माधव प्रौद्योगिकी एवं विज्ञान संस्थान, ग्वालियर
MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
Deemed to be University
(Declared under Distinct Category by Ministry of Education, Government of India)
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Department : Department of Engineering Mathematics and Computing

Year	2020-2024			CO Attainment			CO-PO Matrix														PO Attainment													
			Course Outcome	Direct % Attainment	Indirect % Attainment	Total % Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
	Introduction to Computing (50101)	CO1	Explain core components of computing and linkage between them	3.0	3.0	3.00	2	2	3	2	2		2					2	2	2	6.00	6.00	9.00	6.00	6.00		6.00					6.00	6.00	6.00
		CO2	Introduce role of operating system	3.0	2.0	3.00	2	2	2	2	2		3					2	2	2	6.00	6.00	6.00	6.00	6.00		9.00					6.00	6.00	6.00
		CO3	Discuss the role of computing in real world applications	3.0	2.0	3.00	2	2	3	3	2							2	2	2	6.00	6.00	9.00	9.00	6.00							6.00	6.00	6.00
		CO4	Implement networking corresponding in file handling and security using linux	3.0	1.5	2.00	2	2	3	3	2								2	2	4.00	4.00	6.00	6.00	4.00								4.00	4.00

Semester 1	Co	CO5	Apply the computing techniques in startups for socio-economic progress	3.0	1.5	3.00	2	2	2	2	2								2	2	6.00	6.00	6.00	6.00	6.00							6.00	6.00	
																					2.80	2.80	2.77	2.75	2.80		3.00				3.00	2.80	2.80	1
	Introduction to Computer Programming (250102)	CO1	Discuss computational methods and computers would be useful	3.0	1.5	2.0	3	3	3					1				2		6.00	6.00	6.00						2.00				4.00		
		CO2	Describe the basic principles of imperative and structural programming	3.0	1.5	3.0	3	3	3					1				2		9.00	9.00	9.00						3.00				6.00		
		CO3	Test a pseudo-code and flowchart for a given problem	2.0	1.5	2.0	3	3	3					2				2		6.00	6.00	6.00						4.00				4.00		
		CO4	Apply concept of array and pointer in programming	2.0	1.5	2.0	3	3	3					2				2		6.00	6.00	6.00						4.00				4.00		
		CO5	Design the structure and function to test their programme	3.0	1.5	3.0	3	3	3					2				2		9.00	9.00	9.00						6.00				6.00		
																				2.40	2.40	2.40						2.38				2.40		
	Statistical Techniques (250103)	CO1	Determine the central of tendency, skewness and kurtosis	3.0	1.5	2.0	3	3	3				1	1	1	2		2		6.00	6.00	6.00					2.00	2.00	2.00	4.00		4.00		
		CO2	Describe the theory of probability and its distributions	3.0	1.5	3.0	3	3		2		2		2	1	1	2	1		9.00	9.00		6.00		6.00		6.00	3.00	3.00	6.00	3.00				
		CO3	Compare the correlation and regression analysis	3.0	1.5	3.0	3	3					1	1	1					9.00	9.00						3.00	3.00	3.00						
		CO4	Analyze the test of hypothesis	3.0	1.5	3.0	3		3	3	2		1	1	1					9.00		9.00	9.00	6.00			3.00	3.00	3.00						
		CO5	Compare the coefficient of association, colligation and degree of association of data	3.0	1.5	3.0	3	3		3	2		1	1	1	1	1		2	9.00	9.00		9.00	6.00			3.00	3.00	3.00	3.00	3.00		6.00		
																				2.80	2.75	2.50	3.00	3.00	3.00		2.83	2.80	2.80	2.60	3.00	2.00	3.00	1
	Element of Calculus (250104)	CO1	Determine the maxima and minimum of function for one and two variables	3.0	1.5	2.0	1	1	1	1		3	3	3	3	3				2	2.00	2.00	2.00	2.00		6.00	6.00	6.00	6.00	6.00				4.00		
		CO2	Describe derivatives concepts using different techniques	3.0	1.5	3.0	1	1	1	1		3	3	3	3	3				2	3.00	3.00	3.00	3.00		9.00	9.00	9.00	9.00	9.00				6.00		
		CO3	Discuss integral calculus	3.0	1.5	2.0	1	1	1	1		3	3	3	3	3				2	2.00	2.00	2.00	2.00		6.00	6.00	6.00	6.00	6.00				4.00		
		CO4	Obtain the volume and area of surface by using multiple integrals	3.0	1.5	3.0	1	1	1	1		3	3	3	3	3				2	3.00	3.00	3.00	3.00		9.00	9.00	9.00	9.00	9.00				6.00		
		CO5	Evaluate the gamma and beta Function	3.0	1.5	3.0	1	1	1	1		3	3	3	3	3				2	3.00	3.00	3.00	3.00		9.00	9.00	9.00	9.00	9.00				6.00		
																					2.60	2.60	2.60	2.60		2.60	2.60	2.60	2.60	2.60				2.60		1
	Energy, Ecology, Environment & Society (EEES) (100015)	CO1	Describe various energy resources, their conversion to electrical	3.0	2.6	2.9	3	3	2	3	3			1	1	1		1	2	2	8.74	8.74	5.83	8.74	8.74			2.91	2.91	2.91		2.91	5.83	5.83	
