



# CITY ENGINEERING COLLEGE

Approved by AICTE New Delhi & Affiliated by VTU, Belagavi  
Doddakallasandra, Off Kanakapura Main Road,  
Next to Gokulam Apartment, Bangalore - 560 062.



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

### EVEN SEMESTER

#### IV Semester: 2023-2024 (EVEN Sem)

**Course Name:** Analysis & Design of Algorithms

**Course Code:** BCS401 /C401

Cos	Statements
C401.1	Apply asymptotic notational method to analyze the performance of the algorithms in terms of time complexity.
C401.2	Demonstrate divide & conquer approaches and decrease & conquer approaches to solve computational problems.
C401.3	Make use of transform & conquer and dynamic programming design approaches to solve the given real world or complex computational problems.
C401.4	Apply greedy and input enhancement methods to solve graph & string based computational problems.
C401.5	Analyse various classes (P, NP and NP Complete) of problems and Illustrate backtracking, branch & bound and approximation methods.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	1		3	2									3	2	
CO2	1	2	2	1									2	3	
CO3	1		3	1									3	2	
CO4	2		3	1									2	2	
CO5	1	3	3	1									3	3	
AVG	1.2	2.5	2.8	1.2									2.6	2.4	



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### ACADEMIC YEAR: 2023-24

#### EVEN SEMESTER

**IV Semester: 2023-2024 (EVEN Sem)**

**Course Name:** : Artificial Intelligence

**Course Code:** : : BAD402 /C402

Cos	Statements
C402.1	Apply knowledge of agent architecture, searching and reasoning techniques for different applications.
C402.2	Compare various Searching and Inferencing Techniques.
C402.3	Develop knowledge base sentences using propositional logic and first order logic
C402.4	Describe the concepts of quantifying uncertainty.
C402.5	Use the concepts of Expert Systems to build applications.

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



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## DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

### ACADEMIC YEAR: 2023-24

### EVEN SEMESTER

**IV Semester: 2023-2024 (EVEN Sem)**

**Course Name: Database Management System**

**Course Code: BCS403 /C403**

Cos	Statements
C403.1	Describe the basic elements of a relational database management system
C403.2	Design entity relationship for the given scenario.
C403.3	Apply various Structured Query Language (SQL) statements for database manipulation.
C403.4	Analyse various normalization forms for the given application
C403.5	Develop database applications for the given real world problem.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	1	3	2										3	2	
CO2	3	1	2		2								3	2	
CO3	1	1	3		2								3	2	
CO4	2	2	3	1	2								3	2	
CO5	1	2	3	2	1								3	2	1
AVG	1.6	1.8	2.6	1.5	1.7								3	2	1



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## DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

### ACADEMIC YEAR: 2023-24

#### EVEN SEMESTER

#### IV Semester: 2023-2024 (EVEN Sem)

**Course Name:** Discrete Mathematical Structures

**Course Code:** : BCS405A/C404

Cos	Statements
C404.1	Apply concepts of logical reasoning and mathematical proof techniques in proving theorems and statements.
C404.2	Demonstrate the application of discrete structures in different fields of computer science.
C404.3	Apply the basic concepts of relations, functions and partially ordered sets for computer representations.
C404.4	Solve problems involving recurrence relations and generating functions.
C404.5	Illustrate the fundamental principles of Algebraic structures with the problems related to computer science & engineering.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
C01	2	1	2	3									3	2	
C02	2	1	3	1									2	3	
C03	1	3	3	2									1	3	
C04	2	3	2	1									2		
C05	1	3	3										1		
AVG	1.6	2.2	2.6	1.7									1.8	2.6	



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## DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

### ACADEMIC YEAR: 2023-24

### EVEN SEMESTER

#### IV Semester: 2023-2024 (EVEN Sem)

Course Name: : Biology for Computer Science

Course Code: BBOK407/C407

Cos	Statements
C407.1	Elucidate the basic biological concepts via relevant industrial applications and case studies
C407.2	Evaluate the principles of design and development, for exploring novel bioengineering projects.
C407.3	Corroborate the concepts of biomimetics for specific requirements
C407.4	Think critically towards exploring innovative biobased solutions for socially relevant problems
C407.5	To know about the Trends In Bioengineering

