		C106.6	Understand the importance of team work, team motivation and effective team communication for further implementation in the corporate life. They should also be able to identify concretely between team and group dynamics.	1			1	1	2	1	2	3	3	2	2	3	1
7	1	Computer Applications in Civil Engineering-I	C107		2	1	1	1.67	2	3	3	1	3	3	1	3	3	2.34
	1		C107.1	To solve different problems using M S-Excel	2	1	1	2	2	3	3	1	3	3	1	3	3	2
	1		C107.2	To generate various graphs and charts by analyzing the given data in Excel	2	1	1	2	2	3	3	1	3	3	1	3	3	2

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					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	1		C107.3	To present different problems in various slides using M S - Power Point Use	2	1	1	1	2	3	3	1	3	3	1	3	3	3
8	2	Engineering Mathematics-II	C108		2.17	2.17	1.34	1.34	1.17	1.34	1.34	1.34	0.67	1	0.5	2.5	1	1.17
	2		C108.1	Solve differential equations of first order and first degree.	2	2	2	1	1	2	2					3	1	2
	2		C108.2	Form mathematical model of rectilinear motion, electric circuit, Fourier heat conduction, Newton's law of cooling.	2	2	2	2	2					2		2	1	1
	2		C108.3	Represent periodic function as Fourier series.	3	2		1		2	2	2				3	1	1
	2		C108.4	Evaluate definite integral by DUIS rules and to trace Cartesian and polar curves.	2	3		2		1	2	2		2		2	1	
	2		C108.5	Transform the Cartesian co-ordinates into spherical polar and cylindrical coordinate systems.	2	2	2		2	2		2	2		2	2	1	2
	2		C108.6	Apply methods to find area and volume by double and triple integration	2	2	2	2	2	1	2	2	2	2	1	3	1	1
9	2	Fundamentals of Mechanical Engineering	C109		2	1.5	1.5	0.67	0	0	0	0	0	0	0	1	1	1.34
	2		C109.1	understand fundamentals of thermal engineering.	2	1	1	1								1	1	1
	2		C109.2	understand working ofpower producing and absorbing devices.	1											1	1	2
	2		C109.3	understand different energy sources and fundamental laws of heat transfer.	3	2	2	1								1	1	2
	2		C109.4	understand basic properties of fluids and materials.	2	2	2	1								1	1	2
	2		C109.5	understand different mechanical devices and mechanisms	2	2	2	1								1	1	
	2		C109.6	understand machine tools and manufacturing processes.	2	2	2									1	1	1

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					1	2	3	4	5	6	7	8	9	10	11	12	1	2
10	2	Engineering Mechanics	C110		3	2.5	1	1.67	1	2	1.5	2	3	3	1	3	1.67	2
	2		C110.1	calculate resultant and apply conditions of equilibrium.	3	3	1	2	1	2	2	2	3	3	1	3	2	2
	2		C110.2	analyze the truss and calculate friction force.	3	3	1	3	1	2	1	2	3	3	1	3	2	2
	2		C110.3	calculate centroid and moment of inertia.	3	2	1	1	1	2	2	2	3	3	1	3	2	3
	2		C110.4	solve problem on rectilinear motion.	3	2	1	1	1	2	1	2	3	3	1	3	1	1
	2		C110.5	solve problems on curvilinear motion.	3	2	1	1	1	2	2	2	3	3	1	3	1	1
	2		C110.6	useD'Alembert's principle, Work Energy principle and Impulse Momentum principle for particle.	3	3	1	2	1	2	1	2	3	3	1	3	2	3
11	2	Engineering Chemistry	C111		1.17	1.17	0.17	0	0	0.34	0.34	0	0.84	1	0	1	2.84	0.67
	2		C111.1	Analyze the methods involved in improving quality of water for domestic and industrial purposes.	1	1				1	2		1	2		1	3	1
	2		C111.2	Express the crystal structure through X-ray diffraction technique to examine the internal structure of crystal.	2	2	1						1	1		1	3	
	2		C111.3	Demonstrate the properties and applications of fossil fuels and derived fuels.	1	1				1			1	1		1	3	1
	2		C111.4	Define the fundamental principles of corrosion and methods used for minimizing corrosion.	1	1										1	3	1
	2		C111.5	Interpret the basic concepts of electrochemical techniques and its applications in society.	1	1							1	1		1	2	
	2		C111.6	Develop the skills for correct stereo chemical assignment and interpretation in complex organic molecules.	1	1							1	1		1	3	1
12	2	Building Construction	C112		1.34	1.5	1.84	1.34	1.34	0.67	0.5	0.5	0.84	0	0.5	0.84	1.67	1.5

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					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	2		C112.1	understand different types of foundation and masonry	2	2	3	2	1	1						1	3	
	2		C112.2	design staircase	1	2	3	2	1	1		1	1			1	2	1
	2		C112.3	understand types of Arches and flooring	1	1	2	1	2				1			1	1	2
	2		C112.4	understand different methods of building finishes	1	1			1		1		1		1	1	2	2
	2		C112.5	know different types of formworks	1	1	1	1	1	1	1	1	1		1		1	1
	2		C112.6	understand different properties of construction materials	2	2	2	2	2	1	1	1	1		1	1	1	3
13	2	Professional Skill Development-II	C113		0.84	0.17	0.67	0.84	0.67	1.34	0.84	1.84	2.5	3	1.5	1.84	1.67	0.67
	2		C113.1	Speak fluently in English without errors in the sentence construction and hence present themselves as effective English communicators. They will be able to learn 20-25 common errors made in parts of speech and also use 10 modal verbs efficiently during professional communication.							1	1	2	3	1	2	1	
	2		C113.2	Differentiate between vocabulary used as adjectives, verbs and adverbs and be able to use the 60-70 words for their daily conversation.	1			1	1	1		1	2	3	3	2	1	
	2		C113.3	Overcome the fear of speaking and will be aware of the 3 types of public speaking necessary according to the contemporary requirements. They would be able to deliver a public speech according to the need of the audience and also be aware of positive body language to be manifested during a speech.	1			1	1	2		2	2	3		2	2	
	2		C113.4	Deal with the deeper parameters of working in teams like team motivation,	1		2	1		3	1	2	3	3	2	1	2	

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					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				multicultural team activity and team conflict resolution.														
	2		C113.5	Analyze themselves relating to their hobbies and strengths and hence set realistic goals in terms of personal and professional growth. They will be able to identify at least 5-7 strengths and a couple of goals to be achieved that will enable their lives to be directed appropriately.	1		2	1	1		1	2	3	3	1	2	2	2
	2		C113.6	Apply 5-6 positive strategies to resolve conflicts arising during team work	1	1		1	1	2	2	3	3	3	2	2	2	2
14	2	Workshop Technology	C114		3	1.67	1.34	0.67	1	2	3	1.34	3	2.67	0.67	2.67	1	1.34
	2		C114.1	understand basic manufacturing processes in the industry.	3	1	1	1	2	2	3	2	3	3	1	3	1	2
	2		C114.2	understand importance of safety.	3	1	1	1	1	2	3	2	3	3	1	3	1	1
	2		C114.3	understand electrical circuit making	3	3	2			2	3		3	2		2	1	1
15	3	Building Planning, Design and Byelaws*	C201		2.34	3	3	2.17	2.17	3	3	2.34	2.17	2.67	3	3	2.17	2.67
	3		C201.1	describe various types of buildings, their planning and building byelaws.	2	3	3	2	3	3	3	2	3	3	3	3	3	3
	3		C201.2	apply design considerations for climate, ventilation and lighting in building planning.	3	3	3	2	2	3	3	2	2	3	3	3	2	3
	3		C201.3	apply design considerations for Noise & acoustics, fire protection, Electrical & telecommunication and circulation in building planning.	3	3	3	2	2	3	3	2	2	3	3	3	2	3
	3		C201.4	apply design considerations for plumbing services in building planning.	3	3	3	2	2	3	3	2	2	3	3	3	2	3
	3		C201.5	explain the legal aspects of plan sanctioning	1	3	3	2	1	3	3	3	1	2	3	3	2	1

