Madhav Institute of Technology & Science, Gwalior

B.Tech. Information Technology

Vision
"To create world class quality Engineers and Technocrats capable of providing leadership in all spheres of life and society"

Mission
To provide quality education
To organize and arrange innovative courses / training programs /Workshops in the field of Computer Science & Engineering and Information Technology
To Promote research in the fields of Computer Science & Engineering and Information Technology

Programme Educational Objectives	
PEO1	Work productively as Information Technology professional including supportive and leadership roles on multidisciplinary teams.
PEO2	Communicate effectively, recognize and incorporate societal needs and constraints in their professional endeavors with high regard to legal and ethical responsibilities.
PEO3	Engage in life-long learning to remain current in their profession and be ready to undertake challenging problems.
PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineeringfundamentals, and an engineering specialization to the solution of complex engineeringproblems
PO2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics,natural sciences, and engineering sciences
PO3	Design/development of solutions: Design solutions for complex engineering problems anddesign system components or processes that meet the specified needs with appropriateconsideration for the public health and safety, and the cultural, societal, and
PO4	Conduct investigations of complex problems: Use research-based knowledge and researchmethods including design of experiments, analysis and interpretation of data, and synthesis of theinformation to provide valid conclusions
PO5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activitieswith an understanding of the limitations
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assesssocietal, health, safety, legal and cultural issues and the consequentresponsibilities relevant tothe professional engineering practice

PO7	Environment and sustainability: Understand the impact of the professional engineeringsolutions in societal and environmental contexts, and demonstrate the knowledge of, and needfor sustainable development
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities andnorms of the engineering practice
PO9	Individual and team work: Function effectively as an individual, and as a member or leaderin diverse teams, and in multidisciplinary settings
PO10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and writeeffective reports and design documentation, make effective presentations, and give and receiveclear instructions
PO11	Project management and finance: Demonstrate knowledge and understanding of theengineering and management principles and apply these to one's own work, as a member and Leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change
PSO1	Students are able to exhibit analytical & logical skills and apply knowledge of Information Technology.
PSO2	Students are able to identify, formulate and resolve real life/social problems by using current development in the field of information technology

Madhav Institute of Technology & Science, Gwalior- 474 005
(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Department : Information Technology