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



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### ACADEMIC YEAR: 2023-24

### EVEN SEMESTER

#### IV Semester: 2023-2024 (EVEN Sem)

**Course Name:** : Universal human Values

**Course Code:** : BUHK408/C408

Cos	Statements
C408.1	They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
C408.2	They would have better critical ability
C408.3	They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
C408.4	It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.
C408.5	To know about the Professional Ethics

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1						3	1					2			1
CO2		3				2						1			2
CO3						3	2	1				2			1
CO4						2						3			2
CO5								3				1			1
AVG		3				2.5	1.5	2				1.8			1.4



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### ACADEMIC YEAR: 2023-24

### EVEN SEMESTER

**V1 Semester: 2023-2024 (EVEN Sem)**

**Course Name:** Software Engineering and Project Management

**Course Code:** 21CS61/C601

Cos	Statements
C601.1	Understand the activities involved in software engineering and analyze the role of various process models
C601.2	Explain the basics of object-oriented concepts and build a suitable class model using modelling techniques
C601.3	Describe various software testing methods and to understand the importance of agile methodology and DevOps
C601.4	Illustrate the role of project planning and quality management in software development
C601.5	Understand the importance of activity planning and different planning models

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2		1										3	2	
CO2	1		2		2								2	2	
CO3	2				3								3	1	
CO4		2	2		3								3	2	
CO5	2	1			3									1	
AVG	1.7	1.5	1.6		2.7								2.7	1.6	



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### ACADEMIC YEAR: 2023-24

### EVEN SEMESTER

**V1 Semester: 2023-2024 (EVEN Sem)**

**Course Name::** Data Science and its Applications

**Course Code:** : 21AD62 /C602

Cos	Statements
C602.1	Identify and demonstrate data using visualization tools.
C602.2	Make use of Statistical hypothesis tests to choose the properties of data, curate and manipulate data.
C602.3	Utilize the skills of machine learning algorithms and techniques and develop models.
C602.4	Demonstrate the construction of decision tree and data partition using clustering.
C602.5	Experiment with social network analysis and make use of natural language processing skills to develop data driven applications.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
C01	3	1	3	1	3								2	3	
C02	1		2		3								3	3	
C03	3	1	3		2								2	2	
C04	1		2	1		2							2	3	
C05	2					2							2	2	
AVG	2	1	2.5	1	2.6	2							2.2	2.6	





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### ACADEMIC YEAR: 2023-24

#### EVEN SEMESTER

**V1 Semester: 2023-2024 (EVEN Sem)**

**Course Name:** Machine Learning

**Course Code:** 21AI63 /C603

Cos	Statements
C603.1	Understand the concept of Machine Learning and Concept Learning.
C603.2	Apply the concept of ML and various classification methods in a project.
C603.3	Analyse various training models in ML and the SVM algorithm to be implemented.
C603.4	Apply the ML concept in a decision tree structure and implementation of Ensemble learning and Random Forest.
C603.5	Apply Bayes techniques and explore more about the classification in ML.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2		2									3	3	
CO2	1	1	2	2									2	2	
CO3	1		3	2									3	3	
CO4	1		3		1								3	2	
CO5	1		3		1								2	3	
AVG	1.4	1.5	2.7	2	1								2.6	2.6	



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### ACADEMIC YEAR: 2023-24

### EVEN SEMESTER

**V1 Semester: 2023-2024 (EVEN Sem)**

**Course Name:** Business Intelligence

**Course Code:** 21AI641 /C604

Cos	Statements
C604.1	Apply the basics of data and business to understand Decision Support systems and Business Intelligence framework.
C604.2	Describe the significance of Computerized Decision Support, apply the basics of mathematics to Understand the mathematical modeling behind decision support.
C604.3	Explain Data warehousing, its architecture and Extraction, Transformation, and Load (ETL) Processes.
C604.4	Analyze the importance of knowledge management and explain its activities, approaches and Its implementation
C604.5	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	1					2					2	1	3		3
CO2	1				1	1					3	2	2		2
CO3					3	2		1			2	1	1		3
CO4			3		3	1		2			3		2		3
CO5	2				3	1		1			3		1		3
AVG	1.3		3		2.5	1.4		1.3			2.6	1.3	1.8		2.8