		CO2	Summarize national/international power status and renewable	2.9	2.6	2.8	3	3	3	3	3	1	2	1	1	1		1	2	2	8.50	8.50	8.50	8.50	8.50	2.83	5.67	2.83	2.83	2.83		2.83	5.67	5.67	
		CO3	Observe the impact of pollution on the ecosystem and control	3.0	2.5	2.9	3	3	3	3	3	1	2	1	1	1		1	2	2	8.71	8.71	8.71	8.71	8.71	2.90	5.80	2.90	2.90	2.90		2.90	5.80	5.80	
		CO4	Use the concepts of ecosystems and their conservation.	2.6	2.5	2.6	3	3	3	3	3	1		1	1	1		1	2	2	7.77	7.77	7.77	7.77	7.77	2.59		2.59	2.59	2.59		2.59	5.18	5.18	
		CO5	Solve problems of society in a sustainable and ethical manner	3.0	2.8	3.0	3	3	3	3	3			1	1	1		1			8.88	8.88	8.88	8.88	8.88			2.96	2.96	2.96		2.96			
																					2.84	2.84	2.83	2.84	2.84	2.77	2.87	2.84	2.84	2.84		2.84	2.81	2.81	1
Semester 2	Computer Organization and Logic Design(250201)	CO1	Describe the architecture of central processing unit.	3.0	2.2	2.8	1	1	1			3	3	3	3	3				2	2.84	2.84	2.84			8.53	8.53	8.53	8.53	8.53				5.69		
		CO2	Analyze different number systems and their operations	3.0	2.1	2.8				1		3	3	3	3	3				2				2.81		8.43	8.43	8.43	8.43	8.43				5.62		
		CO3	Test CPU architecture	3.0	2.0	2.8		1	1	1		3	3	3	3	3				2		2.80	2.80	2.80		8.39	8.39	8.39	8.39	8.39				5.59		
		CO4	Discuss parallel processing, pipelining and inter processor	3.0	1.9	2.8						3	3	3	3	3				2						8.36	8.36	8.36	8.36	8.36				5.57		
		CO5	Explain I/O and memory organization	3.0	1.9	2.8						3	3	3	3	3				2						8.33	8.33	8.33	8.33	8.33				5.55		
			Computer Organization and Logic Design(250201)																		2.84	2.82	2.82	2.80		2.80	2.80	2.80	2.80	2.80				2.80		1
	Differential Equati	CO1	Determine the analytic solution of ordinary differential equations	2.1	2.0	2.1	2	2	2	2		1			1				2		4.17	4.17	4.17	4.17		2.09			2.09				4.17		
		CO2	Compute the solution of ordinary differential equations with	2.2	2.0	2.16	2	2	2	2		1			1				2		4.33	4.33	4.33	4.33		2.16			2.16				4.33		
		CO3	Solve second and higher order differential equations	2.6	2.1	2.5	2	2	2	2		1			2				2		5.02	5.02	5.02	5.02		2.51			5.02				5.02		
		CO4	Formulate the partial differential equations	2.3	1.9	2.2	2	2	2	2		1			2				2		4.45	4.45	4.45	4.45		2.23			4.45				4.45		
		CO5	Evaluate the partial differential equations of higher order	2.3	2.0	2.2	2	2	2	2		1			2				2		4.48	4.48	4.48	4.48		2.24			4.48				4.48		
			Differential Equations (250202)																		2.25	2.25	2.25	2.25		2.25			2.28				2.25		1
	Object Oriented Methodology and Programming with C++(250203)	CO1	Discuss the classes & objects and their significance	3.0	2.2	2.8							3	2	2	2	2	2		2							8.53	5.69	5.69	5.69	5.69	5.69		5.69		
		CO2	Explain the benefits of object oriented design	3.0	2.1	2.8							3	2	2	2	2	2		2							8.43	5.62	5.62	5.62	5.62	5.62		5.62		
		CO3	Build C++ classes using appropriate features of object	3.0	2.0	2.8							3	2	3	2	3	2		2							8.39	5.59	8.39	5.59	8.39	5.59		5.59		
		CO4	Analyze the utilization of inheritance and polymorphism to	3.0	2.1	2.8							2	2	2	2	3	2		2							5.64	5.64	5.64	5.64	8.46	5.64		5.64		
		CO5	Apply object orient programming concepts for real world problem	3.0	1.9	2.8							3	2	2	2	2	2		2							8.33	5.55	5.55	5.55	5.55	5.55		5.55		
			Object Oriented Methodology and Programming with C++(250203)																								2.81	2.81	2.81	2.81	2.81	2.81		2.81		1
	Linear Algebra (250204)	CO1	Discuss the matrix and its properties	3.0	2.0	2.8	2			2	3				2	2	2		2	2	5.58			5.58	8.37				5.58	5.58	5.58		5.58	5.58	
		CO2	Formulate various algebraic structures	3.0	2.3	2.9	2			2	3				2	2	2		2	2	5.73			5.73	8.59				5.73	5.73	5.73		5.73	5.73	
		CO3	Describe the fundamental of vector space	3.0	2.5	2.9	2			2	3				2	2	2		2	2	5.79			5.79	8.69				5.79	5.79	5.79		5.79	5.79	
		CO4	Apply linear transformation in practical applications	3.0	2.5	2.9	2			2	3				3	3	2		2	2	5.81			5.81	8.71				8.71	8.71	5.81		5.81	5.81	
		CO5	Apply the inner product spaces in engineering applications	3.0	2.1	2.8	2			2	3				3	3	2		2	2	5.64			5.64	8.46				8.46	8.46	5.64		5.64	5.64	
