MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
NAAC Accredited with A++ Grade
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO attainment with Gap Analysis and action taken for July-Dec. 2022

Sem	Faculty Name	Brabch & Section	Cource code & name		Course Outcome Statements	CO attainment from Quiz (%age)	CO attainment from Assignment (%age	CO attainment from Mid Sem (%age) Avg. of mid sem I & II	CO attainment from End Sem (%age)	CO direct attainment (%age)	CO direct attainment level	CO indirect attainment (%age) (Calculated using CO f/b, End Sem Seminar, 1 min Paper writing)	CO indirect attainment level	Overall CO attainment	Target (To be set for Overall CO Attainment)	Attained/not attained	Action taken for Not Attained
III	Dr. Rajni Ranjan Singh	CSE	150312-Operating Systems	CO1	Outline the basic concept of operating systems	81.24	80.48	79.55	77.41	78.8075	3	77.9	3	3	2.5	Attained	
				CO2	Analyze the working of operating system	83.57	81.33	78.63	81.5	81.02	3	76	3	3	2.5	Attained	
				CO3	Examine the working of various scheduling/allocation approaches	81.46	85.32	83.87	81.49	82.56	3	74.5	3	3	2.5	Attained	
				CO4	. Measure the performance of various scheduling/allocation approaches	79.69	82.36	80.54	79.45	80.11625	3	74	3	3	2.5	Attained	
				CO5	Analyze the various operating system problems/issues	80.49	79.71	79.62	81.59	80.725	3	75.6	3	3	2.5	Attained	
				CO6	Develop the Solution of various operating system problems/issues	79.54	85.67	83.36	80.31	81.64625	3	73.4	3	3	2.5	Attained	
III	Dr. Manish Dixit	CSE	150313 -Computer Graphics	CO1	Explain interactive Computer Graphics, various display devices and explore applications of computer graphics.	96	98	90	64.3	78.9	3	72.3	3	3	2.5	Attained	
				CO2	Illustrate various line generations, circle generation, curve generation and shape Generation algorithms.	80	97	80	65.7	74.975	3	73.23	3	3	2.5	Attained	
				CO3	Apply various 2-Dimensional and 3-Dimensional transformations and projections on Images.	88	92	74	63.2	72.6	3	72.3	3	3	2.5	Attained	
				CO4	Classify methods of image clipping and various algorithms for Line and Polygon clipping.	92	92	48	67.4	68.7	2.9	71.4	3	2.9	2.5	Attained	
				CO5	Choose appropriate filling algorithms, Hidden Surface Elimination algorithm and apply on various images.	96	96	48	65.3	68.65	2.9	74.6	3	2.9	2.5	Attained	
				CO6	Discuss various color models, shading methods, animation and Digital Image Processing.	96	96	48	66.4	69.2	2.9	69.3	3	2.9	2.5	Attained	
III	Dr. R.K. Gupta	CSE	150311-Computer System Organization	CO1	Recall the basic building blocks of computer Architecture.	82.26	82.8	88.25	77.51	81.45	3	73.78	3	3	2.5	Attained	
				CO2	Explain different memories and the functional units of a processor	79.34	83.43	84.76	75.59	79.33125	3	78.52	3	3	2.5	Attained	
				CO3	Explain the concept of working of microprocessor, multiprocessor and pipelining.	81.49	85.49	79.28	73.56	77.4725	3	80.43	3	3	2.5	Attained	
				CO4	Analyze various modes of Input-Output data transfer.	82.62	87.43	81.78	71.45	77.42625	3	79.54	3	3	2.5	Attained	
				CO5	Evaluate the arithmetic related to the number system.	83.65	82.76	88.69	77.23	81.58875	3	82.4	3	3	2.5	Attained	
				CO6	Develop the skill of writing low level programming.	87.62	86.85	81.47	78.12	81.23625	3	77.7.	3	3	2.5	Attained	
III	Dr. Ranjeet Kumar Singh	CSE	150314-Design & Analysis of Algorithms	CO1	Tell the basic features of an Algorithms.	78.5	84.3	76.4	68.3	73.6	3	74.4	3	3	2.5	Attained	
				CO2	Outline major Algorithms and Data Structures.	74.6	85.1	73.4	85.4	81.0125	3	79.4	3	3	2.5	Attained	
				CO3	Apply various algorithmic design paradigms.	73.7	86.7	77.4	63.7	71.25	3	72.4	3	3	2.5	Attained	
				CO4	:Analyze the asymptotic performance of Algorithms.	79.4	82.4	78.2	65.2	72.375	3	77.2	3	3	2.5	Attained	
