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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester: 2023-2024 (ODD Sem)

Course Name: Mathematics for Computer Science
Course Code: BCS301/C301

Cos	Statements
C301.1	Explain the basic concepts of probability, random variables, probability distribution
C301.2	Apply suitable probability distribution models for the given scenario.
C301.3	Apply the notion of a discrete-time Markov chain and n-step transition probabilities to solve the given problem
C301.4	Use statistical methodology and tools in the engineering problem-solving process.
C301.5	Compute the confidence intervals for the mean of the population and apply the ANOVA test related to engineering problems.

	PO1	PO 2	PO3	PO4	PO5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	2		1								2	3	2	
CO2	3	2	3	1									3	2	
CO3	2	2	3	2	2	1				1			3	2	
CO4	1	2	3	2	3				1	1			3	2	
CO5	2	2	3	2	1				1	1			3	2	
Avg	2.2	2	3	1.6	2	1			1	1		2	3	2	

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester: 2023-2024 (ODD Sem)

Course Name: Digital Design and Computer Organization
Course Code: : BCS302/C302

Cos	Statements
C302.1	Apply the K–Map techniques to simplify various Boolean expressions.
C302.2	Design different types of combinational and sequential circuits along with Verilog programs.
C302.3	Describe the fundamentals of machine instructions, addressing modes and Processor performance.
C302.4	Explain the approaches involved in achieving communication between processor and I/O devices.
C302.5	Analyze internal Organization of Memory and Impact of cache/Pipelining on Processor Performance.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO 3
CO1	2	2	2	1									2	3	
CO2	1	1	3	2									2	3	
CO3	3	2	1		1							1	2	3	
CO4	1	2	2	2	2							1	2	3	
CO5		3	2	2	1							1	2	3	
Avg	1.7	2	2	1.7	1.3							1	2	3	

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester:2023-2024 (ODD Sem)

Course Name: Operating System
Course Code: : BCS303/C303

Cos	Statements
C303.1	Explain the structure and functionality of operating system
C303.2	Apply appropriate CPU scheduling algorithms for the given problem.
C303.3	Analyse the various techniques for process synchronization and deadlock handling.
C303.4	Apply the various techniques for memory management
C302.5	Explain file and secondary storage management strategies and describe the need for information protection mechanisms

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO 3
CO1	3	1	2	1									3	2	
CO2	1	3	2	2									3	2	
CO3	2	1	3	2									3	2	
CO4	2	3	2	1	1								2	3	
CO5	3	2	2	1	1								2	3	
Avg	2.2	2	2.2	1.4	1								2.6	2.4	

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester: 2023-2024 (ODD Sem)

Course Name: Data Structures and its Applications
Course Code: BCS304/C304

Cos	Statements
C304.1	Explain different data structures and their applications.
C304.2	Apply Arrays, Stacks and Queue data structures to solve the given problems.
C304.3	Use the concept of linked list in problem solving.
C304.4	Develop solutions using trees and graphs to model the real-world problem.
C304.5	Explain the advanced Data Structures concepts such as Hashing Techniques and Optimal Binary Search Trees.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3												3	2	
CO2		2	3										3	2	
CO3	1	1	3	2									2	3	
CO4	2	1	3		2			1				1	3	3	
CO5	3	2	2	1									3	2	
Avg	2.2	1.5	2.7	1.5	2			1				1	2.8	2.4	

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester: 2023-2024 (ODD Sem)

Course Name: Data Analytics with R
Course Code: : BDS306C /C306

Cos	Statements
C306.1	Describe the structures of R Programming.
C306.2	Describe the matrices and list ,Data Frame
C306.3	Illustrate the basics of Data Preparation with real world examples.
C306.4	Apply the Graphical Packages of R for visualization.
C306.5	Apply various Statistical Analysis methods for data analytics.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	2	1	2									3	2	
CO2	3	2	1	2									3	2	
CO3	3	3	2	1				1					3	2	
CO4	1	2	3	2	3	2			1				3	2	
CO5		3	2	1	3	2			1				3	2	
Avg	2.5	2.4	1.8	1.6	3	2		1	1				3	2	

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester: 2023-2024 (ODD Sem))

Course Name: Social Connect & Responsibility
Course Code: : BSCK307 /C307

Cos	Statements
C307.1	Communicate and connect to the surrounding
C307.2	Create a responsible connection with the society and Involve in the community in general in which they work.
C307.3	Notice the needs and problems of the community and involve them in problem – solving.
C307.4	Develop among themselves a sense of social & civic responsibility & utilize their knowledge in finding practical solutions to individual and community problems.
C307.5	Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	2					3	2		2	3	1	2			3
CO2						3	2		1	2					
CO3						2	2		2	2					
CO4			3		1	3	3		3						
CO5			3		1	2	2		3						
Avg	2		3		1	2.6	2.2		2.2	2.33	1	2			3

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester: 2021-2022 (ODD Sem)

Course Name: Automata Theory and Compiler Design
Course Code: 21CS51/C501

Cos	Statements
C501.1	Acquire fundamental understanding of the core concepts in automata theory and Theory of Computation
C501.2	Design and develop lexical analyzers, parsers and code generators
C501.3	Design Grammars and Automata (recognizers) for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and their relative powers.
C501.4	Acquire fundamental understanding of the structure of a Compiler and Apply concepts automata theory and Theory of Computation to design Compilers
C501.5	Design computations models for problems in Automata theory and adaptation of such model in the field of compilers

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	1		1		2	1						3	2	1
CO2	1		3	2		1	1					1	3	2	
CO3	1	2	3	2	1	1							3	2	
CO4	3	1	2	1	1								2	3	
CO5	1	2	3	1	1				2	2	1	1	3	2	
Avg	1.8	1.5	2.7	1.4	1	1.3	1	0	2	2	1	1	2.8	2.2	1

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester: 2021-2022 (ODD Sem)

Course Name: Computer Networks
Course Code: : 21CS52 /C502

Cos	Statements
C502.1	Learn the basic needs of communication system.
C502.2	Interpret the communication challenges and its solution.
C502.3	Identify and organize the communication system network components
C502.4	Design communication networks for user requirements
C502.5	To know about the principles of Network applications

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3			1		1	1		1	1		1	3	2	2
CO2	1	2	2	1	1	1				1			2	3	
CO3		3	1	2	1				1	1		1	3	2	3
CO4	1	1	3	2	1							2	3	2	3
CO5	2				2	1	1	2		1			3	2	3
Avg	1.7	2	2	1.5	1.2	1	1	2	1	1		1.3	2.8	2.2	2.7

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester: 2021-2022 (ODD Sem)

Course Name: **Database Management System**
Course Code: **21CS53 /C503**

Cos	Statements
C503.1	Identify, analyze and define database objects, enforce integrity constraints on a database using RDBMS
C503.2	Use Structured Query Language (SQL) for database manipulation and also demonstrate the basic of query evaluation.
C503.3	Design and build simple database systems and *relate* the concept of transaction, concurrency control and recovery in database
C503.4	Develop application to interact with databases, relational algebra expression.
C503.5	Develop applications using tuple and domain relation expression from queries.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	1	3	2	1									3	2	
CO2	3	1	2	1	2	1	1			1			3	2	
CO3	1	1	3	1	2						1		3	2	
CO4	2	2	3	1	2	1	1				1	1	3	2	
CO5	1	2	3	2	1	1	1						3	2	1
Avg	1.6	1.8	2.6	1.2	1.7	1	1			1	1	1	3	2	1

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester: 2021-2022 (ODD Sem)

Course Name: Principles of Artificial Intelligence
Course Code: 21AI54 /C504

Cos	Statements
C504.1	Apply knowledge of agent architecture, searching and reasoning techniques for different applications.
C504.2	Analyse Searching and Inferencing Techniques.
C504.3	Develop knowledge base sentences using propositional logic and first order logic
C504.4	Demonstrating agents, searching and inferencing
C504.5	Illustrate the application of probability in uncertain reasoning.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	2	2	1	3	1	1					1	3	2	
CO2	2	3	2	2	2	1	1	1				1	3	2	
CO3	3	2	3	2		1					1		3	2	
CO4	3	2	3	1	1	1	1						3	2	
CO5	1	2	1	1	2	1	1						3	2	1
Avg	2.4	2.2	2.2	1.4	2	1	1	1			1	1	3	2	1

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester: 2021-2022 (ODD Sem)

Course Name: **Environmental Studies**
Course Code: : **21CIV57/C507**

Cos	Statements
C507.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,
C507.2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment
C507.3	Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components
C507.4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues
C507.5	Demonstrate the Latest Developments in Environmental Pollution Mitigation Tools

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3					2	3			2	1	1	2	2	1
CO2	1	2	3			2	3								
CO3	3				1	2	3	2	2	2		1	2	2	
CO4	2		2		2	1	3	1	1	2	1	1	2	2	
CO5	1				3	2	3	1	2	2		1	2	2	
Avg	2	2	2.5	0	2	1.8	3	1.3	1.6	2	1	1	2	2	1

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester: 2021-2022 (ODD Sem)

Course Name: Research Methodology & Intellectual Property Rights
Course Code: :21RMI56/C508

Cos	Statements
C508.1	To know the meaning of engineering research
C508.2	To Know the procedure of Literature Review and Technical Reading
C508.3	To Know the fundamentals of patent laws and drafting procedure .
C508.4	Understanding the copyright laws and subject matters of copyrights and designs
C508.5	Understanding the basic principles of design rights .

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3					2	2	3	1	1		3	1	1	1
CO2		3			1	1	2	3					1	1	1
CO3	3						2	3	1	1		1	1	1	1
CO4	1				2	2	2	3	1	1		1	1	1	
CO5	3						2	3	1	1		1	1	1	
Avg	2.5	3			1.5	1.6	2	3	1	1		1.5	1	1	1

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

VII Semester: 2020-2021 (ODD Sem)

Course Name: Advanced Artificial Intelligence
Course Code: 18AI71/C701

Cos	Statements
C701.1	Demonstrate the fundamentals of Intelligent Agents
C701.2	Illustrate the reasoning for Uncertain Knowledge
C701.3	Explore the explanation based learning in solving AI problems
C701.4	Demonstrate the applications of Rough sets and Evolutionary Computing algorithms
C701.5	Apply the NLP model to various applications

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	1		1	1	2							3	2	
CO2	2	3	2	2	1	1	1	1	1			1	2	3	
CO3	2	2	3	2	2	1	1		1	1	1		3	2	
CO4	1	1	1	3	3	2	1	1	1				3	2	
CO5	1		2	3	1	2	2		1	1		1	2	3	
Avg	1.8	1.7	2	2.2	1.6	1.6	1.2	1	1	1	1	1	2.6	2.4	

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

VII Semester: 2020-2021 (ODD Sem)

Course Name: Advanced Machine Learning
Course Code: 18AI72/C702

Cos	Statements
C702.1	Apply effectively ML algorithms to solve real world problems.
C702.2	Apply Instant based techniques and derive effectively learning rules to real world problems.
C702.3	Build ML models using ANNs
C702.4	Apply effective ML algorithms to solve real world problems.
C702.5	Apply Instant based techniques and derive effectively learning rules to real world problems.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1		3	3	2	1		1		1			1	3	2	
CO2	2	3	2		1				1		1	1	3	3	
CO3	1	2	3		1	1			1		1		3	2	
CO4	2	2	2	2	1	1	1				1	1	3	2	1
CO5	1	2	2	3	1	1					1		2	3	1
Avg	1.5	2.4	2.4	2.3	1	1	1	0	1	0	1	1	2.8	2.4	1

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

VII Semester: 2020-2021 (ODD Sem)

Course Name: Block Chain Technologies
Course Code: 18AI733/C703

Cos	Statements
C703.1	Define and Explain the fundamentals of Blockchain
C703.2	Illustrate the technologies of blockchain
C703.3	Describe the models of blockchain
C703.4	Analyze and demonstrate the Ethereum
C703.5	Analyze and demonstrate Hyperledger fabric

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	2	1	1								1	3	2	
CO2	1	2	3	2	1								2	3	
CO3	3	2	3	2	1								3	2	
CO4	1	3	2	2	2		2		1		1		2	3	
CO5	1	3	2	2	2	1	1	1				1	3	2	
Avg	1.8	2.4	2.2	1.8	1.5	1	1.5	1	1		1	1	2.6	2.4	

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

VII Semester: 2020-2021 (ODD Sem)