			Linear Algebra (250204)																		2.86			2.86	2.86				2.86	2.86	2.86		2.86	2.86	1
	Technical Language(100016)	CO1	Speak clearly effectively and appropriately in a public forum to a variety of audiences and purposes	3.0	2.2	2.8	2	2	2						1	2	2	2	2	1	5.69	5.69	5.69						2.84	5.69	5.69	5.69	5.69	2.84	
		CO2	Prepare oral presentations and arguments within the	3.0	2.1	2.8	2	2	2						1	2	2	2	2	1	5.62	5.62	5.62						2.81	5.62	5.62	5.62	5.62	2.81	
		CO3	and traditions in language as well as its social,	3.0	2.0	2.8	2	2	2						1	2	2	2	2	1	5.59	5.59	5.59						2.80	5.59	5.59	5.59	5.59	2.80	
		CO4	writing and/or speech the interpretation of texts																																
		CO4	Interpret text written in English assessing the results in	3.0	2.1	2.8	2	2	2						1	2	2	2	2	1	5.64	5.64	5.64						2.82	5.64	5.64	5.64	5.64	2.82	
			Technical Language(100016)																		2.82	2.82	2.82						2.82	2.82	2.82	2.82	2.82	2.82	
	Discrete Mathematical Structures (250302)	CO1	Discuss set theory and its application	3.0	2.2	2.8	2	2	2						2	2	2		2		5.68	5.68	5.68						5.68	5.68	5.68		5.68		
		CO2	Explain the concept of poset and Lattice	3.0	2.2	2.8	2	2	2						2	2	2		2		5.68	5.68	5.68						5.68	5.68	5.68		5.68		
		CO3	Describe graph theory and create algorithm for finding	3.0	1.5	2.7	2	2	2						2	2	2		2		5.40	5.40	5.40						5.40	5.40	5.40		5.40		
		CO4	Design algorithm for finding spanning tree	3.0	1.8	2.8	2	2	2						2	2	2		2		5.52	5.52	5.52						5.52	5.52	5.52		5.52		
		CO5	Solve the homogenous and non homogenous recurrence	3.0	2.0	2.8	2	2	2						2	2	2		2		5.60	5.60	5.60						5.60	5.60	5.60		5.60		
			Discrete Mathematical Structures (250302)																		2.79	2.79	2.79						2.79	2.79	2.79		2.79		1

Semester 3	Operating System Concepts (250303)	CO1	Discuss the basic concept of operating systems	3.0	2.2	2.8	3	2	2						2	2	2		2		8.52	5.68	5.68						5.68	5.68	5.68		5.68			
		CO2	Understanding memory management	3.0	2.2	2.8	3	2	2						2	2	2		2		8.52	5.68	5.68						5.68	5.68	5.68		5.68			
		CO3	Explain deadlocks in inter processing communication	3.0	1.5	2.7	3	2	2						2	2	2		2		8.10	5.40	5.40						5.40	5.40	5.40		5.40			
		CO4	Measure the performance of various scheduling/allocation	3.0	1.8	2.8	3	2	2						2	2	2		2		8.28	5.52	5.52						5.52	5.52	5.52		5.52			
		CO5	Compare performance measure of operating system	3.0	2.0	2.8	3	2	2						2	2	2		2		8.40	5.60	5.60						5.60	5.60	5.60		5.60			
			Operating System Concepts (250303)																		2.78	2.78	2.78						2.78	2.78	2.78		2.78			1
	Data Structure and Algorithms (250304)	CO1	Describe the basics of algorithms and their performance criteria's	2.7	1.9	2.5	3	3	2	3	3		1					2	2	1	7.62	7.62	5.08	7.62	7.62		2.54					5.08	5.08	2.54		
		CO2	Explain the working of linear/Non Linear data structures	2.9	1.8	2.7	3	3	3	3	2		2	3	1	2				1	8.05	8.05	8.05	8.05	5.36		5.36	8.05	2.68	5.36				2.68		
		CO3	Detect the appropriate data structure to solve specific	3.0	1.8	2.8	2	3	3	2	1	1		2	1	1	2	1		2	5.51	8.27	8.27	5.51	2.76	2.76		5.51	2.76	2.76	5.51	2.76		5.51		
		CO4	Analyze the performance of various data structures & their	3.0	1.9	2.8	3	3	3	3					1				1	1	8.31	8.31	8.31	8.31					2.77				2.77	2.77		
		CO5	Evaluate the time/space complexities of various data	3.0	1.9	2.8	3	3	2	3				1	1	1			1	2	8.33	8.33	5.55	8.33				2.78	2.78	2.78			2.78	5.55		
			Data Structure and Algorithms (250304)																		2.70	2.71	2.71	2.70	2.62	2.76	2.63	2.72	2.75	2.72	2.76	2.61	2.66	2.72		1
	Numerical Techniques (250305)	CO1	Discuss the concepts of algebraic & transcendental equations	3.0	2.2	2.8				2			3		2	2	2							5.68			8.52		5.68	5.68	5.68					
		CO2	Explain the finite difference operators	3.0	2.2	2.8				2			3	2	2	2	2		3					5.68			8.52	5.68	5.68	5.68	5.68		8.52			
		CO3	Solve numerical integration and differentiation	3.0	1.5	2.7				2			2	3	2	2	2		3					5.40			5.40	8.10	5.40	5.40	5.40		8.10			
		CO4	Find the problems of ordinary differential equation	3.0	1.8	2.8				2				2	3	3	2		3					5.52				5.52	8.28	8.28	5.52		8.28			