				CO5	Compare different design techniques to develop algorithms for computational problems.	72.3	85.2	79.3	66.1	72.5625	3	81.3	3	3	2.5	Attained	
				CO6	Design algorithms using greedy strategy, divide and conquer approach, dynamic programming, backtracking, branch and bound approach.	73.4	81.4	71.3	62.4	68.375	2.8	75.3	3	2.8	2.5	Attained	
III	Dr. R.K. Gupta	CSD	290304-Computer System Organization	CO1	Recall the basic building blocks of computer Architecture.	81.21	81.67	87.25	72.49	78.4175	3	71.3	3	3	2.5	Attained	
				CO2	Explain different memories and the functional units of a processor	83.32	81.48	83.76	71.58	77.33	3	74.5	3	3	2.5	Attained	
				CO3	Explain the concept of working of microprocessor, multiprocessor and pipelining.	79.43	86.44	75.28	70.63	74.86875	3	77.4	3	3	2.5	Attained	
				CO4	Analyze various modes of Input-Output data transfer.	78.68	82.45	81.78	74.91	78.04125	3	73.2	3	3	2.5	Attained	
				CO5	Evaluate the arithmetic related to the number system.	81.49	81.49	86.69	73.78	78.935	3	75.6	3	3	2.5	Attained	
				CO6	Develop the skill of writing low level programming.	84.59	89.38	84.47	78.52	82.12375	3	78.5	3	3	2.5	Attained	
III	Dr. Rajni Ranjan Singh	CSD	290303-Operating Systems	CO1	Outline the basic concept of operating systems	79.26	81.58	77.52	80.43	79.7	3	70.63	3	3	2.5	Attained	
				CO2	Analyze the working of operating system	84.38	79.43	73.67	79.54	78.66375	3	74.91	3	3	2.5	Attained	
				CO3	Examine the working of various scheduling/allocation approaches	77.46	89.42	85.82	84.41	84.52	3	73.78	3	3	2.5	Attained	
				CO4	Measure the performance of various scheduling/allocation approaches	76.63	84.46	83.58	76.89	79.47625	3	78.52	3	3	2.5	Attained	
				CO5	Analyze the various operating system problems/issues	80.43	84.41	79.68	77.56	79.305	3	80.43	3	3	2.5	Attained	
				CO6	Develop the Solution of various operating system problems/issues	84.56	92.37	81.39	78.49	81.70875	3	79.54	3	3	2.5	Attained	
III	Dr. Ranjeet Kumar Singh	CSD	290302-Design & Analysis of Algorithms	CO1	Tell the basic features of an Algorithms	81.23	82.52	72.46	73.43	75.29875	3	84.41	3	3	2.5	Attained	
				CO2	Outline major Algorithms and Data Structures.	79.34	81.47	74.74	73.54	75.55625	3	76.89	3	3	2.5	Attained	
				CO3	Apply various algorithmic design paradigms	76.45	88.48	75.67	85.41	82.23875	3	79.6	3	3	2.5	Attained	
				CO4	Analyze the asymptotic performance of Algorithms	79.43	87.48	83.56	74.89	79.19875	3	77.4	3	3	2.5	Attained	
				CO5	Compare different design techniques to develop algorithms for computational problems	81.66	89.47	82.63	72.56	78.32875	3	73.2	3	3	2.5	Attained	
				CO6	Design algorithms using greedy strategy, divide and conquer approach, dynamic programming, backtracking, branch and bound approach.	84.56	91.34	80.32	77.67	80.9025	3	75.6	3	3	2.5	Attained	
III	Prof. Dilip Mishra	CSD	290301-Discrete structure	CO1	Understand logical notation to define and reason mathematically about the fundamental data types and structures used in computer algorithms and systems.	74.12	77.56	79.69	78.23	77.9975	3	78.5	3	3	2.5	Attained	
				CO2	. Outline various mathematical concepts along with their applications	69.32	78.45	75.78	76.89	75.86125	3	75.3	3	3	2.5	Attained	
				CO3	. Implement the applications of various types of graphs to solve real life problem	66.89	66.89	77.78	89.43	80.8825	3	71.3	3	3	2.5	Attained	
				CO4	Apply the mathematical concepts to solve engineering problems.	72.45	59.21	78.87	78.54	75.445	3	74.5	3	3	2.5	Attained	
				CO5	Analyze the set theory, prepositional logic, graph theory, discrete numeric function and algebraic structure to examine the real world problem.	76.89	69.56	80.98	76.56	76.83125	3	73.3	3	3	2.5	Attained	