Course Name: Business Intelligence
Course Code: 18AI744/C704

Cos	Statements
C704.1	Apply the basics of data and business to understand Decision Support systems and Business Intelligence framework.
C704.2	Describe the significance of 106omputerized Decision Support, apply the basics of mathematics to understand the mathematical modelling behind decision support.
C704.3	Explain Data warehousing , its architecture and Extraction, Transformation, and Load (ETL) Processes.
C704.4	Analyze the importance of knowledge management and explain its activities, approaches and its implementation.
C704.5	Describe the Expert systems and analyze its development , discuss areas suitable for application of experts system.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1		2	2	1	2	3	2		2	1	1	1	3	2	3
CO2	2	2	1		2	1	1		1	1	1		2	3	3
CO3	1	2	1	1							1		2	2	3
CO4	2		2								3		3	2	1
CO5			3	1	2	2	1	1		2	1		2	1	3
Avg	1.6	2	1.8	1	2	2	1.3	1	1.5	1.3	1.4	1	2.4	2	2.6

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

VII Semester: 2020-2021 (ODD Sem)

Course Name: Energy and Environment
Course Code: 18ME751/C706

Cos	Statements
C706.1	Understand energy scenario, energy sources and their utilization.
C706.2	Understand various methods of energy storage, energy management and economic analysis
C706.3	Analyse the awareness about the environment and ecosystem.
C706.4	Understand environmental pollution along with social issues and acts.
C706.5	Understand the social issues and the environment that affect the climate changes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	2					2	3	1	2	1	1	1	2	1	
CO2	2	2	1	1		2	3	1	1	1	1		2	2	
CO3	2	2	1				3				2	1	1		1
CO4	2						3	2	2	1	1	1	1	2	1
CO5	2				1	2	3	1	1		2		2	2	
Avg	2	2	1	1	1	2	3	1.2	1.5	1	1.4	1	1.6	1.7	1

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Department of Computer Science and Engineering

2.6.1QlM Programme Outcomes (POs) and Course Outcomes (COs) offered by the department- ODD Semester
Academic Year 2023-2024

SL NO	SEMESTER	SUBJECT/SUBJECT CODE
1	3	Mathematics for Computer Science(BCS301)
2		Digital Design and Computer Organization (BCS302)
3		Operating Systems(BCS303)
4		Data Structures And Applications(BCS304)
5		Object Oriented Programming with JAVA (BCS306A)
6		Data Structures Laboratory(BCSL305)
7		Social Connect & Responsibility(BSCK307)
8	5	Automata Theory And Compiler Design(21CS51)
9		Computer Networks(21CS52)
10		Database Management Systems(21CS53)
11		Artificial Intelligence And Machine Learning(21CS54)
12		Research Methodology & Intellectual Property Rights (21RMI56)
13		Database Management System Laboratory With Mini Project (21CSL55)
14		Environmental Studies(21CV57)
15		Angular JS(21CSL581)
16	7	Artificial Intelligence & Machine Learning(18CS71)
17		Big Data Analytics(18CS72)
18		User Interface Design(18CS734)
19		Network Management(18CS742)
20		Energy & Environment(18ME751)
21		Artificial Intelligence & Machine Learning Lab(18CSL76)

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester :2023-24

Course Name: Mathematics for Computer Science

Course Code: BCS301/C301

Cos	Statements
C301.1	Explain the basic concepts of probability, random variables, probability distribution.
C301.2	Apply suitable probability distribution models for the given scenario.
C301.3	Apply the notion of a discrete-time Markov chain and n-step transition probabilities to solve the given problem
C301.4	Use statistical methodology and tools in the engineering problem-solving process.
C301.5	Compute the confidence intervals for the mean of the population.
C301.6	Apply the ANOVA test related to engineering problems.

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	1	1							1	1	1	1
CO2	2	2	1	1	1				2	1		2	1	1	3
CO3	3	3	3	1	1					1		2	2	2	2
CO4	3	3	3	3	1	1		1	1	3		2	3	1	1
CO5	2	3	3	1	2					1		3	2	1	2
AVERAGE	2.6	2.4	2.2	1.4	1.2	1	0	1	1.5	1.5	0	2	1.8	1.2	1.8

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester :2023-24

Course Name: Digital Design and Computer Organization

Course Code: BCS302/C302

Cos	Statements
C302.1	Apply the K–Map techniques to simplify various Boolean expressions.
C302.2	Design different types of combinational and sequential circuits along with Verilog programs.
C302.3	Describe the fundamentals of machine instructions, addressing modes and Processor performance.
C302.4	Explain the approaches involved in achieving communication between processor and I/O devices.
C302.5	Analyze internal Organization of Memory and Impact of cache/Pipelining on Processor Performance.

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	1	1	1							1	2	1
CO2	3	1	1	1								2	2	1	2
CO3	3	3	3	3	1								3	3	3
CO4	1	3	3	1	1								2	2	2
CO5	3	3	3	1	3	3						1	3	3	3
AVERAGE	2.6	2.2	2.2	1.4	1.5	2	0	0	0	0	0	1.5	2.2	2.2	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III **Semester :2023-24**

Course Name: OPERATING SYSTEMS

Course Code: BCS303/C303

Cos	Statements
C303.1	Explain the structure and functionality of operating system
C303.2	Apply appropriate CPU scheduling algorithms for the given problem.
C303.3	Analyse the various techniques for process synchronization and deadlock handling.
C303.4	Apply the various techniques for memory management
C303.5	Explain file and secondary storage management strategies.
C303.6	Describe the need for information protection mechanisms

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1									1	1	1
CO2	1	1	1	1								2	1	1	2
CO3	2	2	3	2	2						1	1	2	2	2
CO4	2	2	1	2							1	1	2	2	2
CO5	2	2	2	1										1	1
AVERAGE	1.6	1.6	1.6	1.4	2	0	0	0	0	0	1	1.3	1.5	1.4	1.6

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III **Semester :2023-24**

Course Name: DATA STRUCTURES AND APPLICATIONS

Course Code: BCS304 /C304

Cos	Statements
C304.1	Explain different data structures and their applications.
C304.2	Apply Arrays, Stacks and Queue data structures to solve the given problems.
C304.3	Use the concept of linked list in problem solving.
C304.4	Develop solutions using trees and graphs to model the real-world problem.
C304.5	Explain the advanced Data Structures concepts such as Hashing Techniques and Optimal Binary Search Trees.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	1	1							1	1	1	3
CO2	2	3	1	1	1							1	1	2	2
CO3	2	2	1	2	1							1	1	1	2
CO4	1	3	2	1	1							1	1	1	1
CO5	3	2	2	1	1							1	1	1	3
AVERAGE	2.2	2.2	1.4	1.2	1	0	0	0	0	0	0	1	1	1.2	2.2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester :2023-24

Course Name: Object Oriented Programming with JAVA
Course Code: BCS306A /C306

Cos	Statements
C306.1	Demonstrate proficiency in writing simple programs involving branching and looping structures.
C306.2	Design a class involving data members and methods for the given scenario.
C306.3	Apply the concepts of inheritance and interfaces in solving real world problems.
C306.4	Use the concept of packages and exception handling in solving complex problem.
C306.5	Apply concepts of multithreading, autoboxing and enumerations in program development

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	2	1								3	1	1	3
CO2	1	1	2	1								2	1	2	2
CO3	1	1	2	1								2	1	1	2
CO4	1	1	1	1								2	1	2	1
CO5	1	1	1	2								3	1	2	3
AVERAGE	1	1	1.6	1.2	0	0	0	0	0	0	0	2.4	1	1.6	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester :2023-24

Course Name: DATA STRUCTURES LABORATORY

Course Code: BCSL305/C305

Cos	Statements
C305.1	Analyze various linear and non-linear data structures.
C305.2	Demonstrate the working nature of different types of data structures and their applications
C305.3	Use appropriate searching and sorting algorithms for the give scenario.
C305.4	Apply the appropriate data structure for solving real world problems.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester :2023-24

Course Name: Social Connect & Responsibility

Course Code: BSCK307/C307

Cos	Statements
C307.1	Communicate and connect to the surrounding.
C307.2	Create a responsible connection with the society.
C307.3	Involve in the community in general in which they work.
C307.4	Notice the needs and problems of the community and involve them in problem –solving.
C307.5	Develop among themselves a sense of social & civic responsibility & utilize their knowledge in finding practical solutions to individual and community problems.
C307.6	Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester :2023-24

Course Name: AUTOMATA THEORY AND COMPILER DESIGN

Course Code: 21CS51/C501

Cos	Statements
C5O1.1	Acquire fundamental understanding of the core concepts in automata theory and Theory of Computation.
C5O1.2	Design and develop lexical analysers, parsers and code generators.
C5O1.3	Design Grammars and Automata (recognizers) for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and their relative powers.
C5O1.4	Acquire fundamental understanding of the structure of a Compiler and Apply concepts automata theory and Theory of Computation to design Compilers.
C5O1.5	Design computations models for problems in Automata theory and adaptation of such model in the field of compilers.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	3	1								1	1	1
CO2	2	2	1	2	1								1	1	3
CO3	3	3	3	3	1								2	2	2
CO4	3	3	3	2	1								3	1	1
CO5	2	3	3	3	2								2	1	2
AVERAGE	2.6	2.4	2.2	2.6	1.2	0	0	0	0	0	0	0	1.8	1.2	1.8

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester :2023-24

Course Name: Computer Networks

Course Code: 21CS52/C502

Cos	Statements
C5O2.1	Learn the basic needs of communication system.
C5O2.2	Interpret the communication challenges and its solution.
C5O2.3	Identify the communication system network components.
C5O2.4	Organize the communication system network components.
C5O2.5	Design communication networks for user requirements.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1	2	1	1						1	3	2	1
CO2	3	3	1	2	2							2	1	1	2
CO3	3	3	3	2	1							2	3	3	3
CO4	1	3	3	1	1							2	2	2	2
CO5	3	3	3	1	3	3						1	3	3	3
AVERAGE	2.6	3	2.2	1.6	1.6	2	0	0	0	0	0	1.6	2.4	2.2	2.2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V **Semester :2023-24**

Course Name: DATABASE MANAGEMENT SYSTEMS

Course Code: 21CS53/C503

Cos	Statements
C503.1	Identify, analyze and define database objects, enforce integrity constraints on a database using RDBMS.
C503.2	Use Structured Query Language (SQL) for database manipulation and also demonstrate the basic of query evaluation.
C503.3	Design and build simple database systems and relate the concept of transaction, concurrency control and recovery in database.
C503.4	Develop application to interact with databases, relational algebra expression.
C503.5	Develop applications using tuple and domain relation expression from queries.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	33	3	1										1	1	1
CO2	2	3	1							1		1	1	1	2
CO3	2	2	3	2	2						1	1	2	2	2
CO4	2	2	3	2						1	1	1	2	2	2
CO5	2	2	2											1	1
AVERAGE	8.2	2.4	2	2	2	0	0	0	0	1	1	1	1.5	1.4	1.6

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V **Semester :2023-24**

Course Name: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
Course Code: 21CS54/C504

Cos	Statements
C5O4.1	Apply the knowledge of searching and reasoning techniques for different applications.
C5O4.2	Have a good understanding of machine leaning in relation to other fields and fundamental issues and challenges of machine learning.
C5O4.3	Apply the knowledge of classification algorithms on various dataset and compare results.
C5O4.4	Model the neuron and Neural Network, and to analyze ANN learning and its applications.
C5O4.5	Identifying the suitable clustering algorithm for different pattern.

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	1	1						1	1	1	1	3
CO2	1	3	2	1	1	1					1	1	1	2	2
CO3	2	2	3	2	1							1	1	1	2
CO4	1	3	2	1	1	1						1	1	1	1
CO5	2	2		1	1							1	1	1	3
AVERAGE	1.8	2.6	2.5	1.2	1	1	0	0	0	0	1	1	1	1.2	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester :2023-24

Course Name: RESEARCH METHODOLOGY & INTELLECTUAL PROPERTY RIGHTS

Course Code: 21RMI56/C506

Cos	Statements
C5O6.1	To know the meaning of engineering research.
C5O6.2	To know the procedure of Literature Review and Technical Reading.
C5O6.3	To know the fundamentals of patent laws and drafting procedure.
C5O6.4	Understanding the copyright laws and subject matters of copyrights and designs
C5O6.5	Understanding the basic principles of design rights.