Year 2018-2022

			Course Outcome	CO Attainment: Direct % Attainment	CO Attainment: Indirect % Attainment	CO Attainment: Total % Attainment	CO-PO Matrix: PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PO Attainment: PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	
Semester I	100203:Basic Computer Engineering	CO1	Define the fundamentals of computer system.	2.6	1.9	**2.5**	2	3	2	3	2	3	2	3	3	3	1	2	2	3	4.92	7.38	4.92	7.38	4.92	7.38	4.92	7.38	7.38	7.38	2.46	4.92	4.92	7.38	
		CO2	Outline the various components of computer system.	2.5	1.1	**2.2**		3	2		1		1			1	2		3	2	2		6.66	4.44		2.22		2.22		2.22	4.44		6.66	4.44	4.44	
		CO3	Design, implement, test and debug the computer programs using programming language.	1.8	3	**2.0**	2	3	3	3	1	1	1	1	2	3		3			4.08	6.12	6.12	6.12	2.04	2.04	2.04	2.04	4.08	6.12		6.12			
		CO4	Analyze the usage of various system & application softwares to manage computer system and data.	2.3	1.8	**2.2**	2	1		1	2	2	2	3	2		1	2	2	3	4.40	2.20		2.20	4.40	4.40	4.40	6.60	4.40		2.20	4.40	4.40	6.60	
		CO5	Develop the ability to design computer programs to solve real world problems.	1.8	1.3	**1.7**	1	2		2	2			2	1	2	2	2	3		1.70	3.40		3.40	3.40			3.40	1.70	3.40	3.40	3.40	5.10		
		CO6	Elaborate the working of Internet.	2.8	1.5	**2.5**	2	3	3	3	2	2	2	2	1	2	2	2	1	3	5.08	7.62	7.62	7.62	5.08	5.08	5.08	5.08	2.54	5.08	5.08	5.08	2.54	7.62	
			100203:Basic Computer Engineering																		2.24	2.23	2.31	2.23	2.21	2.36	2.33	2.23	2.23	2.20	2.19	2.18	2.14	2.37	1
	100203: Basic Computer Engineering LAB	CO1	Demonstrate the fundamentals of computer programming	2.7	1.9	**2.5**	2	3	2	3	2	3	2	3	3	3	1	2	2	3	5.08	7.62	5.08	7.62	5.08	7.62	5.08	7.62	7.62	7.62	2.54	5.08	5.08	7.62	
		CO2	Read, understand and trace the execution of program	2.7	2.7	**2.7**	2		2	3	1		1		1	2		3	2	2	5.40		5.40	8.10	2.70		2.70		2.70	5.40		8.10	5.40	5.40	
		CO3	Develop Conditional and Iterative Statements	2.1	3	**2.3**	2			3	1	1	1	1	2	3		3		3	4.56			6.84	2.28	2.28	2.28	2.28	4.56	6.84		6.84		6.84	
		CO4	Design the program using functions	2.5	3	**2.6**		1		1	2	2	2	3	2		1	2	2	3		2.60		2.60	5.20	5.20	5.20	7.80	5.20		2.60	5.20	5.20	7.80	
		CO5	Implement the programs using Derived and User defined data types	2.8	3	**2.8**	1	2		2		3		2	1	2	2	2	3	3	2.84	5.68		5.68		8.52		5.68	2.84	5.68	5.68	5.68	8.52	8.52	
		CO6	Design program for a given problem using computer programming	2.4	2.6	**2.4**	2	3	3	3	2	2	2	2	1	2	2	2	1	3	4.88	7.32	7.32	7.32	4.88	4.88	4.88	4.88	2.44	4.88	4.88	4.88	2.44	7.32	
			100203: Basic Computer Engineering LAB																		2.53	2.58	2.54	2.54	2.52	2.59	2.52	2.57	2.54	2.54	2.62	2.56	2.66	2.56	
Semester III	160304: OOPs and methodology	CO1	Relate the concepts and significance of OOPs in real world.	1.3	2.8	**1.6**	1	2		3			1		3		3	2	3		1.60	3.20		4.80			1.60		4.80		4.80	3.20	4.80	
		CO2	Demonstrate adeptness of object oriented programming to solve problems using Object oriented concepts	1.2	3.0	**1.6**	3	3		3			2	3			3	3		1	4.68	4.68		4.68			3.12	4.68			4.68	4.68		1.56	
		CO3	Apply object oriented programming to develop solutions of problems using standard language constructs.	1.2	3.0	**1.6**			2	3	1			2	3		3	3	2				3.12	4.68			3.12	4.68			4.68	4.68	3.12		
		CO4	Analyze data flow diagrams and flow charts for small/ moderate problems	1.6	2.9	**1.9**	1	3		2		3	1		3	2	3	3			1.86	5.58		3.72		5.58	1.86		5.58	3.72	5.58	5.58			
		CO5	Determine how to simulate the problem in field of Operating system, Computer networks and real world problems.	2.3	3.0	**2.4**			2					2			3		2	1			4.88				4.88			7.32		4.88	2.44	
		CO6	Develop software using concepts of objects, associations and integrity constraint.	1.2	2.9	**1.5**	2					3					3	3			3.07					4.60				4.60	4.60			
			160304: OOPs and methodology																		1.60	1.68	2.00	1.63	1.56	1.70	1.64	1.81	1.67	1.86	1.76	1.62	1.83	2.00	1
	160303: Computer Graphics and Multimedia	CO1	Illustrate the fundamental concepts of Computer Graphics, hardware & software components and its applications.	1.9	3.0	**2.1**	3	2	2	3		1	2		2	3	1	3	2	3	6.36	4.24	4.24	6.36		2.12	4.24		4.24	6.36	2.12	6.36	4.24	6.36	
		CO2	Explain various graphical image genration & manipulation methods and algorithms.	1.8	3.0	**2.0**	3	2	1	2	1	1		2	2		2	3	2		6.12	4.08	2.04	4.08	2.04	2.04		4.08	4.08		4.08	6.12	4.08		
		CO3	Apply various methods of generation & manipulation of images for creating graphical images and color models.	1.9	1.2	**1.8**			2			2	3		2			2	2	3			3.52			3.52	5.28		3.52			3.52	3.52	5.28	
		CO4	Explain various rendering, illumination and color models of realistic image or pictures using image processing techniques.	1.5	2.6	**1.7**	2	3	2	2		1	1		2		2	3		3	3.44	5.16	3.44	3.44		1.72	1.72		3.44		3.44	5.16		5.16	
		CO5	Discuss various methods to create natural seen & realistic images in 2D &3D space.	1.6	2.7	**1.8**	3	2	2			2	2	1	2		2	3	3	3	5.46	3.64	3.64			3.64	3.64	1.82	3.64		3.64	5.46	5.46	5.46	
		CO6	Design & analysis of various graphical image processing techniques and animation.	1.8	2.8	**2.0**	2	3	2		2	1			3	2		2	3	2	4.00	6.00	4.00		4.00	2.00			6.00	4.00		4.00	6.00	4.00	
			160303: Computer Graphics and Multimedia																		1.95	1.93	1.90	1.98	2.01	1.88	1.86	1.97	1.92	2.07	1.90	1.91	1.94	1.88	1
	160302: Data Structure LAB	CO1	Outline the basics of algorithms and their performance criteria.	2.5	2.8	**2.6**	3	2	2	3		1	2		2	3	1	3	2	3	7.68	5.12	5.12	7.68		2.56	5.12		5.12	7.68	2.56	7.68	5.12	7.68	
		CO2	Explain the working of linear and non-linear data structures.	3.0	3	**3.0**	3	2	1	2	1	1		2	2		2	3	2		9.00	6.00	3.00	6.00	3.00	3.00		6.00	6.00		6.00	9.00	6.00			
		CO3	Identify the appropriate data structure to solve the specific problems.	3.0	3	**3.0**			2				3		2			2					6.00				9.00		6.00			6.00			
		CO4	Analyse the performance of various data structures and their applications.	3.0	3	**3.0**	2	3	2	2		1	1		2		2		2	3	6.00	9.00	6.00	6.00		3.00	3.00		6.00		6.00		6.00	9.00	
		CO5	Evaluate the time and space complexities of various data structures and their applications.	3.0	2.8	**3.0**	3		2			2	2	1	2		2	3	3	3	8.88		5.92			5.92	5.92	2.96	5.92		5.92	8.88	8.88	8.88	
		CO6	Design the optimal algorithmic solutions for various problems	3.0	2.9	**3.0**	2	3	2		2	1			3	2		2	3	2	5.96	8.94	5.96		5.96	2.98			8.94	5.96		5.96	8.94	5.96	
			160302: Data Structure LAB																		2.89	2.91	2.91	2.81	2.99	2.91	2.88	2.99	2.92	2.73	2.93	2.89	2.91	2.87	1
	160303: Computer Graphics LAB	CO1	Demonstrates the fundamental concepts of Computer Graphics and its applications.	3	3	**3.0**	3	2	1	2		1	2		1	3	1	3	2	2	9.00	6.00	3.00	6.00		3.00	6.00		3.00	9.00	3.00	9.00	6.00	6.00	
		CO2	Explain and use hardware's and software's component of computer graphics	3	3	**3.0**	3	2	1	2		1		2	2		2	3	2	3	9.00	6.00	3.00	6.00		3.00		6.00	6.00		6.00	9.00	6.00	9.00	
		CO3	Apply various image generation, manipulations and color model techniques in coding.	3	3	**3.0**		3	2	1	2	1	3		3	1		1	2			9.00	6.00	3.00	6.00	3.00	9.00		9.00	3.00		3.00	6.00		
		CO4	Implement algorithms for create and manipulate image in programs.	3	3	**3.0**	2	3		2		1	1		2		2	3	2		6.00	9.00		6.00		3.00	3.00		6.00		6.00	9.00	6.00		
		CO5	Develop the ability to write computer programs for create image and animation using graphics concepts.	3	3	**3.0**	3	2	2			2	3	1	2		2	3	3	3	9.00	6.00	6.00			6.00	9.00	3.00	6.00		6.00	9.00	9.00	9.00	
		CO6	Develop application programs and projects in terms of image and animation using computer graphics.	3	3	**3.0**	2	3	2		2				3	2		2	3	2	6.00	9.00	6.00		6.00				9.00	6.00		6.00	9.00	6.00	
			160303: Computer Graphics LAB																		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1
	160304: Object Oriented Programming LAB	CO1	Select proper arithmetic, logical, relational, and string manipulation expressions to process data.	1.2	3	**1.56**	3	2	2	3		1	2		2	3	1	3	2	3	4.68	3.12	3.12	4.68		1.56	3.12		3.12	4.68	1.56	4.68	3.12	4.68	
		CO2	Demonstrate the use of various OOPs concepts with the help of programs.	1.5	3	**1.8**	3	2	2		2	1		2	2		2	3	1	2	5.40	3.60	3.60		3.60	1.80		3.60	3.60		3.60	5.40	1.80	3.60	
		CO3	Apply validation techniques to build a reliable solution to a given problem.	1.4	2.8	**1.68**	2	1	2			2	3		1			3	2	3	3.36	1.68	3.36			3.36	5.04		1.68			5.04	3.36	5.04	
		CO4	Analyze and write programs to solve more complicated problems using the concepts of Object Oriented Methodology.	1.6	2.9	**1.86**	3	3	2	2	1	1	1		2		2	2	2	3	5.58	5.58	3.72	3.72	1.86	1.86	1.86		3.72		3.72	3.72	3.72	5.58	
		CO5	Choose appropriate programming concepts as and when required in the future application development.	1.6	2.6	**1.8**	3		2			3	2	1	2		2	3	3	3	5.40		3.60			5.40	3.60	1.80	3.60		3.60	5.40	5.40	5.40	
		CO6	Construct a complete class definition with in the class definition, write class and instance methods including the constructor and overloaded methods.	2.0	3	**2.2**	2	3	1	1		1			3	2		2	3	1	4.40	6.60	2.20	2.20		2.20			6.60	4.40		4.40	6.60	2.20	
			160304: Object Oriented Programming LAB																		1.80	1.87	1.78	1.77	1.82	1.80	1.70	1.80	1.86	1.82	1.78	1.79	1.85	1.77	1
	160305: Hardware LAB	CO1	Explain basics of different computer peripherals and interfaces.	3	2.7	**2.94**	3	3	3		1	1	1		2		2	2	2	3	8.82	8.82	8.82		2.94	2.94	2.94		5.88		5.88	5.88	5.88	8.82	
		CO2	Demonstrate architecture of various computer hardware devices and their functioning.	3	2.8	**2.96**	3		2			3	2	2	2		2	3	3	3	8.88		5.92			8.88	5.92	5.92	5.92		5.92	8.88	8.88	8.88	
		CO3	Demonstrate the details of system buses, memory system, and I/O interfaces.	3	3.0	**3**	2	3	1	1		1			3	2		2	3	1	6.00	9.00	3.00	3.00		3.00			9.00	6.00		6.00	9.00	3.00	
		CO4	Identify the existing configuration of the computers peripherals and creating wireless network through the access point.	3	3.0	**3**	3	2	2	3		1	2		2	3	1	3	2	3	9.00	6.00	6.00	9.00		3.00	6.00		6.00	9.00	3.00	9.00	6.00	9.00	
		CO5	Analyze progress in contemporary peripherals and bus systems.	3	3.0	**3**	3	2	2		2	1		2	2		2	3	1	2	9.00	6.00	6.00		6.00	3.00		6.00	6.00		6.00	9.00	3.00	6.00	
		CO6	construct a networking based on IPv4 address scheme.	3	3.0	**3**	2	1	2			2	3		1			3	2	3	6.00	3.00	6.00			6.00	9.00		3.00			9.00	6.00	9.00	
			160305: Hardware LAB																		2.98	2.98	2.98	3.00	2.98	2.98	2.98	2.98	2.98	3.00	2.97	2.99	2.98	2.98	1
	160301: Digital Electronics	CO1	Illustrate various number systems, Binay codes and its application in digital design.	3	3.0	**3**	3	3		2	1		1			1	2	3	2	2	9.00	9.00		6.00	3.00		3.00			3.00	6.00	9.00	6.00	
		CO2	Identify the logic functions, circuits, truth tables and also apply the laws of Boolean algebra to simplify circuits and expressions.	1.6	3.0	**1.88**			2	1		2		2	2		2	3	2	1				3.76	1.88		3.76		3.76	3.76		3.76	5.64	3.76	1.88	
		CO3	Develop the formal procedures for the analysis and design of combinational circuits.	1.7	2.9	**1.94**	3			2	1	2					2		1	1	5.82			3.88	1.94	3.88				3.88		1.94	1.94	
		CO4	Analyse sequential circuit's components and their usability in digital circuits.	3	3.0	**3**		2		2		3		3			2	3	2			6.00		6.00		9.00		9.00			6.00	9.00	6.00		
		CO5	Compare the concept of memories, programmable devices and digital ICs.	1.4	2.9	**1.7**	2									2				1	3.40									3.40			1.70	