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					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	3		C201.6	explain the role of town planning authority and various presentation drawings	2	3	3	3	3	3	3	3	3	2	3	3	2	3
16	3	Applied Geology	C202		1.17	1.5	0.5	1.84	1.17	1.67	1.5	1.34	1.84	2.17	1.84	2	2	0.84
	3		C202.1	explain Geology of River, Mountain earthquakes & volcanism to decide the location, type of foundation and type of civil engineering structure	1			2			1		2	2	2	2	2	
	3		C202.2	identify different rocks & minerals.	1	2		2	2	2	2	1	2	2	2	2	2	1
	3		C202.3	identify different Geological structures to decide location and type of civil engineering structure.	2	2	1	2	2	2	2	1	2	2	2	2	2	
	3		C202.4	determine influence of texture & structures of rocks on occurrence of Ground water.				1	1	2	1	2	2	2	1	2	2	
	3		C202.5	Explain surface and subsurface investigation for tunnels	2	3	2	2	2	3	2	3	2	2	2	2	2	2
	3		C202.6	explain geological aspects at dam, reserviors and bridges.	1	2		2		1	1	1	1	3	2	2	2	2
17	3	Engineering Economics & Financial Accounting	C203		1.34	1.84	2.34	2	2.17	1.5	1.5	1.34	2	1.84	2.17	2.34	1.5	2
	3		C203.1	draw organization chart.	1	1	3	1	2	1	1	2	3	1	2	2	3	
	3		C203.2	able find out time value of money.	2	2	3	3	3	2	2	1	2	2	2	3	2	3
	3		C203.3	select best project.	1	3	3	2	2	2	2	1	2	2	3	2	2	3
	3		C203.4	find out depreciation cost.	1	1	2	2	2	1	1	1	2	2	1	2		1
	3		C203.5	prepare balance sheet.	2	2	1	2	2	2	2	1	2	2	3	3		2
	3		C203.6	generate finance for his organization	1	2	2	2	2	1	1	2	1	2	2	2	2	3
18	3	Mechanics of Solids	C204		2	3	3	3	1	1	3	2	2	2	2	3	1.67	1
	3		C204.1	calculate stresses due to axial force.	2	3	3	3	1	1	3	2	2	2	2	3	1	1

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					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	3		C204.2	calculate shear force and bending moment in the beam.	2	3	3	3	1	1	3	2	2	2	2	3	2	1
	3		C204.3	calculate bending stress and deflection in the beam.	2	3	3	3	1	1	3	2	2	2	2	3	2	1
	3		C204.4	calculate shear stress due to shear force and torsion.	2	3	3	3	1	1	3	2	2	2	2	3	2	1
	3		C204.5	calculate critical load for column.	2	3	3	3	1	1	3	2	2	2	2	3	2	1
	3		C204.6	calculate principal stresses.	2	3	3	3	1	1	3	2	2	2	2	3	1	1
19	3	Concrete Technology	C205		2.34	2.17	2.17	1.67	1.34	1.17	1	1	2.34	1	1	3	1.17	2.34
	3		C205.1	test Ingredients of concrete.	2	2	2	1	1	1	1	1	2	1	1	3	1	2
	3		C205.2	measure Workability of concrete.	1	1	1	1	1	1	1	1	3	1	1	3	1	1
	3		C205.3	measure strength of Hardened concrete.	3	3	3	2	2	1	1	1	3	1	1	3	2	2
	3		C205.4	design of Concrete Mix.	3	3	3	2	2	1	1	1	2	1	1	3	2	3
	3		C205.5	decide the use of Admixtures.	2	3	3	2	1	1	1	1	2	1	1	3	1	3
	3		C205.6	measure Durability of concrete	3	1	1	2	1	2	1	1	2	1	1	3		3
20	3	Professional Skill Development-III	C206		0.17	0.34	0.17	0.84	1.67	1.34	1.34	1.67	2.5	2.5	0.84	1.34	1.67	0.67
	3		C206.1	Solve the aptitude test in the recruitment exam and competitive exam by applying short techniques and solve the question in less amount of time. They would be able to handle around 15-20 topics of math's and reasoning and 50 rules of parts of speech.	1	1		2	2	2	3	2	3	3		1	1	1
	3		C206.2	Present themselves with finesse by using around 25-20 idioms and phrases relevant to corporate communication as well as spoken English. They will also learn 50-60 words and other words that are specifically used in meetings, group discussions, presentation and other corporate events.					2	1	2	2	3	3	1	2	1	

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					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	3		C206.3	Process their ideas and thoughts (verbal communication) into written communication in an effective, coherent and logical manner within a stipulated time and specific word limit of 500-750 words for essay writing along with limited words for technical writing and report writing.					2	2		2	3	3	2	2	2	2
	3		C206.4	Identify themselves in terms of their strengths. Weaknesses and opportunities available to them for the career growth. They would also learn to overcome their weakness and convert into strengths and also make utilization of the opportunity vis-à-vis their strength. They would also learn to set realistic short/long term goals relevant to them through the SMART goal mnemonic.													2	
	3		C206.5	Differentiate between the different types of leaders and groom themselves to be potential leaders. Based on their qualities and strengths they would learn 5 types of leadership styles and mould themselves according to that. They would also learn 10-15 leadership traits.		1	1	1	2	1	2	1	3	3	1	1	1	1
	3		C206.6	Prepare PowerPoint presentation and paper presentation effectively by focusing on body language, tone of communication and audiences' needs. They would also learn to handle the questions in an effective and smart way.				2	2	2	1	3	3	3	1	2	3	
21	3	Computer Applications in Civil Engineering-II	C207		3	1	1	2	3	3	2	3	2	2	2	3	3	0.67
	3		C207.1	draw various Engineering drawing using	3	1	1	2	3	3	2	3	2	2	2	3	3	

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					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				AutoCAD.														
	3		C207.2	draw various elements of a building.	3	1	1	2	3	3	2	3	2	2	2	3	3	1
	3		C207.3	draw various elevation and sections of the building.	3	1	1	2	3	3	2	3	2	2	2	3	3	1
22	3	Testing of Materials	C208		3	3	1	1.5	1	2	1	2	3	3	1	3	2	2
	3		C208.1	decide quality of materials by performing tests on Metals	3	3	1	3	1	2	1	2	3	3	1	3	2	2
	3		C208.2	decide quality of materials by performing tests on Cement	3	3	1	1	1	2	1	2	3	3	1	3	2	2
	3		C208.3	decide quality of materials by performing tests on Aggregate	3	3	1	1	1	2	1	2	3	3	1	3	2	2
	3		C208.4	decide quality of materials by performing tests on Concrete	3	3	1	1	1	2	1	2	3	3	1	3	2	2
23	4	Engineering Mathematics-III	C209		2.84	1	1	1	1	1.84	1.84	1.34	1.34	1.84	1	1.17	1	1.5
	4		C209.1	form mathematical modeling of systems using differential equations and solve the differential equations	3	1	1	1	1	2	1	1	1	1	1	1	1	2
	4		C209.2	apply Vector differentiation and integration that finds applications in solid mechanics, fluid flow, heat problems and potential theory etc.	3	1	1	1	1	2	2	1	1	2	1	2	1	1
	4		C209.3	analyze the numerical data by applying statistical methods	3	1	1	1	1	2	2	1	1	2	1	1	1	2
	4		C209.4	solve system of linear equation and ordinary differential equation by numerical methods	3	1	1	1	1	1	2	1	1	2	1	1	1	2
	4		C209.5	apply mathematical modeling of systems using partial differential equations and solve the partial differential equations.	3	1	1	1	1	2	2	2	2	2	1	1	1	2
	4		C209.6	apply vector integral calculus to solve various problems in Civil Engineering	2	1	1	1	1	2	2	2	2	2	1	1	1	

