CITY ENGINEERING COLLEGE

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: 2022-23

EVEN SEMESTER

IV Semester: 2022-2023 (EVEN Sem)

Course Name: Mathematical Foundations for Computing

Course Code: 21MATCS41/C401

Cos	Statements
C401.1	Apply the concepts of logic for effective computation and relating problems in the Engineering domain
C401.2	Analyse the concepts of functions and relations to various field of Engineering .Comprehend the concepts of Graph Theory for various applications of computational science
C401.3	Apply discrete and continuous probability distributions in analysing the probability models arising in the engineering field
C401.4	Make use of correlation and regression analysis to fit a suitable mathematical model of the statistical data
C401.5	Construct joint probability distribution and demonstrate the validity of testing the hypotheis

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO 3
CO1	2	2		2								1	3	2	
CO2	3	2		1								1	2	3	
CO3	3	2	3	1								1	3	2	
CO4	2	1	3	1								1	2	2	
CO5	3	2	3	1								1	3	3	
Avg	2.6	1.8	3	1.2								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: 2022-23

EVEN SEMESTER

IV Semester: 2022-2023 (EVEN Sem)

Course Name: Design and Analysis of Algorithms
Course Code: 21CS42 /C402

Cos	Statements
C402.1	Analyze the performance of the algorithms, state the efficiency using asymptotic notations and analyze mathematically the complexity of the algorithm.
C402.2	Apply divide and conquer approaches and decrease and conquer approaches in solving the problems analyze the same
C402.3	Apply the appropriate algorithmic design technique like greedy method, transform and conquer approaches and compare the efficiency of algorithms to solve the given problem.
C402.4	Apply and analyze dynamic programming approaches to solve some problems. and improve an algorithm time efficiency by sacrificing space.
C402.5	Apply and analyze backtracking, branch and bound methods and to describe P, NP and NP-Complete problems.

	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	2										3	3	
CO3	3	1	3										2	2	
CO4	1	2	2	1									2	3	
CO5	2	1	1	1									2	2	
Avg	2	1.4	2.2	1									2.2	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:2022-23

EVEN SEMESTER

IV Semester: 2022-2023 (EVEN Sem)

Course Name: Microcontroller and Embedded Systems
Course Code: 21CS43 /C403

Cos	
C404.1	Explain C-Compilers and optimization
C404.2	Describe the ARM microcontroller's architectural features and program module.
C404.3	Apply the knowledge gained from programming on ARM to different applications
C404.4	Program the basic hardware components and their application selection method.
C404.5	Demonstrate the need for a real-time operating system for embedded system applications.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	2	1	2	3									3	2	
CO2	2	1	3	1									2	3	
CO3	1	3	3	2									1	3	
CO4	2	3	2	1	2								2		
CO5	1	3	3		2								1		
Avg	1.6	2.2	2.6	1.7	2								1.8	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: 2022-23

EVEN SEMESTER

IV Semester:2022-2023 (EVEN Sem)

Course Name: Operating Systems
Course Code: 21CS44 /C404

Cos	Statements
C403.1	Identify the structure of an operating system and its scheduling mechanism.
C403.2	Demonstrate the allocation of resources for a process using scheduling algorithm.
C403.3	Identify root causes of deadlock and provide the solution for deadlock elimination
C403.4	Explore about the storage structures and learn about the Linux Operating system.
C403.5	Analyze Storage Structures and Implement Customized Case study

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	2	2										3	2	
CO2	2	1	2										3	2	
CO3	1	2	3										3	2	
CO4	3	1	3	1									3	2	
CO5	1	1	3	2									3	2	
Avg	2	1.4	2.6	1.5									3	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 ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2022-23

EVEN SEMESTER

IV Semester: 2022-2023 (EVEN Sem)

Course Name: Biology For Engineers
Course Code: 21BE45 /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						3					1			2
CO2	2						3					2			2
CO3	2						3					1			2
CO4	2						3					2			2
CO5	2						3					2			2
Avg	2						3					1.6			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 ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2022-23

EVEN SEMESTER

VI Semester: 2022-2023 (EVEN Sem)

Course Name: Machine Learning
Course Code: 18AI61 /C601

Cos	Statements
C601.1	Choose the learning techniques with this basic knowledge.
C601.2	Apply effectively ML algorithms for appropriate applications.
C601.3	Apply and demonstrate the Training models
C601.4	To know about the Decision Trees and Ensemble learning techniques
C601.5	Apply bayesian techniques and derive effectively learning rules.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	2	2		2									3	2	
CO2	3	2		1									2	3	
CO3	2	2	3	1	3								3	2	
CO4	2	1	3	1									2	2	
CO5	3	2	3	1									3	3	
Avg	2.4	1.8	3	1.2	3								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: 2022-23

EVEN SEMESTER

VI Semester: 2022-2023 (EVEN Sem)

Course Name: Digital Image Processing
Course Code: 18AI62 /C602

Cos	Statements
C602.1	Understand, Ascertain and describe the basics of image processing concepts through mathematical interpretation.
C602.2	Apply image processing techniques in both the spatial and frequency (Fourier)domains.
C602.3	Demonstrate image restoration process and its respective filters required.
C602.4	Design image analysis techniques in the form of image segmentation and evaluate the Methodologies for segmentation.
C602.5	Conduct independent study and analysis of Image Enhancement techniques.