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### ACADEMIC YEAR: 2023-24

### EVEN SEMESTER

**V1 Semester: 2023-2024 (EVEN Sem)**

**Course Name:** Renewable Energy Power Plants

**Course Code:** 21ME652 /C605

Cos	Statements
C605.1	Describe the various forms of non-conventional energy resources.
C605.2	Apply the fundamental knowledge of mechanical engineering to design various renewable energy systems
C605.3	Analyze the implications of renewable energy forms for selecting an appropriate system for a specific application.
C605.4	Discuss on the environmental aspects and impact of non-conventional energy resources, in comparison with various conventional energy systems, their prospects and limitations.
C605.5	To know about the energy conversions

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



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## DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

### ACADEMIC YEAR: 2023-24

### EVEN SEMESTER

VIII Semester: 2020-2021 (EVEN Sem)

Course Name: Neural Networks And Deep Learning

Code: 18AI81/C801

Cos	Statements
C801.1	Identify the deep learning algorithms which are more appropriate for various types of learning tasks in various domains.
C801.2	Implement deep learning algorithms and solve real-world problems.
C801.3	Execute performance metrics of Deep Learning Techniques.
C801.4	Evaluate RNN in Tensor Flow, and demonstrate training in RNN , Deep RNNs, LSTM Cell, GRU Cell, NLP
C801.5	Evaluating the efficiency of data representation and applying reinforcement learning techniques

	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	PS O3
CO1	2	2	3	1	2								3	3	
CO2	1	2	3	2	1	1					2	1	3	3	
CO3	1	2	3	2							2		2	3	
CO4	1	2	3	2					2	1		1	3	2	
CO5	1	2	3	1	2	2			1		2	2	3	3	
Avg	1.2	2	3	1.6	1.6	1.5			1.5	1	2	1.3	2.8	2.8	



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## DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

### ACADEMIC YEAR: 2023-24

### EVEN SEMESTER

VIII Semester: 2020-2021 (EVEN Sem)

Course Name: Modern Information Retrieval

Course Code: : 18AI824/ C802

Cos	Statements
C802.1	Apply information retrieval principles to locate relevant information in large collections of data
C802.2	Implement features of retrieval systems for web-based search tasks
C802.3	Apply the common algorithms and techniques for information retrieval related to document indexing and query processing
C802.4	Demonstrate a thorough understanding and solid knowledge of the principles and techniques of human-computer interaction
C802.5	Implement graphical user interfaces with modern software tools and design interactive software systems applications for real-time app

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	3	3	2	1					1	3	2	
CO2		1	3	2	3	2	1	2		1	1	1	2	3	
CO3	3	2	3	2	1	1			1			1	3	2	
CO4		2	1	3	2	1			1	3			2	2	
CO5		2	3	2	3	1		2	2	2	1	1	2	2	2
Avg	2.5	1.8	2.4	2.4	2.4	1.4	1	2	1.3	2	1	1	2.4	2.2	2



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## Department of Computer Science and Engineering

### 2.6.1QIM Programme Outcomes (POs) and Course Outcomes (COs) offered by the department -EVEN Semester Academic Year 2023-2024

SL NO	SEMESTER	SUBJECT/SUBJECT CODE
1	8	Internet of things and applications(18CS81)
2		Storage Area Network(18CS822)



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### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### ACADEMIC YEAR: 2023-24

### EVEN SEMESTER

**VIII Semester :2023-24**

**Course Name: Internet of things and applications**

**Course Code: 18CS81/C801**

COs	Statements
C801.1	Interpret the impact and challenges posed by IoT networks leading to new architectural models.
C801.2	Compare and contrast the deployment of smart objects and the technologies to connect them to network.
C801.3	Appraise the role of IoT protocols for efficient network communication.
C801.4	Elaborate the need for Data Analytics and Security in IoT
C801.5	Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.

### CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	1								2	3	1	3
CO2	2	1	3	3	2	2			2	1		3	3	2	1
CO3	2	1	2	1	1	2			2	2		2	3	3	1
CO4	3	1	1	2	1	1			1	3		2	3	1	1
CO5	1	1	1	1	1	1			1	1	3	3	3	1	3
<b>AVERAGE</b>	2.2	1	1.6	2	1.2	1.5	0	0	1.5	1.7	3	2.4	3	1.6	1.8



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### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### ACADEMIC YEAR: 2023-24

### EVEN SEMESTER

VIII Semester :2023-24

Course Name: Storage Area Network

Course Code: 18CS822/C802

Cos	Statements
C802.1	Identify key challenges in managing information and analyze different storage networking technologies and virtualization
C802.2	Explain components and the implementation of NAS
C803.3	Describe CAS architecture and types of archives and forms of virtualization
C804.4	Illustrate the storage infrastructure and management activities
C805.5	Understand the various replication techniques and security implementation of SAN

### CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1	2	1						3	1	1	3
CO2	1	3	1	1	2					1		2	1	2	2
CO3	1	2	1	1	2					1	1	2	1	1	2
CO4	1	3		1	1					3	3	2	1	1	1
CO5	1	2		1	1							3	1	2	3
AVERAGE	1	2.2	1	1	1.6	1	0	0	0	1.6	2	2.4	1	1.4	2.2















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**ACADEMIC YEAR: 2023-24**

## **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

### **ODD SEMESTER - IV**

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

Course Name :Biology For Engineers

Course Code : BBOK407

Cos	Statements
C406.1	Elucidate the basic biological concepts via relevant industrial applications and case studies
C406.2	Evaluate the principles of design and development, for exploring novel bio -engineering projects
C406.3	Corroborate the concepts of biomimetics for specific requirements.
C406.4	Think critically towards exploring innovative biobased solutions for socially relevant problems

#### **Co-Po Mapping**

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



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**ACADEMIC YEAR: 2023-24**

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**ODD SEMESTER - VI**

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

Course Name: Technological Innovation Management and Entrepreneurship  
Course Code: HSMC 21EC61

Cos	Statements
C601.1	Understand the fundamental concepts of Management and its functions
C601.2	Understand the different functions to be performed by managers/Entrepreneur
C601.3	Understand the social responsibilities of a Business.
C601.4	Understand the Concepts of Entrepreneurship and to identify Business opportunities.
C601.5	Understand the components in developing a business plan and awareness about various sources of funding and Institutions supporting Entrepreneur.

**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			
CO2				1			1							1
CO3				1			1							
CO4				1			1							
CO5				1			1							
AVERAGE				1		1	1				1			













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**ACADEMIC YEAR: 2023-24**

## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

### ODD SEMESTER - VIII

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

Course Name: Cellular and Wireless Communication  
Course Code:18EC81

Cos	Statements
C801.1	Understand the Communication theory both Physical and network-ing associated with GSM, CDMA & LTE4G systems
C801.2	Explain concepts of propagation mechanisms like Reflection, Dif-fraction ,Scattering in wireless channels
C801.3	Develop a scheme for idle mode, call setup, call progress and handling and call tear down in a GSM cellular network
C801.4	Develop a scheme for idle mode, call setup, call progress handling and call tear down in a CDMA cellular network
C801.5	Understand the Basic operations of Air interface in a LTE4G system.

#### Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1		1		2	1		1		2	1	3	1	1
CO2		3			2					1	2	1	1	1
CO3	1	1	2	1	1	1		1			1	1	1	1
CO4	1	1	1	2	1	3		2	1	2	1	1	1	
CO5	1	1	2	2	1	1		1	1	1	1	3	2	2
AVERAGE	0.8	1.2	1.2	1.2	1	1.2		1	1	1	1	1.8	1.2	1



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**ACADEMIC YEAR: 2023-24**

## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

### ODD SEMESTER - VIII

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

Course Name: Network Security  
Course Code: 18EC821

Cos	Statements
C802.1	Understand the Communication theory both Physical and network – in associated with GSM, CDMA & LTE4G systems
C802.2	Explain concepts of propagation mechanisms like Reflection, Dif-fraction, Scattering in wireless channels
C802.3	Develop a scheme for idle mode, call setup, call progress and handling and call tear down in a GSM cellular network
C802.4	Develop a scheme for idle mode, call setup, call progress handling and call tear down in a CDMA cellular network
C802.5	Understand the Basic operations of Air interface in a LTE4G system.

#### **Co-Po Mapping**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1				2	1				2	1	3	1	1
CO2		3			2					1	2	1	1	1
CO3	1	1	1	1	1	1	1	1	1		1	1	1	1
CO4	1	1	1	2	1	3		2	1	2	1	1	1	
CO5	1	1	1	2	1	1		1	1	1	1	3	2	2
AVERAGE	1	1.5	1.5	1.66	1.4	1.5		1.25	0.6	1.5	1.2	1.8	1.2	1.25



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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

### EVEN SEMESTER

VIII Semester :2023-24

Course Name: Internet of things and applications

Course Code: 18CS81/C801

COs	Statements
C801.1	Interpret the impact and challenges posed by IoT networks leading to new architectural models.
C801.2	Compare and contrast the deployment of smart objects and the technologies to connect them to network.
C801.3	Appraise the role of IoT protocols for efficient network communication.
C801.4	Elaborate the need for Data Analytics and Security in IoT
C801.5	Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.

### CO PO Mapping

CO'S	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								2	3	1	3
CO2	2	1	3	3	2	2			2	1		3	3	2	1
CO3	2	1	2	1	1	2			2	2		2	3	3	1
CO4	3	1	1	2	1	1			1	3		2	3	1	1
CO5	1	1	1	3	1	1			1	1	3	3	3	1	3
AVERAGE	2.2	1	1.6	4	1.2	1.5	0	0	1.5	1.7	3	2.4	3	1.6	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

### EVEN SEMESTER

VIII Semester: 2023-24

Course Name: Storage Area Network

Course Code: 18CS822/C802

Cos	Statements
C802.1	Identify key challenges in managing information and analyze different storage networking technologies and virtualization
C802.2	Explain components and the implementation of NAS
C803.3	Describe CAS architecture and types of archives and forms of virtualization
C804.4	Illustrate the storage infrastructure and management activities
C805.5	Understand the various replication techniques and security implementation of SAN

### CO PO Mapping

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1	2	1						3	1	1	3
CO2	1	3	1	1	2					1		2	1	2	2
CO3	1	2	1	1	2					1	1	2	1	1	2
CO4	1	3		1	1					3	3	2	1	1	1
CO5	1	2		1	1							3	1	2	3
AVERAGE	1	2.2	1	1	1.6	1	0	0	0	1.6	2	2.4	1	1.4	2.2



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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**

#### **EVEN SEMESTER**

<b>Subject: ENERGY ENGINEERING</b>		<b>Subject Code: 18ME81</b>
<b>Course Outcomes</b>		
<b>CO1</b>	Understand the construction and working of steam generators and their accessories.	
<b>CO2</b>	Identify renewable energy sources and their utilization	
<b>CO3</b>	Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, nuclear, hydel and tidal.	