		CO5	Compute the solution of Partial differential equations	2.0	2.5	2.1				2				2	3	3	2		3					4.20				4.20	6.30	6.30	4.20		6.30			
			Numerical Techniques (250305)																					2.65			2.81	2.61	2.61	2.61	2.65		2.60			1
	Biology for Engineers(1000002)	CO1	Classify living organisms on the basis of different properties	3.0	1.9	2.8	3	3	3										2		8.34	8.34	8.34										5.56			
		CO2	Explain mechanism of various physiological processes of	2.6	1.8	2.4	3	3	3										2		7.33	7.33	7.33										4.88			
		CO3	Explain functions and industrial application of various bio-	3.0	1.8	2.8	2	3	3										2		5.51	8.27	8.27										5.51			
		CO4	Discuss the basics and Industrial applications of microbiology	3.0	1.9	2.8	2	3	3										2		5.54	8.31	8.31										5.54			
		CO5	Describe basic concepts of genetics and molecular biology	1.4	1.9	1.5	2	2	2										2		2.99	2.99	2.99										2.99			
			Biology for Engineers(1000002)																		2.48	2.52	2.52										2.45			1

semester 4	Transform and Vector Calculus (250401)	CO1	Solve complex mathematical problems using Fourier series	3.0	2.0	2.8						3	2	2					2							8.37	5.58	5.58					5.58			
		CO2	Evaluate differential equations using Laplace transform	3.0	2.4	2.9						3	2	2					2							8.63	5.75	5.75					5.75			
		CO3	Solve difference equations using Z-transform	3.0	2.1	2.8						3	2	2					2							8.49	5.66	5.66					5.66			
		CO4	Decompose computational problems using Wavelet analysis.	3.0	1.9	2.8						3	2	2					2							8.33	5.55	5.55					5.55			
		CO5	Apply vector calculus to find the solutions of engineering problems	3.0	2.1	2.8						3	2	2					2							8.46	5.64	5.64					5.64			
																										2.82	2.82	2.82					2.82			1
			Transform and Vector Calculus (250401)																																		
	Database Management Systems and SQL	CO1	Solve complex mathematical problems using Fourier series	3.0	2.3	2.9	3	3	3	3	3		1	1	1	2		2	3	3	8.57	8.57	8.57	8.57	8.57		2.86	2.86	2.86	5.71		5.71	8.57	8.57	
		CO2	Evaluate differential equations using Laplace transform	2.9	2.0	2.7	3	3	3	3	3		1	1	1			2	3	2	8.15	8.15	8.15	8.15	8.15		2.72	2.72	2.72			5.43	8.15	5.43		
		CO3	Solve difference equations using Z-transform	2.3	2.1	2.3	3	3	3	2	2		1	1	1	2		2	3	1	6.75	6.75	6.75	4.50	4.50		2.25	2.25	2.25	4.50		4.50	6.75	2.25		
		CO4	Decompose computational problems using Wavelet analysis.	3.0	2.0	2.8	3	3	3	2	3	1	1	1	1	2		2	3	3	8.37	8.37	8.37	5.58	8.37	2.79	2.79	2.79	2.79	5.58		5.58	8.37	8.37		
		CO5	Apply vector calculus to find the solutions of engineering	3.0	1.9	2.8	3	3	3	3	3	2	1	1	1	1		2	3	3	8.34	8.34	8.34	8.34	8.34	5.56	2.78	2.78	2.78	2.78		5.56	8.34	8.34		
																					2.68	2.68	2.68	2.70	2.71	2.78	2.68	2.68	2.68	2.65		2.68	2.68	2.75		1
			Database Management Systems and SQL																																		
	Theory of Computation (250402)	CO1	Explain the basic concepts of finite automata theory &	1.2	2.4	1.4	3	3	3	3	2	2	2	2	1	3	1		1	2	4.34	4.34	4.34	4.34	2.89	2.89	2.89	2.89	1.45	4.34	1.45		1.45	2.89		
		CO2	Discuss the concept of push down automata	1.6	2.1	1.7	3	3	3	2	2	2	3	3	1	2		2	1	1	5.08	5.08	5.08	3.39	3.39	3.39	5.08	5.08	1.69	3.39		3.39	1.69	1.69		
		CO3	Analyze the grammar, its types, simplification and normal	2.6	1.9	2.5	3	3	3	3	2	1		3		3		1	1	1	7.38	7.38	7.38	7.38	4.92	2.46		7.38		7.38		2.46	2.46	2.46		
		CO4	computability and complexity	2.8	2.0	2.6	3	3	3	3	2	1		3		3		1	1	1	7.92	7.92	7.92	7.92	5.28	2.64		7.92		7.92		2.64	2.64	2.64		
		CO5	Construct abstract models of computing and check their	2.1	2.0	2.1	3	3	3	3	2	2	1	2	1	2		2	1	2	6.24	6.24	6.24	6.24	4.16	4.16	2.08	4.16	2.08	4.16		4.16	2.08	4.16		
																					2.06	2.06	2.06	2.09	2.06	1.94	1.68	2.11	1.74	2.09	1.45	2.11	2.06	1.98		1
			Theory of Computation (250402)																																		
	Design and Analysis of Algorithms (250404)	CO1		1.6	2.2	1.7	3	3	3	1	2	3						3			5.15	5.15	5.15	1.72	3.43	5.15						5.15				
		CO2	Apply DBMS techniques to solve real time problem	2.3	2.3	2.3	3	3	3	1	2	2						3		2	6.88	6.88	6.88	2.29	4.59	4.59							6.88		4.59		