	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	2		2										3	3	
CO3	3	1	3										2	2	
CO4	2		2	1									2	3	
CO5	2	1	1	1									2	2	
Avg	2.4	1	2.2	1									2.2	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: 2022-23

EVEN SEMESTER

VI Semester: 2022-2023 (EVEN Sem)

Course Name: Java for Mobile Applications
Course Code: 18AI63/C603

Cos	Statements
C603.1	Interpret the need for advanced Java concepts like enumerations and collections in developing modular and efficient programs
C603.2	Understand various application components in android.
C603.3	Design efficient user interface using different layouts.
C603.4	Develop application with persistent data storage using SQLite
C603.5	Getting to know the Android User Interface

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	2	2					1		1			3	2	1
CO2	2	1	2					2		1			3	2	1
CO3	1	2	3					1		2			3	2	2
CO4	3	1	3	1						1			3	2	2
CO5	1	1	3	2				1		1			3	2	3
Avg	2	1.4	2.6	1.5				1.2		1.2			3	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 ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

ACADEMIC YEAR: 2022-23

EVEN SEMESTER

VI Semester: 2022-2023 (EVEN Sem)

Course Name: Foundation for Data Science
Course Code: 18AI644 /C604

Cos	
C604.1	**Apply** the knowledge of mathematics to explain the concept of data science, the available techniques in data science and its scope in business
C604.2	**Develop** a Decision tree based on supervised segmentation and predict the class for a given data set by selecting (through solving) the attribute for segmentation using the available techniques.
C604.3	**Analyze** the given data set, and solve a problem by performing Classification using the basics of mathematics and data science
C604.4	**Develop** solutions to group entities in data set and **apply** it for the given real-world data using the basic **knowledge** of similarity, neighbors and clustering
C604.5	**Analyze** the importance of mining text (social data) and formulate the association rules based on market basket analysis

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	1	2	3									3	2	
CO2	2	1	3	1									2	3	
CO3	1	3	3	2									1	3	
CO4	2	3	2	1									2	2	
CO5	1	3	3			2							1		
Avg	1.8	2.2	2.6	1.7		2							1.8	2.5	

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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: ACADEMIC YEAR: 2022-23

EVEN SEMESTER

VI Semester: 2022-2023 (EVEN Sem)

Course Name: Non Conventional Energy Sources
Course Code: 18ME651 /C607

Cos	Statements
C607.1	Describe the environmental aspects of non-conventional energy resources. In Comparison with various conventional energy systems, their prospects and limitations.
C607.2	Know the need of renewable energy resources, historical and latest developments.
C607.3	Describe the use of solar energy and the various components used in the energy production with respect to applications like-heating, cooling, desalination, power generation, drying, cooking etc
C607.4	Appreciate the need of Wind Energy and the various components used in energy generation and know the classifications.and Compare Solar, Wind and bio energy systems, their prospects, Advantages and limitations
C607.5	Understand the concept of Biomass energy resources and their classification, types of biogas Plants- applications and Acquire the knowledge of fuel cells, wave power, tidal power and geothermal principles and applications.

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

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CITY ENGINEERING COLLEGE
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DEPARTMENT OF CIVIL ENGINEERING

ACADEMIC YEAR 2022-23

COURSE OUTCOMES (EVEN)

8th Semester

COURSE NAME: DESIGN OF PRE-STRESSECONCRETE

COURSE CODE: 18CV81(C801)

COs	STATEMENTS
C801.1	Understand the requirement of PSC members for present scenario.
C801.2	Analyze the stresses encountered in PSC element during transfer and at working.
C801.3	Understand the effectiveness of the design of PSC after studying losses.
C801.4	Capable of analyzing the PSC element and finding its efficiency.
C801.5	Design PSC beam for different requirements.

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DEPARTMENT OF CIVIL ENGINEERING

ACADEMIC YEAR 2022-23

COURSE OUTCOMES (EVEN)

8th Semester

COURSE NAME: REHABILITATION AND RETROFITTING

COURSE CODE: 18CV824(C802)

COs	STATEMENTS
C802.1	Identify the causes for structural (Concrete) deterioration.
C802.2	Assess the type and extent of damage and carry out damage assessment of structures through various types of tests.
C802.3	Recommend maintenance requirements of the buildings and preventive measures against influencing factors.
C802.4	Select suitable material and suggest an appropriate method for repair and rehabilitation.

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DEPARTMENT OF CIVIL ENGINEERING

ACADEMIC YEAR 2022-23

COURSE OUTCOMES (EVEN)

8th Semester

COURSE NAME: PROJECT WORK PHASE-2

COURSE CODE: 18CVP83(C803)

COs	STATEMENTS
C803.1	Describe the project and be able to defend it
C803.2	Develop critical thinking and problem-solving skills
C803.3	Learn to use modern tools and techniques.
C803.4	Communicate effectively and to present ideas clearly and coherently both in written and oral forms.
C803.5	Develop skills to work in a team to achieve common goal.
C803.6	Develop skills of project management and finance.
C803.7	Develop skills of self-learning, evaluate their learning and take appropriate actions to improve it.
C803.8	Prepare them for life-long learning to face the challenges and support the technological changes to meet the societal needs.

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CITY ENGINEERING COLLEGE

Department of Computer Science and Engineering

2.6.1QlM Programme Outcomes (POs) and Course Outcomes (COs) offered by the department -EVEN Semester
Academic Year 2022-2023

SL NO	SEMESTER	SUBJECT/SUBJECT CODE
1	4	Mathematical Foundations For Computing (21CS41)
2		Design And Analysis of Algorithms (21CS42)
3		Microcontroller And Embedded Systems (21CS43)
4		Operating Systems (21CS44)
5		Biology For Engineers (21BE45)
6		Python Programming Laboratory (21CSL46)
7	6	System Software and Compilers (18CS61)
8		Computer Graphics and Visualization(18CS62)
9		Web Technology and its applications(18CS63)
10		Data Mining and Data Warehousing(18CS641)
11		Conservation Of Natural Resources (18ME651)
12		System Software Laboratory(18CSL66)
13		Computer Graphics Laboratory with Mini Project (18CSL67)
14		Mobile Application Development(18CSMP68)
15	8	Internet of things and applications(18CS81)
16		Storage Area Network(18CS822)

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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: 2022-23

IV Semester EVEN SEMESTER

Course Name: MATHEMATICAL FOUNDATIONS FOR COMPUTING **Course Code 21CS41/C401**

Cos	Statements
C401.1	Analyze the performance of the algorithms, state the efficiency using asymptotic notations and analyze mathematically the complexity of the algorithm.
C401.2	Analyze the concepts of functions and relations to various fields of Engineering. Comprehend the concepts of Graph Theory for various applications of Computational sciences.
C401.3	Apply discrete and continuous probability distributions in analysing the probability models arising in the engineering field.
C401.4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data
C401.5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.