<b>Subject: TRIBOLOGY</b>		<b>Subject Code: 18ME822</b>
<b>Course Outcomes</b>		
<b>CO1</b>	Understand the fundamentals of tribology and associated parameters	
<b>CO2</b>	Apply concepts of tribology for the performance analysis and design of components experiencing relative motion	
<b>CO3</b>	Analyse the requirements and design hydrodynamic journal and plane slider bearings for a given application	
<b>CO4</b>	Select proper bearing materials and lubricants for a given tribological application	
<b>CO5</b>	Apply the principles of surface engineering for different applications of tribology	





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<b>Subject: PRODUCTION AND OPERATIONS MANAGEMENT</b>		<b>Subject Code: 21ME61</b>
<b>Course Outcomes</b>		
<b>CO1</b>	Apply the necessary tools for decision making in operations management.	
<b>CO2</b>	Examine various approaches for forecasting the sales demand for an organization.	
<b>CO3</b>	List various capacity and location plans to determine the suitable capacity required for meeting the forecast demand of an organization.	
<b>CO4</b>	Analyze the aggregate plan and master production schedule for an organization, given its periodic demand.	
<b>CO5</b>	Apply MRP, purchasing and SCM techniques into practice.	

<b>Subject: HEAT TRANSFER</b>		<b>Subject Code: 21ME62</b>
<b>Course Outcomes</b>		
<b>CO1</b>	Solve steady state heat transfer problems in conduction.	
<b>CO2</b>	Solve transient heat transfer problems	
<b>CO3</b>	solve convection heat transfer problems using correlations	
<b>CO4</b>	Solve radiation heat transfer problems	
<b>CO5</b>	Explain the mechanisms of boiling and condensation. And Determine performance parameters of heat exchangers.	

<b>Subject: MACHINE DESIGN</b>		<b>Subject Code: 21ME63</b>
<b>Course Outcomes</b>		
<b>CO1</b>	Apply codes and standards in the design of machine elements and select an element based on the Manufacturer's catalogue.	
<b>CO2</b>	Analyse the performance and failure modes of mechanical components subjected to combined loading and fatigue loading using the concepts of theories of failure.	
<b>CO3</b>	Demonstrate the application of engineering design tools to the design of machine components like shafts, springs, couplings, fasteners, welded and riveted joints, brakes and clutches	
<b>CO4</b>	Design different types of gears and simple gear boxes for relevant applications	
<b>CO5</b>	Apply design concepts of hydrodynamic bearings for different applications and select Anti friction bearings for different applications using the manufacturers, catalogue	

<b>Subject: SUPPLY CHAIN MANAGEMENT &amp; INTRODUCTION TO SAP</b>		<b>Subject Code: 21ME641</b>
<b>Course Outcomes</b>		
<b>CO1</b>	Understand the framework and scope of supply chain management.	
<b>CO2</b>	Build and manage a competitive supply chain using strategies, models, techniques and information technology.	
<b>CO3</b>	Plan the demand, inventory and supply and optimize supply chain network.	
<b>CO4</b>	Understand the emerging trends and impact of IT on Supply chain.	
<b>CO5</b>	Understand the basics of SAP material management system	



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<b>Subject:</b> RENEWABLE ENERGY POWER PLANTS		<b>Subject Code:</b> 21ME652
<b>Course Outcomes</b>		
<b>CO1</b>	Describe the various forms of non-conventional energy resources	
<b>CO2</b>	Apply the fundamental knowledge of mechanical engineering to design various renewable energy systems.	
<b>CO3</b>	Analyze the implications of renewable energy forms for selecting an appropriate system for a specific application	
<b>CO4</b>	Discuss on the environmental aspects and impact of non-conventional energy resources, in comparison with various conventional energy systems, their prospects and limitations.	



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<b>Subject:</b> APPLIED THERMODYNAMICS		<b>Subject Code:</b> BME401
<b>Course Outcomes</b>		
<b>CO1</b>	Analyse air standard cycle to evaluate the performance of I C engines.	
<b>CO2</b>	Analyze the gas power cycles to evaluate the overall efficiency of gas turbine plant.	
<b>CO3</b>	Apply thermodynamic concepts to analyze the performance of vapour power cycles.	
<b>CO4</b>	Analyze the vapour compression and vapour absorption systems to improve refrigeration.	
<b>CO5</b>	Determination of various parameters of air compressors and steam nozzles.	