		CO3	Explain functional dependencies and normalization	1.9	2.0	1.9	3	2	3	1	2	2				2		3			5.76	3.84	5.76	1.92	3.84	3.84				3.84		5.76				
		CO4	Evaluate the methods of transaction, concurrency and	2.2	2.0	2.2	3				2	2	2		2			2			6.50				4.33	4.33	4.33		4.33			4.33				
		CO5	Apply DBMS techniques to solve real time problem	2.6	2.1	2.5	3			2	2							2	2	2	7.51			5.01	5.01							5.01	5.01	5.01		
																					2.12	1.98	1.98	2.19	2.12	1.99	2.17		2.17	1.92		2.09	2.50	2.40		1
			Design and Analysis of Algorithms (250404)																																		
	Number Theory a	CO1	Discuss the properties of number theory and transcendental numbers	3.0	2.2	2.8	2			2	3								2		5.67			5.67	8.51								5.67			
		CO2	Describe the divisibility and related algorithms, factorization	3.0	2.4	2.9	2			2	3								2		5.76			5.76	8.64								5.76			
		CO3	Determine arithmetical functions, distribution of primes and	3.0	2.0	2.8	2			2	3								2		5.60			5.60	8.40								5.60			
		CO4	Compare cryptography techniques for security problems	3.0	2.0	2.8	2			2	3								2		5.61			5.61	8.42								5.61			
		CO5	Evaluate the public key cryptosystems	3.0	2.1	2.8	2			2	3								2		5.65			5.65	8.47								5.65			
																					2.83			2.83	2.83								2.83			1
			Number Theory and Cryptography (250405)																																		
	Cyber Security (100009)	CO1	Discuss the basic terminologies of cyber security	2.2	2.2	2.2	3	2		2		2	2	1		2		2			6.59	4.39		4.39		4.39	4.39	2.20		4.39		4.39				
		CO2	Explain the basic concept of networking and internet	1.5	2.3	1.7	3	2		2						2		2			4.96	3.31		3.31						3.31		3.31				
		CO3	Apply various methods used to protect data in the internet	1.6	2.0	1.6	2	2	2	1						2		2		1	3.28	3.28	3.28	1.64						3.28		3.28		1.64		
		CO4	Discover the concept of IP security and architecture	2.2	2.0	2.2	3	3	1	1			2			2		2			6.50	6.50	2.17	2.17			4.33			4.33		4.33				
		CO5	Compare various types of cyber security	1.5	2.1	1.6	3	3	2	1	2					2		2	1	2	4.87	4.87	3.25	1.62	3.25					3.25		3.25	1.62	3.25		
		CO6	Develop the understanding of cybercrime investigation and IT ACT 2000	1.5	2.1	1.6	2	2	1	1		2	2			2		2			3.22	3.22	1.61	1.61		3.22	3.22			3.22		3.22				
																					1.84	1.83	1.72	1.84	1.62	1.90	1.99	2.20		1.82		1.82	1.62	1.63		1
			Cyber Security (100009)																																		
	Indian Constitution and Traditional Knowledge (1000001)	CO1	Know the rich Indian traditions and the Indian constitution	3.0	2.2	2.8	3	3	3	3	1								2	2	8.53	8.53	8.53	8.53	2.84								5.69	5.69		
		CO2	Appraise the utility and significance of tradition and its	2.9	2.1	2.7	3	3	3	3	1								2	2	8.07	8.07	8.07	8.07	2.69								5.38	5.38		
		CO3	Employ the knowledge of the constitutional norms as laid in	3.0	2.0	2.8	3	3	3	3	1								2	2	8.39	8.39	8.39	8.39	2.80								5.59	5.59		
		CO4	Create a better society and living standards for themselves as	2.9	1.9	2.7	3	3	3	3	1								2	2	8.00	8.00	8.00	8.00	2.67								5.33	5.33		
		CO5	Recognize the basic concepts of ethics and morality pertaining	2.9	1.9	2.7	3	3	3	3	1								2	2	8.09	8.09	8.09	8.09	2.70								5.39	5.39		
		CO6	Connect traditional Indian philosophy with their everyday	0.9	1.9	1.1	3	3	3	3	1								2	2	3.28	3.28	3.28	3.28	1.09								2.18	2.18		
																					2.46	2.46	2.46	2.46	2.46								2.46	2.46		1
			Indian Constitution and Traditional Knowledge (1000001)																																		
ster 5	Computer Networks (250501)	CO1	Discuss the computer network and their uses	3.0	1.8	2.8	3	3	3	2	2	3	3		2	2	3	2	3	3	8.26	8.26	8.26	5.50	5.50	8.26	8.26		5.50	5.50	8.26	5.50	8.26	8.26		
		CO2	Describe network layers	1.4	1.2	1.4	3	3	3	2	2	2	3		2	2	3	2	3	3	4.08	4.08	4.08	2.72	2.72	2.72	4.08		2.72	2.72	4.08	2.72	4.08	4.08		
		CO3	Finding deficiencies in existing protocols and then go onto	0.9	1.2	1.0	3	3	3	2	2	3	3		2	2	3	2	3	3	2.90	2.90	2.90	1.94	1.94	1.94	2.90		1.94	1.94	2.90	1.94	2.90	2.90		