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
24	4	Surveying	C210		2.5	1.34	0	0	2.17	0.67	0	0.67	0.84	1.34	0	1.67	2.84	2
	4		C210.1	Explain the use of linear measurements and prismatic compass in surveying.	3					2			3	2		2	3	2
	4		C210.2	Describe the process of vertical measurements and contouring and calculate reduced levels.	3				3	2		2		2		2	3	3
	4		C210.3	Describe the use of vernier theodolite for angular measurements and calculate coordinates of traverse stations.	2	2			2			2				2	3	1
	4		C210.4	Calculate omitted measurements in traverse survey and describe permanent adjustments of theodolite.	2	3			2					2			2	1
	4		C210.5	Explain various methods of setting out curves and describe field procedure of curve setting.	2	3			3							2	3	3
	4		C210.6	Explain use of plane table and minor instruments in surveying.	3				3				2	2		2	3	2
25	4	Mechanics of Fluids	C211		2.17	2	2	2.34	2	2	0	0	0	0.17	0	1	1.84	0.67
	4		C211.1	describe basic properties of fluids and measure its properties in static conditions.	2	2	2	2	2	2				1		1	2	1
	4		C211.2	apply knowledge of fluid kinematics and dynamics conditions.	3	2	2	3	2	2						1	2	1
	4		C211.3	analyses physical phenomenon dimensionally.	2	2	2	3	2	2						1	2	1
	4		C211.4	explain laminar flow and flow through pipes	2	2	2	2	2	2						1	2	
	4		C211.5	explain of boundary layer theory.	2	2	2	2	2	2						1	1	
	4		C211.6	describe turbulent flow.	2	2	2	2	2	2						1	2	1
26	4	Construction Techniques and Machinery	C212		1.5	2	1.17	1.84	2.67	1.34	1.67	1.17	1.34	1.67	2	2.34	2	1.67
	4		C212.1	explain erection techniques for high rise	1	2	1	1	1	2	2	1	1	2	2	3	2	2

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				structures.														
	4		C212.2	describe different construction techniques in underwater construction	2	2	2	2	3	1	2	1	2	2	3	3	2	2
	4		C212.3	explain advanced construction techniques.	2	2	1	3	3	1	2	1	1	1	1	2	2	2
	4		C212.4	describe diffrent earth moving equipments.	1	1	1	1	3	1	1	1	1	1	3	2	2	1
	4		C212.5	explain hoisting and haulting equipments.	2	3	1	3	3	1	2	1	2	1	1	2	2	1
	4		C212.6	describe various dewatering and paving equipments.	1	2	1	1	3	2	1	2	1	3	2	2	2	2
27	4	Structural Analysis- I	C213		3	3	3	3	3	0	0	0	0	1	0	0	1	1
	4		C213.1	calculate degree of indeterminacy of the structure.	3	3	3	3	3					1			1	1
	4		C213.2	calculate deflection of truss	3	3	3	3	3					1			1	1
	4		C213.3	analyze Indeterminate truss using strain energy method.	3	3	3	3	3					1			1	1
	4		C213.4	calculate fixed end moments	3	3	3	3	3					1			1	1
	4		C213.5	analyze plane structure using slope deflection method.	3	3	3	3	3					1			1	1
	4		C213.6	analyze plane structure using moment distribution method.	3	3	3	3	3					1			1	1
28	4	Professional Skill Development-IV	C214		0.84	1	0.67	1.84	1.67	1.5	1.5	1.17	2.5	3	0.84	1.67	1.34	0.84
	4		C214.1	Learn further concepts of Maths, Logical reasoning and English grammar and apply short cuts/ tricks to solve questions in less time. Learn remaining 25-30 rules of grammar relevant from the recruitment point of view.	2	3	2	2	2		1	1	2	3		1	1	2
	4		C214.2	Use appropriate words in the right context both academically and professionally. Students would have approximately	2	3	2	2	2		1	1	2	3		1	1	1

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				around 80-100 words from the academic word list prescribed in the syllabus.														
	4		C214.3	Understand the importance of email etiquettes and distinguish between the format of formal and informal emails/letters. They would be able to draft professional mails and letters like job application letters, cover letters, and apology emails with proper structure and words which are necessary in the corporate life.				2	2	2	2	2	3	3	1	1	2	
	4		C214.4	Apply various strategies of conflict resolution through amicable way to settle team conflicts/disputes. They would learn to handle criticism and feedback in a positive way as an individual as well as a team.				1	1	2	1		3	3	1	3	1	2
	4		C214.5	Understand the major concepts of leadership like coaching, mentoring. They would learn effective time management strategies- Pareto principle (the 80-20 rule of time management) and apply them in the corporate life.	1			2	1	2	1		3	3	1	3	2	
	4		C214.6	Understand the importance of grooming, body language and etiquettes in the corporate sector. They would be able to conduct themselves in a professional and impressive way by conducting themselves according to situations in the professional sector. They would also learn various strategies and conversational techniques to handle telephonic interviews confidently.				2	2	3	3	3	2	3	2	1	1	
29	4	Computer Applications in	C215		2	3	3	2	3	1	0	1	0	0	1	1	2	1

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
		Civil Engineering-III																
	4		C215.1	analyse the beams	2	3	3	2	3	1		1			1	1	2	1
	4		C215.2	analyse the plane frames.	2	3	3	2	3	1		1			1	1	2	1
	4		C215.3	analyse the plane truss.	2	3	3	2	3	1		1			1	1	2	1
	4		C215.4	analyse the structure in space.	2	3	3	2	3	1		1			1	1	2	1
30	4	Civil Engineering Construction Practice	C216		2.6	1.8	1.2	1.2	1	1.8	0.2	1.8	2.4	1.2	1.4	1.2	2.6	2
	4		C216.1	setout of foundation for buildings	2	1			1	1		1	3	1		1	3	2
	4		C216.2	carry out testing of construction materials	3	2	1	2	1	2		1	2	1	1	1	3	2
	4		C216.3	manage inventory on site.	2	1	1		1	2		2	2	1	2	1	2	2
	4		C216.4	maintain quality control on site.	3	2	2	2	1	2		2	2	1	2	1	3	2
	4		C216.5	work as a site engineer	3	3	2	2	1	2	1	3	3	2	2	2	2	2
31	5	Structural Design-I*	C301		3	3	3	2	2	3	2	3	2	2	1	1	2.84	3
	5		C301.1	estimate design load	3	3	3	2	2	3	2	3	2	2	1	1	3	3
	5		C301.2	design a connection for axial load	3	3	3	2	2	3	2	3	2	2	1	1	3	3
	5		C301.3	design a members for axial tension	3	3	3	2	2	3	2	3	2	2	1	1	3	3
	5		C301.4	design a members for axial compression	3	3	3	2	2	3	2	3	2	2	1	1	3	3
	5		C301.5	design a built up column	3	3	3	2	2	3	2	3	2	2	1	1	2	3
	5		C301.6	design a beam	3	3	3	2	2	3	2	3	2	2	1	1	3	3
32	5	Advanced Surveying	C302		3	1	0	0	3	0	0	0	0.84	0	0	2.67	2	1.84
	5		C302.1	explain Geodetic control survey and theory of errors.	3				3				3			2	1	1
	5		C302.2	explain various features of modern Total Station for survey.	3				3							2	3	2
	5		C302.3	describe principles and components of Space Based Positioning System and its	3				3							3	2	1