		CO6	Design and analyze circuits for digital arithmetic.	2.5	3.0	**2.6**	2	1			2		2		3		2	3		1	5.20	2.60			5.20		5.20		7.80		5.20	7.80		2.60	
			160301: Digital Electronics																		1.84	3.00	1.88	2.35	1.94	2.38		2.55	1.88	1.70	2.27	2.44	2.34	1.84	1
	160302: Data Structures	CO1	Outline the basics of algorithms and their performance criteria.	3	1.2	**2.64**	3	2	2	3	1	1	2		2		1		2		7.92	5.28	5.28	7.92	2.64	2.64	5.28		5.28		2.64		5.28		
		CO2	Explain the working of linear and non-linear data structures.	3	3.0	**3**	3	2	1	2		1		2	2		2		2		9.00	6.00	3.00	6.00		3.00		6.00	6.00		6.00		6.00		
		CO3	Identify the appropriate data structure to solve the specific problems.	3	2.9	**2.98**	3	3	2			2	3		2			2	2		8.94	8.94	5.96			5.96	8.94		5.96			5.96	5.96		
		CO4	Analyse the performance of various data structures and their applications.	2.6	3.0	**2.68**	2	3	2	2		1	1		2		2		2	3	5.36	8.04	5.36	5.36		2.68	2.68		5.36		5.36		5.36	8.04	
		CO5	Evaluate the time and space complexities of various data structures and their applications.	2.5	2.9	**2.58**	3	2	2			2	2	1	2		2	3		3	7.74	5.16	5.16			5.16	5.16	2.58	5.16		5.16	7.74		7.74	
		CO6	Design the optimal algorithmic solutions for various problems	2.4	3.0	**2.52**	2	3	2		2	1			3	2		2	3	2	5.04	7.56	5.04		5.04	2.52			7.56	5.04		5.04	7.56	5.04	
			160302: Data Structures																		2.75	2.73	2.71	2.75	2.56	2.75	2.76	2.86	2.72	2.52	2.74	2.68	2.74	2.60	1
Semester IV	**160401: Design and Analysis of Algorithm**	CO1	Tell the basic features of an Algorithms	1.2	2.7	**1.5**	3	2	1	3		1	1		2	3	1	3	2	3	4.50	3.00	1.50	4.50		1.50	1.50		3.00	4.50	1.50	4.50	3.00	4.50	
		CO2	Demonstrate a familiarity with major Algorithms and Data Structures	2.667	1.9	**2.5**	3	2		2			1	2	2		2	3	2	3	7.54	5.03		5.03			2.51	5.03	5.03		5.03	7.54	5.03	7.54	
		CO3	Apply important algorithmic design paradigms and methods of analysis	1.6	2.2	**1.7**	2	2	1		1	2	3						2	2	3.44	3.44	1.72		1.72	3.44	5.16						3.44	3.44	
		CO4	Analyze the asymptotic performance of Algorithms	3	2.9	**3.0**	2	3	2	2			1		2		2	3	2	3	5.96	8.94	5.96	5.96			2.98		5.96		5.96	8.94	5.96	8.94	
		CO5	Compare different design techniques to develop algorithms for computational problems.	3	2.2	**2.8**	3	2				2	2	1	2		2	3	3	3	8.52	5.68				5.68	5.68	2.84	5.68		5.68	8.52	8.52	8.52	
		CO6	Design algorithms using greedy strategy, divide and conquer approach, dynamic programming, backtrac	2.667	3	**2.7**	3	3	1		2	1			3	2		2	3	2	8.20	8.20	2.73		5.47	2.73			8.20	5.47		5.47	8.20	5.47	
			160401: Design and Analysis of Algorithm																		2.39	2.45	2.38	2.21	2.40	2.23	2.23	2.62	2.53	1.99	2.60	2.50	2.44	2.40	1
	160402: Database management system	CO1	Demonstrate the concepts of different type of database system.	3	3	**3**	3	1		1	2		2	2		2		1	1		9.00	3.00		3.00	6.00		6.00	6.00		6.00		3.00	3.00		
		CO2	Apply Relational algebra concepts to design database system.	3	3	**3**	3	1			1		2	1		2	1	1	1	1	9.00	3.00			3.00		6.00	3.00		6.00	3.00	3.00	3.00	3.00	
		CO3	Make use of queries to design and access database system.	3.0	3	**3**	3	1			1	1		1				2		1	9.00	3.00			3.00	3.00		3.00				6.00		3.00	
		CO4	Analyze the evaluation of transaction processing and concurrency control.	3.0	3	**3**	2	2	1	2	1		1	1		1		2		1	6.00	6.00	3.00	6.00	3.00		3.00	3.00		3.00		6.00		3.00	
		CO5	Determine the optimize database for real world applications.	2.533	3	**2.6264**	2	2	2		3	3	2	3		2		2	1	2	5.25	5.25	5.25		7.88	7.88	5.25	7.88		5.25		5.25	2.63	5.25	
		CO6	Design a database system for a real world application.	1.333	3	**1.6664**	2	2	2	2	3		2	3		2	2	3	2	1	3.33	3.33	3.33	3.33	5.00		3.33	5.00		3.33	3.33	5.00	3.33	1.67	
			160402: Database management system																		2.77	2.62	2.32	2.47	2.53	2.72	2.62	2.53		2.62	2.11	2.57	2.39	2.65	1
	160403: Operating system	CO1	Outline the basic concept of operating systems	3.0	3.0	**3.0**	3	2	2	3		1	2		2	3	1	3	2	3	9.00	6.00	6.00	9.00		3.00	6.00		6.00	9.00	3.00	9.00	6.00	9.00	
		CO2	Analyze the working of operating system	3.0	2.1	**2.8**	3	2	1	2	1	1	1	2	2		2	3	2	3	8.46	5.64	2.82	5.64	2.82	2.82	2.82	5.64	5.64		5.64	8.46	5.64	8.46	
		CO3	Examine the working of various scheduling/allocation approaches	3.0	2.3	**2.9**	3	2	1			2	2		2			3	2	3	8.58	5.72	2.86			5.72	5.72		5.72			8.58	5.72	8.58	
		CO4	Measure the performance of various scheduling/allocation approaches	2.5	2.7	**2.5**	2	3	2	2		1	2		2		2	3	2	3	5.08	7.62	5.08	5.08		2.54	5.08		5.08		5.08	7.62	5.08	7.62	
		CO5	Compare the various operating system problems/issues	2.9	1.9	**2.7**	3	2	1			3	2	1	2		2	3	3	3	8.10	5.40	2.70			8.10	5.40	2.70	5.40		5.40	8.10	8.10	8.10	
		CO6	Develop the Solution of various operating system problems/issues	1.7	2.2	**1.8**	2	3	2		2	1			3	2		2	3	2	3.60	5.40	3.60		3.60	1.80			5.40	3.60		3.60	5.40	3.60	
			160403: Operating system																		2.68	2.56	2.56	2.82	2.14	2.66	2.78	2.78	2.56	2.52	2.73	2.67	2.57	2.67	1
	160404: Computer System Organization	CO1	Demonstrate the computer architecture for defining basic component and functional unit.	3	2.9	**3.0**		2		2		3		3			2	3	2			5.96		5.96		8.94		8.94			5.96	8.94	5.96		
		CO2	Recall different number system and solve the basic arithmetic operations of signed and unsigned numbe	3	2.2	**2.8**	2				2					2				1	5.68				5.68					5.68				2.84	
		CO3	Develop the fundamental concept to understand the working of microprocessor.	3	3	**3.0**	2	3	2	2			1		2		2	3	2	3	6.00	9.00	6.00	6.00			3.00		6.00		6.00	9.00	6.00	9.00	
		CO4	Explain the basic concept of input output organization.	3	3	**3.0**	3	2				2	2	1	2		2	3	3	3	9.00	6.00				6.00	6.00	3.00	6.00		6.00	9.00	9.00	9.00	
		CO5	Compare various memory and mapping techniques.	3	3	**3.0**	3	3	2		2	1	3		3			1	2	3	9.00	9.00	6.00		6.00	3.00	9.00		9.00			3.00	6.00	9.00	
		CO6	Develop the skill of writing assembly language programming.	3	3	**3.0**	2	3	2	2		1	1		2		2	3	2	2	6.00	9.00	6.00	6.00		3.00	3.00		6.00		6.00	9.00	6.00	6.00	
			160404: Computer System Organization																		2.97	3.00	3.00	2.99	2.92	2.99	3.00	2.99	3.00	2.84	3.00	3.00	3.00	2.99	1
	100004: Cyber Security	CO1	Tell the basic terminologies of cyber security	3	3	**3.0**	3	2	2	3		1	2		2	3	1	3	2	3	9.00	6.00	6.00	9.00		3.00	6.00		6.00	9.00	3.00	9.00	6.00	9.00	
		CO2	Explain the basic concepts of Networking and Internet	3	3	**3.0**	3	2	1	2		1		2	2		2	3	2	3	9.00	6.00	3.00	6.00		3.00		6.00	6.00		6.00	9.00	6.00	9.00	
		CO3	Apply various methods used to protect data in the internet environment in real world situations	3	3	**3.0**	3	3	2		2	2	3		2			3	2	3	9.00	9.00	6.00		6.00	6.00	9.00		6.00			9.00	6.00	9.00	
		CO4	Discover the Concepts of IP security and Architecture	3	3	**3.0**	2	3	2	2		1	1		2		2	3	2	3	6.00	9.00	6.00	6.00		3.00	3.00		6.00		6.00	9.00	6.00	9.00	
		CO5	Compare various types of Cyber Security Threats/ Vulnerabilities	3	3	**3.0**	3	2	2			2	2	1	2		2	3	3	3	9.00	6.00	6.00			6.00	6.00	3.00	6.00		6.00	9.00	9.00	9.00	
		CO6	Develop the understanding of Cyber Crime Investigation and IT Act 2000	3	2.1	**2.8**	3	3	2		1	2	3		2			3	2	3	8.46	8.46	5.64		2.82	5.64	8.46		5.64			8.46	5.64	8.46	
			100004: Cyber Security																		2.97	2.96	2.97	3.00	2.94	2.96	2.95	3.00	2.97	3.00	3.00	2.97	2.97	2.97	1
Semester V	**160501: Discrete Structures**	CO1	understand the basic concepts of set theory, propositional logic, graph theory, discrete numeric function and algebraic structure.	3	3	**3.0**	3	2	1	2		1	2		1	3	1	3	2	2	9.00	6.00	3.00	6.00		3.00	6.00		3.00	9.00	3.00	9.00	6.00	6.00	
		CO2	Illustrate the knowledge of course content and distinguish between them in terms of their applications.	3	3	**3.0**	3	2	1	2	1	1		2	2		2	3	2	3	9.00	6.00	3.00	6.00	3.00	3.00		6.00	6.00		6.00	9.00	6.00	9.00	
		CO3	Implement the course content to solve the problems.	2.2	3	**2.4**	3	3	2			1	3		3			1	2	3	7.08	7.08	4.72			2.36	7.08		7.08			2.36	4.72	7.08	
		CO4	Apply the concept of studied topics with suitable technique faced in engineering problems.	1.8	3	**2.0**	2	3	2	2		1	1		2		2	3	2	2	4.08	6.12	4.08	4.08		2.04	2.04		4.08		4.08	6.12	4.08	4.08	
		CO5	Analyze the basic concepts of set theory, propositional logic, graph theory, discrete numeric function and algebraic structure to examine the real world problems	3	3	**3.0**	3	2	2			2	3	1	2		2	3	3	3	9.00	6.00	6.00			6.00	9.00	3.00	6.00		6.00	9.00	9.00	9.00	
		CO6	Design the analytical skill and interpret applications of engineering beneficial in real time troubleshooting.	3	2.8	**3.0**	2	3	2		2				3	2		2	3	2	5.92	8.88	5.92		5.92				8.88	5.92		5.92	8.88	5.92	
			160501: Discrete Structures																		2.76	2.67	2.67	2.68	2.97	2.73	2.68	3.00	2.70	2.98	2.73	2.76	2.76	2.74	1
	160503: Theory of Computation LAB	CO1	Judge various model of computation.	2.5	1.2	**2**	3	2	1	2	2	1	2		1	3	1	3	2	2	6.72	4.48	2.24	4.48	4.48	2.24	4.48		2.24	6.72	2.24	6.72	4.48	4.48	
		CO2	Construct abstract models of computing.	3	3	**3**	3	2	1	2	1	1		2	2		2	3	2	3	9.00	6.00	3.00	6.00	3.00	3.00		6.00	6.00		6.00	9.00	6.00	9.00	
		CO3	Infer the power of abstract models in computing to recognize the languages.	1.6	3	**2**	3	3	2		2	1	3		3			1	2	3	5.64	5.64	3.76		3.76	1.88	5.64		5.64			1.88	3.76	5.64	
		CO4	Demonstrate analytical thinking and intuition for problem solving situations in related areas of theory of computation.	3	3	**3**	2	2	3	1	3	1	1		2	1	2	3	2	2	6.00	6.00	9.00	3.00	9.00	3.00	3.00		6.00	3.00	6.00	9.00	6.00	6.00	
		CO5	Explain the limitations of computation in solving problems.	1.9	3	**2**	3	2	3	1	2	2	3	1	2		2	3	3	3	6.36	4.24	6.36	2.12	4.24	4.24	6.36	2.12	4.24		4.24	6.36	6.36	6.36	
		CO6	Define set of rules for syntax verification	3	3	**3**	2	2	2		2				3	2		2	3	2	6.00	6.00	6.00		6.00				9.00	6.00		6.00	9.00	6.00	
			160503: Theory of Computation LAB																		2.48	2.49	2.53	2.60	2.54	2.39	2.16	2.71	2.55	2.62	2.64	2.60	2.54	2.50	1
	160502: Software Engineering LAB	CO1	Define basic concepts of UML.	3	3	**3.0**	3	2	1	2	3	1	2		1	3	1	3	2	2	9.00	6.00	3.00	6.00	9.00	3.00	6.00		3.00	9.00	3.00	9.00	6.00	6.00	
		CO2	Illustrate the software development process using different tools.	3	3	**3.0**	3	2	1	2		2		2	2		3	3	2	3	9.00	6.00	3.00	6.00		6.00		6.00	6.00		9.00	9.00	6.00	9.00	
		CO3	Apply the UML to solve different common modeling problems.	3	3	**3.0**	3	3	2	1		1	3		3			1	2	2	9.00	9.00	6.00	3.00		3.00	9.00		9.00			3.00	6.00	6.00	
		CO4	Utilize the knowledge of Software engineering and project management.	3	3	**3.0**	2	3	2	2		1	1		2		2	3	2	2	6.00	9.00	6.00	6.00		3.00	3.00		6.00		6.00	9.00	6.00	6.00	
		CO5	Analyze the vocabulary, rules, and idioms of the UML and learn how to model it effectively.	3	3	**3.0**	3	2	2			2	3	1	2		2	3	3	3	9.00	6.00	6.00			6.00	9.00	3.00	6.00		6.00	9.00	9.00	9.00	
		CO6	Design the systems, from concept to executable artifact, using object oriented techniques.	3	3	**3.0**	2	3	2		2	1	2		3	2		2	3	2	6.00	9.00	6.00		6.00	3.00	6.00		9.00	6.00		6.00	9.00	6.00	
			160502: Software Engineering LAB																		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1
	160504: Microprocessor and interfacing LAB	CO1	Explain types of instructions and addressing modes.	3	3	**3.0**	3	3		2	1						2	3	2	2	9.00	9.00		6.00	3.00						6.00	9.00	6.00	6.00	
		CO2	Make use of Hex code needed in assembly language	3	3	**3.0**			2	1		2		2	2		2	3	2	1			6.00	3.00		6.00		6.00	6.00		6.00	9.00	6.00	3.00	
		CO3	Experiment with various peripheral devices to interface with microprocessor.	3	3	**3.0**	3			2	1	2					2		1	1	9.00			6.00	3.00	6.00					6.00		3.00	3.00	
		CO4	Simplify the arithmetic, Logical, etc. problems using instruction set of 8086/8051 microprocessor.	1.2	3	**1.6**		2		2		3		3			2	3	2			3.12		3.12		4.68		4.68			3.12	4.68	3.12		
		CO5	Determine the process required in interfacing with 8086/8051.	3	3	**3.0**	2									2				1	6.00									6.00				3.00	
		CO6	Develop the assembly language programs in 8086/8051 to solve a real world problem.	2.8	3	**2.8**	2	1			2		2		3		2	3		1	5.68	2.84			5.68		5.68		8.52		5.68	8.52		2.84	
			160504: Microprocessor and interfacing LAB																		2.97	2.49	3.00	2.59	2.92	2.38	2.84	2.14	2.90	3.00	2.68	2.60	2.59	2.97	1
		CO1	Explain the basic concepts of switching and finite automata theory and languages.	2.6	3	**2.7**	3	2	1	2	3	1	2		1	3	1	3	2	2	8.04	5.36	2.68	5.36	8.04	2.68	5.36		2.68	8.04	2.68	8.04	5.36	5.36	