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1					1			1	3	1	1	3
CO2	3	1	1					1		1	1	2	1	2	2
CO3	3	2	1					1		1		2	1	1	2
CO4	3	1	1							1		2	1	2	1
CO5	2	1	1					1				3	1	2	3
AVERAGE	1.8	1.2	1	0	0	0	2.8	1	0	1	1	2.4	1	1.6	2.2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester :2023-24

Course Name: DATABASE MANAGEMENT SYSTEM LABORATORY WITH MINI PROJECT

Course Code: 21CSL55/C505

Cos	Statements
C5O5.1	Create, Update and query on the database.
C5O5.2	Demonstrate the working of different concepts of DBMS.
C5O5.3	Implement, analyze and evaluate the project developed for an application.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester :2023-24

Course Name: Environmental Studies

Course Code: 21CV57/C507

Cos	Statements
C507.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale.
C507.2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
C507.3	Demonstrate ecology knowledge of a complex relationship between biotic and a biotic component.
C507.4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

V Semester :2023-24

Course Name: ANGULAR JS

Course Code: 21CSL581/C806

Cos	Statements
C5O8.1	Develop Angular JS programs using basic features.
C5O8.2	Develop dynamic Web applications using AngularJS modules.
C5O8.3	Make use of form validations and controls for interactive applications.
C5O8.4	Appy the concepts of Expressions, data bindings and filters in developing Angular JS programs.
C5O8.5	Make use of modern tools to develop Web applications.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

VII Semester :2023-24

Course Name: Artificial Intelligence & Machine Learning

Course Code: 18CS71/C701

Cos	Statements
C7O1.1	Appaise the theory of Artificial intelligence and Machine Learning.
C7O1.2	Explain theory of probability and statistics related to machine learning
C7O1.3	Investigate concept learning, ANN, Bayes classifier, k nearest neighbour, Q,
C7O1.4	Develop Kernel Methods with Dual Representations, Radial Basis and Function Networks
C7O1.5	Analyse implementation of Maximum Margin Classifiers and Relevance Vector Machines

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1									1	1	1	1
CO2	2	2	1	1	1				2	1		2	1	1	3
CO3	3	3	3	1	1					1		2	2	2	2
CO4	3	3	3	3	1	1		1	1	3		2	3	1	1
CO5	2	3	3	1	2					1		3	2	1	2
AVG	2.6	2.4	2.2	1.5	1.2	1	0	1	1.5	1.5	0	2	1.8	1.2	1.8

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

VII Semester :2023-24

Course Name: Big Data Analytics

Course Code: 18CS72/C702

Cos	Statements
C7O2.1	Understand fundamentals of Big Data analytics.
C7O2.2	Investigate Hadoop framework and Hadoop Distributed File system.
C7O2.3	Illustrate the concepts of NoSQL using MongoDB and Cassandra for Big Data.
C7O2.4	Demonstrate the MapReduce programming model to process the big data along with Hadoop tools.
C7O2.5	Use Machine Learning algorithms for real world big data. Analyze web contents and Social Networks to provide analytics with relevant visualization tools.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1		1	1							3	2	1
CO2	3	1	1									2	1	1	2
CO3	3	3	3	3	1								3	3	3
CO4	1	3	3	1	1								2	2	2
CO5	3	3	3	1	3	3						1	3	3	3
AVERAGE	2.6	2.2	2.2	1.6	1.5	2	0	0	0	0	0	1.5	2.4	2.2	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

VII Semester :2023-24

Course Name: USER INTERFACE DESIGN

Course Code: 18CS734/C703

Cos	Statements
C7O3.1	To study the concept of menus, windows, interfaces
C7O3.2	To study about business functions
C7O3.3	To study the characteristics and components of windows and the various controls For the windows.
C7O3.4	To study about various problems in windows design with color, text, graphics.
C7O3.5	To study the testing methods

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1										1	1	1
CO2	1	1	1							1		2	1	1	2
CO3	2	2	3	2	2						1	1	2	2	2
CO4	2	2	1	2						1	1	1	2	2	2
CO5	2	2	2											1	1
AVERAGE	1.6	1.6	1.6	2	2	0	0	0	0	1	1	1.3	1.5	1.4	1.6

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

VII Semester :2023-24

Course Name: Network Management

Course Code: 18CS742/C704

Cos	Statements
C7O4.1	Analyze the issues and challenges pertaining to management of emerging network technologies such as wired/wireless networks and high-speed internets.
C7O4.2	Apply network management standards to manage practical networks
C7O4.3	Formulate possible approaches for managing OSI network model.
C7O4.4	Use on SNMP for managing the network. Use RMON for monitoring the behavior of the network
C7O4.5	Identify the various components of network and formulate the scheme for the managing them

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1	1							1	1	1	3
CO2	1	3	1	1	1							1	1	2	2
CO3	2	2	1	2	1							1	1	1	2
CO4	1	3		1	1							1	1	1	1
CO5	1	2		1	1							1	1	1	3
AVERAGE	1.2	2.2	1	1.2	1	0	0	0	0	0	0	1	1	1.2	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

VII Semester :2023-24

Course Name: Energy & Environment

Course Code: 18ME751/C705

Cos	Statements
C7O5.1	Understand energy scenario, energy sources and their utilization.
C7O5.2	Understand various methods of energy storage.
C7O5.3	Understand various methods of energy management and economic analysis.
C7O5.4	Analyse the awareness about environment and eco system.
C7O5.5	Understand the environment pollution along with social issues and acts

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1			2	1	3	1				3	1	1	3
CO2	1	1			2	1	3	1		1		2	1	2	2
CO3	1	1			2	1	3	1		1		2	1	1	2
CO4	1	1			1	1	3			1		2	1	2	1
CO5	1	1			1	2	2	1				3	1	2	3
AVERAGE	1	1	0	0	1.6	1.2	2.8	1	0	1	0	2.4	1	1.6	2.2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

VII Semester :2023-24

Course Name: Artificial Intelligence & Machine Learning Lab

Course Code: 18CSL76/C706

Cos	Statements
C7O6.1	Implement and demonstrate AI and ML algorithms.
C7O6.2	Design Java/Python programs for various Learning algorithms.
C7O6.3	Apply appropriate data sets to the Machine Learning algorithms.
C7O6.4	Apply Classification, Clustering and regression algorithm on the data set.
C7O6.5	Identify and apply Machine Learning algorithms to solve real world problems.

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ACADEMIC YEAR: 2023-24

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - III

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: AV Mathematics-III for EC Engineering
Course Code: BMATEC301

Cos	Statements
C301.1	Demonstrate the Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing, and field theory.
C301.2	To use Fourier transforms to analyze problems involving continuous-time signals
C301.3	To apply Z-Transform techniques to solve difference equations
C301.4	Understand that physical systems can be described by differential equations and solve such equation
C301.5	Make use of correlation and regression analysis to fit a suitable mathematical model for statistical data

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	1	3	2										2	
CO2	1	2			2				1				2	
CO3		2	2	1	2	1							2	
CO4	1	2	2	1	1	1			1			1	1	
CO5	1	2	1	2	1	1			1				2	
AVERAGE	1	2.2	1.75	1.33	1.5	1	0	0	1	0	0	0	1.8	0

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - III

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Digital System Design using Verilog
Course Code: BEC302

Cos	Statements
C302.1	Simplify Boolean functions using K-map and Quine-McCluskey minimization technique
C302.2	Analyze and design for combinational logic circuits.
C302.3	Analyze the concepts of Flip Flops(SR, D,T and JK) and to design the synchronous sequential circuits using Flip Flops.
C302.4	Model Combinational circuits (adders, subtractors, multiplexers) and sequential circuits using Verilog descriptions.

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	2	2	1	1							1	2	1
CO2	1	2	1	1	2								1	
CO3	1	2	2	2	2								2	
CO4	1	2	2	2	2								1	
AVERAGE	1	1	1.75	1.5	1.75							1	1.5	1

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - III

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Electronic Principles and Circuits
Course Code: BEC303

Cos	Statements
C303.1	Understand the characteristics of BJTs and FETs for switching and amplifier circuits.
C303.2	Design and analyze amplifiers and oscillators with different circuit configurations and biasing conditions
C303.3	Understand the feedback topologies and approximations in the design of amplifiers and oscillators.
C303.4	Design of circuits using linear ICs for wide range applications such as ADC, DAC, filters and timers.
C303.5	Understand the power electronic device components and its functions for basic power electronic circuits.

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	1	2	1	1	1								2	1
CO2	1	2	1	2	1								2	
CO3	1	2	1	2	2								2	
CO4	1	2	2	1	1								2	
CO5	1	2	1	2	2								2	
AVERAGE	1	2	1.2	1.5	2								2	1

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - III

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Network Analysis
Course Code: BEC304

Cos	Statements
C304.1	Determine currents and voltages using source transformation/ source shifting/ mesh/ nodal analysis and reduce given network using star- delta transformation.
C304.2	Solve problems by applying Network Theorems and electrical laws to reduce circuit complexities and to arrive at feasible solutions
C304.3	Analyze the circuit parameters during switching transients and apply Laplace transform to solve the given network
C304.4	Evaluate the frequency response for resonant circuits and the network parameters for two port networks

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	2	2	2	1						2		1	
CO2	1	2	2	1	1						1		2	
CO3	1	2	1	1	1						1		2	
CO4	1	2	1	2	1								2	
AVERAGE	1	2	1.5	1.5	1.5									

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - III

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Analog and Digital Systems Design Laboratory
Course Code: BECL30

Cos	Statements
C306.1	Design and analyze the BJT/FET amplifier and oscillator circuits
C306.2	Design and test Op-amp circuits to realize the mathematical computations, DAC and precision rectifier
C306.3	Design and test the combinational logic circuits for the given specifications
C306.4	Test the sequential logic circuits for the given functionality.
C306.5	Demonstrate the basic circuit experiments using 555 timer.

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	2	1	1	2								2	
CO2	1	2	1	1	2	1							2	
CO3	1	2	1	1	2	1							2	
CO4	1	2	1	1	2	1							2	
CO5	1	2	1	1	2								2	
AVERAGE	1	2	1	1	2	0.6							2	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - III

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Social Connect & Responsibility
Course Code: BSCK307/C307

Cos	Statements
C305.1	Communicate and connect to the surrounding
C305.2	Create a responsible connection with the society.
C305.3	Involve in the community in general in which they work
C305.4	Notice the needs and problems of the community and involve them in problem –solving
C305.5	Develop among themselves a sense of social & civic responsibility & utilize their knowledge in finding practical solutions to individual and community problems
C305.6	Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1					2	2	2		1	1	1		2
CO2	1		2			2	2	2	2	1	1			1
CO3	1		1		2	1	2	1				1		2
CO4	1		2			2	1	1	1			1		2
CO5	1		2			2	2	2	1	2		1		2
CO6	1		2			2	1	1	1	2		1		2
AVERAGE	1	0	1.75	0	2	1.8	1.8	1.6	0.8	0.8	0.4	0.8	0	1.8

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ODD SEMESTER - III

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Sensors and Instrumentation
Course Code: BEC306B

Cos	Statements
C305.1	Understand the material properties required to make sensor
C305.2	Understand the principle of transducers for measuring physical parameters.
C305.3	Describe the manufacturing process of sensors
C305.4	Analyze the instrument characteristics and error
C305.5	Describe the principle of operation and develop circuits for multirange Ammeters, Voltmeters and Bridges to measure passive component values and frequency.

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	1	2	2	1	2	1	2						2	1
CO2		2	2	2	2	1	1						2	1
CO3	1	2	1	2	1								2	
CO4		1	2	1	1								1	
CO5	1	2	1	1	1								2	1
AVERAGE	0.6	1.8	1.6	1.4	1.4	0.4	0.6						1.8	0.6

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ODD SEMESTER - III

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: MATLAB Programming
Course Code: BEC358B

Cos	Statements
C305.1	Understand the syntax of MATLAB for arithmetic computations, arrays, matrices.
C305.2	Understand the built in function, saving and loading data, and create plots
C305.3	Create program using symbolic computations, Importing and exporting data and files
C305.4	Create program using character strings, Command line functions and Built-in functions.

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	1	3	3	2	2									
CO2		2	1	2										
CO3	2	2		2	1									
CO4		2	1		2									
AVERAGE	0.75	0.25	1.25	1.5	1.25									

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ACADEMIC YEAR: 2023-24

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - V

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Digital Communication
Course Code: 21EC51

Cos	Statements
C705.1	Analyze different digital modulation techniques and choose the appropriate modulation technique for the given specifications
C705.2	Test and validate symbol processing and performance parameters at the receiver under ideal and corrupted bandlimited channels
C705.3	Differentiate various spread spectrum schemes and compute the performance parameters of communication system
C705.4	Apply the fundamentals of information theory and perform source coding for given message
C705.5	Apply different encoding and decoding techniques with error Detection and Correction

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	2	1				1						1	3	
CO2	3	2				2							2	
CO3	2	2	1										2	
CO4	2	1		1									2	
CO5	3	2		1									2	
AVERAGE	1.6	1.6	1	0.4		1.5							2.2	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - V

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Computer Organization and ARM Microcontroller
Course Code: 21EC52

Cos	Statements
C305.1	Computer Organization & ARM Microcontrollers
C305.2	Demonstrate functioning of different sub systems, such as processor, Input/output, and memory
C305.3	Describe the architectural features and instructions of 32-bit microcontroller ARM Cortex M3
C305.4	Apply the knowledge gained for Programming ARM Cortex M3 for different application
C305.5	Understand the basic hardware components and their selection method based on the characteristics and attributes of an embedded system

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	2	2	1	1	1							3	3	1
CO2	3	2			1								2	
CO3	2	1		1										
CO4	2	2	1	1	1	1							2	
CO5	2	1	1	1	1		1						2	1
AVERAGE														

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - V

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Computer Communication Networks
Course Code: 21EC53

Cos	Statements
C305.1	Understand the concepts of networking thoroughly
C305.2	Identify the protocols and services of different layers
C305.3	Distinguish the basic network configurations and standards associated with each network
C305.4	Discuss and analyze the various applications that can be implemented on networks.