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				applications.														
	5		C302.4	describe technique of Hydrographic Survey.	3	3			3							3	2	1
	5		C302.5	describe the process of Aerial survey and its use in Surveying.	3	3			3							3	2	3
	5		C302.6	explain basics of Remote sensing and Geographical information System and its applications	3				3				2			3	2	3
33	5	Engineering Project Management	C303		2.5	1.84	1	1.84	2	1.34	1.34	1.84	2.17	2.34	1.5	1.5	2.84	2.34
	5		C303.1	prepare organization chart.	2	1	1	1	2	2	2	3	2	1	2	1	3	1
	5		C303.2	prepare a network and analyze by CPM and PERT methods.	3	2	1	2	2	1	1	1	2	3	1	2	3	3
	5		C303.3	update network and carryout resource allocation	2	2	1	2	2	1	1	2	3	3	2	1	3	2
	5		C303.4	carry out material management	3	2	1	2	2	1	1	1	2	3	1	2	3	2
	5		C303.5	solve linear programming problem by graphical and simplex methods	2	2	1	2	2	2	2	3	2	1	2	1	2	3
	5		C303.6	check quality parameters in construction process.	3	2	1	2	2	1	1	1	2	3	1	2	3	3
34	5	Structural Analysis-II	C304		3	3	3	3	2	0	0	0	1	2	0	0	1	0.5
	5		C304.1	calculate plastic moment capacity of section.	3	3	3	3	2				1	2			1	1
	5		C304.2	draw Influence Line Diagrams (ILD) for reaction, Shear Force and Bending Moment	3	3	3	3	2				1	2			1	1
	5		C304.3	draw Influence Line Diagrams (ILD) for force in members of truss	3	3	3	3	2				1	2			1	1
	5		C304.4	analyse three hinge arch	3	3	3	3	2				1	2			1	
	5		C304.5	analyse two hinge arch	3	3	3	3	2				1	2			1	
	5		C304.6	analyse frame using approximate method.	3	3	3	3	2				1	2			1	
3	5	Advanced	C305		3	3	3	2	2	2.34	2.5	1	2	3	1	1	1.84	1.34

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
5		Mechanics of Fluid																
	5		C305.1	Design most efficient channel section; find critical depth of a flow.	3	3	3	2	2	3	3	1	2	3	1	1	2	3
	5		C305.2	Understand and apply knowledge of various flow profile and their characteristics.	3	3	3	2	2	3	3	1	2	3	1	1	2	
	5		C305.3	Find energy dissipated in a hydraulic jump.	3	3	3	2	2	2	3	1	2	3	1	1	2	1
	5		C305.4	Calculate forces on vanes for different conditions.	3	3	3	2	2	2	2	1	2	3	1	1	1	
	5		C305.5	Understand and apply knowledge of turbines.	3	3	3	2	2	2	2	1	2	3	1	1	2	2
	5		C305.6	Understand and apply knowledge of pumps.	3	3	3	2	2	2	2	1	2	3	1	1	2	2
36	5	Professional Skill Development-V	C306		0.84	0	0	0	0	0.84	0	0.84	0	2.5	0	0.84	1.34	0.84
	5		C306.1	Learn further concepts of Maths, Logical reasoning and English grammar and apply short cuts/ tricks to solve questions in less time. Learn remaining 25-30 rules of grammar topics of tenses and Sub- verb agreement relevant from the recruitment point of view.	1					1		1		3		1	1	2
	5		C306.2	Use Mnemonics, and learn appropriate strategies to handle complex topics in GDs and ways to handle them. Students would learn the appropriate ways of stating opinions, disagreeing or communicating during the Group Discussion Process.	1					1		1		3		1	2	1
	5		C306.3	Apply various strategies of conflict resolution through amicable way to settle team conflicts/disputes and how to handle criticism and feedback in a positive way as	1					1		1		3		1	1	

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				an individual as well as a team.														
	5		C306.4	Students would learn effective time management strategies- Pareto principle (the 80-20 rule of time management) and apply them in the corporate life. It would be a continuation of the topic covered during the previous semester PSD-4	1					1		1		3		1	2	2
	5		C306.5	Learn to handle Case studies effectively and incorporate the right approach towards Case Studies asked during the recruitment process.	1					1		1		3		1	1	
	5		C306.6	Learn to handle Case studies effectively and incorporate the right approach													1	
37	6	Structural Design-II*	C307		1	1.84	2	0.17	0.84	1.67	0	2	2	1	0	1.34	1.84	1.67
	6		C307.1	differentiate between various design philosophies of R.C.C. and know the properties of materials used in R.C.C. and the partial safety factors in Limit State Method .	3							2	2	1			2	1
	6		C307.2	differentiate between under-reinforced, over-reinforced and balanced section , analyse and design a singly reinforced, doubly reinforced and flanged beam by Limit State Method.	3	3				2		2	2	1		1	1	1
	6		C307.3	design beams for flexure, shear, bond for various supporting conditions		2	3		2	2		2	2	1		1	1	2
	6		C307.4	design different types of slabs and a staircase.		2	3		2	2		2	2	1		2	3	2
	6		C307.5	design short columns for axial load, uniaxial and biaxial bending by using SP-16.		2	3		1	2		2	2	1		2	2	2
	6		C307.6	design isolated column footings.		2	3	1		2		2	2	1		2	2	2
38	6	Environmental Engineering-I	C308		1.34	1.5	1.67	1.34	1	1.17	1.84	1.34	1.17	1	1	1.17	1.17	3

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	6		C308.1	Explain the water quality criteria and drinking water quality standards.	1	2	2	1	1	1	2	1	1	1	1	1	2	3
	6		C308.2	Explain aeration and sedimentation process of water treatment.	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	6		C308.3	Describe filtration, disinfection and advanced water treatment processes.	1	2	2	1	1	1	2	1	1	1	1	1	1	3
	6		C308.4	Enumerate the various aspects of air pollution.	1	1	1	1	1	1	2	1	1	1	1	1	1	3
	6		C308.5	Describe the solid and hazardous waste management.	1	1	2	2	1	1	2	2	1	1	1	1	1	3
	6		C308.6	Explain the aspects of environmental management.	3	2	2	2	1	2	2	2	2	1	1	2	1	3
39	6	Estimation, Costing and Valuation*	C309		1.67	2.67	1.5	2	2	3	2	2.17	1.34	2	0.84	2.5	2.5	3
	6		C309.1	Explain the specifications for different construction works and materials..	2	3	3	2	2	3	2	2	2	2	2	3	3	3
	6		C309.2	Prepare estimate of the buildings, and other civil engineering structures.	2	3	2	2	2	3	2	3	2	2		2	3	3
	6		C309.3	Carryout rate analysis of different items of construction work		2		2	2	3	2	2		2		3	2	3
	6		C309.4	Carry out valuation of civil engineering structures.	2	3		2	2	3	2	2		2		2	3	3
	6		C309.5	Fill the tender documents.	2	3	2	2	2	3	2	2	2	2	2	2	2	3
	6		C309.6	Compare different types of contracts	2	2	2	2	2	3	2	2	2	2	1	3	2	3
40	6	Geotechnical Engineering	C310		3	2.67	2.84	2.67	2	0.5	0.5	0.5	1	2	1.67	1	1.5	1.84
	6		C310.1	determine weight - volume relation in soil as a three phase system	3	2	2	2	1				1	2	1	1	1	2
	6		C310.2	determine index properties of soil.	3	2	3	3	3	1	1	1	1	2	2	1	1	2
	6		C310.3	explain the compaction and consolidation process.	3	3	3	2	2				1	2	1	1	1	3
	6		C310.4	calculate the geostatic stresses and coefficient of permeability.	3	3	3	3	2	1			1	2	2	1	2	