	160503: Theory Computation	CO2	Relate practical problems to languages, automata, computability, and complexity.	3	3	**3.0**	3	2	1	2		2		2	2		3	3	2	3	9.00	6.00	3.00	6.00		6.00		6.00	6.00		9.00	9.00	6.00	9.00	
		CO3	Construct abstract models of computing and analyse their power to recognize the languages.	3	3	**3.0**	3	3	2	1		1	3		3			1	2	2	9.00	9.00	6.00	3.00		3.00	9.00		9.00			3.00	6.00	6.00	
		CO4	Construct and analyze the grammar.	3	3	**3.0**	2	3	2	2		1	1		2		2	3	2	2	6.00	9.00	6.00	6.00		3.00	3.00		6.00		6.00	9.00	6.00	6.00	
		CO5	Apply mathematical models and descriptors in various computing theories	1.2	3	**1.6**	3	2	2			2	3	1	2		2	3	3	3	4.68	3.12	3.12			3.12	4.68	1.56	3.12		3.12	4.68	4.68	4.68	
		CO6	Solve problems in computer science using mathematical and formal techniques.	3	3	**3.0**	2	3	2		2	1	2		3	2		2	3	2	6.00	9.00	6.00		6.00	3.00	6.00		9.00	6.00		6.00	9.00	6.00	
			160503: Theory of Computation																		2.67	2.77	2.68	2.91	2.81	2.60	2.55	2.52	2.75	2.81	2.60	2.65	2.65	2.65	1
	160502: Software Engineering	CO1	List various software models with respect to their accuracy and needs of the customer requirement.	2.5	3	**2.6**	3	2	1	2		1	2		1	3	1	3	2	2	7.80	5.20	2.60	5.20		2.60	5.20		2.60	7.80	2.60	7.80	5.20	5.20	
		CO2	Explain the real world problems using software engineering concepts.	2.5	3	**2.6**	3	2	1	2		1		2	2		2	3	2	3	7.80	5.20	2.60	5.20		2.60		5.20	5.20		5.20	7.80	5.20	7.80	
		CO3	Develop the technique and results with customer expectations.	1.4	3	**1.72**	3	3	2	1	2	1	3		3	1		1	2	3	5.16	5.16	3.44	1.72	3.44	1.72	5.16		5.16	1.72		1.72	3.44	5.16	
		CO4	Identify and how to use various cost estimation techniques used in software engineering.	3	3	**3**	2	3	2	2		1	1		2		2	3	2	2	6.00	9.00	6.00	6.00		3.00	3.00		6.00		6.00	9.00	6.00	6.00	
		CO5	Compare design of a system, component, or process to meet desired needs within realistic constraints	1.7	2.9	**1.94**	3	2	2			2	3	1	2		2	3	3	3	5.82	3.88	3.88			3.88	5.82	1.94	3.88		3.88	5.82	5.82	5.82	
		CO6	Develop the techniques, skills and software engineering tools necessary for engineering domain.	3	3	**3**	2	3	2		2				3	2		2	3	2	6.00	9.00	6.00		6.00				9.00	6.00		6.00	9.00	6.00	
			160502: Software Engineering																		2.41	2.50	2.45	2.59	2.36	2.30	2.13	2.38	2.45	2.59	2.53	2.54	2.48	2.40	1
	160504: Microprocessor & Interfacing	CO1	Classify the concepts of different advanced microprocessors and microcontroller.	2.5	3	**2.6**	3	1	1	2		1	2		1	3	1	3	2	2	7.80	2.60	2.60	5.20		2.60	5.20		2.60	7.80	2.60	7.80	5.20	5.20	
		CO2	Illustrate the various peripheral interfaces, controllers and bus standards.	3	3	**3.0**	3	2	1	2		1		2	2		2	3	2	3	9.00	6.00	3.00	6.00		3.00		6.00	6.00		6.00	9.00	6.00	9.00	
		CO3	Build a system using peripheral devices and controllers for 8086 microprocessor.	3	3	**3.0**	3	3	2		1	1	3		3	1		1	2	3	9.00	9.00	6.00		3.00	3.00	9.00		9.00	3.00		3.00	6.00	9.00	
		CO4	Distinguish the interface with various devices to the microprocessor.	3	3	**3.0**	2	3	2	2		1	1		2		2	3	2	2	6.00	9.00	6.00	6.00		3.00	3.00		6.00		6.00	9.00	6.00	6.00	
		CO5	Design an interface for various devices on 8086/8051 based systems.	3	3	**3.0**	3	2	2			2	3	1	2		2	3	3	3	9.00	6.00	6.00			6.00	9.00	3.00	6.00		6.00	9.00	9.00	9.00	
		CO6	Develops skills in assembly language programming for 8051 & 8086 applications.	3	3	**3.0**	2	3	2		2				3	2		2	3	2	6.00	9.00	6.00		6.00				9.00	6.00		6.00	9.00	6.00	
			160504: Microprocessor & Interfacing																		2.93	2.97	2.96	2.87	3.00	2.93	2.91	3.00	2.97	2.80	2.94	2.92	2.94	2.95	1
Semester VI	160601: Compiler Design	CO1	Recall the concepts of finite automata and context free grammar	3.00	2.2	**2.8**	3	2	1	2		1		2	2		2	3	2	3	8.52	5.68	2.84	5.68		2.84		5.68	5.68		5.68	8.52	5.68	8.52	
		CO2	Build the concept of working of compiler	3.00	3	**3.0**	3	3	2		1	1	3		3	1		1	2	3	9.00	9.00	6.00		3.00	3.00	9.00		9.00	3.00		3.00	6.00	9.00	
		CO3	Examine various parsing techniques and their comparison	3.00	2.9	**3.0**	2	3	2	2		1	1		2		2	3	2	2	5.96	8.94	5.96	5.96		2.98	2.98		5.96		5.96	8.94	5.96	5.96	
		CO4	Compare various code generation and code optimization techniques.	3.00	2.2	**2.8**	3	2	2		2	1		2	2		2	3	1	2	8.52	5.68	5.68		5.68	2.84		5.68	5.68		5.68	8.52	2.84	5.68	
		CO5	Analyze different tools and techniques for designing a compiler	2.00	3	**2.2**	2	1	2			2	3		1	2		3	2	3	4.40	2.20	4.40			4.40	6.60		2.20	4.40		6.60	4.40	6.60	
		CO6	Design various phases of compiler	1.47	3	**1.8**	3	3	2		1	1	1		2		2	2	2	3	5.32	5.32	3.55		1.77	1.77	1.77		3.55		3.55	3.55	3.55	5.32	
			160601: Compiler Design																		2.61	2.63	2.58	2.91	2.61	2.55	2.54	2.84	2.67	2.47	2.61	2.61	2.58	2.57	1
	160602: Computer Networks	CO1	Define Security and its requirement at different levels & in different cases.	3.0	3	**3.0**	3	1	1	2		1	2		1	3	1	3	2	2	9.00	3.00	3.00	6.00		3.00	6.00		3.00	9.00	3.00	9.00	6.00	6.00	
		CO2	What are security principles and how they can be achieved.	3.0	3	**3.0**	3	2	1	2		1		2	2		2	3	2	3	9.00	6.00	3.00	6.00		3.00		6.00	6.00		6.00	9.00	6.00	9.00	
		CO3	Outline the characteristics and working of infected/ malicious system or person.	3.0	2.9	**3.0**	3	3	2		1	1	3		3			1	2	3	8.94	8.94	5.96		2.98	2.98	8.94		8.94			2.98	5.96	8.94	
		CO4	Analyze the different attacks and perform security algorithm/ solution accordingly.	2.4	2.5	**2.4**	2	3	2	2		1	1		2		2	3	2	2	4.84	7.26	4.84	4.84		2.42	2.42		4.84		4.84	7.26	4.84	4.84	
		CO5	Explain the mechanisms/ techniques for various attacks against security or more specifically principles of security.	2.3	2.4	**2.3**	3	2	2			2	3	1	2		2	3	3	3	6.88	4.59	4.59			4.59	6.88	2.29	4.59		4.59	6.88	6.88	6.88	
		CO6	Justify the role of Government and thirty party in security.	1.4	3	**1.7**	2	3	2		2				3	2		2	3	2	3.44	5.16	3.44		3.44				5.16	3.44		3.44	5.16	3.44	
			160602: Computer Networks																		2.63	2.50	2.48	2.81	2.14	2.66	2.69	2.76	2.50	2.49	2.63	2.57	2.49	2.61	
	160602: Agile Methodology	CO1	Demonstrate Scrum Release Planning and Scrum Sprint Planning	2.5	3	**2.6**	1	2		3			1		3		3	2	3	1	2.59	5.19		7.78			2.59		7.78		7.78	5.19	7.78	2.59	
		CO2	Apply user stories into tasks and ideal day estimates.	3.0	3	**3.0**	3	3		3			2	3			3	3			9.00	9.00		9.00			6.00	9.00			9.00	9.00			
		CO3	Classify a Sprint with Sprint Reviews and Sprint Retrospectives	2.5	3	**2.6**			2	3	1			2	3		3	3	2	3			5.19	7.78	2.59			5.19	7.78		7.78	7.78	5.19	7.78	
		CO4	Examine the Scrum with multiple team or distributed project teams.	2.5	2.9	**2.6**	1	3		2		3	1		3	2	3	3			2.57	7.72		5.15		7.72	2.57		7.72	5.15	7.72	7.72			
		CO5	Design test driven and agile principle based software.	3.0	3	**3.0**			2					2			3		2				6.00					6.00			9.00		6.00		
		CO6	Develop any application using agile methodology.	2.8	3	**2.9**	2					3					3	3		1	5.75					8.62					8.62	8.62		2.87	
			160602: Agile Methodology																		2.84	2.74	2.80	2.70	2.59	2.72	2.79	2.88	2.59	2.57	2.77	2.74	2.71	2.65	1
	160611: Network and Web security	CO1	Explain cryptographic algorithms, hash algorithms and authentication mechanisms.	3.0	3	**3.0**	3	2	2	3		1	2		2	3	1	3	2	3	9.00	6.00	6.00	9.00		3.00	6.00		6.00	9.00	3.00	9.00	6.00	9.00	
		CO2	Illustrate fundamentals of number theory, attacks and security principles.	3.0	3	**3.0**	3	2	1	2		1		2	2		2	3	2	3	9.00	6.00	3.00	6.00		3.00		6.00	6.00		6.00	9.00	6.00	9.00	
		CO3	Apply number theory and various algorithms to achieve principles of security.	3.0	3	**3.0**	3	3	2			2	3		2			2	2	3	9.00	9.00	6.00			6.00	9.00		6.00			6.00	6.00	9.00	
		CO4	Analyze the cause for various existing network attacks and describe the working of available security controls	1.9	3	**2.1**	2	3	2	2		1	1		2		2	3	2	3	4.19	6.28	4.19	4.19		2.09	2.09		4.19		4.19	6.28	4.19	6.28	
		CO5	Examine the vulnerabilities in IT infrastructure.	1.7	3	**2.0**	3	2	2			2	2	1	2		2	3	3	3	5.96	3.97	3.97			3.97	3.97	1.99	3.97		3.97	5.96	5.96	5.96	
		CO6	Predict the attacks and controls associated with IP, transport-level, web and e-mail security.	1.7	1.9	**1.8**	2	3	2		2	1			3	2		2	3	2	3.53	5.30	3.53		3.53	1.77			5.30	3.53		3.53	5.30	3.53	
			160611: Network and Web security																		2.54	2.44	2.43	2.74	1.77	2.48	2.63	2.66	2.42	2.51	2.45	2.49	2.39	2.52	
Semester VII	160716: Mobile Computing	CO1	explain the basic concepts of mobile telecommunications system	3	3.0	**3.0**	1	3		2	2	3	1	2	1		1	2	3	2	3.00	9.00		6.00	6.00	9.00	3.00	6.00	3.00		3.00	6.00	9.00	6.00	
		CO2	demonstrate the infrastructure to develop mobile communications system	3	3.0	**3.0**	1	3	2		2		2	2		2	2	2		2	3.00	9.00	6.00		6.00		6.00	6.00		6.00	6.00	6.00		6.00	
		CO3	classify the different generations and technology for mobile communications	3	2.6	**2.9**	2	3			3	3	2		2		2	2		2	5.84	8.76			8.76	8.76	5.84		5.84		5.84	5.84		5.84	
		CO4	examine the working of different protocols of wireless mobile communication technology.	3	3.0	**3.0**	1	1	2	1	1	2	2	3	2		2	3		2	3.00	3.00	6.00	3.00	3.00	6.00	6.00	9.00	6.00		6.00	9.00		6.00	
		CO5	determine the importance of each technology suitable for different situation of mobile and wireless communications	2.7	3.0	**2.8**	2		3	1	3		2	3	2	2	3	2	2	2	5.52		8.28	2.76	8.28		5.52	8.28	5.52	5.52	8.28	5.52	5.52	5.52	
		CO6	develop protocols for adhoc and infrastructure based wireless networks.	3	3.0	**3.0**	2	2	2		2	2	3		3	2	2		2	2	6.00	6.00	6.00		6.00	6.00	9.00		9.00	6.00	6.00		6.00	6.00	
			160716: Mobile Computing																		2.93	2.98	2.92	2.94	2.93	2.98	2.95	2.93	2.94	2.92	2.93	2.94	2.93	2.95	
	900208: Soft Computing	CO1	define basic concepts of neural network and fuzzy systems	3	3.0	**3.0**	3	1	1	2		1	2		1	3	1	3	2	2	9.00	3.00	3.00	6.00		3.00	6.00		3.00	9.00	3.00	9.00	6.00	6.00	
		CO2	compare solutions by applying various soft computing approaches on a given problem.	3	2.5	**2.9**	3	2	1	2		1		2	2		2	3	2	3	8.72	5.81	2.91	5.81		2.91		5.81	5.81		5.81	8.72	5.81	8.72	
		CO3	develop and train different supervised and unsupervised learning	3	2.5	**2.9**	3	3	2		1	1	3		3			1	2	3	8.72	8.72	5.81		2.91	2.91	8.72		8.72			2.91	5.81	8.72	
		CO4	classify various nature inspired algorithms according to their application aspect.	3	3.0	**3.0**	2	3	2	2		1	1		2		2	3	2	2	6.00	9.00	6.00	6.00		3.00	3.00		6.00		6.00	9.00	6.00	6.00	
		CO5	compare the efficiency of various hybrid systems.	3	2.1	**2.8**	3	2	2			2	3	1	2		2	3	3	3	8.48	5.65	5.65			5.65	8.48	2.83	5.65		5.65	8.48	8.48	8.48	
		CO6	design a soft computing model for solving real world problems	1.97	3.0	**2.2**	2	3	2		2				3	2		2	3	2	4.35	6.53	4.35		4.35				6.53	4.35		4.35	6.53	4.35	
			900208: Soft Computing																		2.83	2.77	2.77	2.97	2.42	2.91	2.91	2.88	2.75	2.67	2.92	2.83	2.76	2.82	1
	900209: Network Security	CO1	define various aspects of network security	3.0	3.0	**3.0**	3	2	2	3		1	2		2	3	1	3	2	3	9.00	6.00	6.00	9.00		3.00	6.00		6.00	9.00	3.00	9.00	6.00	9.00	
		CO2	illustrate fundamentals of number theory and cryptography	3.0	3.0	**3.0**	3	2	2		2	1		2	2		2	3	1	2	9.00	6.00	6.00		6.00	3.00		6.00	6.00		6.00	9.00	3.00	6.00	
		CO3	apply security mechanisms to achieve principles of network security	3.0	3.0	**3.0**	2	1	2			2	3		1			3	2	3	6.00	3.00	6.00			6.00	9.00		3.00			9.00	6.00	9.00	
		CO4	analyze the cause for various existing network attacks	3.0	3.0	**3.0**	3	3	2		1	1	1		2		2	2	2	3	9.00	9.00	6.00		3.00	3.00	3.00		6.00		6.00	6.00	6.00	9.00	
		CO5	examine the vulnerabilities in applications over internet.	3.0	3.0	**3.0**	3		2			3	2	1	2		2	3	3	3	9.00		6.00			9.00	6.00	3.00	6.00		6.00	9.00	9.00	9.00	
		CO6	develop a secure protocol for achieving various network security services.	3.0	3.0	**3.0**	2	3	1	1		1			3	2		2	3	1	6.00	9.00	3.00	3.00		3.00			9.00	6.00		6.00	9.00	3.00	
			900209: Network Security																		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
	20: R mming	CO1	define basic programming constructs used in R.	3.0	3.0	**3.0**	3	2	1	2	2	1	2		1	3	1	3	2	2	9.00	6.00	3.00	6.00	6.00	3.00	6.00		3.00	9.00	3.00	9.00	6.00	6.00	
		CO2	explain the various commands used in R.	3.0	3.0	**3.0**	3	2	1	2	1	1		2	2		2	3	2	3	9.00	6.00	3.00	6.00	3.00	3.00		6.00	6.00		6.00	9.00	6.00	9.00	
		CO3	apply various concept of programming for controlling the flow of data using R.	3.0	3.0	**3.0**	3	3	2		2	1	3		3			1	2	3	9.00	9.00	6.00		6.00	3.00	9.00		9.00			3.00	6.00	9.00	