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	2	2	1	2	1								2	
CO2	2	1	1	1	1									
CO3	2	2	1	1										
CO4	2	1	1										2	
AVERAGE	2	1.5	1	1.25	1								2	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - V

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: ELECTROMAGNETIC WAVES
Course Code: 21EC54

Cos	Statements
C705.1	Study the different coordinate systems, Physical significance of Divergence, Curl and Gradient
C705.2	Understand the applications of Coulomb ‘s law and Gauss law to different charge distributions and the applications of Laplace ‘s and Poisson ‘s Equations to solve real time problems on capacitance of different charge distributions
C705.3	Understand the physical significance of Biot-Savart‘s, Amperes Law and Stokes‘ theorem for different current distributions.
C705.4	Infer the effects of magnetic forces, materials and inductance
C705.5	Know the physical interpretation of Maxwell ‘equations and applications for Plane waves for their behavior in different medium
C705.6	Acquire knowledge of Poynting theorem and its application of power flow

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	1		1								2	1
CO2	2	2	1	1									2	
CO3	2	2		2	2								1	
CO4		2	1	2									1	1
CO5	2	1		2									1	
CO6	1	1		2										
AVERAGE	2	1.8	1	1.75	1.5								1.4	1

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ACADEMIC YEAR: 2023-24

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - V

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Communication Laboratory
Course Code: 21ECL55

Cos	Statements
C305.1	Design and test the digital modulation circuits and display the waveforms
C305.2	To Implement the source coding algorithm using C/C++/ MATLAB code
C305.3	To Implement the Error Control coding algorithms using C/C++/ MATLAB code
C305.4	Illustrate the operations of networking concepts and protocols using C programming and network simulators

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	2			2		2							2	
CO2	1			1		1								
CO3				1		1								
CO4	1			1		1							1	
AVERAGE	1.25	1.25		1.25		1.25							1	

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - V

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: IOT Laboratory
Course Code: 21ECL581

Cos	Statements
C305.1	Understand internet of Things and its hardware and software components
C305.2	Interface I/O devices, sensors & communication module
C305.3	Remotely monitor data and control devices
C305.4	Develop real life IoT based projects

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	2												1	
CO2	2			1		1							1	
CO3	1			1		1							1	
CO4	1												1	1
AVERAGE	1.5			0.5		0.5							1	1

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ACADEMIC YEAR: 2023-24

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - V

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Environmental Studies
Course Code: 21CIV57

Cos	Statements
C305.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale
C305.2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
C305.3	Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.
C305.4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	1				1		1	1						1
CO2					1		1	1						1
CO3							1	1						1
CO4	1				1		1	1						1
CO5	1						1	1						
AVERAGE	0.6				0.6		1	1						1

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ACADEMIC YEAR: 2023-24

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - V

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Research Methodology and Intellectual Property Right AEC
Course Code: 21EC56

Cos	Statements
C505.1	To know the meaning of engineering research.
C505.2	To know the procedure of Literature Review and Technical Reading.
C505.3	To know the fundamentals of patent laws and drafting procedure
C505.4	Understanding the copyright laws and subject matters of copyrights and designs
C505.5	Understanding the basic principles of design rights.

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	1												1	
CO2	1					1							1	
CO3	1								1					1
CO4	1													
CO5	1													
AVERAGE	1					1			1				0.5	1

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ACADEMIC YEAR: 2023-24

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - VII

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Computer Networks
Course Code: 18EC71

Cos	Statements
C305.1	Understand the concepts of networking.
C305.2	Describe the various networking architectures
C305.3	Identify the protocols and services of different layers
C305.4	Distinguish the basic network configurations and standards associated with each network
C305.5	Analyze a simple network and measure its parameters

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	2	1	1	1		1							1	
CO2	1	2	2	1									1	
CO3	1	1	1	1									1	
CO4	1												1	
CO5	1			1										
AVERAGE	1	1	1	1									1	

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ACADEMIC YEAR: 2023-24

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - VII

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: VLSI Design
Course Code: 18EC72

Cos	Statements
C305.1	Demonstrate understanding of MOS transistor theory, CMOS fabrication flow and technology scaling
C305.2	Draw the basic gates using the stick and layout diagrams with the knowledge of physical design aspects
C305.3	Demonstrate ability to design Combinational, sequential and dynamic logic circuits as per there requirements
C305.4	Interpret Memory elements along with timing considerations
C305.5	Interpret testing and testability issues in VLSI Design

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	2	1	1	1		1							2	
CO2	2	1	1	1		1							2	
CO3	2	1	1	1		2							2	
CO4	2	1	1	1		2							2	
CO5	2	1	1	1									2	
AVERAGE	1	1	1	1		2							2	

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ACADEMIC YEAR: 2023-24

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - VII

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Real Time System
Course Code: 18EC731

Cos	Statements
C305.1	Explain the fundamentals of Real time systems and its classifications
C305.2	Understand the concepts of computer control and the suitable computer hardware requirements for real-time applications
C305.3	Describe the operating system concepts and techniques required for real time systems
C305.4	Develop the software algorithms using suitable languages to meet Real Time applications
C305.5	Apply suitable methodologies to design and develop Real-Time Systems

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	1	1		1		1							1	
CO2	1												1	
CO3	1												1	
CO4	1												1	
CO5	1												1	
AVERAGE	1	1		1		1							1	

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ACADEMIC YEAR: 2023-24

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - VII

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: Computer Networks Laboratory
Course Code: 18ECL76

Cos	Statements
C305.1	Choose suitable tools to model a network
C305.2	Use the network simulator for learning and practice of networking algorithms
C305.3	Illustrate the operations of network protocols and algorithms using C programming
C305.4	Simulate the network with different configurations to measure the performance parameters
C305.5	Implement the data link and routing protocols using C programming.

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	1												1	
CO2	1	1		1										
CO3	1													
CO4	1					1								
CO5	1													
AVERAGE	1	1		1		1							1	

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ACADEMIC YEAR: 2023-24

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER - VII

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

Course Name: VLSI Laboratory
Course Code: 18ECL77

Cos	Statements
C305.1	Design and simulate combinational and sequential digital circuits using Verilog HDL
C305.2	Understand the Synthesis process of digital circuits using EDA tool
C305.3	Perform ASIC design flow and understand the process of synthesis, synthesis constraints and evaluating the synthesis reports to obtain optimum gate level net list
C305.4	Design and simulate basic CMOS circuits like inverter, common source amplifier and differential amplifiers
C305.5	Perform RTL –GDSII flow and understand the stages in ASIC design

Co-Po Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	2	1	1	1									2	2
CO2	1	1	1			1							1	1
CO3	1	1	1	1		1							2	1
CO4	2	1	1	1		1							1	2
CO5	1	1	1	1		1							2	1
AVERAGE	1.75	1	1	1		1							2	1.75

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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester: 2023-24

Course Name: Mathematics for Computer Science

Course Code: BCS301/C301

Cos	Statements
C301.1	Explain the basic concepts of probability, random variables, probability distribution.
C301.2	Apply suitable probability distribution models for the given scenario.
C301.3	Apply the notion of a discrete-time Markov chain and n-step transition probabilities to solve the given problem
C301.4	Use statistical methodology and tools in the engineering problem-solving process.
C301.5	Compute the confidence intervals for the mean of the population.
C301.6	Apply the ANOVA test related to engineering problems.

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	1	1							1	1	1	1
CO2	2	2	1	1	1				2	1		2	1	1	3
CO3	3	3	3	1	1					1		2	2	2	2
CO4	3	3	3	3	1	1		1	1	3		2	3	1	1
CO5	2	3	3	1	2					1		3	2	1	2
AVERAGE	2.6	2.4	2.2	1.4	1.2	1	0	1	1.5	1.5	0	2	1.8	1.2	1.8

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester: 2023-24

Course Name: Digital Design and Computer Organization

Course Code: BCS302/C302

Cos	Statements
C302.1	Apply the K–Map techniques to simplify various Boolean expressions.
C302.2	Design different types of combinational and sequential circuits along with Verilog programs.
C302.3	Describe the fundamentals of machine instructions, addressing modes and Processor performance.
C302.4	Explain the approaches involved in achieving communication between processor and I/O devices.
C302.5	Analyze internal Organization of Memory and Impact of cache/Pipelining on Processor Performance.

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	1	1	1							1	2	1
CO2	3	1	1	1								2	2	1	2
CO3	3	3	3	3	1								3	3	3
CO4	1	3	3	1	1								2	2	2
CO5	3	3	3	1	3	3						1	3	3	3
AVERAGE	2.6	2.2	2.2	1.4	1.5	2	0	0	0	0	0	1.5	2.2	2.2	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III **Semester :2023-24**

Course Name: OPERATING SYSTEMS

Course Code: BCS303/C303

Cos	Statements
C303.1	Explain the structure and functionality of operating system
C303.2	Apply appropriate CPU scheduling algorithms for the given problem.
C303.3	Analyse the various techniques for process synchronization and deadlock handling.
C303.4	Apply the various techniques for memory management
C303.5	Explain file and secondary storage management strategies.
C303.6	Describe the need for information protection mechanisms

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1									1	1	1
CO2	1	1	1	1								2	1	1	2
CO3	2	2	3	2	2						1	1	2	2	2
CO4	2	2	1	2							1	1	2	2	2
CO5	2	2	2	1										1	1
AVERAGE	1.6	1.6	1.6	1.4	2	0	0	0	0	0	1	1.3	1.5	1.4	1.6

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III **Semester :2023-24**

Course Name: DATA STRUCTURES AND APPLICATIONS

Course Code: BCS304 /C304

Cos	Statements
C304.1	Explain different data structures and their applications.
C304.2	Apply Arrays, Stacks and Queue data structures to solve the given problems.
C304.3	Use the concept of linked list in problem solving.
C304.4	Develop solutions using trees and graphs to model the real-world problem.
C304.5	Explain the advanced Data Structures concepts such as Hashing Techniques and Optimal Binary Search Trees.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	1	1							1	1	1	3
CO2	2	3	1	1	1							1	1	2	2
CO3	2	2	1	2	1							1	1	1	2
CO4	1	3	2	1	1							1	1	1	1
CO5	3	2	2	1	1							1	1	1	3
AVERAGE	2.2	2.2	1.4	1.2	1	0	0	0	0	0	0	1	1	1.2	2.2

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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester :2023-24

Course Name: Object Oriented Programming with JAVA
Course Code: BCS306A /C306

Cos	Statements
C306.1	Demonstrate proficiency in writing simple programs involving branching and looping structures.
C306.2	Design a class involving data members and methods for the given scenario.
C306.3	Apply the concepts of inheritance and interfaces in solving real world problems.
C306.4	Use the concept of packages and exception handling in solving complex problem.
C306.5	Apply concepts of multithreading, autoboxing and enumerations in program development

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	2	1								3	1	1	3
CO2	1	1	2	1								2	1	2	2
CO3	1	1	2	1								2	1	1	2
CO4	1	1	1	1								2	1	2	1
CO5	1	1	1	2								3	1	2	3
AVERAGE	1	1	1.6	1.2	0	0	0	0	0	0	0	2.4	1	1.6	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester :2023-24

Course Name: DATA STRUCTURES LABORATORY

Course Code: BCSL305/C305

Cos	Statements
C305.1	Analyze various linear and non-linear data structures.
C305.2	Demonstrate the working nature of different types of data structures and their applications
C305.3	Use appropriate searching and sorting algorithms for the give scenario.
C305.4	Apply the appropriate data structure for solving real world problems.