		CO4	Analyze the topological and routing strategies for an IP based	2.3	1.8	2.2	3	3	3	2	2	2	3		2	2	3	2	3	3	6.58	6.58	6.58	4.38	4.38	4.38	6.58		4.38	4.38	6.58	4.38	6.58	6.58		
		CO5	Solve the issues of transport and application layers	3.0	1.2	2.6	3	3	3	2	2	2	3		2	2	3	2	3	3	7.92	7.92	7.92	5.28	5.28	5.28	7.92		5.28	5.28	7.92	5.28	7.92	7.92		
																					1.98	1.98	1.98	1.98	1.98	1.96	1.98		1.98	1.98	1.98	1.98	1.98	1.98		1
			Computer Networks (250501)																																		
	Real and Complex Analysis (250502)	CO1	Describe concept of real number system and their	3.0	2.4	3	2	2	3	2	2	2	2				2	3		2	5.77	5.77	8.66	5.77	5.77	5.77	5.77				5.77	8.66		5.77		
		CO2	Analyze various properties of continuity and uniform	2.9	2.1	3	2	2	3	3	2	2	2				2	3		2	5.39	5.39	8.08	8.08	5.39	5.39	5.39				5.39	8.08		5.39		
		CO3	Apply concepts of Riemann integral to solve engineering	3.0	1.5	3	3	2	3	2	2	2	2			2		3		2	8.10	5.40	8.10	5.40	5.40	5.40	5.40			5.40		8.10		5.40		
		CO4	Use the applications of complex valued function in real world	2.9	1.6	3	2		3		2	2	3		2	2		2		2	5.22		7.83		5.22	5.22	7.83		5.22	5.22		5.22		5.22		
		CO5	Classify various forms of singularities of complex valued	2.9	2.0	3	2		3	2	2		3		2	2		2		2	5.44		8.16	5.44	5.44		8.16		5.44	5.44		5.44		5.44		
																					2.72	2.76	2.72	2.74	2.72	2.72	2.71		2.66	2.68	2.79	2.73		2.72		1
			Real and Complex Analysis (250502)																																		
	Software Engineering (250503)	CO1	Explain the various fundamental concepts of software	2.8	2.2	3	3			2			3				2				8.06			5.38			8.06				5.38					
		CO2	Describe the concepts of software design and analysis	2.8	2.4	3	3	2	3				3	2			2		3		8.15	5.43	8.15				8.15	5.43			5.43		8.15			
		CO3	Compare the techniques for software project management	3.0	2.3	3	3	3	2				2	3			3		3		8.45	8.45	5.63				5.63	8.45			8.45		8.45			
		CO4	Apply appropriate model for real life software project	2.6	2.1	2	3			3			2				2				7.40			7.40			4.94				4.94					
		CO5	Test the software through different approaches	3.0	2.2	3	3	2	1					2					3		8.52	5.68	2.84					5.68					8.52			
				2.6	2.2	2	3	2	2					2					3		7.46	4.98	4.98					4.98					7.46			
																					2.67	2.73	2.70	2.56			2.68	2.73			2.69		2.72			1
			Software Engineering (250503)																																		
	Science Python (0504)	CO1	Discuss data science techniques	3.0	1.8	3				2		3		2	2									5.50		8.26		5.50	5.50							
		CO2	Apply different tool for data science using python	1.4	1.2	1				2						3	3							2.72						4.08	4.08					
		CO3	Use visualization techniques to solve real world problems	1.9	1.2	2				2				2	2				2	2				3.54				3.54	3.54				3.54	3.54		

Seme																																						
	Data using (25	CO4	Apply exploratory data analysis for data science methods	2.3	1.8	2				2		2					3			1				4.38		4.38					6.58			2.19		
		CO5	Implement data science techniques for solving real world	3.0	1.2	3				2		2			2		3							5.28		5.28			5.28		7.92					
			Data Science using Python (250504)																					2.14		2.56		2.26	2.39	1.36	2.06		1.77	1.91		1
	Optimization Techniques (250505)	CO1	Determine the solution of linear programming problem	2.2	2.2	2.2	3	3	3		2	2				2					6.60	6.60	6.60		4.40	4.40				4.40						
		CO2	Solve non linear programming problem using optimization	2.4	2.2	2.4	2	2	3		2	2				2					4.71	4.71	7.06		4.71	4.71				4.71						
		CO3	Find the optimal solution using PERT/CPM	2.3	2.1	2.3	2	3	3		2	2				2					4.53	6.80	6.80		4.53	4.53				4.53						
		CO4	Discuss the concept of game theory	2.1	2.2	2.1	2	3	3		2	2				2					4.23	6.34	6.34		4.23	4.23				4.23						
		CO5	Evaluate the different models of inventory	2.3	2.0	2.2	2	3	3		2	2				2					4.49	6.74	6.74		4.49	4.49				4.49						
				2.3	2.1	2.2	3	2	3		2	2				2					6.66	4.44	6.66		4.44	4.44				4.44						
			Optimization Techniques (250505)																		2.23	2.23	2.23		2.23	2.23				2.23						1
	ster ement 006)	CO1	Identify disaster prevention and mitigation approaches	2.4	2.2	2.4	3	3	3		2	2				2					7.08	7.08	7.08		4.72	4.72				4.72						