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 COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2022-23

IV Semester EVEN SEMESTER

Course Name: DESIGN AND ANALYSIS OF ALGORITHMS **Course Code 21CS42/C402**

Cos	Statements
C402.1	Analyze the performance of the algorithms, state the efficiency using asymptotic notations and analyze mathematically the complexity of the algorithm.
C402.2	Apply divide and conquer approaches and decrease and conquer approaches in solving the problems analyze the same
C402.3	Apply the appropriate algorithmic design technique like greedy method, transform and conquer approaches and compare the efficiency of algorithms to solve the given problem.
C403.4	Apply and analyze dynamic programming approaches to solve some problems. and improve an algorithm time efficiency by sacrificing space.
C404.5	Apply and analyze backtracking, branch and bound methods and to describe P, NP and NPComplete problems.

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 COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2022-23

IV Semester EVEN SEMESTER

Course Name: MICROCONTROLLER AND EMBEDDED SYSTEMS **Course Code 21CS43/C403**

Cos	Statements
C403.1	Explain C-Compilers and optimization
C403.2	Describe the ARM microcontroller's architectural features and program module.
C403.3	Apply the knowledge gained from programming on ARM to different applications
C403.4	Program the basic hardware components and their application selection method.
C403.5	Demonstrate the need for a real-time operating system for embedded system applications

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: 2022-23

IV Semester EVEN SEMESTER

Course Name: OPERATING SYSTEMS **Course Code 21CS44/C404**

Cos	Statements
C404.1	Identify the structure of an operating system and its scheduling mechanism
C404.2	Demonstrate the allocation of resources for a process using scheduling algorithm
C404.3	Identify root causes of deadlock and provide the solution for deadlock elimination
C404.4	Explore about the storage structures and learn about the Linux Operating system.
C404.5	Analyze Storage Structures and Implement Customized Case study

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: 2022-23

IV Semester EVEN SEMESTER

Course Name: BIOLOGY FOR ENGINEERS **Course Code 21BE45/C405**

Cos	Statements
C405.1	Elucidate the basic biological concepts via relevant industrial applications case studies
C405.2	Understand resource allocation purposes
C405.3	Demonstrate the allocation of resources for a process using scheduling algorithm
C405.4	Corroborate the concepts of biomimetics for specific requirements.
C405.5	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	PSO3
CO1	1	1	1	1									1	1	1
CO2	1	1	1	1									1	1	2
CO3	1	1	1	2									2	2	2
CO4	1	1	1	2									2	2	2
CO5	1	1	1	1										1	1
AVERAGE	1	1	1	1	0	0	0	0	0	0	0	0	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: 2022-23

IV Semester EVEN SEMESTER

Course Name: PYTHON PROGRAMMING LABORATORY **Course Code 21CSL46/C406**

Cos	Statements
C406.1	Demonstrate proficiency in handling of loops and creation of functions.
C406.2	Identify the methods to create and manipulate lists, tuples and dictionaries.
C406.3	Discover the commonly used operations involving regular expressions and file system.
C406.4	Interpret the concepts of Object-Oriented Programming as used in Python.
C406.5	Determine the need for scraping websites and working with PDF, JSON and other file formats.

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Kanakapura Main Road, Bangalore-560061

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: 2022-23

VI Semester EVEN SEMESTER

Course Name: SYSTEM SOFTWARE AND COMPILERS **Course Code: 18CS61 /C601**

Cos	Statements
C601.1	Explain system software
C601.2	Design and develop lexical analyzers, parsers and code generators
C601.3	Familiarize with source file, object file and executable file structures and libraries
C601.4	Describe the front-end and back-end phases of compiler and their importance to students
C601.5	Utilize lex and yacc tools for implementing different concepts of system software

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: 2022-23

VI Semester EVEN SEMESTER

Course Name: Computer Graphics and Visualization **Course Code: 81CS62 /C602**

Cos	Statements
C602.1	Design and implement algorithms for 2D graphics primitives and attributes.
C602.2	Construct geometric objects using Computer Graphics principles and OpenGL APIs
C602.3	Illustrate Geometric transformations on both 2D and 3D objects.
C602.4	Apply concepts of clipping and visible surface detection in 2D and 3D viewing, and Illumination Models.
C602.5	Decide suitable hardware and software for developing graphics packages using OpenGL.

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 COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2022-23

VI Semester EVEN SEMESTER

Course Name: Web Technology and its applications **Course Code: 18CS63/C603**

Cos	Statements
C603.1	Adapt HTML and CSS syntax and semantics to build web pages.
C603.2	Construct and visually format tables and forms using HTML and CSS
C603.3	Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically.
C603.4	Appraise the principles of object oriented development using PHP
C603.5	Inspect JavaScript frameworks like jQuery and Backbone which facilitates developer to focus on core features.

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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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: 2022-23

VI Semester EVEN SEMESTER

Course Name: Data Mining and Data Warehousing **Course Code: 18CS641 /C604**

Cos	Statements
C604.1	Identify data mining problems and implement the data warehouse
C604.2	Write association rules for a given data pattern.
C604.3	Explain rules related to association, classification and clustering analysis.
C604.4	Compare and contrast between different classification and clustering algorithms
C604.5	Choose between classification and clustering solution.