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

ODD SEMESTER

III Semester :2023-24

Course Name: Social Connect & Responsibility

Course Code: BSCK307/C307

Cos	Statements
C307.1	Communicate and connect to the surrounding.
C307.2	Create a responsible connection with the society.
C307.3	Involve in the community in general in which they work.
C307.4	Notice the needs and problems of the community and involve them in problem – solving.
C307.5	Develop among themselves a sense of social & civic responsibility & utilize their knowledge in finding practical solutions to individual and community problems.
C307.6	Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.

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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

V Semester :2023-24

CourseName:AUTOMATA THEORY AND COMPILER DESIGN

CourseCode: 21CS51/C501

Cos	Statements
C5O1.1	Acquire fundamental understanding of the core concepts in automata theory and Theory of Computation.
C5O1.2	Design and develop lexical analysers, parsers and code generators.
C5O1.3	Design Grammars and Automata (recognizers) for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and their relative powers.
C5O1.4	Acquire fundamental understanding of the structure of a Compiler and Apply concepts automata theory and Theory of Computation to design Compilers.
C5O1.5	Design computations models for problems in Automata theory and adaptation of such model in the field of compilers.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	3	1								1	1	1
CO2	2	2	1	2	1								1	1	3
CO3	3	3	3	3	1								2	2	2
CO4	3	3	3	2	1								3	1	1
CO5	2	3	3	3	2								2	1	2
AVERAGE	2.6	2.4	2.2	2.6	1.2	0	0	0	0	0	0	0	1.8	1.2	1.8

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

V Semester: 2023-24

CourseName: Computer Networks

CourseCode: 21CS52/C502

Cos	Statements
C5O2.1	Learn the basic needs of communication system.
C5O2.2	Interpret the communication challenges and its solution.
C5O2.3	Identify the communication system network components.
C5O2.4	Organize the communication system network components.
C5O2.5	Design communication networks for user requirements.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1	2	1	1						1	3	2	1
CO2	3	3	1	2	2							2	1	1	2
CO3	3	3	3	2	1							2	3	3	3
CO4	1	3	3	1	1							2	2	2	2
CO5	3	3	3	1	3	3						1	3	3	3
AVERAGE	2.6	3	2.2	1.6	1.6	2	0	0	0	0	0	1.6	2.4	2.2	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

V **Semester :2023-24**

CourseName:DATABASE MANAGEMENT SYSTEMS

CourseCode: 21CS53/C503

Cos	Statements
C503.1	Identify, analyze and define database objects, enforce integrity constraints on a database using RDBMS.
C503.2	Use Structured Query Language (SQL) for database manipulation and also demonstrate the basic of query evaluation.
C503.3	Design and build simple database systems and relate the concept of transaction, concurrency control and recovery in database.
C503.4	Develop application to interact with databases, relational algebra expression.
C503.5	Develop applications using tuple and domain relation expression from queries.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1										1	1	1
CO2	2	3	1							1		1	1	1	2
CO3	2	2	3	2	2						1	1	2	2	2
CO4	2	2	3	2						1	1	1	2	2	2
CO5	2	2	2											1	1
AVERAGE	8.2	2.4	2	2	2	0	0	0	0	1	1	1	1.5	1.4	1.6

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

V **Semester: 2023-24**

Course Name: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Course Code: 21CS54/C504

Cos	Statements
C5O4.1	Apply the knowledge of searching and reasoning techniques for different applications.
C5O4.2	Have a good understanding of machine leaning in relation to other fields and fundamental issues and challenges of machine learning.
C5O4.3	Apply the knowledge of classification algorithms on various dataset and compare results.
C5O4.4	Model the neuron and Neural Network, and to analyze ANN learning and its applications.
C5O4.5	Identifying the suitable clustering algorithm for different pattern.

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	1	1						1	1	1	1	3
CO2	1	3	2	1	1	1					1	1	1	2	2
CO3	2	2	3	2	1							1	1	1	2
CO4	1	3	2	1	1	1						1	1	1	1
CO5	2	2		1	1							1	1	1	3
AVERAGE	1.8	2.6	2.5	1.2	1	1	0	0	0	0	1	1	1	1.2	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

V Semester :2023-24

CourseName: RESEARCH METHODOLOGY & INTELLECTUAL PROPERTY RIGHTS

CourseCode: 21RMI56/C506

Cos	Statements
C5O6.1	To know the meaning of engineering research.
C5O6.2	To know the procedure of Literature Review and Technical Reading.
C5O6.3	To know the fundamentals of patent laws and drafting procedure.
C5O6.4	Understanding the copyright laws and subject matters of copyrights and designs
C5O6.5	Understanding the basic principles of design rights.

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1					1			1	3	1	1	3
CO2	3	1	1					1		1	1	2	1	2	2
CO3	3	2	1					1		1		2	1	1	2
CO4	3	1	1							1		2	1	2	1
CO5	2	1	1					1				3	1	2	3
AVERAGE	1.8	1.2	1	0	0	0	2.8	1	0	1	1	2.4	1	1.6	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

V Semester: 2023-24

Course Name: DATABASE MANAGEMENT SYSTEM LABORATORY WITH MINI PROJECT

CourseCode: 21CSL55/C505

Cos	Statements
C5O5.1	Create, Update and query on the database.
C5O5.2	Demonstrate the working of different concepts of DBMS.
C5O5.3	Implement, analyze and evaluate the project developed for an application.

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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

V Semester: 2023-24

CourseName: Environmental Studies
CourseCode: 21CV57/C507

Cos	Statements
C507.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale.
C507.2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
C507.3	Demonstrate ecology knowledge of a complex relationship between biotic and a biotic component.
C507.4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

V Semester: 2023-24

CourseName: ANGULAR JS

CourseCode: 21CSL581/C806

Cos	Statements
C5O8.1	Develop Angular JS programs using basic features.
C5O8.2	Develop dynamic Web applications using AngularJS modules.
C5O8.3	Make use of form validations and controls for interactive applications.
C5O8.4	Appy the concepts of Expressions, data bindings and filters in developing Angular JS programs.
C5O8.5	Make use of modern tools to develop Web applications.

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

VII Semester :2023-24

Course Name: Artificial Intelligence & Machine Learning

Course Code: 18CS71/C701

Cos	Statements
C7O1.1	Appaise the theory of Artificial intelligence and Machine Learning.
C7O1.2	Explain theory of probability and statistics related to machine learning
C7O1.3	Investigate concept learning, ANN, Bayes classifier, k nearest neighbour, Q,
C7O1.4	Develop Kernel Methods with Dual Representations, Radial Basis and Function Networks
C7O1.5	Analyse implementation of Maximum Margin Classifiers and Relevance Vector Machines

CO POMapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	1	1									1	1	1	1
CO2	2	2	1	1	1				2	1		2	1	1	3
CO3	3	3	3	1	1					1		2	2	2	2
CO4	3	3	3	3	1	1		1	1	3		2	3	1	1
CO5	2	3	3	1	2					1		3	2	1	2
AVERAGE	2.6	2.4	2.2	1.5	1.2	1	0	1	1.5	1.5	0	2	1.8	1.2	1.8

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

VII Semester: 2023-24

Course Name: Big Data Analytics

Course Code: 18CS72/C702

Cos	Statements
C7O2.1	Understand fundamentals of Big Data analytics.
C7O2.2	Investigate Hadoop framework and Hadoop Distributed File system.
C7O2.3	Illustrate the concepts of NoSQL using MongoDB and Cassandra for Big Data.
C7O2.4	Demonstrate the MapReduce programming model to process the big data along with Hadooptools.
C7O2.5	Use Machine Learning algorithms for real world big data. Analyze web contents and Social Networks to provide analytics with relevant visualization tools.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1		1	1							3	2	1
CO2	3	1	1									2	1	1	2
CO3	3	3	3	3	1								3	3	3
CO4	1	3	3	1	1								2	2	2
CO5	3	3	3	1	3	3						1	3	3	3
AVERAGE	2.6	2.2	2.2	1.6	1.5	2	0	0	0	0	0	1.5	2.4	2.2	2.2

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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

VII Semester :2023-24

Course Name: USER INTERFACE DESIGN

Course Code: 18CS734/C703

Cos	Statements
C7O3.1	To study the concept of menus, windows, interfaces
C7O3.2	To study about business functions
C7O3.3	To study the characteristics and components of windows and the various controls Forthe windows.
C7O3.4	To study about various problems in windows design with color, text, graphics.
C7O3.5	To study the testing methods

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1										1	1	1
CO2	1	1	1							1		2	1	1	2
CO3	2	2	3	2	2						1	1	2	2	2
CO4	2	2	1	2						1	1	1	2	2	2
CO5	2	2	2											1	1
AVERAGE	1.6	1.6	1.6	2	2	0	0	0	0	1	1	1.3	1.5	1.4	1.6

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

VII Semester: 2023-24

Course Name: Network Management

Course Code: 18CS742/C704

Cos	Statements
C7O4.1	Analyze the issues and challenges pertaining to management of emerging network technologies such as wired/wireless networks and high-speed internets.
C7O4.2	Apply network management standards to manage practical networks
C7O4.3	Formulate possible approaches for managing OSI network model.
C7O4.4	Use on SNMP for managing the network. Use RMON for monitoring the behavior of the network
C7O4.5	Identify the various components of network and formulate the scheme for the managing them

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1	1							1	1	1	3
CO2	1	3	1	1	1							1	1	2	2
CO3	2	2	1	2	1							1	1	1	2
CO4	1	3		1	1							1	1	1	1
CO5	1	2		1	1							1	1	1	3
AVERAGE	1.2	2.2	1	1.2	1	0	0	0	0	0	0	1	1	1.2	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

VII Semester :2023-24

CourseName: Energy & Environment

CourseCode: 18ME751/C705

Cos	Statements
C7O5.1	Understand energy scenario, energy sources and their utilization.
C7O5.2	Understand various methods of energy storage.
C7O5.3	Understand various methods of energy management and economic analysis.
C7O5.4	Analyse the awareness about environment and eco system.
C7O5.5	Understand the environment pollution along with social issues and acts

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1			2	1	3	1				3	1	1	3
CO2	1	1			2	1	3	1		1		2	1	2	2
CO3	1	1			2	1	3	1		1		2	1	1	2
CO4	1	1			1	1	3			1		2	1	2	1
CO5	1	1			1	2	2	1				3	1	2	3

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AVERAGE	1	1	0	0	1.6	1.2	2.8	1	0	1	0	2.4	1	1.6	2.2

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2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2023-24

ODD SEMESTER

VII Semester: 2023-24

Course Name: Artificial Intelligence & Machine Learning Lab

Course Code: 18CSL76/C706

Cos	Statements
C7O6.1	Implement and demonstrate AI and ML algorithms.
C7O6.2	Design Java/Python programs for various Learning algorithms.
C7O6.3	Apply appropriate data sets to the Machine Learning algorithms.
C7O6.4	Apply Classification, Clustering and regression algorithm on the data set.
C7O6.5	Identify and apply Machine Learning algorithms to solve real world problems.

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DEPARTMENT OF MECHANICAL ENGINEERING

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

ACADEMIC YEAR: 2023-24

ODD SEMESTER

Subject: CONTROL ENGINEERING	**Subject Code:**18ME71
Course Outcomes	
CO1	Identify the control system and its types , control actions
CO2	Construct the system governing equations for physical models(Electrical, Thermal, Mechanical, Electro Mechanical
CO3	Analyze the gain of the system using block diagram and signal flow graph
CO4	Evaluate the stability of Control system in complex domain and frequency domain
CO5	Employ state equations to study the Bode's plot

Subject: COMPUTER AIDED DESIGN AND MANUFACTURING	**Subject Code:**18ME72
Course Outcomes	
CO1	Define automation, CIM,CAD,CAM& explain differences between these concepts. Solve simple problems of transformations of entities on computer screen
CO2	Explain the basics of automated manufacturing industries through mathematical models and analyze different types of automated flow lines
CO3	Analyze the automated flowlines to reduce time and enhance productivity
CO4	Explain the use of different computer applications in manufacturing and able to prepare part program for simple jobs on CNCand Robot Programming
CO5	Visualize and appreciate the modern trends in manufacturing like additive manufacturing industry 4.0 and applications of IOT leading to smart manufacturing.

Subject: TOTAL QUALITY MANAGEMENT	**Subject Code:**18ME734
Course Outcomes	
CO1	Explain the various approaches of TQM
CO2	Infer the customer perception of quality
CO3	Analyze customer needs and perception to design feed back systems
CO4	Apply statistical tools for continuous improvement of systems
CO5	Apply the tools and technology for effective improvement of TQM

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Subject: ENERGY AND ENVIRONMENT	**Subject Code:**18ME751
Course Outcomes	
CO1	To understand the fundamentals of energy sources, energy use, energy efficiency, and resulting environmental implications of various energy supplies
CO2	To introduce various aspects of environmental pollution and its control
CO3	To understand the causes and remedies related to social issues like global warming, ozone layer depletion, climate change etc
CO4	To introduce various acts related to prevention and control of pollution of water and air, forest protection act, wild life protection act etc.