<b>Subject:</b> MACHINING SCIENCE & METROLOGY		<b>Subject Code:</b> BME402
<b>Course Outcomes</b>		
<b>CO1</b>	Analyze various cutting parameters in metal cutting.	
<b>CO2</b>	Understand the construction of machines & machine tools and compute the machining time of various operations.	
<b>CO3</b>	Understand the concept of Temperature in Metal Cutting, forms of wear in metal cutting and Cutting fluids	
<b>CO4</b>	Understand the objectives of metrology, methods of measurement, standards of measurement & various measurement parameters. Explain tolerance, limits of size, fits, geometric and position tolerances, gauges and their design	
<b>CO5</b>	Understand the working principle of different types of comparators, gauges, angular Measurements	

<b>Subject:</b> FLUID MECHANICS		<b>Subject Code:</b> BME403
<b>Course Outcomes</b>		
<b>CO1</b>	Identify and calculate the key fluid properties used in the analysis of fluid behavior.	
<b>CO2</b>	Understand and apply the principles of pressure, buoyancy and floatation	
<b>CO3</b>	Apply the knowledge of fluid dynamics while addressing problems of mechanical and chemical engineering	
<b>CO4</b>	Understand the concept of boundary layer in fluid flow and apply dimensional analysis to form dimensionless numbers in terms of input output variables.	
<b>CO5</b>	Understand the basic concept of compressible flow and CFD	
<b>CO6</b>	Conduct basic experiments of fluid mechanics and understand the experimental uncertainties.	



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<b>Subject: MECHANICAL MEASUREMENTS AND METROLOGY LAB</b>		<b>Subject Code: BME404</b>
<b>Course Outcomes</b>		
<b>CO1</b>	To calibrate pressure gauge, thermocouple, LVDT, load cell, micrometer.	
<b>CO2</b>	To measure angle using Sine Center/ Sine Bar/ Bevel Protractor, alignment using Autocollimator/ Roller set.	
<b>CO3</b>	To demonstrate measurements using Optical Projector/Tool maker microscope, Optical flats.	
<b>CO4</b>	To measure cutting tool forces using Lathe/Drill tool dynamometer.	
<b>CO5</b>	To measure Screw thread parameters using 2-Wire or 3-Wire method, gear tooth profile using gear tooth vernier/Gear tooth micrometer.	
<b>CO6</b>	To measure surface roughness using Tally Surf/ Mechanical Comparator	

<b>Subject: ENVIRONMENTAL STUDIES</b>		<b>Subject Code: BME405B</b>
<b>Course Outcomes</b>		
<b>CO1</b>	Understand the basic concepts of environmental studies and natural resources.	
<b>CO2</b>	Explain about the various eco-systems of nature	
<b>CO3</b>	Discuss different types of environmental pollutions and their control measures.	
<b>CO4</b>	Explain the acquired knowledge about the various social aspects related to the environment.	



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## Department of Applied Science and Humanities

### 2.6.1 QIM 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	BCHE102/202
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	BENGG106-206
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

<b>Sl. No</b>	<b>Course Name</b>	<b>Course Code</b>
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



**HOD**



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## DEPARTMENT OF APPLIED 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 in multi-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 conversation

## 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: 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 all programs

offered by the Institution

#### EVEN SEMESTER

II Semester : 2023-24

Course Name: Object Oriented Programming Using Java

Course Code: 22MCA22

COs	Statements
CO1	Use object-oriented programming concepts to solve real world problems.
CO2	Explain the concept of class and objects with access control to represent real world entities
CO3	Describe the concept of interface and abstract classes to define generic classes.
CO4	Demonstrate the implementation of inheritance (multilevel, hierarchical and multiple) by using extend and implement keywords.
CO5	Demonstrate the user defined exceptions by exception handling keywords (try, catch, throw, throws and finally).