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				CO6	Design analytical skill and interpret applications of engineering in real time troubleshooting.	69.45	70.67	69.65	72.12	70.9875	3	77.7.	3	3	2.5	Attained	
III	Prof. Hemlata Arya	CSD	290305-Computer Graphics and Animation	CO1	Explain interactive Computer Graphics, various display devices and explore	85	86	72	74	76.375	3	81.46	3	3	2.5	Attained	
				CO2	Illustrate various line generations, circle generation, curve generation and shape	82	84	74	69	73.75	3	76	3	3	2.8	Attained	
				CO3	Apply various 2-Dimensional and 3-Dimensional transformations and	72	92	75	85	81.75	3	82.24	3	3	2.8	Attained	
				CO4	Classify methods of image clipping and various algorithms for Line and	84	87	86	74	79.875	3	74	3	3	2.8	Attained	
				CO5	Choose appropriate filling algorithms, Hidden Surface Elimination	74	92	84	72	77.75	3	83.36	3	3	2.8	Attained	
				CO6	Analyis various color models, shading methods, animation and Digital	82	94	88	74	81	3	75.62	3	3	2.8	Attained	
V	Prof. Ankita Sengar	CSE	150511 -Data Science	CO1	Define basic concepts of Data Sciences.	72	68	58	72	69.5	3	80	3	3	2.8	Attained	
				CO2	Illustrate various concepts of python that are used in data sciences.	88	60	68	69	70	3	77	3	3	2.8	Attained	
				CO3	Identify various methods for the representation and manipulation of	72	60	74	76	73	3	75	3	3	2.8	Attained	
				CO4	Analysis the data for applying various statistical modelling approaches.	60	62	64	72	67.25	2.7	71	3	2.8	2.8	Attained	
				CO5	Identify hidden patterns in data and transform it using data science	52	72	70	76	71	3	72	3	3	2.8	Attained	
				CO6	Apply regression techniques to solve real world problems.	55	88	69	69	68	2.8	70	3	2.8	2.8	Attained	
V	Prof.Khushboo Agrawal	CSE	150512-Networking with TCP/IP	CO1	outlier the basic functionality of TCP/IP Layers.	70	72	75	78	75.5	3	91	3	3	2.8	Attained	
				CO2	analyze various addressing mechanism used in the internet	68	64	65	76	70.75	3	85	3	3	2.8	Attained	
				CO3	elaborate framing, routing and address translation mechanism used in the internet.	60	60	60	80	70	3	80	3	3	2.8	Attained	
				CO4	analyze the working of application layer protocols.	59	55	77	75	71	3	79	3	3	2.8	Attained	
				CO5	simulate the network protocols and topologies	55	55	80	73	70.25	3	83	3	3	2.8	Attained	
				CO6	install, maintain and troubleshoot a TCP/IP network	51	50	59	69	61.875	2.2	77	3	2.4	2.4	Attained	
V	Prof. Kratika sharma	CSE	150513-Information Security	CO1	Explain attacks, hash algorithms and authentication mechanisms	68	68	68	68	68	2.8	78	3	2.8	2.5	Attained	
				CO2	Illustrate fundamentals of number theory and security principles	72	84	64	72	71.5	3	76	3	3	2.5	Attained	
				CO3	Apply various algorithms to achieve principles of network security	76	88	60	76	73.5	3	81	3	3	2.5	Attained	
				CO4	Analyse the cause for various existing network attacks and describe the	80	72	72	76	75	3	79	3	3	2.5	Attained	
				CO5	Examine the vulnerabilities in IT infrastructure	76	80	68	72	72.5	3	80	3	3	2.5	Attained	
				CO6	Predict the attacks and controls associated with IP, transport-level, web and	76	80	64	72	71.5	3	81	3	3	2.5	Attained	
V	Prof. Mahesh Parmar	CSE	150514-Compiler Design	CO1	Define the concepts of finite automata and context free grammar	60.23	82	88	88	83.77875	3	90	3	3	2.5	Attained	
				CO2	Build the concept of working of compiler	65	84.33	96	84	84.66625	3	88.33	3	3	2.5	Attained	