Subject: COMPUTER INTEGRATED MANUFACTURING LAB	**Subject Code:**18MEL76
Course Outcomes	
CO1	Generate CNC Lathe part programs for different turning operations.
CO2	Generate CNC Mill Part programs for point to point motions & line motions
CO3	Make use of Canned Cycles for Drilling, Peck drilling, Boring, Tapping, Turning, Facing,Taper turning Thread cutting etc.
CO4	Simulate Tool Path for different machining operations using CNC TRAIN software.

Subject: DESIGN LAB	**Subject Code:**18MEL77
Course Outcomes	
CO1	Analyze principal stresses, strains in members subjected to various loading using Strain Gauge Rosettes
CO2	Evaluate the parameters for single DOF of vibrational systems and identify critical speed of shaft for different modes
CO3	Estimate the parameters of journal bearing, governor and apply the knowledge of dynamics to balance the rotating masses
CO4	Apply the concept of photo elasticity for stress analysis and to calibrate photo elastic models

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Subject: Project Phase I	**Subject Code:**18MEP78
Course Outcomes	
CO1	Review the research literature,identify and analyze the complex engineering problems, formulate the sustainable conclusions or solutions using the basic principles of applied mathematics,science and engineering
CO2	Design proper methodology to derive the solutions for the existing or anticipated complex engineering problems in concern with the issues of public health, safety societal, cultural and environmental areas.
CO3	Practice and establish the professional engineering methodology for sustainable development in the society to address the complex engineering problems associated with societal and environmental factors.
CO4	Form internal & external group to work together as a team in the project under consideration under multi-disciplinary settings.
CO5	Communicate effectively addressing the complex engineering activities with documentation reports and proper presentation tools.

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Subject: THEORY OF MACHINES	**Subject Code: 21ME51**
Course Outcomes	
CO1	Knowledge of mechanisms and their motion and the inversions of mechanisms
CO2	Analyse the velocity, acceleration of links and joints of mechanisms.
CO3	Analyse the mechanisms for static and dynamic equilibrium.
CO4	Carry out the balancing of rotating and reciprocating masses
CO5	Analyse different types of governors used in real life situation.
CO6	Analyze the free and forced vibration phenomenon.

Subject: THERMO-FLUIDS ENGINEERING	**Subject Code:** 21ME52
Course Outcomes	
CO1	Apply the concepts of testing of I. C. Engines and evaluate their performance, and evaluate the performance of Reciprocating compressor.
CO2	Apply and analyse the concepts related to Refrigeration and Air conditioning, and get conversant with Psychrometric Charts, Psychrometric processes, human comfort conditions.
CO3	Explain the construction, classification and working principle of the Turbo machines and apply of Euler's turbine equation to evaluate the energy transfer and other related parameters. Compare and evaluate the performance of positive displacement pumps.
CO4	Classify, explain and analyse the various types of hydraulic turbines and centrifugal pumps.
CO5	Classify, explain and analyse various types of steam turbines and centrifugal compressor.

Subject: FINITE ELEMENT ANALYSIS	**Subject Code:** 21ME53
Course Outcomes	
CO1	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements.
CO2	Develop element characteristic equation and generation of global equation.
CO3	Formulate and solve Axi-symmetric and heat transfer problems.
CO4	Design different types of gears and simple gear boxes for relevant applications
CO5	Apply suitable boundary conditions to a global equation for bars, trusses, beams, circular shafts, heat transfer, fluid flow, axi-symmetric and dynamic problems.

Subject: MODERN MOBILITY & AUTOMOTIVE MECHANICS	**Subject Code:** 21ME54
Course Outcomes	
CO1	Understand the working of different systems employed in automobile.
CO2	Analyse the limitation of present day automobiles.
CO3	Evaluate the energy sources suitability
CO4	Apply the knowledge for selection of automobiles based on their suitability

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Subject: DESIGN LAB		**Subject Code:** 21MEL55
Course Outcomes		
CO1	Compute the natural frequency of the free and forced vibration of single degree freedom systems, critical speed of shafts.	
CO2	Carry out balancing of rotating masses and gyroscope phenomenon.	
CO3	Analyse the governor characteristics.	
CO4	Determine stresses in disk, beams and plates using photo elastic bench.	
CO5	Determination of Pressure distribution in Journal bearing	
CO6	Analyse the stress and strains using strain gauges in compression and bending test	
CO7	To realize different mechanisms and cam motions	

Subject: BASICS OF MATLAB		**Subject Code:** 21ME581
Course Outcomes		
CO1	To know about fundamentals of MATLAB tool	
CO2	To provide an overview to program curve fitting & solve Linear and Nonlinear Equations.	
CO3	To understand the concept and importance of Fourier transforms.	
CO4	To gain knowledge about MATLAB Simulink & solve Electrical engineering problems.	

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Subject: MECHANICS OF MATERIALS	**Subject Code:** BME301
Course Outcomes	
CO1	Understand the concepts of stress and strain in simple and compound bars.
CO2	Explain the importance of principal stresses and principal planes & Analyse cylindrical pressure vessels under various loadings
CO3	Apply the knowledge to understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment
CO4	Evaluate stresses induced in different cross-sectional members subjected to shear loads.
CO5	Apply basic equation of simple torsion in designing of circular shafts & Columns

Subject: MANUFACTURING PROCESS	**Subject Code:** BME302
Course Outcomes	
CO1	Describe the casting process and prepare different types of cast products. Acquire knowledge on Pattern, Core, Gating, Riser system and to use Jolt, Squeeze, and Sand Slinger Moulding machines
CO2	Compare the Gas fired pit, Resistance, Coreless, Electrical and Cupola Metal Furnaces. Compare the Gravity, Pressure die, Centrifugal, Squeeze, slush and Continuous Metal mold castings.
CO3	Understand the Solidification process and Casting of Non-Ferrous Metals.
CO4	Describe the Metal Arc, TIG, MIG, Submerged and Atomic Hydrogen Welding processes etc. used in manufacturing.
CO5	Describe the methods of different joining processes and thermal effects in joining process

Subject: MATERIAL SCIENCE AND ENGINEERING	**Subject Code:** BME303
Course Outcomes	
CO1	Understand the atomic arrangement in crystalline materials and describe the periodic arrangement of atoms in terms of unit cell parameters.
CO2	Understand the importance of phase diagrams and the phase transformations.
CO3	Explain various heat treatment methods for controlling the microstructure..
CO4	Correlate between material properties with component design and identify various kinds of defects.
CO5	Apply the method of materials selection, material data and knowledge sources for computer aided selection of materials.

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Subject: BASIC THERMODYNAMICS	**Subject Code:** BME304
Course Outcomes	
CO1	Explain fundamentals of thermodynamics and evaluate energy interactions across the boundary of thermodynamic systems.
CO2	Apply 1st law of thermodynamics to closed and open systems and determine quantity of energy transfers.
CO3	Evaluate the feasibility of cyclic and non-cyclic processes using 2nd law of thermodynamics
CO4	Apply the knowledge of entropy, reversibility and irreversibility to solve numerical problems and Interpret the behaviour of pure substances and its application in practical problems.
CO5	To measure Screw thread parameters using 2-Wire or 3-Wire method, gear tooth profile using gear tooth vernier/Gear tooth micrometer.
CO6	Recognize differences between ideal and real gases and evaluate thermodynamic properties of ideal and real gas mixtures using various relations.

Subject: Introduction to modeling and Design for Manufacturing	**Subject Code:** BMEL305
Course Outcomes	
CO1	Create and modify a form based design.
CO2	Use design tools for moulded parts
CO3	Demonstrate proficiency in the setup and creation of design
CO4	Simulate the assembly of machine components in 3D environment

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Department of Applied Science and Humanities

2.6.1 QlM Programme Outcomes (POs) and Course Outcomes (COs) offered by the department (EVEN and ODD) ACY 2023-2024

I YEAR COURSES

Sl. No	Course Name	Course Code
1	Mathematics-I for Computer Science and Engineering stream	BMATS101
2	Mathematics-I for Electrical & Electronics Engineering Stream	BMATE101
3	Mathematics-I for CIVIL Engineering Stream	BMATC101
4	Applied Physics for CSE Stream	BPHYS102/202
5	Applied Physics for EEE Stream	BPHYE102/202
6	Applied Physics for CIVIL Stream	BPHYC102/202
7	Applied Chemistry for Computer Science	BCHES102/202
8	Applied Chemistry for Electrical and Electronics Stream	BCHEE102/202
9	Applied Chemistry for Civil Engineering stream	BCHEC102/202
10	Engineering mechanics	BCIVC103/203
11	Principles of Programming using C	BPOPS103/203
12	Communicative English	BENGK106-206
13	Professional Writing Skills in English	BPWSK206-106
14	Balake Kannada	BKBKK107-207
15	Indian Constitution	BICOK107-207
16	Innovation and Design Thinking	BIDTK158/258

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Sl. No	Course Name	Course Code
17	Scientific Foundations of Health	BICOK107-207
18	Introduction to Internet of Things (IOT)	BETCK105H/205H
19	Introduction to Python Programming	BPLCK105B/205B
20	Introduction to mechanical engineering	BESCK104D/204D
21	Computer Aided Engineering Drawing	BCEDK103/203
22	Basic Electronics	BBEE103
23	Introduction to Electronics & Communication	BESCK104C/204C
24	Introduction to C Programming	BESCK104E/204E
25	Mathematics-II for Computer Science and Engineering stream	BMATS201
26	Mathematics-II for Electrical & Electronics Engineering Stream	BMATE201
27	Mathematics-II for Civil Engineering stream	BMATC201
27	Introduction to Electrical Engineering	BESCK204B

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DEPARTMENT OFAPPLIED SCIENCE AND HUMANITIES

ACADEMIC YEAR 2023-24

COURSE OUTCOMES OF I YEAR

COURSE NAME: Mathematics-I for Computer Science and Engineering stream
COURSE CODE: BMATS101[C101]

COs	STATEMENTS
C101.1	Apply the knowledge of calculus to solve problems related to polar curves and learn the notion of partial differentiation to compute rate of change of multivariate functions
C101.2	Analyze the solution of linear and nonlinear ordinary differential equations
C101.3	Get acquainted and to apply modular arithmetic to computer algorithms
C101.4	Make use of matrix theory for solving the system of linear equations and compute eigenvalues and eigenvectors
C101.5	Familiarize with modern mathematical tools namely MATHEMATICA/MATLAB/ PYTHON/ SCILAB

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C101.1	3	2										1	3	1	
C101.2	3	2										1	3	1	
C101.3	3	2										1	3	2	
C101.4	3	2		1								1	3	2	
C101.5	3	2		1								1	3	1	2

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COURSE NAME: Mathematics-I for Electrical & Electronics Engineering Stream
COURSE CODE: BMATE101[C102]

COs	STATEMENTS
C102.1	Apply the knowledge of calculus to solve problems related to polar curves and learn the notion of partial differentiation to compute rate of change of multivariate functions
C102.2	Analyse the solution of linear and nonlinear ordinary differential equations
C102.3	Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing area and volume
C102.4	Make use of matrix theory for solving the system of linear equations and compute eigenvalues and eigenvectors
C102.5	Familiarize with modern mathematical tools namely MATHEMATICA/MATLAB/ PYTHON/ SCILAB

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C102.1	3	2										1	3	1	
C102.2	3	2										1	3	1	
C102.3	3	2										1	3	2	
C102.4	3	2		1								1	3	2	
C102.5	3	2		1								1	3	1	2

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COURSE NAME: Mathematics-I for CIVIL Engineering Stream
COURSE CODE: BMATC101[C103]

COs	STATEMENTS
C103.1	apply the knowledge of calculus to solve problems related to polar curves.
C103.2	learn the notion of partial differentiation to compute rate of change of multivariate functions.
C103.3	analyze the solution of linear and nonlinear ordinary differential equations.
C103.4	make use of matrix theory for solving the system of linear equations and compute eigenvalues and eigenvectors.
C103.5	familiarize with modern mathematical tools namely MATHEMATICA/ MATLAB/ PYTHON/SCILAB

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C103.1	3	2										1	3	1	
C103.2	3	2										1	3	1	
C103.3	3	2										1	3	2	
C103.4	3	2		1								1	3	2	
C103.5	3	2		1								1	3	1	2

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COURSE NAME: Applied Physics for CSE Stream
COURSE CODE: BPHYS102/202[C104]