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: 2022-23

VI Semester EVEN SEMESTER

Course Name: CONSERVATION OF NATURAL RESOURCES **Course Code: 18ME651 /C605**

Cos	Statements
C605.1	Describe the environmental aspects of non-conventional energy resources. In Comparison with various conventional energy systems, their prospects and limitations.
C605.2	Know the need of renewable energy resources, historical and latest developments.
C605.3	Describe the use of solar energy and the various components used in the energy production with respect to applications like-heating, cooling, desalination, power generation, drying, cooking etc.
C605.4	Appreciate the need of Wind Energy and the various components used in energy generation and know the classifications.
C605.5	Understand the concept of Biomass energy resources and their classification, types of biogas Plants- 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 COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2022-23

VI Semester EVEN SEMESTER

Course Name: System Software Laboratory **Course Code: 18CSL66 /C606**

Cos	Statements
C606.1	To make students familiar with Lexical Analysis and Syntax Analysis phases of Compiler Design and implement programs on these phases using LEX & YACC tools and/or C/C++/Java
C606.2	To enable students to learn different types of CPU scheduling algorithms used in operating system.
C606.3	Implement and demonstrate Lexer‟s and Parser‟s .
C606.4	Evaluate different algorithms required for management, scheduling, allocation and communication used in operating system.

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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: 2022-23

VI Semester EVEN SEMESTER

Course Name: COMPUTER GRAPHICS LABORATORY WITH MINI PROJECT
Course Code: 18CSL67 /C606

Cos	Statements
C606.1	Apply the concepts of computer graphics
C606.2	Implement computer graphics applications using OpenGL
C606.3	Animate real world problems using OpenGL .

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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: 2022-23

VI Semester EVEN SEMESTER

Course Name: Mobile Application Development **Course Code: 18CSMP68 /C606**

Cos	Statements
C606.1	Create, test and debug Android application by setting up Android development environment
C606.2	Implement adaptive, responsive user interfaces that work across a wide range of devices.
C606.3	Infer long running tasks and background work in Android applications
C606.4	Demonstrate methods in storing, sharing and retrieving data in Android applications
C606.5	Describe the steps involved in publishing Android application to share with the world

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 COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2022-23

VIII Semester EVEN SEMESTER

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
AVERAGE	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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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: 2022-23

VIII Semester EVEN SEMESTER

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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Department of Electronics and Communication Engineering

Academic Year: 2022-23

IV - Semester

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

Course Name: Math's for communication Engineers
Course Code: BSC21EC41

Cos	Statements
C301.1	Use the Concepts of Analytic function and complex Potentials, visualization
C301.2	Obtain Series Solutions of ordinary Differential Equation
C301.3	Make use of the Correlation and Regression Analysis to fit model for Statistical data
C301.4	Apply Discrete and Continuous Probability Distributions in Engineering Field
C301.5	Construct joint probability and Testing the Hypothesis

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1	1	1	1									
CO2		1												
CO3	1				1	1								
CO4			1	1										
CO5														
AVERAGE	0.6	0.4	0.4	0.4	0.4	1								

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

IV - Semester

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

Course Name: Digital Signal Processing
Course Code: IPCC 21EC42

Cos	Statements
C303.1	Determine response of LTI systems using time domain and DFT techniques
C303.2	Compute DFT of real and complex discrete time signals
C303.3	Compute DFT using FFT algorithms
C303.4	Design FIR and IIR Digital Filters
C303.5	Design of Digital Filters using DSP processor

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	
CO2	2	1	1	1									1	
CO3	2	1	1	1									1	
CO4	2	1	1	1									1	
CO5	1	1	1	1									1	
AVERAGE	2.2	1	1	1									1	

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

IV - Semester

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

Course Name: Circuits & Controls
Course Code: IPCC 21EC43

Cos	Statements
C304.1	Analyse and solve Electric circuit, by applying, loop analysis, Nodal analysis and by applying network Theorems.
C304.2	Evaluate two port parameters of a network and Apply Laplace transforms to solve electric networks.
C304.3	Deduce transfer function of a given physical system, from differential equation representation or Block Diagram representation and SFG representation.
C304.4	Calculate time response specifications and analyse the stability of the system.
C304.5	Draw and analyse the effect of gain on system behavior using root loci.
C305.5	Perform frequency response Analysis and find the stability of the system.
C305.6	Represent State model of the system and find the time response of the system.
C305.7	Represent State model of the system and find the time response of the 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	1	1	1									2	
CO2	1	2	1	1									1	
CO3	1	1	1	1		1								
CO4	1	2	1										1	
CO5	1	1	1	1		1								
CO6	1	1	1	1		1							1	
CO7	2	1	1	1									1	
AVERAGE	1.14	1.2	1	0.8		0.5							0.8	

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Academic Year: 2022-23

IV - Semester

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

Course Name: Communication Theory
Course Code: PCC 21EC44

Cos	Statements
C306.1	Understand the amplitude and frequency modulation techniques and perform time and frequency domain transformations.
C306.2	Identify the schemes for amplitude and frequency modulation and demodulation of analog signals and compare the performance.
C306.3	Characterize the influence of channel noise on analog modulated signals.
C306.4	Understand the characteristics of pulse amplitude modulation, pulse position modulation and pulse code modulation systems
C306.5	Illustration of digital formatting representations used for Multiplexers, Vocoders and Video transmission.