				CO3	Examine various parsing techniques and their comparison	70.2	73	90	72	76.4	3	90	3	3	2.2	Attained	
				CO4	Compare various code generation and code optimization techniques.	68	73	92	60	70.625	3	73.6	3	3	2.2	Attained	
				CO5	Analyze different tools and techniques for designing a compiler	62.15	66	94	80	79.51875	3	85	3	3	2.5	Attained	
				CO6	Design various phases of compiler	60.23	84.33	87	60	69.82	3	88.33	3	3	2.5	Attained	
V	Prof. JaimalaJha	CSE	150515-Artificial Intelligence	CO1		71	80	80	78	77.875	3	78	3	3	3	Attained	
				CO2	I am able to Understand concepts and applications of Artificial Intelligence	68	70	68	73	70.75	3	76	3	3	3	Attained	
				CO3	I am able to Formulate problems as state space search problem &	60	65	60	79	70.125	3	79	3	3	2.5	Attained	
				CO4	I am able to Understand the working of various informed, uninformed and	59	60	75	75	71.125	3	75	3	3	3	Attained	
				CO5	I am able to Understand the concept of knowledge representation	59	59	78	73	70.75	3	73	3	3	3	Attained	
				CO6	I am able to Evaluate the various learning algorithms for solving problems.	55	57	63	78	68.75	2.9	78	3	2.9	2.5	Attained	
VII	Prof. Khushboo Agrawal	CSE	150711-Networking with TCP/IP	CO1	define the concept of computer network and various layered architecture	71	80	80	78	77.875	3	78	3	3	3	Attained	
				CO2	compare the classless and class full addressing of IPV4 .	68	70	65	73	70	3	76	3	3	3	Attained	
				CO3	identify the different types of networking devices and their functions within a network.	60	65	60	80	70.625	3	80	3	3	2.5	Attained	
				CO4	analyze various protocols of computer networks for assisting network design and implementation.	59	55	75	75	70.5	3	75	3	3	3	Attained	
				CO5	design client server applications and communication model and protocols for communication.	59	55	80	73	70.75	3	73	3	3	3	Attained	
				CO6	elaborate various TCP/IP protocol for achieving multimedia and security services.	52	55	63	78	68.125	2.8	78	3	2.8	2.5	Attained	
VII	Prof. Amit Manjhwar	CSE	150712-Data mining & Wareshouing	CO1	classify various databases systems and data models of data warehouse	84.23	83.56	80.11	73	77.50125	3	72	3	3	3	Attained	
				CO2	compare various methods for storing & retrieving data from different data	80	83.56	76	78	78.445	3	75	3	3	3	Attained	
				CO3	apply pre-processing techniques for construction of data warehouse.	81.23	86.22	78	76	78.43125	3	76	3	3	3	Attained	
				CO4	analyse data mining for knowledge discovery & prediction.	80.11	79.23	86	77	79.9175	3	77	3	3	3	Attained	
				CO5	explain data mining methods for identification of association for transactional	80.11	77.51	89	75	79.4525	3	78	3	3	3	Attained	
				CO6	develop various classification and clustering algorithms for data using data	79.23	77	88	74	78.52875	3	74	3	3	3	Attained	
VII	Prof. Jigyasa Mishra	CSE	100008-Intellectual Property Rights	CO1	Imbibe the knowledge of Intellectual Property and its protection through	84	80	80	71	76	3	82	3	3	2.5	Attained	
				CO2	apply the knowledge of IPR for professional development	88	80	66	68	71.5	3	70	3	3	2.5	Attained	
				CO3	develop a platform for protection and complianceof Intellectual Property	84	64	70	74	73	3	80	3	3	3	Attained	
				CO4	create awareness amidst academia and industry of IPR and Copyright	88	64	64	72	71	3	78	3	3	2.5	Attained	
				CO5	deliver the purpose and function of IPR and patenting.	80	76	72	76	75.5	3	80	3	3	3	Attained	
				CO6						0	1		1	1		Please Set Target	