		CO2	Classify global and national disasters, their trends and profiles	3.0	2.2	2.8	2	2	3		2	2				2					5.67	5.67	8.50		5.67	5.67				5.67						
		CO3	Determine the impacts of various disasters	2.3	2.1	2.3	2	3	3		2	2				2					4.53	6.80	6.80		4.53	4.53				4.53						

	Dis Mana (100	CO4	Apply Disaster Risk Reduction in management	3.0	2.2	2.8	2	3	3		2	2				2					5.67	8.50	8.50		5.67	5.67				5.67					
		CO5	Infer the linkage between disasters, environment and	2.3	2.0	2.2	2	3	3		2	2				2					4.49	6.74	6.74		4.49	4.49				4.49					
		CO6		2.3	2.1	2.2	3	2	3		2	2				2					6.66	4.44	6.66		4.44	4.44				4.44					
																				Disaster Management (1000006)	2.44	2.45	2.46		2.46	2.46				2.46					
	Project Management and Financing (1000005)	CO1	Discuss the attributes of project and its different phases	3.0	2.2	2.8	2	2	2					3	3	3	3		3	3	5.70	5.70	5.70					8.54	8.54	8.54	8.54		8.54	8.54		
		CO2	Develop the project network based on work breakdown	2.1	2.4	2.2	2	2	2					3	3	3	3		3	3	4.31	4.31	4.31					6.47	6.47	6.47	6.47		6.47	6.47		
		CO3	Analyze the project network and make decide the various	2.6	2.3	2.5	2	2	2					3	3	3	3		3	3	5.07	5.07	5.07					7.61	7.61	7.61	7.61		7.61	7.61		
		CO4	Evaluate the optimum cost of project for assigned deadlines																																	
		CO5	Apply techniques to arrange the finances to complete it	1.0	2.1	1.2								3	3	3	3		3	3								3.68	3.68	3.68	3.68		3.68	3.68		
																				Project Management and Financing (1000005)	2.51	2.51	2.51					2.19	2.19	2.19	2.19		2.19	2.19		1
	Computer Graphics (250601)	CO1	Explain interactive computer graphics and display devices	3.0	2.2	2.8	2	2	2					3	3	3	3		3	3	5.68	5.68	5.68					8.52	8.52	8.52	8.52		8.52	8.52		
		CO2	Describe line generations, circle generation, curve generation	3.0	2.2	2.8	2	2	2					3	3	3	3		3	3	5.67	5.67	5.67					8.50	8.50	8.50	8.50		8.50	8.50		
		CO3	Apply various 2-dimensional and 3-dimensional	2.3	2.1	2.3	2	2	2					3	3	3	3		3	3	4.53	4.53	4.53					6.80	6.80	6.80	6.80		6.80	6.80		
		CO3	Classify methods of image clipping and algorithms for line and																																	
		CO4	Choose appropriate filling algorithms, hidden surface																																	
		CO5	Discuss color models, shading methods, animation in digital	3.0	2.2	2.8								3	3	3	3		3	3								8.50	8.50	8.50	8.50		8.50	8.50		
																				Computer Graphics (250601)	2.65	2.65	2.65					2.69	2.69	2.69	2.69		2.69	2.69		1
	Compiler Design (250602	CO1	Explain the concepts of finite automata and context-free	2.9	2.1	2.7	2	2	2					3	3	3	3		3	3	5.47	5.47	5.47					8.21	8.21	8.21	8.21		8.21	8.21		
		CO2	Discuss the concept of working of compiler	2.5	2.2	2.4	2	2	2					3	3	3	3		3	3	4.78	4.78	4.78					7.17	7.17	7.17	7.17		7.17	7.17		
		CO3	Compare parsing techniques	1.6	2.2	1.7	2	2	2					3	3	3	3		3	3	3.37	3.37	3.37					5.06	5.06	5.06	5.06		5.06	5.06		
		CO4	Analyze code generation and code optimization techniques																																	
		CO5	Apply different tools and techniques for designing a compiler	1.5	2.1	1.6								3	3	3	3		3	3								4.87	4.87	4.87	4.87		4.87	4.87		
																				Compiler Design (250602	2.27	2.27	2.27					2.11	2.11	2.11	2.11		2.11	2.11		1
Semester 6	Artificial Intelligence & Machine Learning (250603	CO1	Describes the basics of artificial intelligence &machine	2.3	2.1	2.3	3		2								2				6.77		4.51								4.51				
		CO2	Compare techniques for search and processing in artificial	2.3	2.2	2.3	2	2				2							2		4.54	4.54				4.54							4.54			
		CO3	Identify types of machine learning problems and techniques	2.3	2.2	2.3		2	3													4.57	6.86													
		CO4	Analysis techniques in artificial intelligence& machine learning	2.3	2.1	2.3	2	2			3										4.53	4.53			6.79											
		CO5	Apply artificial intelligence and machine learning techniques	2.1	2.0	2.1		3	2										2			6.26	4.18										4.18			
		CO6	Build artificial intelligence enabled intelligent systems for	2.2	2.0	2.2											2														4.32				
																				Artificial Intelligence & Machine Learning (250603	2.26	2.21	2.22		2.26	2.27					2.21		2.18		1