#### 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	1						2					













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**

**EVEN SEMESTER**

**II Semester :2023-24**

**Course Name: Human Resource Management**

**Course Code: 22MBA21**

<b>Sl. No.</b>	<b>Description</b>
CO1	Understand and gain practical experience in the field of Human Resource Concepts, functions and theories.
CO2	Acquire conceptual insight of Human Resource and various functions of HR.
CO3	Apply personnel, managerial and welfare aspects of HR.
CO4	Perceive greater understanding about HR practices.
CO5	Perceive knowledge about the future trends in HRM

**CO PO Mapping**

<b>CO's</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO 1</b>	<b>PSO 2</b>	<b>PSO 3</b>	<b>PSO 4</b>
<b>CO1</b>	<b>1</b>				<b>2</b>	<b>3</b>			
<b>CO2</b>	<b>1</b>		<b>2</b>				<b>2</b>		
<b>CO3</b>		<b>2</b>		<b>3</b>				<b>2</b>	
<b>CO4</b>	<b>1</b>	<b>2</b>		<b>2</b>					<b>3</b>
<b>CO5</b>		<b>2</b>			<b>2</b>				



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**

**EVEN SEMESTER**

**II Semester :2023-24**

**Course Name: Financial Management**

**Course Code: 22MBA22**

Sl. No.	Description
CO1	Understand the basic financial concepts
CO2	Apply time value of money
CO3	Evaluate the investment decisions
CO4	Estimate working capital requirements
CO5	Analyze the capital structure and dividend decisions

**CO PO Mapping**

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



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**

**EVEN SEMESTER**

**II Semester :2023-24**

**Course Name: Research Methodology and IPR**

**Course Code: 22MBA23**

Sl. No.	Description
CO1	Understand various research approaches, techniques and strategies in the appropriate in business.
CO2	Apply a range of quantitative / qualitative research techniques to business and day to day management problems.
CO3	Demonstrate knowledge and understanding of data analysis, interpretation and report writing.
CO4	Develop necessary critical thinking skills in order to evaluate different research approaches in Business.
CO5	Discuss various forms of the intellectual property, its relevance and business impact in the changing global business environment and leading International Instruments concerning IPR.

**CO PO Mapping**

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



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**

**EVEN SEMESTER**

**II Semester :2023-24**

**Course Name: Operations Research**

**Course Code: 22MBA24**

Sl. No.	Description
CO1	Get an insight into the fundamentals of Operations Research and its definition, characteristics and phases
CO2	Use appropriate quantitative techniques to get feasible and optimal solutions
CO3	Understand the usage of game theory, Queuing Theory and Simulation for Solving Business Problems
CO4	Understand and apply the network diagram for project completion

**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



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**

**EVEN SEMESTER**

**II Semester :2023-24**

**Course Name: Strategic Management**

**Course Code: 22MBA25**

Sl. No.	Description
CO1	Students should get clear idea about the concept of Strategic Management, its relevance, Characteristics, process nature and purpose.
CO2	Student to acquire an understanding of how firms successfully institutionalize a strategy and create an organizational structure for domestic and overseas operations and gain competitive advantage.
CO3	To give the students an insight on strategy at different levels of an organization to gain competitive advantage.
CO4	To help students understand the strategic drive-in multinational firms and their decisions in different markets.

**CO PO Mapping**

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



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**

**EVEN SEMESTER**

**II Semester :2023-24**

**Course Name: Managerial Economics**

**Course Code: 22MBA26**

Sl. No.	Description
CO1	The student will understand the application of Economic Principles in Management decision making.
CO2	The student will earn the microeconomic concepts and apply them for effective functioning of a Firm and Industry.
CO3	The student will be able to understand, assess and forecast the demand.
CO4	The student will apply the concepts of production and cost for optimization of production.
CO5	The student will design competitive strategies like pricing, product differentiation etc. and marketing according to the market structure.
CO6	The student will be able to understand the impact of macroeconomic concepts.

**CO PO Mapping**

CO's	PO1	PO2	PO3	PO4	PO5	PSO 1	PSO 2	PSO 3	PSO 4
CO1	3		1			3			
CO2	3	2		1			3		
CO3	2				1			1	
CO4	2		3		1				1
CO5	2			1	3		3		
CO6	3			1					2