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	6		C310.5	measure the shear strength of soil by various methods.	3	3	3	3	2	1	1	1	1	2	2	1	2	2
	6		C310.6	calculate the active and passive earth pressure by various methods.	3	3	3	3	2		1	1	1	2	2	1	2	2
41	6	Elective-I	C311	Average/ Sum of Elective-I	2	2	1.34	2	2	2	2	2	2	1	1	2	2.17	3
	6		C311.1		2	2	1	2	2	2	2	2	2	1	1	2	2	3
	6		C311.2		2	2	2	2	2	2	2	2	2	1	1	2	2	3
	6		C311.3		2	2	1	2	2	2	2	2	2	1	1	2	2	3
	6		C311.4		2	2	1	2	2	2	2	2	2	1	1	2	2	3
	6		C311.5		2	2	2	2	2	2	2	2	2	1	1	2	2	3
	6		C311.6		2	2	1	2	2	2	2	2	2	1	1	2	3	3
42	6	Professional Skill Development-VI	C312		1	0	0	0	0	0	0	0	0	3	0	0	1.5	0.5
	6		C312.1	Learn further concepts of Maths, Logical reasoning and English grammar and apply short cuts/ tricks to solve questions in less time. Learn remaining 25-30 rules of grammar topics such as prepositions, conjunctions etc relevant from the recruitment point of view.	1									3			1	1
	6		C312.2	Learn to handle vocabulary questions such as synonyms and analogies in recruitment test and other competitive exams	1									3			1	
	6		C312.3	Understand and Learn techniques/Strategies of how to handle Personal interviews during recruitment process. Through Mock PIs students would be taught the appropriate ways of answering tricky questions in Interview and would learn the correct body language etc	1									3			2	1

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				to be demonstrated in an interview process														
	6		C312.4	They would be acquainted with the differences between CV, Bio- Data and Resume and they would learn the correct format of a Résumé along with methods and styles to make their Resumes interesting	1									3			2	
	6		C312.5	Students would learn to incorporate various rules of written communicationin business writing scenario with the appropriate tone and words	1									3			1	1
	6		C312.6	Understand the importance of grooming, body language and etiquettes in the corporate sector. They would be able to conduct themselves in a professional and impressive way by conducting themselves according to situations in the professional sector	1									3			2	
43	7	Structural Design-III*	C401		3	3	3	3	0	1.67	0	2	2	2	0	0	2.17	2
	7		C401.1	differentiate between prestressed concrete and reinforced concrete, analyse a prestressed concrete beam, draw the stress distribution diagrams at initial and final stages of loading and know the various methods of prestressing.	3	3	3	3				2	2	2			2	1
	7		C401.2	calculate various losses due to prestressing, design a simply supported prestressed concrete beam (rectangular , symmetrical and unsymmetrical flanged beam) for flexure and shear .	3	3	3	3		2		2	2	2			2	1
	7		C401.3	design and detaling of flat slab using IS code method	3	3	3	3		2		2	2	2			2	2

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	7		C401.4	design and detailing a T and L shaped cantilever retaining wall for various loading conditions.	3	3	3	3		2		2	2	2			3	2
	7		C401.5	design and detailing of a rectangular combined footing for two columns, beam-slab type.	3	3	3	3		2		2	2	2			2	3
	7		C401.6	design the circular water tanks resiting on ground using IS code method, design of rectangular tanks using IS code method	3	3	3	3		2		2	2	2			2	3
44	7	Environmental Engineering-II	C402		2	1.34	1.84	1	1.34	1	1.67	1	1.5	1.34	1.5	1.17	1	3
	7		C402.1	Use the concept related to sewage, sewer, storm water, etc in its hydraulic design	2	1	3	1	1	1	2	1	1	1	1	1	1	3
	7		C402.2	Study of Primary treatment	2	2	3	1	2	1	2	1	1	1	1	1	1	3
	7		C402.3	To test the sample of waste water in the laboratory for physical & chemical characteristics.	2	1	1	1	1	1	1	1	2	2	1	2	1	3
	7		C402.4	Take-up functional planning, layout and design of sewage treatment plant components.	2	2	2	1	2	1	1	1	2	1	3	1	1	3
	7		C402.5	Analyze the industrial waste water for its treatment units	2	1	1	1	1	1	1	1	1	1	1	1	1	3
	7		C402.6	Plan for rural sanitation provisions, perform functional design of septic tank	2	1	1	1	1	1	3	1	2	2	2	1	1	3
45	7	Foundation Engineering	C403		1.84	2.67	2.5	2	2.17	2.34	1	1.34	1.34	2	0.67	2.17	2.17	1.34
	7		C403.1	Carryout soil exploration.	3	3	2	2	3	3	2	2	2	2	2	2	2	
	7		C403.2	Find out bearing capacity of soil	2	3	2	2	2	2			2	2		2	3	1
	7		C403.3	Apply knowledge of consolidation to foundation design..	2	2	3	2	2	2	2		2	2		2	2	1
	7		C403.4	Design pile foundation	2	3	3	2	2	2		2		2		2	2	2
	7		C403.5	Analyze sheet pile foundation	2	3	3	2	2	2		2		2		2	2	2
	7		C403.6	Apply methods of soil stabilization.		2	2	2	2	3	2	2	2	2	2	3	2	2

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
46	7	Urban Planning	C404		2.84	3	2.67	2.67	1.84	2.84	3	2.5	2.67	2.5	2.67	3	1.5	3
	7		C404.1	understand rationale of Town planning	3	3	3	3	2	2	3	2	3	3	3	3	1	3
	7		C404.2	earn theory of Urban planning	3	3	2	2	2	3	3	3	3	3	3	3	1	3
	7		C404.3	understand concept of smart city planning.	3	3	3	3	2	3	3	3	3	3	3	3	2	3
	7		C404.4	learn process of making development plan as per MRTP Act 1966	2	3	3	3	1	3	3	2	2	1	2	3	2	3
	7		C404.5	know Intelligent Transport system.	3	3	3	3	2	3	3	3	2	2	2	3	2	3
	7		C404.6	Describe spatial aspects of planning.	3	3	2	2	2	3	3	2	3	3	3	3	1	3
47	7	Elective-II	C405	Average/ Sum of Elective-II	2	1.84	1.84	1.67	1.67	1.84	2.17	1.84	1.34	1.84	2.34	2	2.67	2.84
	7		C405.1		3	2	3	2	2	2	2	2	2	2	2	2	3	3
	7		C405.2		2	3	3	1	2	1	2	1	1	1	2	2	3	3
	7		C405.3		2	2	1	1	1	2	2	2	1	2	2	2	3	3
	7		C405.4		1	1	1	2	1	2	2	2	1	2	3	2	2	3
	7		C405.5		2	1	1	2	2	2	2	2	1	2	2	2	2	2
	7		C405.6		2	2	2	2	2	2	3	2	2	2	3	2	3	3
48	7	Computer Applications in Civil Engineering-IV	C406		2	3	3	3	3	3	0	0	1	0	2	0	2	2
	7		C406.1	Analyse the Building frame and calculate design forces in the members	2	3	3	3	3	3			1		2		2	2
	7		C406.2	Design RCC members	2	3	3	3	3	3			1		2		2	2
	7		C406.3	Design RCC Framed Building	2	3	3	3	3	3			1		2		2	2
49	7	Project Stage- I	C407		0.84	0.67	0.17	0.84	1.84	0	0.5	0.17	2.67	2.17	0.67	0.5	3	3
	7		C407.1	decide and define the topic of his/her project	2	2	1	2			1		1				3	3
	7		C407.2	define the scope of his/her project and the experimental/design work involved in it.	2	1		3	2		2		3	2			3	3