	Intellectual Property Rights (IPR) (1000007)	CO1	Imbibe the knowledge of Intellectual Property and its	3.0	2.2	2.8								2	2	3	2			1								5.67	5.67	8.50	5.67			2.83		
		CO2	apply the knowledge of IPR for professional development	2.3	2.1	2.3								2	2	3	2			1								4.53	4.53	6.80	4.53			2.27		
		CO3	develop a platform for protection and compliance of	3.0	2.2	2.8								2	2	3	2			1								5.67	5.67	8.50	5.67			2.83		
		CO4	create awareness amidst academia and industry of IPR and	2.3	2.0	2.2								2	2	3	2	3		1								4.49	4.49	6.74	4.49	6.74		2.25		
		CO5	deliver the purpose and function of IPR and patenting.	2.3	2.1	2.2								2	2	3	2			1								4.44	4.44	6.66	4.44			2.22		
																				Intellectual Property Rights (IPR) (1000007)								2.48	2.48	2.48	2.48	2.25		2.48		
Semester 7	Engineering Reliability (250731)	CO1	Discuss the reliability of the system	2.3	2.1	2.3	3	3	3	2	2	3	3		2	2	3	2	3	2	6.79	6.79	6.79	4.53	4.53	6.79	6.79		4.53	4.53	6.79	4.53	6.79	4.53		
		CO2	Evaluation of measure for system reliability	2.9	2.1	2.7	3	3	3	2	2	2	3		2	2	3	2		2	8.21	8.21	8.21	5.47	5.47	5.47	8.21		5.47	5.47	8.21	5.47		5.47		
		CO3	Apply Markov process to carried out system reliability	2.5	2.2	2.4	3	3	3	2	2	3	3		2	2	3	2		2	7.17	7.17	7.17	4.78	4.78	7.17	7.17		4.78	4.78	7.17	4.78		4.78		
		CO4	Find maintainability and availability of the system	2.1	2.2	2.1	3	3	3	2	2	2	3		2	2	3	2		2	6.38	6.38	6.38	4.25	4.25	4.25	6.38		4.25	4.25	6.38	4.25		4.25		
		CO5	Find maintainability and availability of the system	2.2	2.1	2.2	3	3	3	2	2	2	3		2	2	3	2		2	6.55	6.55	6.55	4.37	4.37	4.37	6.55		4.37	4.37	6.55	4.37		4.37		
																				Engineering Reliability (250731)	2.34	2.34	2.34	2.34	2.34	2.34	2.34		2.34	2.34	2.34	2.34	2.26	2.34	1
	Distributed Computing (250732)	CO1	Discuss the concepts related to distributed system	2.4	1.9	2.4	3	3	3		2	2				2					7.08	7.08	7.08		4.72	4.72				4.72					
		CO2	Describe the core architectural aspects of distributed systems	2.1	2.2	2.8	2	2	3		2	2				2					5.67	5.67	8.50		5.67	5.67				5.67					
		CO3	Explain the resources in a distributed system are managed by	2.3	2.4	2.3	2	3	3		2	2				2					4.53	6.80	6.80		4.53	4.53				4.53					
		CO4	Apply the concept distributed file system and distributed	3.0	2.2	2.8	2	3	3		2	2				2					5.67	8.50	8.50		5.67	5.67				5.67					
		CO5	Compare various distributed system algorithms for solving	2.3	2.4	2.2	2	3	3		2	2				2					4.49	6.74	6.74		4.49	4.49				4.49					
		CO6		2.3	2.6	2.2	3	2	3		2	2				2					6.66	4.44	6.66		4.44	4.44				4.44					
																				Distributed Computing (250732)	2.44	2.45	2.46		2.46	2.46				2.46					
Semester	130801 : Internship/ Project	CO 1	Formulate the real world problems.	2.2	2.3	2.2	3									3					6.66									6.66					
		CO 2	Express the technical ideas, strategies & methodologies.	2.2	2.3	2.2	3	2				2				2					6.66	4.44				4.44				4.44					
		CO 3	Utilize the new tools, algorithms, techniques to obtain	2.2	2.3	2.2		3			3	3			3	2		3																	
		CO 4	Test & validate the developed prototype/results.	2.2	2.3	2.2	3			3	2					2		2																	
		CO 5	Write a project report.	2.2	2.3	2.2	3						2			2					6.66						4.44			4.44					
		CO 6	Prepare oral demonstrations.	2.2	2.3	2.2	2	3	2		2		3		2	3	3	2			4.44	6.66	4.44		4.44		6.66		4.44	6.66	6.66	4.44			
																				130801 : Internship/ Project	1.74	1.39	2.22		0.63	0.89	2.22		0.89	1.59	2.22	0.63			
	130802 : Professional Development	CO 1	Develop intellectual curiosity, competency and skills	3.0	2.2	2.8			2	3	3		2	2	3	2							5.70	8.54	8.54		5.70	5.70	8.54	5.70					
		CO 2	Develop critical thinking, creativity and effective communication	2.1	2.4	2.2			3	2	3		2	2	3	2							6.47	4.31	6.47		4.31	4.31	6.47	4.31					
		CO 3	Display professionalism and ownership of professional growth and learning	2.6	2.3	2.5			3	3	3		2	2	3	2							7.61	7.61	7.61		5.07	5.07	7.61	5.07					
																				130802 : Professional Development			2.47	2.56	2.51		2.51	2.51	2.51	2.51			