Co-Po Mapping

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

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

IV - Semester

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

	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	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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Department of Electronics and Communication Engineering

Academic Year: 2022-23

IV - Semester

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 : AEC 21BE45

Cos	Statements
C305.1	Elucidate the basic biological concepts via relevant industrial applications and case studies
C305.2	Evaluate the principles of design and development, for exploring novel bio -engineering projects
C305.3	Corroborate the concepts of biomimetic for specific requirements.
C305.4	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: 2022-23

IV - Semester

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

Course Name : Communication Laboratory I
Course Code : PCC 21ECL46

Cos	Statements
C305.1	Demonstrate the AM and FM modulation and demodulation by representing the signals in time and frequency domain.
C305.2	Design and test the sampling, Multiplexing and PAM with relevant circuits.
C305.3	Demonstrate the basic circuitry and operations used in AM and FM receivers.
C305.4	Illustrate the operation of PCM and delta modulations for different input conditions.

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	
CO2	2	1	2	2									2	
CO3	2	1	2	1									2	
CO4	2	1	1	1									1	
AVERAGE	1.7	1	1.5	1									1.7	

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

IV - Semester

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

Course Name : Embedded C Basics
Course Code : 21EC481

Cos	Statements
C305.1	Write C programs in 8051 for solving simple problems that manipulate input data using different instructions of 8051 C.
C305.2	Develop testing and experimental procedures on 8051 Microcontroller, analyze their operation under different cases
C305.3	Develop programs for 8051 Microcontroller to implement real world problems.
C305.4	Design and Develop Mini projects

Co-Po Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1												1	
CO2	2	1	1	1			1						1	
CO3	1	1	1	1			1						1	
CO4	1	1	1	1			1						1	
AVERAGE	1.25	0.75	0.75	0.75			0.75						1	

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

VI - Semester

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

Course Name : Digital communications
Course Code : 18EC61

Cos	Statements
C605.1	Associate and apply the concepts of Band pass sampling to well specified Signals and channels
C605.2	Analyze and compute performance parameters and transfer rates for low pass and band pass symbol under ideal and corrupted non band limited channels
C605.3	Test and validate symbol processing and performance parameters at the receiver under ideal and corrupted band limited channels
C605.4	Demonstrate that band pass signals subjected to corruption and distortion in a band limited channel can be processed at the receiver to meet specified performance criteria.
C605.5	Understand the principles of spread spectrum communications

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	2	1		1							2	
CO2	1	2	1	1		1							2	
CO3	1	1	1	1									1	
CO4	1	2	1	1									1	
CO5	2	1	1	1									2	
AVERAGE	1.4	1.4	1.2	1		0.4							1.6	

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

VI - Semester

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

Course Name : Embedded Systems
Course Code : 18EC62

Cos	Statements
C605.1	Describe the architectural features and instructions of 32-bit microcontroller ARM Cortex M3
C605.2	Apply the knowledge gained for Programming ARM Cortex M3 for different applications.
C605.3	Understand the basic hardware components and their selection method based on the characteristics and attributes of an embedded system
C605.4	Develop the hardware software co-design and firm ware design approaches
C605.5	Explain the need of real time operating system for embedded system applications.

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	2									2	
CO2	2	1	1	1									1	
CO3	2												1	
CO4	2	1	2	1									1	
CO5	1	1	1											
AVERAGE	1.6	0.5	1	0.8									1	

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

VI - Semester

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

Course Name : Microwave and Antenna
Course Code : 18EC6321122

Cos	Statements
C605.1	Describe the use and advantages of microwave transmission
C605.2	Analyze various parameters related to microwave transmission lines and waveguides
C605.3	Identify microwave devices for several applications
C605.4	Analyze various antenna parameters necessary for building a RF system
C605.5	Recommend various antenna configurations according to the applications

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	
CO3	1		1	1									1	
CO4		1	2	2									1	
CO5	1	1	1										1	
AVERAGE	1.2	1.2	1.2	0.8	1								1.2	

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CITY ENGINEERING COLLEGE

Department of Electronics and Communication Engineering

Academic Year: 2022-23

VI - Semester

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

Course Name : Operating System
Course Code : 18EC641

Cos	Statements
C605.1	Explain the goals, structure, operation and types of operating systems
C605.2	Apply scheduling techniques to find performance factors
C605.3	Explain organization of file systems and IOCS
C605.4	Apply suitable techniques for contiguous and non-contiguous memory allocation
C605.5	Describe message passing, deadlock detection and prevention methods.

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	
CO2	1	1	1										1	
CO3	2	1	1										1	
CO4	1	1	1		1								1	
CO5		1	1		1								1	
AVERAGE	1.2	1	1		1								1	

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

VI - Semester

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

Course Name : Python Application Programming
Course Code : 18EC646

Cos	Statements
C605.1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions
C605.2	Demonstrate proficiency in handling Strings and File Systems
C605.3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use regular Expressions.
C605.4	Interpret the concepts of Object-Oriented Programming as used in Python
C605.5	Implement exemplary applications related to Network Programming, Web Services and Databases in Python.

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	2	2	1		1								1	
CO3	1	1	1	1										
CO4	1	1	1	1										
CO5	2	1	1	1		1							1	
AVERAGE	1.4	1.2	1	0.6	1	1							0.6	1

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

VI - Semester

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

Course Name : Embedded System Laboratory
Course Code : 18ECL66

Cos	Statements
C605.1	Understand the instructionsetof32bitmicrocontrollerARMCortex M3,andthesoftwaretoolrequiredforprogramminginAssembly and C language
C605.2	Develop assembly language programs using ARM Cortex M3fordifferentapplications
C605.3	Interface external devices and *VO* with ARMCortexM3
C605.4	Develop C language programs and library functions for embedded system applications
C605.5	Analyze the functions of various peripherals, peripheral registers andpowersavingmodesofARMCortexM3

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	
CO2	2	1	1		1								1	
CO3	2	1	1	1									1	
CO4	1	1	1										1	
CO5	1	1	1										1	
AVERAGE	1.6	1	1	1	1								1	