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	7		C407.3	carry out the literature review pertaining to topic decided and the methodology pertaining to it.					3			1	3	2			3	3
	7		C407.4	prepare a technical report of the project work completed in stage-I.					3				3	3	2	1	3	3
	7		C407.5	prepare and give a presentation on project work of stage-I					3				3	3	2	1	3	3
	7		C407.6	satisfactorily answer the questions and queries on work of project completed in stage-I.	1	1							3	3		1	3	3
50	7	In plant Training for 45 days	C408		0.17	0	0.17	0.17	0.34	0.84	0.5	0.5	2.67	3	0.67	1.5	3	3
	7		C408.1	complete the inplant training 45 days in civil Engineering/Construction Industry/ Govt. organization/research organisation related to civil Engineering.	1		1	1				3	3	3	2	2	3	3
	7		C408.2	know and implement various terms and problems on sites/design office related to civil engineering.						1	1		3	3			3	3
	7		C408.3	Prepare the log book of day to day activities during his/her inplant training period and get it signed every day from the supervisor						2			2	3		2	3	3
	7		C408.4	complete the technical report/ log book of his/her inplant training for 45 days duly certified by the officer in charge for the training						2			2	3	1	2	3	3
	7		C408.5	explain and grade his/her experience of inplant training based on the knowledge received					2		2		3	3		2	3	3
	7		C408.6	satisfactorily answer the questions and quaries on work/experience of his/her inplant training completed.									3	3	1	1	3	3

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
51	8	Earthquake Resistant Design of Structures	C409		3	1.5	2.67	0.67	0.5	1.5	0	2.17	0.17	0.34	0.67	2.34	2	2.17
	8		C409.1	describe the causes and characteristics of earthquakes, effects of earthquake and various seismic zones	3		3			2		2				3	1	1
	8		C409.2	define single and multiple degree freedom system, different types of vibrations.	3		3			2		2				3	1	1
	8		C409.3	calculate the earthquake forces using Equivalent Static method as per I.S.1893-2002.	3	3	2	2				2				2	2	3
	8		C409.4	determine the earthquake forces using Dynamic method as per I.S.1893-2002, decide the choice of method.	3	3	2	2				2				2	2	3
	8		C409.5	design a shear wall by understanding the concept behind it.	3	3	3			3		2	1		2	2	3	2
	8		C409.6	design the various provisions in buildings for earthquake resistance and the ductile detailing provisions as per I.S. 13920-1993.	3		3		3	2		3		2	2	2	3	3
52	8	Water Resources Engineering	C410		2	2	1.34	2	1.34	0	1.34	0	0	0	0	2	2	2.84
	8		C410.1	Describe methods of Measurement of precipitations and its analysis for planning water resources project.	2			2								2	2	3
	8		C410.2	Describe methods of estimation of evaporation and infiltration and their use for hydrological studies.	2			2								2	2	3
	8		C410.3	Describe the methods of stream flow measurement and design the flood hydrograph.	2	3	2	2	2		2					2	2	3
	8		C410.4	Describe process of reservoir planning and design the gravity dams.	2	3	2	2	2		2					2	2	3

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	8		C410.5	Design and construction of earth dams.	2	3	2	2	2		2					2	2	3
	8		C410.6	Hydraulic design of spillways and energy dissipation arrangement.	2	3	2	2	2		2					2	2	2
53	8	Infrastructure Engineering	C411		2.5	2.5	2.84	2.5	2	0.84	1.17	0.34	1	0.84	1.84	1.17	1.5	3
	8		C411.1	carry out surveys involved in planning & highway alignment.	2	2	3	3	2		2	1	2	2	2		1	3
	8		C411.2	carry out traffic survey & geometric design for highway construction.	2	3	2	3	2	1	1			1	3	1	2	3
	8		C411.3	design flexible & rigid pavements as per IRC	3	3	3	3	2	1			2	1	1	2	2	3
	8		C411.4	describe various components of permanent way.	3	2	3	2	2	1	2				2	2	1	3
	8		C411.5	construe geometric design of a railway track & signaling in railways.	2	2	3	2	2	2	1		2	1	1	1	2	3
	8		C411.6	annotate components of an airport.	3	3	3	2	2		1	1			2	1	1	3
54	8	Elective-III	C412	Average/ Sum of Elective-III	2.84	2	1.17	2.34	2	1.67	2	2	1.84	1.34	1.34	2	1	2.34
	8		C412.1		3	2	1	3	2	1	3	2	2	2	2	2	1	2
	8		C412.2		3	2	2	2	2	1	3	2	2	2	1	2	1	2
	8		C412.3		3	2	1	3	2	2	1	2	2	1	1	2	1	2
	8		C412.4		2	2	1	2	2	2	1	2	2	1	2	2	1	3
	8		C412.5		3	2	1	2	2	2	2	2	2	1	1	2	1	2
	8		C412.6		3	2	1	2	2	2	2	2	1	1	1	2	1	3
55	8	Project Stage-II	C413		0.34	0.5	0.17	0.5	1.34	0.34	0.84	0.67	2.5	1.5	0.84	0.84	3	3
	8		C413.1	complete the experimentation/ design/ model work of the topic defined in stage-I	2	1	1	3	2		1		3		2		3	3
	8		C413.2	complete the experimentation work / analytical work related to your topic and arrive at observations and calculations									3		2	1	3	3
	8		C413.3	arrive at conclusions of the problem /topic selected based on the observations and		2				2	2					2	3	3

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				define the scope for future work related to the topic														
	8		C413.4	prepare a technical report of his/her project work completed in stage-I and stage-II.					3		2	2	3	3		1	3	3
	8		C413.5	prepare and give a presentation on project work of stage-II					3				3	3	1		3	3
	8		C413.6	satisfactorily answer the questions and queries on work of project completed								2	3	3		1	3	3
41	8	Elective- I (URBAN WATER MANAGEMENT)	C311		2	2	1.34	2	2	2	1.67	1	1	1	1	1	1.67	3
	8		C311.1	Understand how cities are growing and changing which is leading to describing the promise of IUWM and how some city case studies that explore the ways in which aspects of IUWM have been put into practice, since every city faces a different challenge and requires context-appropriate solutions.	2	2	1	2	2	2	2	1	1	1	1	1	1	3
	8		C311.2	Focus on the implications of these changes for urban water resources: in the past, water security efforts focused on water quantity and understand how new concerns about water quality are now emerging.	2	2	2	2	2	2	2	1	1	1	1	1	1	3
	8		C311.3	Understand and design the new tools and strategies to shift from urban water management to IUWM, and develop flexible and adaptable urban water	2	2	1	2	2	2	1	1	1	1	1	1	2	3