9002 Progra	**CO4**	analyze the concept of concept of object oriented programming in R.	2.8	3.0	**2.8**	2	2	3	1	3	1	1		2		2	3	2	2
	CO5	choose appropriate packages of R programming for dealing various tasks.	3.0	3.0	**3.0**	3	2	3	1	2	2	3	1	2		2	3	3	3
	CO6	predict results from the datasets using R commands.	3.0	3.0	**3.0**	2	2	2		2				3	2		2	3	2
		900220: R Programming																	
900222: Computer Networks	**CO1**	I am able to explain the fundamental concepts of computer network.	3.0	3.0	**3.0**	3	1	1	2		1	2		1	3	1	3	2	2
	CO2	I am able to illustrate the basic taxonomy & terminologies of computer network.	3.0	3.0	**3.0**	3	2	1	2		1		2	2		2	3	2	3
	CO3	I am able to identify various parameter for affecting the performance of computer network.	3.0	3.0	**3.0**	3	3	2		1	1	3		3			1	2	3
	CO4	I am able analyze the concepts of communication using various layer of OSI model.	3.0	3.0	**3.0**	2	3	2	2		1	1		2		2	3	2	2
	CO5	I am able to evaluate the performance of computer network in congestion and Internet.	3.0	3.0	**3.0**	3	2	2			2	3	1	2		2	3	3	3
	CO6	I am able to design the network environment and applications for implementation of computer networking concept.	3.0	3.0	**3.0**	2	3	2		2				3	2		2	3	2
		900222: Computer Networks																	