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										0	1		1	1		Please Set Target	
										0	1		1	1		Please Set Target	
										0	1		1	1		Please Set Target	
										0	1		1	1		Please Set Target	
										0	1		1	1		Please Set Target	
										0	1		1	1		Please Set Target	

	Excellent (3)	Very Good (2)	Good (1)
Attainment Levels	70	60	50

Total CO Attainment = 80% of Direct CO Attainment + 20% of

Direct CO Attainment = 12.5% of Weekly Quiz Score +

For **Indirect CO attainment:** CO feedback from the students, by respective course instructor, was collected (via Institute's MOODLE), along with the course end seminar and one minutes paper writing.

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III	Prof. Amit Manjhwar + Dr.Smita Parate	CSE	150313 -Computer Graphics-LAB	CO1	Explain interactive Computer Graphics, various display devices and explore	77	82	70	73.8	3	3	2	Attained	
				CO2	Illustrate various line generations, circle generation, curve generation and shape	86	90	75	80.2	3	3	2	Attained	
				CO3	Apply various 2-Dimensional and 3-Dimensional transformations and projections	77	87	66	72.4	3	3	2	Attained	
				CO4	Classify methods of image clipping and various algorithms for Line and Polygon	65	83	62	66.8	2.7	2.7	2	Attained	
				CO5	Choose appropriate filling algorithms, Hidden Surface Elimination algorithm and	77	84	72	75.4	3	3	2	Attained	
				CO6	Discuss various color models, shading methods, animation and Digital Image	71	88	69	73.2	3	3	2	Attained	
III	Dr. Ranjeet Singh + Prof. Ms. Khushboo Agarwal	CSE	150314-Design & Analysis of Algorithms-LAB	CO1	Tell the basic features of an Algorithms.	67	82	63	67.6	2.8	2.8	2.5	Attained	
				CO2	Outline major Algorithms and Data Structures.	73	79	61	67	2.7	2.7	2.5	Attained	
				CO3	Apply various algorithmic design paradigms.	77	78	69	72.4	3	3	2.5	Attained	
				CO4	:Analyze the asymptotic performance of Algorithms.	80	79	76	77.4	3	3	2.5	Attained	
				CO5	Compare different design techniques to develop algorithms for computational	79	76	78	77.8	3	3	2.5	Attained	
				CO6	Design algorithms using greedy strategy, divide and conquer approach, dynamic	77	78	79	78.4	3	3	2.5	Attained	
III	Prof. Arun Kumar+Prof. Kratika sharma	CSD	290306-Digital Circuit Design Lab	CO1	Understand the truth tables and functions of various logic gates.	78	89	74	77.8	3	3	2.5	Attained	
				CO2	Understand the importance of logic circuits	87	94	76	81.8	3	3	2.5	Attained	
				CO3	Design basic combinational logic circuits	78	87	68	73.8	3	3	2.5	Attained	
				CO4	Design various sequential logic circuits	68	84	62	67.6	2.8	2.8	2.5	Attained	
				CO5	Analyse and implement digital logic circuits	78	89	72	76.6	3	3	2.3	Attained	
				CO6	Develop and implement some basic Applications of digital electronics	71	91	69	73.8	3	3	2.3	Attained	
III	Dr. Ranjeet Kumar Singh + Prof. Jaimala Jha	CSD	290302-Design & Analysis of Algorithms-LAB	CO1	Tell the basic features of an Algorithms.	78	76	75	73	3	3	2.5	Attained	
				CO2	Outline major Algorithms and Data Structures.	81	77	69	73	3	3	2.5	Attained	
				CO3	Apply various algorithmic design paradigms.	79	75	70	72.8	3	3	2.5	Attained	
				CO4	:Analyze the asymptotic performance of Algorithms.	77	79	68	72	3	3	2.5	Attained	
				CO5	Compare different design techniques to develop algorithms for computational	80	81	72	75.4	3	3	2.5	Attained	
				CO6	Design algorithms using greedy strategy, divide and conquer approach, dynamic	71	80	63	68	2.8	2.8	2.5	Attained	
III	Prof. Arun Kumar+Prof. Kratika sharma	CSD	290306-Digital Circuit Design Lab	CO1	Understand the truth tables and functions of various logic gates.	78	89	74	77.8	3	3	2.7	Attained	
				CO2	Understand the importance of logic circuits	87	94	76	81.8	3	3	2.5	Attained	
				CO3	Design basic combinational logic circuits	78	87	68	73.8	3	3	2.5	Attained	
				CO4	Design various sequential logic circuits	68	84	62	67.6	2.8	2.8	2.5	Attained	
				CO5	Analyse and implement digital logic circuits	78	89	72	76.6	3	3	2.3	Attained	
				CO6	Develop and implement some basic Applications of digital electronics	71	91	69	73.8	3	3	2.3	Attained	
V	Prof. Jigyasa Mishra + Prof. JaimalaJha	CSE	150516-Minor Project	CO1	**Describe the problem statement and objective of the minor project,**	71	78	80	77.8	3	3		Please Set Target	
				CO2	**Identify a solution and prototype related to the chosen topic.**	74	76	75	75	3	3	2	Attained	
				CO3	**Demonstrate critical thinking skills by evaluating different approaches, methodologies, or solutions.**	69	68	75	72.4	3	3	2	Attained	
				CO4	**Analyze practical application of theoretical concepts.**	61	75	75	72.2	3	3	2	Attained	
				CO5	**Design clear and concise documentation of the entire project, including the problem definition, literature review, methodology, results, and conclusion.**	69	73	86	80	3	3	2.5	Attained	
				CO6	**Evaluate the project details through a formal presentation, including the use of**	78	73	80	78.2	3	3	2.5	Attained	
VII	Prof. Arun Kumar+Prof.Khushboo Agrawal+Prof. Amit Manjhwar	CSE	150701-Departmental Lab	CO1	Tell the use of various built-in data structures used in python	71	73	84	79.2	3	3	2.5	Attained	
				CO2	Outline the working of file handling operations, normal functions and lambda functions in python	78	77	74	75.4	3	3	2.5	Attained	
				CO3	Apply the concepts of object oriented programming in python	69	71	69	69.4	2.9	2.9	2	Attained	
				CO4	Analyze the data and visualize it using python's matplotlib	72	77	71	72.4	3	3	2	Attained	
				CO5	Rule out various important characteristics of data using scikit-learn package	79	81	64	70.4	3	3	2	Attained	