COs	STATEMENTS
C104.1	Describe the principles of LASERS and Optical fibers and their relevant applications.
C104.2	Discuss the basic principles of the Quantum Mechanics and its application in Quantum Computing.
C104.3	Summarize the essential properties of superconductors and its applications in qubits.
C104.4	Illustrate the application of physics in design and data analysis.
C104.5	Practice working in groups to conduct experiments in physics and perform precise and honest measurements.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C104.1	3	2										2	3	2	
C104.2	3	3										2	3	2	
C104.3	3	3										2	2		
C104.4	3	2	1		1							2	3	1	
C104.5	3	2	1		2			3	3			2	3		2

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COURSE NAME: Applied Physics for EEE Stream
COURSE CODE: BPHYE102/202 [C105]

COs	STATEMENTS
C105.1	Describe the fundamental principles of the Quantum Mechanics and the essentials of Photonics.
C105.2	Elucidate the concepts of conductors, dielectrics and superconductivity
C105.3	Discuss the fundamentals of vector calculus and their applications in Maxwell's Equations and EM Waves
C105.4	Summarize the properties of semiconductors and the working principles of semiconductor devices.
C105.5	Practice working in groups to conduct experiments in physics and perform precise and honest measurements.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C105.1	3	2										2	3	2	
C105.2	3	2										2	3	2	
C105.3	3	2										2	2		
C105.4	3	2			1							2	3	1	
C105.5	3	2	1		2			3	3			2	3		2

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COURSE NAME: Applied Physics for CIVIL Stream
COURSE CODE: BPHYC102/202 [C106]

COs	STATEMENTS
C106.1	Describe the fundamental principles of the Quantum Mechanics and the essentials of Photonics.
C106.2	Elucidate the concepts of conductors, dielectrics and superconductivity
C106.3	Discuss the fundamentals of vector calculus and their applications in Maxwell's Equations and EM Waves
C106.4	Summarize the properties of semiconductors and the working principles of semiconductor devices.
C106.5	Practice working in groups to conduct experiments in physics and perform precise and honest measurements.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C106.1	3	2			1							2	3	2	
C106.2	3	2										2	3	2	
C106.3	3	2										2	2		
C106.4	3	2				1						2	3	1	
C106.5	3	2	1		2			3	3			2	3		2

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COURSE NAME: Applied Chemistry for Computer Science
COURSE CODE: BCHES102/202 [C107]

COs	STATEMENTS
C107.1	Identify the terms and applications processes involved in scientific and engineering.
C107.2	Explain the phenomena of chemistry to describe the methods of engineering processes
C107.3	Solve the problems in chemistry that are pertinent in engineering applications
C107.4	Apply the basic concepts of chemistry to explain the chemical properties and processes
C107.5	Analyse properties and multidisciplinary situations processes associated with chemical substances inmulti-disciplinary situations.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C107.1	3	1	1				1						3	2	
C107.2	3	1	1				1						3	2	
C107.3	3	1	1				1						3		
C107.4	3	1	1				1						3	2	
C107.5	3	1	1				1						3		2

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COURSE NAME: Applied Chemistry for Electrical and Electronics Stream
COURSE CODE: BCHEE102/202[C108]

COs	STATEMENTS
C108.1	Identify the terms and applications processes involved in scientific and engineering
C108.2	Explain the phenomena of chemistry to describe the methods of engineering processes
C108.3	Solve the problems in chemistry that are pertinent in engineering applications
C108.4	Apply the basic concepts of chemistry to explain the chemical properties and processes
C108.5	Analyse properties and multidisciplinary situations processes associated with chemical substances in multi-disciplinary situations.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C108.1	3	1	1				1						3	2	
C108.2	3	1	1				1						3	2	
C108.3	3	1	1				1						3		
C108.4	3	1	1				1						3	2	
C108.5	3	1	1				1						3		2

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Course Name: Applied Chemistry for Civil Engineering stream
COURSE CODE: BCHEC102/202 [C109]

COs	STATEMENTS
C109.1	Identify the terms and applications processes involved in scientific and engineering
C109.2	Explain the phenomena of chemistry to describe the methods of engineering processes
C109.3	Solve the problems in chemistry that are pertinent in engineering applications
C109.4	Apply the basic concepts of chemistry to explain the chemical properties and processes
C109.5	Analyse properties and multidisciplinary situations processes associated with chemical substances in multi-disciplinary situations.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C109.1	3	1	1				1						3	2	
C109.2	3	1	1				1						3	2	
C109.3	3	1	1				1						3		
C109.4	3	1	1				1						3	2	
C109.5	3	1	1				1						3		2

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Course Name: ENGINEERING MECHANICS

COURSE CODE: BCIVC103/203[C110]

COs	STATEMENTS
C110.1	Compute the resultant of a force system and resolution of a force
C110.2	Comprehend the action for forces, moments, and other types of loads on rigid bodies and compute the reactive forces
C110.3	Analyse the frictional resistance offered by different planes
C110.4	Locate the centroid and compute the moment of inertia of sections
C110.5	Analyse the bodies in motion.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C110.1	2	3											2	2	
C110.2	2	3											2	2	
C110.3	2	3											3	2	
C110.4	2	3											2	2	
C110.5	2	3											3	1	

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Course Name: Principles of Programming using C
COURSE CODE: BPOPS103/203 [C111]

COs	STATEMENTS
C111.1	Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts.
C111.2	Apply programming constructs of C language to solve the real-world problem
C111.3	Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting
C111.4	Explore user-defined data structures like structures, unions and pointers in implementing solutions
C111.5	Design and Develop Solutions to problems using modular programming constructs

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C111.1	3	1											3	2	
C111.2	3	3	3										3	2	
C111.3	3	2	1										3	3	
C111.4	3	2	1										3	3	
C111.5	3	3	3		1								3	1	3

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Course Name: Communicative English

COURSE CODE: BENGK106-206[C112]

COs	STATEMENTS
C112.1	Understand and apply the Fundamentals of Communication Skills in their communication skills.
C112.2	Identify the nuances of phonetics, intonation and enhance pronunciation skills.
C112.3	To impart basic English grammar and essentials of language skills as per present requirement.
C112.4	Understand and use all types of English vocabulary and language proficiency
C112.5	Adopt the Techniques of Information Transfer through presentation.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C112.1										3			1		
C112.2										3					
C112.3										3					1
C112.4										3					
C112.5										3			1		

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Course Name: Professional Writing Skills in English

COURSE CODE: BPWSK206-106[C113]

COs	STATEMENTS
C113.1	To understand and identify the Common Errors in Writing and Speaking.
C113.2	To Achieve better Technical writing and Presentation skills.
C113.3	To read Technical proposals properly and make them to Write good technical reports.
C113.4	Acquire Employment and Workplace communication skills.
C113.5	To learn about Techniques of Information Transfer through presentation in different level.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C113.1										1					
C113.2										3			1		
C113.3										3		1			2
C113.4										3					
C113.5										3		2	1		

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Course Name: Balake Kannada

COURSE CODE: BKBKK107-207[C114]

COs	STATEMENTS
C114.1	To understand the necessity of learning of local language for comfortable life.
C114.2	To speak, read and write Kannada language as per requirement.
C114.3	To communicate (converse) in Kannada language in their daily life with kannada speakers.
C114.4	To Listen and understand the Kannada language properly.
C114.5	To speak in polite conservation

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C114.1										1		1			
C114.2										1				1	
C114.3										1				1	
C114.4										1					
C114.5										1		2			

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Course Name: Indian Constitution

COURSE CODE: BICOK107-207[C115]

COs	STATEMENTS
C115.1	Analyse the basic structure of Indian Constitution.
C115.2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
C115.3	Know about our Union Government, political structure & codes, procedures.
C115.4	Understand our State Executive & Elections system of India.
C115.5	Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C115.1															
C115.2															
C115.3							2								
C115.4														1	
C115.5								1							

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Course Name: INNOVATION and DESIGN THINKING
COURSE CODE: BIDTK158/258[C116]

COs	STATEMENTS
C116.1	Appreciate various design process procedure
C116.2	Generate and develop design ideas through different technique
C116.3	Identify the significance of reverse Engineering to Understand products
C116.4	Draw technical drawing for design ideas

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C116.1			1										1		
C116.2													1	1	
C116.3													1		
C116.4													1		

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Course Name: Scientific Foundations of Health

COURSE CODE: BICOK107-207[C117]

COs	STATEMENTS
C117.1	To understand and analyse about Health and wellness (and its Beliefs) & It's balance for positive mind-set
C117.2	Develop the healthy lifestyles for good health for their better future.
C117.3	Build a Healthy and caring relationships to meet the requirements of good/social/positive life.
C117.4	To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future.
C117.5	Prevent and fight against harmful diseases for good health through positive mind-set.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C117.1													1		
C117.2															
C117.3															
C117.4													1		
C117.5															

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Course Name: Introduction to Internet of Things (IOT)
COURSE CODE: BETCK105H/205H[C118]

COs	STATEMENTS
C118.1	Describe the evolution of IoT, IoT networking components, and addressing strategies in IoT.
C118.2	Classify various sensing devices and actuator types.
C118.3	Demonstrate the processing in IoT.
C118.4	Explain Associated IOT Technologies
C118.5	Illustrate architecture of IOT Applications

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C118.1	3												1		
C118.2	3	3											1	1	
C118.3	3												2		
C118.4	3		2								1		1		
C118.5	3		2										1	1	

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Course Name: Introduction to Python Programming
COURSE CODE: BPLCK105B/205B[C119]

COs	STATEMENTS
C119.1	Demonstrate proficiency in handling loops and creation of functions.
C119.2	Identify the methods to create and manipulate lists, tuples and dictionaries.
C119.3	Develop programs for string processing and file organization
C119.4	Interpret the concepts of Object-Oriented Programming as used in Python.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C119.1	3		2		1								2	2	
C119.2	3		2		1								2	2	
C119.3	3	1	2		2							1	3	2	
C119.4	3	1	2		2								3	2	

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Course Name: INTRODUCTION TO MECHANICAL ENGINEERING
COURSE CODE: BESCK104D/204D[C120]

COs	STATEMENTS
C120.1	Explain the concepts of Role of Mechanical Engineering and Energy sources.
C120.2	Describe the Machine Tool Operations and advanced Manufacturing process.
C120.3	Explain the Working Principle of IC engines and EV vehicles.
C120.4	Discuss the Properties of Common Engineering Materials and various Metal Joining Processes
C120.5	Explain the Concepts of Mechatronics, Robotics and Automation in IoT

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C120.1	3					1	2			1		1	3		
C120.2	3					1	1			1		1	2		
C120.3	3					1	1			1		1	2		
C120.4	3					1	1			1		1	2		
C120.5	3					1	1			1		1	2	1	

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Course Name: Computer Aided Engineering Drawing
COURSE CODE: BCEDK103/203[C121]

COs	STATEMENTS
C121.1	Draw and communicate the objects with definite shape and dimensions
C121.2	Recognize and Draw the shape and size of objects through different views
C121.3	Develop the lateral surfaces of the object
C121.4	Create a Drawing views using CAD software.
C121.5	Identify the interdisciplinary engineering components or systems through its graphical representation.