CO4	5.68	5.68	8.52	2.84	8.52	2.84	2.84		5.68		5.68	8.52	5.68	5.68
CO5	9.00	6.00	9.00	3.00	6.00	6.00	9.00	3.00	6.00		6.00	9.00	9.00	9.00
CO6	6.00	6.00	6.00		6.00				9.00	6.00		6.00	9.00	6.00
900220: R Programming	2.98	2.98	2.96	2.97	2.96	2.97	2.98	3.00	2.98	3.00	2.95	2.97	2.98	2.98
CO1	9.00	3.00	3.00	6.00		3.00	6.00		3.00	9.00	3.00	9.00	6.00	6.00
CO2	9.00	6.00	3.00	6.00		3.00		6.00	6.00		6.00	9.00	6.00	9.00
CO3	9.00	9.00	6.00		3.00	3.00	9.00		9.00			3.00	6.00	9.00
CO4	6.00	9.00	6.00	6.00		3.00	3.00		6.00		6.00	9.00	6.00	6.00
CO5	9.00	6.00	6.00			6.00	9.00	3.00	6.00		6.00	9.00	9.00	9.00
CO6	6.00	9.00	6.00		6.00				9.00	6.00		6.00	9.00	6.00
900222: Computer Networks	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Madhav Institute of Technology & Science, Gwalior- 474 005
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Department : Information Technology Year 2018-2022