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				systems.														
	8		C311.4	Gain insight that how UWM can contribute to cities' resilience in the face of climate change and analyze changing climate demanding water management be approached in a different way.	2	2	1	2	2	2	2	1	1	1	1	1	1	3
	8		C311.5	Understand, apply and develop an enabling environment for the change toward a framework for integrated urban water management.	2	2	2	2	2	2	2	1	1	1	1	1	2	3
	8		C311.6	Design, analyze and apply practical approaches for constructing and building GREEN and SMART cities that are inclusive, productive, well governed, and sustainable which leads to foster a new culture of urban water management.	2	2	1	2	2	2	1	1	1	1	1	1	3	3
41	8	Elective- I (HUMAN RESOURCE MANAGEMENT)	C311		2	2	1	1	2	1	2	3	2	1	1	2	2	2
	8		C311.1	discuss the significance of human resources in construction industry.	2	2	1	1	2	1	2	3	2	1	1	2	2	2
	8		C311.2	plan human resources	2	2	1	1	2	1	2	3	2	1	1	2	2	2
	8		C311.3	describe the recruitment and selection process.	2	2	1	1	2	1	2	3	2	1	1	2	2	2
	8		C311.4	discuss the significance of training and development of employees.	2	2	1	1	2	1	2	3	2	1	1	2	2	2
	8		C311.5	analyze the employee benefits and incentives.	2	2	1	1	2	1	2	3	2	1	1	2	2	2
	8		C311.6	describe employee management relations	2	2	1	1	2	1	2	3	2	1	1	2	2	2
47	8	Elective- II (Construction Management)	C405		1.84	1.84	1.34	1.67	1.34	2.5	2	2	0.67	2	2.17	2.34	2.84	2.67

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
	8		C405.1	Know role, duties and responsibilities of construction manager.	3	3	2	2	2	3	2	2	2	2	2	3	2	3
	8		C405.2	Carryout economic comparison of project	2	3	2	1	1	1	2	1		1	2	2	3	3
	8		C405.3	Apply knowledge of linear programming to civil engineering problems.	2	2	1	1	1	2	2	2		2	2	2	3	3
	8		C405.4	Carryout feasibility analysis				2		3	2	3		3	2	3	3	3
	8		C405.5	Apply different laws to construction industry	2	1		2	2	3	2	2		2	2	2	3	1
	8		C405.6	Prepare site layout.	2	2	3	2	2	3	2	2	2	2	3	2	3	3
47	8	Elective- II (Environmental Impact Assessment)	C405		2	1.34	1.84	1	1.34	1	1.67	1	1.5	1.34	1.5	1.17	2.17	2
	8		C405.1	Appreciate the purpose and role of EIA in the decision-making process and understand the strengths of EIA in regard to environmental management;	2	1	3	1	1	1	2	1	1	1	1	1	3	2
	8		C405.2	Understand the technical and social/political limitations of EIA and know the administration and procedures that apply in the student's jurisdiction;	2	2	3	1	2	1	2	1	1	1	1	1	3	2
	8		C405.3	Understand the screening process and the scoping process and how it is applied	2	1	1	1	1	1	1	1	2	2	1	2	3	2
	8		C405.4	Know the options for estimating environmental and social impacts and the format of an EIA Report (Environmental Impact Statement, or Environmental Statement);	2	2	2	1	2	1	1	1	2	1	3	1	1	2
	8		C405.5	Appreciate the factors that assist, and detract, from the usefulness of the EIA Report	2	1	1	1	1	1	1	1	1	1	1	1	1	2
	8		C405.6	Understand the purpose of developing follow-up procedures, and the options for designing these procedures.	2	1	1	1	1	1	3	1	2	2	2	1	2	2

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
54	8	Elective- III (Solid Waste Management)	C412		2.5	1.17	2	1.67	1.17	1	2	1	1	1	1	1.84	0.84	2.5
	8		C412.1	Understand the generation, sources and characteristics of Solid Waste	3	2	2	3	1	1	3	1	1	1	1	2	1	2
	8		C412.2	Classify the types of the collection and storage of Solid Waste	3	1	2	1	1	1	3	1	1	1	1	2	1	2
	8		C412.3	Familiarize with the Present Scenario of transporting the Solid Waste by analyzing inefficient and Unscientific Manual Loading Of Waste and Understand the screening and scoping process and how it is applied	2	1	2	2	1	1	2	1	1	1	1	1	1	3
	8		C412.4	Know the options for sorting the solid waste at Source, Waste Processing Site and Land filling Site	1	1	2	1	1	1	2	1	1	1	1	2	1	3
	8		C412.5	Understand Site Investigation and Site Characterization for Landfill by Proper Planning And Design as well as Principles Of Composting by Manual And Mechanized Methods	3	1	2	1	1	1	1	1	1	1	1	2	1	2
	8		C412.6	Familiarize with latest Emerging Processing Technologies for Solid Waste for Treatment and Recovery of useful Products	3	1	2	2	2	1	1	1	1	1	1	2		3
54	8	Elective- III (Advanced Engineering Geology With Rock Mechanics)	C412		3	2	0.34	2.34	2	1.34	1.34	2	1.67	0.67	0.67	2.17	0.67	1.34
	8		C412.1	Discuss engineering geology of Deccan trap basalt.	3	2		2	2		2	2	2	2	2	2	1	1
	8		C412.2	To determine occurrence of ground water	3	2	2	2	2		2	2	2	2		2		2
	8		C412.3	Explain tail channel erosion	3	2		3	2	2		2	2			3	1	
	8		C412.4	Decide alignment of tunnel with reference	3	2		2	2	2		2	2		2	2	1	2

SN	Sem	Course Name	CO	CO Statement	POs												PSOs	
					1	2	3	4	5	6	7	8	9	10	11	12	1	2
				to nature and structure of rock.														
	8		C412.5	Discuss process of soil formation	3	2		3	2	2	2	2	2			2		1
	8		C412.6	Decide different treatment to tunnel and foundation of civil engineering structures using rock mechanics.	3	2		2	2	2	2	2				2	1	2

HoD-Civil
(Programme Coordinator)

Mapping of COs with POs and PSOs
Programme Articulation Matrix (2014 Course)

SN	Sem	Course Code	Course Name	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
1	1	C101	Engineering Mathematics- I	2.17	2.17	1.34	1.34	1.17	1.34	1.34	1.34	0.67	1	0.5	2.5	1	1.34
2	1	C102	Fundamentals of Civil Engineering	2	0.67	0	0	0	0.34	0	0.34	0.34	2	0	1	2	1.67
3	1	C103	Engineering Graphics*	2.17	0	0	0.5	0	0	0	0	1	0	0	0.34	1	0.84
4	1	C104	Engineering Physics	2.5	0.67	0.34	2	2.5	2	1.67	1	1.17	1.84	0.5	2.34	2	1.17
5	1	C105	Fundamentals of Electrical Engineering	1.5	1.34	1.34	1.17	1	1.17	2	1.34	1.17	1	1.34	1.34	1.84	1.5
6	1	C106	Professional Skill Development-I	1	0	0	0.17	1	1.5	1.17	1.5	2.5	3	0.84	1.84	1.84	0.34
7	1	C107	Computer Applications in Civil Engineering-I	2	1	1	1.67	2	3	3	1	3	3	1	3	3	2.34
8	2	C108	Engineering Mathematics- II	2.17	2.17	1.34	1.34	1.17	1.34	1.34	1.34	0.67	1	0.5	2.5	1	1.17
9	2	C109	Fundamentals of Mechanical Engineering	2	1.5	1.5	0.67	0	0	0	0	0	0	0	1	1	1.34
10	2	C110	Engineering Mechanics	3	2.5	1	1.67	1	2	1.5	2	3	3	1	3	1.67	2
11	2	C111	Engineering Chemistry	1.17	1.17	0.17	0	0	0.34	0.34	0	0.84	1	0	1	2.84	0.67
12	2	C112	Building Construction	1.34	1.5	1.84	1.34	1.34	0.67	0.5	0.5	0.84	0	0.5	0.84	1.67	1.5
13	2	C113	Professional Skill Development-II	0.84	0.17	0.67	0.84	0.67	1.34	0.84	1.84	2.5	3	1.5	1.84	1.67	0.67
14	2	C114	Workshop Technology	3	1.67	1.34	0.67	1	2	3	1.34	3	2.67	0.67	2.67	1	1.34
15	3	C201	Building Planning, Design and Byelaws*	2.34	3	3	2.17	2.17	3	3	2.34	2.17	2.67	3	3	2.17	2.67
16	3	C202	Applied Geology	1.17	1.5	0.5	1.84	1.17	1.67	1.5	1.34	1.84	2.17	1.84	2	2	0.84
17	3	C203	Engineering Economics & Financial Accounting	1.34	1.84	2.34	2	2.17	1.5	1.5	1.34	2	1.84	2.17	2.34	1.5	2
18	3	C204	Mechanics of Solids	2	3	3	3	1	1	3	2	2	2	2	3	1.67	1
19	3	C205	Concrete Technology	2.34	2.17	2.17	1.67	1.34	1.17	1	1	2.34	1	1	3	1.17	2.34
20	3	C206	Professional Skill Development-III	0.17	0.34	0.17	0.84	1.67	1.34	1.34	1.67	2.5	2.5	0.84	1.34	1.67	0.67
21	3	C207	Computer Applications in Civil Engineering-II	3	1	1	2	3	3	2	3	2	2	2	3	3	0.67
22	3	C208	Testing of Materials	3	3	1	1.5	1	2	1	2	3	3	1	3	2	2
23	4	C209	Engineering Mathematics-III	2.84	1	1	1	1	1.84	1.84	1.34	1.34	1.84	1	1.17	1	1.5