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

VI - Semester

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

Course Name : Communication Laboratory
Course Code : 18ECL67

Cos	Statements
C605.1	Design and test circuits for analog modulation and demodulation schemes viz., AM, FM, etc.
C605.2	Determine the characteristics and response of microwave waveguide
C605.3	Determine characteristics of micros trip antennas and devices & compute the parameters associated with it
C605.4	Designandtestthedigitalandanalogmodulationcircuitsanddisplaythewaveforms.
C606.5	Simulate the digital modulation systems and compare the error performance of basic digital modulation schemes

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	
CO2	1	1											1	
CO3	1	1											1	
CO4	1	1	1										1	
CO5	1	1		1									1	
AVERAGE	1.2	1	1	1									1	

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

VIII - Semester

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

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

Cos	Statements
C805.1	UnderstandtheCommunicationtheorybothPhysicalandnetworkingassociatedwithGSM, CDMA&LTE4Gsystems
C805.2	Explainconceptsofpropagationmechanismslike Reflection,Dif-fraction,Scatteringinwirelesschannels
C805.3	Develop a scheme for idle mode, call setup, call progress and handling and call tear down in a GSM cellular network
C805.4	Develop a scheme for idle mode, call setup, call progress handling and call tear down in a CDMA cellular network
C805.5	Understand the Basic operations of AirinterfaceinaLTE4Gsystem.

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	
CO2	2	1	1	1	1								1	
CO3	1	1	1	1									1	
CO4	2	1	1		1								1	
CO5	2	1	1	1									1	1
AVERAGE	1.8	1	1	1	0.4								1	1

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Department of Electronics and Communication Engineering

Academic Year: 2022-23

VIII - Semester

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
C805.1	Explain network security services and mechanisms and explain security concepts
C805.2	Understand the concept of Transport Level Security and Secure Socket Layer
C805.3	Explain Security concerns in Internet Protocol security
C805.4	Explain Intruders, Intrusion detection and Malicious Software
C806.5	DescribeFirewalls,FirewallCharacteristics,BiasingandConfiguration

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	1
CO2	2	1	1										1	1
CO3	1	1	1										1	1
CO4	2	1	1										1	1
CO5	2	1	1										1	1
AVERAGE	1.8	1	1	1		1							1	1

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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:2022-23

IV Semester EVEN SEMESTER

CourseName: MATHEMATICAL FOUNDATIONS FOR COMPUTING **Course Code21CS41/C401**

Cos	Statements
C401.1	Analyze the performance of the algorithms, state the efficiency using asymptotic notations and analyze mathematically the complexity of the algorithm.
C401.2	Analyze the concepts of functions and relations to various fields of Engineering. Comprehend the concepts of Graph Theory for various applications of Computational sciences.
C401.3	Apply discrete and continuous probability distributions in analysing the probability models arising in the engineering field.
C401.4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data
C401.5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.

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:2022-23

IV Semester EVEN SEMESTER

CourseName: DESIGN AND ANALYSIS OF ALGORITHMS **Course Code21CS42/C402**

Cos	Statements
C402.1	Analyze the performance of the algorithms, state the efficiency using asymptotic notations and analyze mathematically the complexity of the algorithm.
C402.2	Apply divide and conquer approaches and decrease and conquer approaches in solving the problems analyze the same
C402.3	Apply the appropriate algorithmic design technique like greedy method, transform and conquer approaches and compare the efficiency of algorithms to solve the given problem.
C403.4	Apply and analyze dynamic programming approaches to solve some problems. and improve an algorithm time efficiency by sacrificing space.
C404.5	Apply and analyze backtracking, branch and bound methods and to describe P, NP and NPComplete problems.

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 INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2022-23

IV Semester EVEN SEMESTER

CourseName: MICROCONTROLLER AND EMBEDDED SYSTEMS **Course Code21CS43/C403**

Cos	Statements
C403.1	Explain C-Compilers and optimization
C403.2	Describe the ARM microcontroller's architectural features and program module.
C403.3	Apply the knowledge gained from programming on ARM to different applications
C403.4	Program the basic hardware components and their application selection method.
C403.5	Demonstrate the need for a real-time operating system for embedded system applications

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:2022-23

IV Semester EVEN SEMESTER

CourseName: OPERATING SYSTEMS **Course Code21CS44/C404**

Cos	Statements
C404.1	Identify the structure of an operating system and its scheduling mechanism
C404.2	Demonstrate the allocation of resources for a process using scheduling algorithm
C404.3	Identify root causes of deadlock and provide the solution for deadlock elimination
C404.4	Explore about the storage structures and learn about the Linux Operating system.
C404.5	Analyze Storage Structures and Implement Customized Case study

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:2022-23

IV Semester EVEN SEMESTER

CourseName: BIOLOGY FOR ENGINEERS **Course Code21BE45/C405**

Cos	Statements
C405.1	Elucidate the basic biological concepts via relevant industrial applications case studies
C405.2	Understand resource allocation purposes
C405.3	Demonstrate the allocation of resources for a process using scheduling algorithm
C405.4	Corroborate the concepts of biomimetics for specific requirements.
C405.5	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	PSO3
CO1	1	1	1	1									1	1	1
CO2	1	1	1	1									1	1	2
CO3	1	1	1	2									2	2	2
CO4	1	1	1	2									2	2	2
CO5	1	1	1	1										1	1
AVERAGE	1	1	1	1	0	0	0	0	0	0	0	0	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:2022-23

IV Semester EVEN SEMESTER

CourseName: PYTHON PROGRAMMING LABORATORY **Course Code21CSL46/C406**

Cos	Statements
C406.1	Demonstrate proficiency in handling of loops and creation of functions.
C406.2	Identify the methods to create and manipulate lists, tuples and dictionaries.
C406.3	Discover the commonly used operations involving regular expressions and file system.
C406.4	Interpret the concepts of Object-Oriented Programming as used in Python.
C406.5	Determine the need for scraping websites and working with PDF, JSON and other file formats.