S.No.	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
1	100203:Basic Computer Engineering	2.24	2.23	2.31	2.23	2.21	2.36	2.33	2.23	2.23	2.20	2.19	2.18	2.14	2.37
2	100203: Basic Computer Engineering LAB	2.53	2.58	2.54	2.54	2.52	2.59	2.52	2.57	2.54	2.54	2.62	2.56	2.66	2.56
3	160304: OOPs and methodology	1.60	1.68	2.00	1.63	1.56	1.70	1.64	1.81	1.67	1.86	1.76	1.62	1.83	2.00
4	160303: Computer Graphics and Multimedia	1.95	1.93	1.90	1.98	2.01	1.88	1.86	1.97	1.92	2.07	1.90	1.91	1.94	1.88
5	160302: Data Structure LAB	2.89	2.91	2.91	2.81	2.99	2.91	2.88	2.99	2.92	2.73	2.93	2.89	2.91	2.87
6	160303: Computer Graphics LAB	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
7	160304: Object Oriented Programming LAB	1.80	1.87	1.78	1.77	1.82	1.80	1.70	1.80	1.86	1.82	1.78	1.79	1.85	1.77
8	160305: Hardware LAB	2.98	2.98	2.98	3.00	2.98	2.98	2.98	2.98	2.98	3.00	2.97	2.99	2.98	2.98
9	160301: Digital Electronics	1.84	3.00	1.88	2.35	1.94	2.38		2.55	1.88	1.70	2.27	2.44	2.34	1.84
10	160302: Data Structures	2.75	2.73	2.71	2.75	2.56	2.75	2.76	2.86	2.72	2.52	2.74	2.68	2.74	2.60
11	160401: Design and Analysis of Algorithm	2.39	2.45	2.38	2.21	2.40	2.23	2.23	2.62	2.53	1.99	2.60	2.50	2.44	2.40
12	160402: Database management system	2.77	2.62	2.32	2.47	2.53	2.72	2.62	2.53		2.62	2.11	2.57	2.39	2.65
13	160403: Operating system	2.68	2.56	2.56	2.82	2.14	2.66	2.78	2.78	2.56	2.52	2.73	2.67	2.57	2.67
14	160404: Computer System Organization	2.97	3.00	3.00	2.99	2.92	2.99	3.00	2.99	3.00	2.84	3.00	3.00	3.00	2.99
15	100004: Cyber Security	2.97	2.96	2.97	3.00	2.94	2.96	2.95	3.00	2.97	3.00	3.00	2.97	2.97	2.97
16	160501: Discrete Structures	2.76	2.67	2.67	2.68	2.97	2.73	2.68	3.00	2.70	2.98	2.73	2.76	2.76	2.74
17	160503: Theory of Computation LAB	2.48	2.49	2.53	2.60	2.54	2.39	2.16	2.71	2.55	2.62	2.64	2.60	2.54	2.50
18	160502: Software Engineering LAB	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
19	160504: Microprocessor and interfacing LAB	2.97	2.49	3.00	2.59	2.92	2.38	2.84	2.14	2.90	3.00	2.68	2.60	2.59	2.97
20	160503: Theory of Computation	2.67	2.77	2.68	2.91	2.81	2.60	2.55	2.52	2.75	2.81	2.60	2.65	2.65	2.65
21	160502: Software Engineering	2.41	2.50	2.45	2.59	2.36	2.30	2.13	2.38	2.45	2.59	2.53	2.54	2.48	2.40
22	160504: Microprocessor & Interfacing	2.93	2.97	2.96	2.87	3.00	2.93	2.91	3.00	2.97	2.80	2.94	2.92	2.94	2.95
23	160601: Compiler	2.61	2.63	2.58	2.91	2.61	2.55	2.54	2.84	2.67	2.47	2.61	2.61	2.58	2.57
24	160602: Computer Networks	2.63	2.50	2.48	2.81	2.14	2.66	2.69	2.76	2.50	2.49	2.63	2.57	2.49	2.61
25	160602: Agile Methodology	2.84	2.74	2.80	2.70	2.59	2.72	2.79	2.88	2.59	2.57	2.77	2.74	2.71	2.65
26	160611: Network and Web security	2.54	2.44	2.43	2.74	1.77	2.48	2.63	2.66	2.42	2.51	2.45	2.49	2.39	2.52

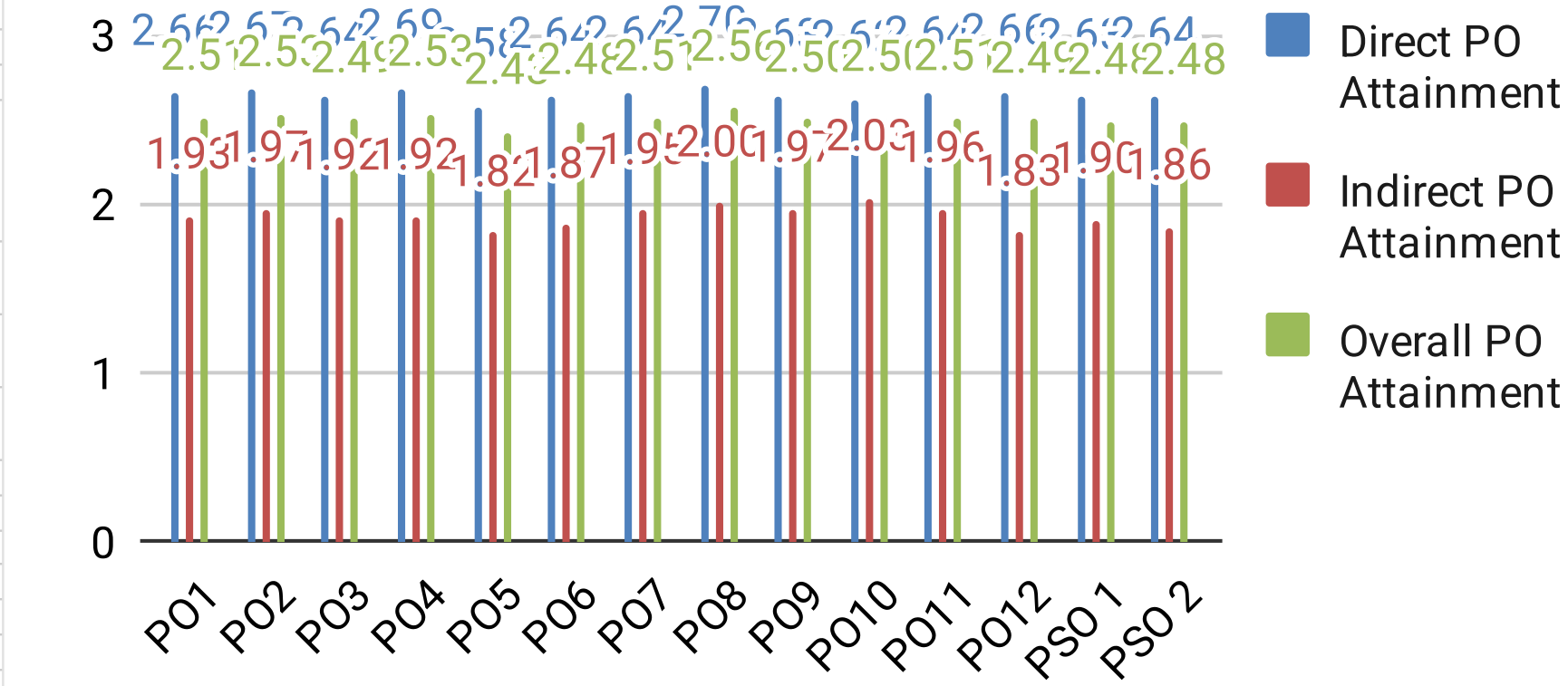
27	160716: Mobile Computing	2.93	2.98	2.92	2.94	2.93	2.98	2.95	2.93	2.94	2.92	2.93	2.94	2.93	2.95
28	900208: Soft Computing	2.83	2.77	2.77	2.97	2.42	2.91	2.91	2.88	2.75	2.67	2.92	2.83	2.76	2.82
29	900209: Network Security	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
30	900220: R Programming	2.98	2.98	2.96	2.97	2.96	2.97	2.98	3.00	2.98	3.00	2.95	2.97	2.98	2.98
31	900222: Computer Networks	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

	INDIRECT PO ATTAINMENT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
Survey 1	(Exit Survey)	1.84	1.87	1.79	1.88	1.85	1.87	1.92	1.98	1.93	2.01	1.95	1.94	1.89	1.91
Survey 2	(Alumni Survey)	2.10	2.10	2.06	2.14	2.01	2.08	2.06	2.12	2.14	2.19	2.26	2.23	2.15	2.10
Survey 3	(Employer Survey)	1.84	1.93	1.90	1.74	1.61	1.66	1.87	1.89	1.82	1.90	1.68	1.31	1.66	1.58
	Indirect PO Attainment	1.93	1.97	1.92	1.92	1.82	1.87	1.95	2.00	1.97	2.03	1.96	1.83	1.90	1.86

Madhav Institute of Technology & Science, Gwalior- 474 005

Department : Information Technology Year 2018-2022

PO ATTAINMENT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
Direct PO Attainment	2.66	2.67	2.64	2.69	2.58	2.64	2.64	2.70	2.63	2.62	2.64	2.66	2.63	2.64
Indirect PO Attainment	1.93	1.97	1.92	1.92	1.82	1.87	1.95	2.00	1.97	2.03	1.96	1.83	1.90	1.86
Overall PO Attainment	2.51	2.53	2.49	2.53	2.43	2.48	2.51	2.56	2.50	2.50	2.51	2.49	2.48	837732


3
2
1
0
2.48
1.86
PO1
PO2
PO3
PO4
PO5
PO6
PO7
PO8
PO9
PO10
PO11
PO12
PSO1
PSO2
Direct PO Attainment
Indirect PO Attainment
Overall PO Attainment