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C121.1	3	2			3	1		1	1	3		2	2		
C121.2	3	2			3	1		1	1	3		2	1		
C121.3	3	2			3	1		1	1	3		2	1		
C121.4	3	2			3	1	1		1	3		1	1	2	
C121.5	3	2			3				1	3		2		2	

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Course Name: Basic Electronics

COURSE CODE: BBEE103 [C122]

COs	STATEMENTS
C122.1	Develop the basic knowledge on construction, operation and characteristics of semiconductor devices
C122.2	Apply the acquired knowledge to construct small scale circuits consisting of semiconductor devices
C122.3	Develop competence knowledge to construct basic digital circuit by make use of basic gate and its function.
C122.4	Construct the conceptual blocks for basic communication system
C122.5	Apply the knowledge of various transducers principle in sensor system

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C122.1	3	3	2		2	2							3	2	
C122.2	3	2	3		2	1							3		
C122.3	3	2	3		3				1				3	1	
C122.4	2	1	1		2	1			1			1	2		
C122.5	2	1	1		2	1			1			1	2	1	

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Course Name: Introduction to Electronics & Communication

COURSE CODE: BESCK104C/204C [C123]

COs	STATEMENTS
C123.1	Develop the basic knowledge and overview in the field of Electronics and Communication.
C123.2	To comprehend the operations and application of electronic circuits.
C123.3	Develop competence knowledge of logic circuits.
C123.4	Develop competence knowledge to construct embedded systems
C123.5	Analyse the basic communication system

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C123.1	3	1											3	2	
C123.2	3	1	1										3		
C123.3	2	1											3		
C123.4	3	3	2										3	2	
C123.5	1												3		

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Course Name: Introduction to C Programming

COURSE CODE: BESCK104E/204E [C124]

COs	STATEMENTS
C124.1	Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts.
C124.2	Apply programming constructs of C language to solve the real-world problem
C124.3	Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting
C124.4	Explore user-defined data structures like structures, unions and pointers in implementing solutions
C124.5	Design and Develop Solutions to problems using modular programming constructs using functions

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C124.1	3	1											3	2	
C124.2	3	3	3										3	2	
C124.3	3	2	1										3	3	
C124.4	3	2	1										3	3	
C124.5	3	3	3		1								3	1	3

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Course Name: Mathematics-II for Computer Science and Engineering stream
COURSE CODE: BMATS201[C201]

COs	STATEMENTS
C201.1	Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing area and volume.
C201.2	Understand the applications of vector calculus refer to solenoidal, and irrotational vectors. Orthogonal curvilinear coordinates.
C201.3	Demonstrate the idea of Linear dependence and independence of sets in the vector space, and linear transformation
C201.4	Apply the knowledge of numerical methods in analysing the discrete data and solving the physical and engineering problems.
C201.5	Get familiarize with modern mathematical tools namely MATHEMATICA/ MATLAB /PYTHON/ SCILAB

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C201.1	3	2										1	3	1	
C201.2	3	2										1	3	1	
C201.3	3	2										1	3	2	
C201.4	3	2		1								1	3	2	
C201.5	3	2		1								1	3	1	2

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Course Name: Mathematics-II for Electrical & Electronics Engineering Stream
COURSE CODE: BMATE201[C202]

COs	STATEMENTS
C202.1	Understand the applications of vector calculus refer to solenoidal, irrotational vectors, line integral and surface integral.
C202.2	Demonstrate the idea of Linear dependence and independence of sets in the vector space, and linear transformation
C202.3	To understand the concept of Laplace transform and to solve initial value problems
C202.4	Apply the knowledge of numerical methods in analysing the discrete data and solving the physical and engineering problems.
C202.5	Get familiarize with modern mathematical tools namely MATHEMATICA/ MATLAB /PYTHON/ SCILAB

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C202.1	3	2										1	3	1	
C202.2	3	2										1	3	1	
C202.3	3	2										1	3	2	
C202.4	3	2		1								1	3	2	
C202.5	3	2		1								1	3	1	2

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Course Name: Mathematics-II for Civil Engineering stream

COURSE CODE: BMATC201[C203]

COs	STATEMENTS
C203.1	Apply the knowledge of multiple integrals to compute area and volume.
C203.2	Understand the applications of vector calculus refer to solenoidal, irrotational vectors, line integral and surface integral.
C203.3	Demonstrate partial differential equations and their solutions for physical interpretations.
C203.4	Apply the knowledge of numerical methods in analysing the discrete data and solving the physical and engineering problems.
C203.5	Get familiarize with modern mathematical tools namely MATHEMATICA/ MATLAB /PYTHON/ SCILAB

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C203.1	3	2										1	3	1	
C203.2	3	2										1	3	1	
C203.3	3	2										1	3	2	
C203.4	3	2		1								1	3	2	
C203.5	3	2		1								1	3	1	2

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Course Name: Introduction to Electrical Engineering

COURSE CODE: BESCK204B[C204]

COs	STATEMENTS
C204.1	Understand the concepts of various energy sources and Electric circuits
C204.2	Apply the basic Electrical laws to solve circuits.
C204.3	Discuss the construction and operation of various Electrical Machines.
C204.4	Identify suitable Electrical machine for practical implementation.
C204.5	Explain the concepts of electric power transmission and distribution, electricity billing, circuit protective devices and personal safety measures..

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C204.1	2												3		
C204.2	2	3	1										3	1	
C204.3	1												2		
C204.4	1	1											1		
C204.5	2	1	1			2							2	1	

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

2.6.1 Program outcomes, program specific outcomes and course outcomes for allprograms offered by the Institution

ODD SEMESTER

I Semester : 2023-24

Course Name: Mathematical Foundation for Computer Applications

Course Code: 22MCA11

COs	Statements
CO1	Apply the fundamentals of set theory and matrices for the given problem.
CO2	Apply the types of distribution, evaluate the mean and variance for the given case study/Problem.
CO3	Solve the given problem by applying the Mathematical logic concepts.
CO4	Model the given problem by applying the concepts of graph theory.
CO5	Design strategy using gaming theory concepts for the given problem.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1											
CO2	1											
CO3	2											
CO4	2											
CO5			3									

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

2.6.1 Program outcomes, program specific outcomes and course outcomes for allprograms offered by the Institution

ODD SEMESTER

I Semester : 2023-24

Course Name: Operating System Concepts

Course Code: 22MCA12

COs	Statements
CO1	Analyze the basic Operating System Structure and concept of Process Management.
CO2	Analyze the given Synchronization/ Deadlock problem to solve and arrive at valid conclusions.
CO3	Analyze OS management techniques and identify the possible modifications for the given problem context.
CO4	Ability to design and solve synchronization problems.
CO5	Ability to simulate and implement operating system concepts such as scheduling, Deadlock management, file management, and memory management.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1				2							
CO2				2			3					
CO3	1		2									
CO4	2											
CO5		2		3								

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

2.6.1 Program outcomes, program specific outcomes and course outcomes for allprograms offered by the Institution

ODD SEMESTER

I Semester : 2023-24

Course Name: Data Structures with Algorithms

Course Code: 22MCA13

COs	Statements
CO1	Explore different data structures, its operations.
CO2	Demonstrate the concept of recursion and Queue.
CO3	Demonstrate the concept of Linked list.
CO4	Apply the concept of Linked list, Trees and Graphs in problem solving .
C05	Implement all data structures in a high-level language for problem solving.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1											2
CO2					1							
CO3		2										
CO4		2										3
CO5					3							

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

2.6.1 Program outcomes, program specific outcomes and course outcomes for allprograms offered by the Institution

ODD SEMESTER

I Semester : 2023-24

Course Name: Computer Networks

Course Code: 22MCA14

COs	Statements
CO1	Apply the basic concepts of networks like protocol, internet and OSI layers.
CO2	Analyze the working of Physical Layer.
CO3	Demonstrate the various Switching networks.
CO4	Analyze the Data Link Layer -1
C05	Analyze the Data Link Layer -2

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1				2							
CO2		2										
CO3	1				3							
CO4		2										
C05		2			3							

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

2.6.1 Program outcomes, program specific outcomes and course outcomes for allprograms offered by the Institution

ODD SEMESTER

I Semester : 2023-24

Course Name: Design and Analysis of Algorithms

Course Code: 22MCA15

COs	Statements
CO1	Describe the basic algorithm design strategies and use them for devising new solutions to various problems.
CO2	Analyze algorithms for time/space complexity.
CO3	Demonstrate the prism's algorithm, Kruskal algorithm, Dijkstra's algorithms.
CO4	Demonstrate multiple graphs.
C05	Differentiate between deterministic and probabilistic algorithms and use the probabilistic algorithms in appropriate scenarios.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1		2									
CO2		2		3								
CO3	1			2								
CO4		2										
CO5	2				3							

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

2.6.1 Program outcomes, program specific outcomes and course outcomes for allprograms offered by the Institution

ODD SEMESTER

I Semester : 2023-24

Course Name: Research Methodology and IPR

Course Code: 22RMI18

COs	Statements
CO1	Identify the suitable research methods and articulate the research steps in a proper sequence for the given problem.
CO2	Explain the functions of the literature review in research, carrying out a literature search, developing theoretical and conceptual frameworks and writing a review.
CO3	Explain various research designs, sampling designs, measurement and scaling techniques.
CO4	Perform the data collection from various sources segregate the primary and secondary data.
CO5	Apply some concepts/section of Copy Right Act /Patent Act /Cyber Law/ Trademark to the given case and develop –conclusions.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2										
CO2	1		2									
CO3		2		3								
CO4		2			3							
CO5	2											

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

2.6.1 Program outcomes, program specific outcomes and course outcomes for allprograms offered by the Institution

ODD SEMESTER

I Semester : 2023-24

Course Name: Basics of Programming & CO

Course Code: 22MCA110

COs	Statements
CO1	Demonstrate the key concepts introduced in C programming by writing and executing the programs.
CO2	Demonstrate the concepts of structures and pointers for the given application/problem.
CO3	Implement the single/multi-dimensional array for the given problem.
CO4	Demonstrate the application of logic gates in solving some societal/industrial problems.
CO5	Analyze how memory organization, operations, instruction sequencing and interrupts are useful in executing the given program.

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1				2							
CO2												2
CO3			1		2							
CO4	2											2
CO5					3							

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

ODD SEMESTER

I Semester :2023-24

Course Name: Principles of Management and Organizational Behavior

Course Code: 22MBA11

Sl. No.	Description
CO1	Gain practical experience in the field of Management and Organizational Behavior.
CO2	Acquire conceptual knowledge of management, various functions of Management and theories in OB.
CO3	Comprehend and apply management and behavioral models to relate attitude, perception and personality.
CO4	Analyze the recent trends in Management and OB models.

CO PO Mapping

CO'S	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2			1		2

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

ODD SEMESTER

I Semester :2023-24

Course Name: Entrepreneurship Development

Course Code: 22MBA12

Sl. No.	Description
CO1	Display keen interest and orientation towards entrepreneurship, entrepreneurial opportunity Modules in order to setup a business and to think creatively.
CO2	To know about the various business models and B-Plans across Business sectors.
CO3	Able to understand the importance of marketing and different forms of businesses.
CO4	Become aware about various sources of funding and institutions supporting entrepreneurs.
CO5	Awareness about legal aspects and ways to protect the ideas.
CO6	To understand the ways of starting a business and to know how to foster their ideas.

CO PO Mapping

CO'S	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	2				3	1			1
CO2	1	2			2		2		
CO3	1		1	2					
CO4	1				1				
CO5	1		3		1			3	
CO6	1		1						2

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

ODD SEMESTER

I Semester :2023-24

Course Name: Accounting for Managers

Course Code: 22MBA13

Sl. No.	Description
CO1	Know what and how books of accounts and financial statements are prepared. .
CO2	How to interpret financial statements of companies for decision making.
CO3	Independently undertake financial statement analysis and take decisions.

CO PO Mapping

CO'S	PO1	PO2	PO3	PO4	PO5	PSO 1	PSO 2	PSO 3	PSO 4
CO1	1				2	3			
CO2			2				2		
CO3				3				2	

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

ODD SEMESTER

I Semester :2023-24

Course Name: Statistics For Managers

Course Code: 22MBA14

Sl. No.	Description
CO1	Understand how to organize, manage, and present the data
CO2	Use and apply a wide variety of specific statistical tools
CO3	Understand the applications of probability in business
CO4	Effectively interpret the results of statistical analysis
CO5	Develop competence of using computer packages to solve the problems

CO PO Mapping

CO'S	PO1	PO2	PO3	PO4	PO5	PSO 1	PSO 2	PSO 3	PSO 4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2			1		2
CO5	2	3							

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

ODD SEMESTER

I Semester :2023-24

Course Name: Marketing Management

Course Code: 22MBA15

Sl. No.	Description
CO1	Comprehend the concepts of Marketing Management.
CO2	Gain knowledge on consumer behaviour and buying process
CO3	Understand concept of Product and Brand Management, Branding and Pricing strategies
CO4	Identify marketing channels and the concept of product distribution, techniques of sales promotion
CO5	Simply ideas into a viable marketing plan for various modes of marketing

CO PO Mapping

CO'S	PO1	PO2	PO3	PO4	PO5	PSO 1	PSO 2	PSO 3	PSO 4
CO1	1				2	3			
CO2	1		2				2		
CO3				3				2	
CO4		2		2					3
CO5		2			2				

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ACADEMIC YEAR:2023-24

DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution

ODD SEMESTER

I Semester :2023-24

Course Name: Business Communication

Course Code: 22MBA15

Sl. No.	Description
CO1	The students will be aware of their communication skills and know their potential to become successful managers.
CO2	The students will get enabled with the mechanics of writing and can compose the business letters in English precisely and effectively.
CO3	The students will be introduced to the managerial communication practices in business those are in vogue.
CO4	Students will get trained in the art of drafting business proposals and business communication with emphasis on analyzing business situations.

CO PO Mapping

CO'S	PO1	PO2	PO3	PO4	PO5	PSO 1	PSO 2	PSO 3	PSO 4
CO1	1				2	3			
CO2			2				2		
CO3				3				2	
CO4		2		2					3

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