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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:2022-23

VI Semester EVEN SEMESTER

Course Name: SYSTEM SOFTWARE AND COMPILERS **CourseCode: 18CS61 /C601**

Cos	Statements
C601.1	Explain system software
C601.2	Design and develop lexical analyzers, parsers and code generators
C601.3	Familiarize with source file, object file and executable file structures and libraries
C601.4	Describe the front-end and back-end phases of compiler and their importance to students
C601.5	Utilize lex and yacc tools for implementing different concepts of system software

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:2022-23

VI Semester EVEN SEMESTER

Course Name: Computer Graphics and Visualization **Course Code: 81CS62 /C602**

Cos	Statements
C602.1	Design and implement algorithms for 2D graphics primitives and attributes.
C602.2	Construct geometric objects using Computer Graphics principles and OpenGL APIs
C602.3	Illustrate Geometric transformations on both 2D and 3D objects.
C602.4	Apply concepts of clipping and visible surface detection in 2D and 3D viewing, and Illumination Models.
C602.5	Decide suitable hardware and software for developing graphics packages using OpenGL.

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:2022-23

VI Semester EVEN SEMESTER

Course Name: Web Technology and its applications **Course Code: 18CS63/C603**

Cos	Statements
C603.1	Adapt HTML and CSS syntax and semantics to build web pages.
C603.2	Construct and visually format tables and forms using HTML and CSS
C603.3	Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically.
C603.4	Appraise the principles of object oriented development using PHP
C603.5	Inspect JavaScript frameworks like jQuery and Backbone which facilitates developer to focus on core features.

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:2022-23

VI Semester EVEN SEMESTER

Course Name: Data Mining and Data Warehousing **Course Code: 18CS641 /C604**

Cos	Statements
C604.1	Identify data mining problems and implement the data warehouse
C604.2	Write association rules for a given data pattern.
C604.3	Explain rules related to association, classification and clustering analysis.
C604.4	Compare and contrast between different classification and clustering algorithms
C604.5	Choose between classification and clustering solution.

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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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ACADEMIC YEAR:2022-23

VI Semester EVEN SEMESTER

CourseName:CONSERVATION OF NATURAL RESOURCES **CourseCode:18ME651 /C605**

Cos	Statements
C605.1	Describe the environmental aspects of non-conventional energy resources. In Comparison with various conventional energy systems, their prospects and limitations.
C605.2	Know the need of renewable energy resources, historical and latest developments.
C605.3	Describe the use of solar energy and the various components used in the energy production with respect to applications like-heating, cooling, desalination, power generation, drying, cooking etc.
C605.4	Appreciate the need of Wind Energy and the various components used in energy generation and know the classifications.
C605.5	Understand the concept of Biomass energy resources and their classification, types of biogas Plants- 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:2022-23

VI Semester EVEN SEMESTER

Course Name: System Software Laboratory **Course Code: 18CSL66 /C606**

Cos	Statements
C606.1	To make students familiar with Lexical Analysis and Syntax Analysis phases of Compiler Design and implement programs on these phases using LEX & YACC tools and/or C/C++/Java
C606.2	To enable students to learn different types of CPU scheduling algorithms used in operating system.
C606.3	Implement and demonstrate Lexer‟s and Parser‟s .
C606.4	Evaluate different algorithms required for management, scheduling, allocation and communication used in operating system.

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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:2022-23

VI Semester EVEN SEMESTER

Course Name: COMPUTER GRAPHICS LABORATORY WITH MINI PROJECT
Course Code: 18CSL66 /C606

Cos	Statements
C606.1	Apply the concepts of computer graphics
C606.2	Implement computer graphics applications using OpenGL
C606.3	Animate real world problems using OpenGL .

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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:2022-23

VI Semester EVEN SEMESTER

Course Name: Mobile Application Development **Course Code: 18CSMP68 /C606**

Cos	Statements
C606.1	Create, test and debug Android application by setting up Android development environment
C606.2	Implement adaptive, responsive user interfaces that work across a wide range of devices.
C606.3	Infer long running tasks and background work in Android applications
C606.4	Demonstrate methods in storing, sharing and retrieving data in Android applications
C606.5	Describe the steps involved in publishing Android application to share with the world

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 Mechanical Engineering
ACADEMIC YEAR 2022-23
Course Outcomes

Subject: MACHINING SCIENCE AND JIGS & FIXTURES		**Subject Code:**21ME42
Course Outcomes		
CO1	Demonstrate the Conventional CNC machines and advanced manufacturing process operations.	
CO2	Determine tool life, cutting force, and economy of the machining process.	
CO3	Analyze the influence of various parameters on machine tools' performance.	
CO4	Select the appropriate machine tools and process, the Jigs, and fixtures for various applications.	

Subject: FLUID MECHANICS		**Subject Code:**21ME43
Course Outcomes		
CO1	Understand the basic principles of fluid mechanics and fluid kinematics .	
CO2	Acquire the basic knowledge of fluid dynamics and flow measuring instruments	
CO3	Understand the nature of flow and flow over bodies and the dimensionless analysis.	
CO4	Acquire the compressible flow fundamental and basics of CFD packages and the need for CFD analysis	
CO5	Conduct basic experiments of fluid mechanics and understand the experimental uncertainties.	

Subject: MECHANICS OF MATERIALS		**Subject Code:**21ME44
Course Outcomes		
CO1	Understand simple, compound, thermal stresses and strains their relations and strain energy.	
CO2	Analyse structural members for stresses, strains and deformations.	
CO3	Analyse the structural members subjected to bending and shear loads. .	
CO4	Analyse shafts subjected to twisting loads.	
CO5	Analyse the short columns for stability.	