S.No.	Name of your Organization	[Level of technical contribution] [PEO 1 & 3]	[Level of success in learning new areas, engaging in professional development, and adapting to technological change] [PEO 1, 2, 3, 4]	[Have they been deserved for elevation to higher level ?] [PEO 1, 2, 4]	[Level of ethical and social responsibility] PEO 1,2,4	[Demonstrated ability to work well on a team] PEO 1,2,4	Any Other Comment / Suggestions
1	MPMKVVCL BHOPAL	Excellent	Very Good	Excellent	Excellent	Excellent	Good technical knowledge
2	The Indian Hume Pipe Co. Ltd.	Very Good	Excellent	Very Good	Excellent	Very Good	GOOD. KEEP IT UP
3	Jamna Auto Industries Limited	Very Good	Very Good	Excellent	Very Good	Excellent	Hardworking & smart students
5	Lovely Professional University	Excellent	Very Good	Excellent	Excellent	Excellent	Mr Tushar is sincere and hard working.and is an as
6	Quikr	Very Good	Excellent	Very Good	Very Good	Very Good	Nicholas is a great addition to the team. He has sh
7	Britannia Industries Limited	Very Good	Very Good	Very Good	Very Good	Excellent	Overall Good Candidates
8	HCIL, gurgaon	Fair	Very Good	Fair	Very Good	Very Good	Please make your study environment as per private
9	Schneider Electric Infrastructure Ltd	Very Good	Very Good	Excellent	Very Good	Very Good	Positive, dynamic, fast learner, good team performe
10	Department of Revenue, MP	Very Good	Excellent	Excellent	Very Good	Excellent	Require more Co -Operation and Co-Ordination.
11	Delhi International Airport Ltd	Fair	Fair	Fair	Fair	Fair	
12	GPC sheopur	Excellent	Very Good	Very Good	Fair	Very Good	
13	Persistent Systems Ltd.	Very Good	Very Good	Very Good	Very Good	Very Good	
14	VEM Technologies	Fair	Excellent	Very Good	Very Good	Excellent	
15	PERSISTENT SYSTEMS PRIVATE L	Excellent	Excellent	Excellent	Excellent	Excellent	
16	samrat ashok technological institute	Very Good	Very Good	Very Good	Very Good	Very Good	
17	Zensar Technologies Pvt. Ltd.	Fair	Fair	Fair	Fair	Fair	
18	Gartner	Fair	Poor	Poor	Very Poor	Very Poor	
19	MPWRD	Fair	Poor	Very Good	Fair	Very Good	
20	Xavient Digital Powered by Telus Inter	Very Good	Very Good	Very Good	Very Good	Very Good	
21	MP Rural Road Development Authorit	Excellent	Excellent	Excellent	Excellent	Excellent	
22	Accenture	Excellent	Excellent	Excellent	Excellent	Excellent	
23	DILIP BUILDCON LIMITED BHOPAL	Very Good	Excellent	Excellent	Very Good	Excellent	
24	BORL	Very Good	Very Good	Very Good	Excellent	Very Good	
25	Madhya Pradesh Rural Engineering S	Very Good	Very Good	Very Good	Excellent	Excellent	
26	Food Corporation of India	Excellent	Fair	Very Good	Excellent	Very Good	
27	SPU Balaghat	Excellent	Excellent	Very Good	Excellent	Excellent	
28	Wipro Technologies	Excellent	Excellent	Excellent	Excellent	Excellent	Jai is an excellent team player and a fast learner.H

Category	[Level of technical contribution] [PEO 1 & 3]	[Level of success in learning new areas, engaging in professional development and adapting to technological change] [PEO 1, 2, 3, 4]	[Have they been deserved for elevation to higher level ?] [PEO 1, 2, 4]	[Level of ethical and social responsibility] PEO 1,2,4	[Demonstrated ability to work well on a team] PEO 1,2,4
Excellent	10	11	11	12	14
Very Good	12	12	13	11	11
Good	12	12	13	11	11
Poor	0	2	1	1	1
Feedback Response	**73.00**	**73.50**	**74.63**	**74.87**	**77.95**

Column1	Question 1	Question 2	Question 3	Question 4	Question 5	Indirect % Attainment
PEO1	1	1	1	1	1	74.79
PEO2		1	1	1	1	75.24
PEO3	1	1				73.25
PEO4						

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(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

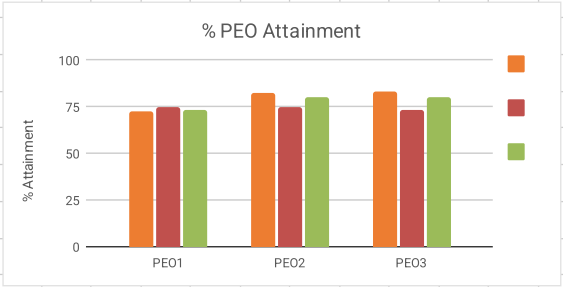
Department : Information Technology **Year 2018-2022**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PEO1	3	3	3	3	2		3	3	3	3	2	2	2	2
PEO2				3	3							3	3	3
PEO3	3	3	3		3	3								

	PEO1	PEO2	PEO3
PO Attainment	**2.51**	**2.53**	**2.49**	**2.53**	**2.43**	**2.48**	**2.51**	**2.56**	**2.50**	**2.50**	**2.51**	**2.49**	**2.48**	**2.48**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PEO1	2.51	2.53	2.49	2.53	1.62		2.51	2.56	2.50	2.50	1.67	1.66	1.66	1.66
PEO2				2.53	2.43							2.49	2.48	2.48
PEO3	2.51	2.53	2.49		2.43	2.48								
	2.51	2.53	2.49	2.53	2.16	2.48	2.51	2.56	2.50	2.50	1.67	2.08	2.07	2.07
	83.68	84.37	83.16	84.45	71.89	82.83	83.55	85.45	83.27	83.45	55.74	69.24	69.02	68.99

	% PEO Attainment		
	Direct	**Indirect**	**Total**
PEO1	72.83	74.79	**73.42**
PEO2	82.81	75.24	**80.54**
PEO3	82.98	73.25	**80.06**



PEO1	Graduates of the programme will have successful technical and professional careers
PEO2	Graduates of the programme will continue to learn and adapt in a world of constantly evolving technology
PEO3	Graduates of the programme will be able to apply, analyze, design and create products and solutions for real life Electrical Engineering problems

Feedback Response (Alumni)

Category	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Low	3	1	4	2	6	3	2	3	1	2	2	2	3	2
Moderate	15	10	14	9	14	8	13	5	9	6	4	2	6	11
Adequate	20	35	21	29	23	35	32	36	33	29	27	31	31	34
Substantial	34	27	36	32	31	27	25	28	27	33	33	36	31	23
Highly Substantial	15	14	12	15	13	14	15	15	17	17	21	16	16	17
% PO Attainment Indirect	**69.89**	**69.89**	**68.74**	**71.26**	**67.13**	**69.43**	**68.74**	**70.80**	**71.49**	**73.10**	**75.40**	**74.25**	**71.72**	**69.66**
	2.10	2.10	2.06	2.14	2.01	2.08	2.06	2.12	2.14	2.19	2.26	2.23	2.15	2.09

Tuesday, 16 July 2019, 10:22 AM															
Submitted answers: 78															
Questions: 14															
Label	Question	Responses													
PO 1	PO1. To what level you are able	Low (Slight)	Moderate(Medium)	Adequate	Substantial(High)	Highly Substantial									
		6	27	19	5	21									
		0.07692307692	0.3461538462	0.2435897436	0.06923076923	0.2641025641		1.8584615			1.86				
PO 2	PO2. To what extent you are abl	Poor	Limited	Acceptable	Good	Excellent					1.87				
		7	12	31	21	12					1.32				
		0.08974358974	0.1538461538	0.3974358974	0.2692307692	0.08974358974		1.8692307			1.88				
PO 3	PO3. To what extent you are abl	Poor	Limited	Acceptable	Good	Excellent					1.85				
		5	12	42	2	17					1.87				
		0.0641025641	0.1538461538	0.5384615385	0.02179487179	0.02564102564		1.3215384			1.92				
PO 4	PO4. To what extent you are abl	Poor	Limited	Acceptable	Good	Excellent					1.98				
		3	11	41	18	5					1.93				
		0.03846153846	0.141025641	0.5256410256	0.2307692308	0.0641025641		1.8846153			2.01				
PO 5	PO5. To what extent you are abl	Poor	Limited	Acceptable	Good	Excellent					1.95				
		5	15	33	19	6					1.94				
		0.0641025641	0.1923076923	0.4230769231	0.2435897436	0.07692307692		1.8461538			1.89				
PO 6	PO6. To what extent you are abl	Poor	Limited	Acceptable	Good	Excellent					1.91				
		4	12	37	21	4									
		0.05128205128	0.1538461538	0.4743589744	0.2692307692	0.05128205128		1.8692307							
PO 7	PO7. To what extent you are abl	Poor	Limited	Acceptable	Good	Excellent									
		5	11	32	23	7									
		0.0641025641	0.141025641	0.4102564103	0.2948717949	0.08974358974		1.9230769							
PO 8	PO8. To what extent Graduates v	Poor	Limited	Acceptable	Good	Excellent									
		1	12	32	29	4									
		0.01282051282	0.1538461538	0.4102564103	0.3717948718	0.05128205128		1.9769230							
PO 9	PO9. To what extent you are abl	Poor	Limited	Acceptable	Good	Excellent									
		5	12	29	25	7									
		0.0641025641	0.1538461538	0.3717948718	0.3205128205	0.08974358974		1.9307692							
PO 10	PO10. To what extent you are ab	Poor	Limited	Acceptable	Good	Excellent									
		2	13	30	22	11									
		0.02564102564	0.1666666667	0.3846153846	0.2820512821	0.141025641		2.0076923							
PO 11	PO11. To what extent you are ab	Poor	Limited	Acceptable	Good	Excellent									
		5	11	28	28	6									
		0.0641025641	0.141025641	0.358974359	0.358974359	0.07692307692		1.9461538							
PO 12	PO12. To what extent Graduates	Poor	Limited	Acceptable	Good	Excellent									
		6	9	30	27	6									
		0.07692307692	0.1153846154	0.3846153846	0.3461538462	0.07692307692		1.9384615							
PSO 1	PSO1. To what extent you are at	Poor	Limited	Acceptable	Good	Excellent									
		6	11	32	23	6									
		0.07692307692	0.141025641	0.4102564103	0.2948717949	0.07692307692		1.8923076							
PSO2	PSO2. To what extent you are at	Poor (0)	Limited (0)	Acceptable (0)	Good (0)	Excellent (0)									
		2	18	29	17	11									
		0.0256410256	0.2307692308	0.3717948718	0.2179487179	0.141025641		1.9076923							

	1.84	1.87	1.79	1.88	1.85	1.87	1.92	1.98	1.93	2.01	1.95	1.94	1.89	1.91	
		1.84	1.87	1.79	1.88	1.85	1.87	1.92	1.98	1.93	2.01	1.95	1.94	1.89	1.91