SN	Sem	Course Code	Course Name	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
24	4	C210	Surveying	2.5	1.34	0	0	2.17	0.67	0	0.67	0.84	1.34	0	1.67	2.84	2
25	4	C211	Mechanics of Fluids	2.17	2	2	2.34	2	2	0	0	0	0.17	0	1	1.84	0.67
26	4	C212	Construction Techniques and Machinery	1.5	2	1.17	1.84	2.67	1.34	1.67	1.17	1.34	1.67	2	2.34	2	1.67
27	4	C213	Structural Analysis- I	3	3	3	3	3	0	0	0	0	1	0	0	1	1
28	4	C214	Professional Skill Development-IV	0.84	1	0.67	1.84	1.67	1.5	1.5	1.17	2.5	3	0.84	1.67	1.34	0.84
29	4	C215	Computer Applications in Civil Engineering-III	2	3	3	2	3	1	0	1	0	0	1	1	2	1
30	4	C216	Civil Engineering Construction Practice	2.6	1.8	1.2	1.2	1	1.8	0.2	1.8	2.4	1.2	1.4	1.2	2.6	2
31	5	C301	Structural Design-I*	3	3	3	2	2	3	2	3	2	2	1	1	2.84	3
32	5	C302	Advanced Surveying	3	1	0	0	3	0	0	0	0.84	0	0	2.67	2	1.84
33	5	C303	Engineering Project Management	2.5	1.84	1	1.84	2	1.34	1.34	1.84	2.17	2.34	1.5	1.5	2.84	2.34
34	5	C304	Structural Analysis-II	3	3	3	3	2	0	0	0	1	2	0	0	1	0.5
35	5	C305	Advanced Mechanics of Fluid	3	3	3	2	2	2.34	2.5	1	2	3	1	1	1.84	1.34
36	5	C306	Professional Skill Development-V	0.84	0	0	0	0	0.84	0	0.84	0	2.5	0	0.84	1.34	0.84
37	6	C307	Structural Design-II*	1	1.84	2	0.17	0.84	1.67	0	2	2	1	0	1.34	1.84	1.67
38	6	C308	Environmental Engineering-I	1.34	1.5	1.67	1.34	1	1.17	1.84	1.34	1.17	1	1	1.17	1.17	3
39	6	C309	Estimation, Costing and Valuation*	1.67	2.67	1.5	2	2	3	2	2.17	1.34	2	0.84	2.5	2.5	3
40	6	C310	Geotechnical Engineering	3	2.67	2.84	2.67	2	0.5	0.5	0.5	1	2	1.67	1	1.5	1.84
41	6	C311	Elective-I	2	2	1.34	2	2	2	2	2	2	1	1	2	2.17	3
42	6	C312	Professional Skill Development-VI	1	0	0	0	0	0	0	0	0	3	0	0	1.5	0.5
43	7	C401	Structural Design-III*	3	3	3	3	0	1.67	0	2	2	2	0	0	2.17	2
44	7	C402	Environmental Engineering-II	2	1.34	1.84	1	1.34	1	1.67	1	1.5	1.34	1.5	1.17	1	3
45	7	C403	Foundation Engineering	1.84	2.67	2.5	2	2.17	2.34	1	1.34	1.34	2	0.67	2.17	2.17	1.34
46	7	C404	Urban Planning	2.84	3	2.67	2.67	1.84	2.84	3	2.5	2.67	2.5	2.67	3	1.5	3
47	7	C405	Elective-II	2	1.84	1.84	1.67	1.67	1.84	2.17	1.84	1.34	1.84	2.34	2	2.67	2.84
48	7	C406	Computer Applications in Civil Engineering-IV	2	3	3	3	3	3	0	0	1	0	2	0	2	2
49	7	C407	Project Stage- I	0.84	0.67	0.17	0.84	1.84	0	0.5	0.17	2.67	2.17	0.67	0.5	3	3
50	7	C408	In plant Training for 45 days	0.17	0	0.17	0.17	0.34	0.84	0.5	0.5	2.67	3	0.67	1.5	3	3

SN	Sem	Course Code	Course Name	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
51	8	C409	Earthquake Resistant Design of Structures	3	1.5	2.67	0.67	0.5	1.5	0	2.17	0.17	0.34	0.67	2.34	2	2.17
52	8	C410	Water Resources Engineering	2	2	1.34	2	1.34	0	1.34	0	0	0	0	2	2	2.84
53	8	C411	Infrastructure Engineering	2.5	2.5	2.84	2.5	2	0.84	1.17	0.34	1	0.84	1.84	1.17	1.5	3
54	8	C412	Elective-III	2.84	2	1.17	2.34	2	1.67	2	2	1.84	1.34	1.34	2	1	2.34
55	8	C413	Project Stage- II	0.34	0.5	0.17	0.5	1.34	0.34	0.84	0.67	2.5	1.5	0.84	0.84	3	3
			Total Courses Mapped	**55**	**50**	**48**	**49**	**48**	**47**	**40**	**45**	**48**	**48**	**41**	**50**	**55**	**55**
			Courses Mapped up to														
			Total up to Sem- I	7	5	4	6	5	6	5	6	7	6	5	7	7	7
			Total up to Sem- II	14	12	11	12	10	12	11	11	13	11	10	14	14	14
			Total up to Sem- III	22	20	19	20	18	20	19	19	21	19	18	22	22	22
			Total up to Sem- IV	30	28	26	27	26	27	23	25	26	26	23	29	30	30
			Total up to Sem- V	36	33	30	31	31	31	26	29	31	31	26	34	36	36
			Total up to Sem- VI	42	38	35	36	36	36	30	34	36	37	30	39	42	42
			Total up to Sem- VII	50	45	43	44	43	43	36	41	44	44	37	45	50	50
			Total up to Sem- VIII	55	50	48	49	48	47	40	45	48	48	41	50	55	55

HoD-Civil
(Programme Coordinator)