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Subject: MECHANICAL MEASUREMENTS AND METROLOGY		**Subject Code:**21MEL46B
Course Outcomes		
CO1	Understand the objectives of metrology, methods of measurement, standards of measurement & various measurement parameters	
CO2	Understand limits, fits and tolerance and the working of comparators	
CO3	Describe measurement of major & minor diameter, pitch, angle and effective diameter of screw threads and gears	
CO4	Explain measurement systems, transducers, intermediate modifying devices and terminating devices	
CO5	Understand the measurement of force, Torque and Pressure	

Subject: SPREAD SHEETS FOR ENGINEERS		**Subject Code:**21ME481
Course Outcomes		
CO1	To create different plots and charts	
CO2	To compute different functions, conditional functions and make regression analysis	
CO3	To carryout iterative solutions for roots, multiple roots, optimization and non-linear regression analysis	
CO4	To carryout matrix operations	
CO5	To Understand VBA and UDF	
CO6	To understand VBA subroutines and Macros	
CO7	To carryout numerical integration and solving differential equations using different methods	

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Subject: FINITE ELEMENT METHODS	**Subject Code:**18ME61
Course Outcomes	
CO1	Identify the application and characteristics of FEA elements such as bars, beams, plane and iso-parametric elements.
CO2	Develop element characteristic equation and generation of global equation.
CO3	Formulate and solve Axi-symmetric and heat transfer problems
CO4	Apply suitable boundary conditions to a global equation for bars, trusses, beams, circular shafts, heat transfer, fluid flow, axi-symmetric and dynamic problems
CO5	Solve for field variables in heat transfer , fluid flow problems, axi-symmetric and dynamic problems

Subject: DESIGN OF MACHINE ELEMENTS II	**Subject Code:**18ME62
Course Outcomes	
CO1	Apply design principles for the design of mechanical system involving springs, belts, pulleys and wire ropes
CO2	Design different types of gears and simple gear boxes for relevant applications
CO3	Understand the design principles of brakes and clutches
CO4	Apply design concepts of hydrodynamics bearings for different applications and select anti friction bearings for different applications using the manufacturers, catalogue
CO5	Apply the engineering design tools to product design

Subject: Heat transfer	**Subject Code:**18ME63
Course Outcomes	
CO1	Understand the modes of heat transfer and apply the basic laws to formulate engineering systems.
CO2	Understand and apply the basic laws of heat transfer to extended surface, composite material and unsteady state heat transfer problems
CO3	Analyze heat conduction through numerical methods and apply the fundamental principle to solve radiation heat transfer problems.
CO4	Analyze heat transfer due to free and forced convective heat transfer.
CO5	Understand the design and performance analysis of heat exchangers and their practical applications, Condensation and Boiling phenomena

Subject: NON-TRADITIONAL MACHINING	**Subject Code:**18ME641
Course Outcomes	
CO1	Understand the compare traditional and non-traditional machining process and recognize the need for Non- traditional machining process.
CO2	Understand the constructional features, performance parameters, process characteristics, applications, advantages and limitations of USM, AJM and WJM
CO3	Identify the need of Chemical and electro-chemical machining process along with the constructional features, process parameters, process characteristics, applications, advantages and limitations.
CO4	Understand the constructional feature of the equipment, process parameters, process characteristics, applications, advantages and limitations EDM & PAM.
CO5	Understand the LBM equipment, LBM parameters, and characteristics. EBM equipment and mechanism of metal removal, applications, advantages and limitations LBM & EBM

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Subject: NON-CONVENTIONAL ENERGY SOURCES		**Subject Code:**18ME651
Course Outcomes		
CO1	To introduce the concepts of solar energy, its radiation, collection, storage and application.	
CO2	To introduce the concepts and applications of Wind energy, Biomass energy, Geothermal energy and Ocean energy as alternative energy sources.	
CO3	To explore society's present needs and future energy demands	
CO4	To examine energy sources and conversion of energy including non-renewable ,renewable energy sources into useful energy .	
CO5	To get exposed to energy conservation methods	

Subject: COMPUTER AIDED MODELLING AND ANALYSIS LAB		**Subject Code:**18MEL66
Course Outcomes		
CO1	Analyze the structural members like bars, trusses, and beams for different loads.	
CO2	Determine the stresses in plates under plane stress conditions.	
CO3	Solve for temperature distribution in 1D and 2D members under conduction and convection heat transfer.	
CO4	Analyze bars and beams for dynamic response	

Subject: HEAT TRANSFER LAB		**Subject Code:**18MEL67
Course Outcomes		
CO1	Perform experiments to determine the thermal conductivity of a metal rod and emissivity of a test plate	
CO2	Estimate the effective thermal resistance in composite slabs and efficiency in pin-fin	
CO3	Conduct experiments to determine convective heat transfer coefficient for free and forced convection and correlate with theoretical values	
CO4	Determine Boiling of Liquid and Condensation of Vapour and Estimate the performance of a refrigerator	
CO5	Calculate temperature distribution of study and transient heat conduction through a plane wall, cylinder and fin	

Subject: MINI-PROJECT		**Subject Code:**18MEMP68
Course Outcomes		
CO1	Practice acquired knowledge within the chosen area of technology for project development.	
CO2	Identify, discuss and justify the technical aspects of the chosen project with a comprehensive and systematic approach.	
CO3	Reproduce, improve and refine technical aspects for engineering projects by applying the knowledge of design/solve complex engineering problems by the usage of modern tools.	
CO4	Work as an individual or in a team in development of technical projects.	
CO5	Communicate and report effectively project related activities and findings.	

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

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

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Department of Basic Science

2.6.1 QlM Programme Outcomes (POs) and Course Outcomes (COs) offered by the department (EVEN and ODD) ACY 2022-2023

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

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Sl. No	Course Name	Course Code
16	Innovation and Design Thinking	BIDTK158/258
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 OF BASIC SCIENCE

ACADEMIC YEAR 2022-23

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: BCHES102/202[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: BCHES102/202 [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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