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CO attainment with Gap Analysis and action taken for July-Dec. 2022

Sem	Faculty Name	Brabch & Section	Cource code & name		Course Outcome Statements	CO attainment Lab wok and sessional (%age)	CO attainment from SBMP (%age) OR CO attainment from Lab wok session for Minor/Departmental Lab/CPS (%)	CO attainment from End Sem Practical (%age)	CO direct attainment (%age)	CO direct attainment level	Overall CO attainment	Target (To be set for Overall CO Attainment)	Attained/not attained	Action taken for Not Attained
				CO6	Create efficient algorithms in python to solve real world problems	80	82	68	73.2	3	3	2	Attained	
VII	Dr. Rajni Ranjan Singh + Prof.Khushboo Agrawal	CSE	150703-Creative Problem Solving	CO1	Define a Structured Problem Solving Process	78	81	87.66	84.396	3	3	2.5	Attained	
				CO2	Understand Cause-Effect-Symptom-Problem Relationships in Problem Definition	77	79	98.99	90.594	3	3	2.5	Attained	
				CO3	Apply Cause-Effect Tools and Techniques and Develop Root-Cause Analysis	76	89	84.21	83.526	3	3	2.1	Attained	
				CO4	Apply Idea Generation Tools and Techniques in Formulating Creative Solutions	81	80	85.23	83.338	3	3	2.1	Attained	
				CO5	Apply Evaluative Tools and Techniques for Decision Making Process	79	80	74.23	76.338	3	3	2.1	Attained	
				CO6	Identify Strategic Considerations in Evaluating Risks and Implementing Solutions	77	78	89.22	84.532	3	3	2.1	Attained	

	Excellent (3)	Very Good (2)
Attainment Levels	70	60

Total CO Attainment = 80% of Direct CO Attainment + 20% of

Direct CO Attainment = 12.5% of Weekly Quiz Score +

For **Indirect CO attainment:** CO feedback from the students, by respective course instructor, was collected (via Institute's MOODLE), along with the course end seminar and one minutes paper writing.