SEMESTER III

RAJIV GANDHI COLLEGE OF ENGINEERING AND TECHNOLOGY
PondyCuddalore Main Road, Kirumampakkam, Puducherry – 607 403.
Affiliated to Pondicherry University and Approved by AICTE, New Delhi

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(MA T31- Mathematics –III) [Total no. of. Students: 84] [2nd Year, 3rd Semester]
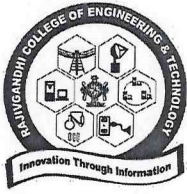
Course Prerequisite: Mathematics – II,

Course Objective:
1. To provide the concepts of functions of a complex variable, conformal mapping, complex integration, series expansion of complex functions, Harmonic analysis and Fourier series.
2. To make the students understand and work out problems of constructing analytic functions, conformal mapping, bilinear transformation, contour integration and expanding functions into Fourier series including Harmonic analysis.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the concepts of function of a complex variable and complex integration and apply these ideas to solve problems occurring in the area of engineering and technology.	L2
CO2	Expand functions into Fourier series which are very much essential for application in engineering and technology.	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES		Program Specific Outcomes	
PO1	Engineering knowledge	PSO1	Foundation of mathematical concept
PO2	Problem analysis		
PO3	Design / development of solutions		
PO4	Conduct investigation of complex problem		
PO5	Modern tool usage	PSO2	Foundation of computer system
PO6	Engineer And Society		
PO7	Environment and sustainability		
PO8	Ethics		
PO9	Individual and team work	PSO3	Foundation of software development
PO10	Communication		
PO11	Project management and finance		
PO12	Life-long Learning		

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	–	3	3	–	-	–	–	–	–	2	3	2	1
CO2	2	3	–	2	3	–	–	–	–	–	–	2	3	2	1
AVG	2	3	0	2.5	3	0	0	0	0	0	0	2	3	2	2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS T32- ELECTRONIC DEVICES AND CIRCUITS) [Total no. of. Students:84] [2nd Year, 3th Semester]

Course Prerequisite: Basic concepts of semi conductor theory like carrier concentration, electrical conductivity, temperature dependence of carrier concentration and electrical conductivity in semiconductors and Hall effect are covered in this course

Course Objective:
1. To introduce the basic principle, operation and applications of electronic devices
2. To understand the concept of biasing and different types of biasing circuits used for BJT, JFET and MOSFET
3. To study the basic models of BJT, JFET and MOSFET
4. To understand the basic concept of feedback and operation of different types of amplifiers and oscillators
5. To understand the characteristics and applications of operational amplifiers

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the principles and applications of diodes, including their use in logic gates	L2
CO2	Comprehend the biasing techniques and small-signal models for BJTs and FETs.	L5
CO3	Analyse the operation and frequency response of RC-coupled and power amplifiers	L3
CO4	Understand the characteristics and applications of operational amplifiers	L2
CO5	Understand the characteristics, operation, and applications of special electronic devices	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex	Modern tool usage	The engineer and society	Environment and	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical	Foundation of computer	Foundation of software
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	2	2	-	-	-	1	2	1	1	3	3	2
CO2	3	3	3	2	2	-	-	-	1	2	1	1	3	3	2
CO3	3	3	3	3	2	-	-	-	1	2	1	1	3	3	2
CO4	3	3	3	3	3	-	-	-	1	2	1	1	3	3	3
C05	3	2	2	2	2	-	-	-	1	2	1	1	3	3	2
AVG	3	2.6	2.6	2.6	2.2	0	0	0	1	2	1	1	3	3	2.2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CST33- **OBJECT ORIENTED PROGRAMMING AND DESIGN**) [Total no. of. Students: 84] [2nd Year, 3rd Semester]

Course Prerequisite: Knowledge of object oriented programming.

Course Objective:
1. To introduce the object oriented concepts.
2. To learn object oriented programming using C++.
3. To understand the challenges in developing object oriented programming.
4. To design programs using UML concepts.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand Object Oriented Software Development Process	L2
CO2	Gain exposure to Object Oriented Methodologies & UML Diagrams	L2
CO3	To apply Object Oriented Analysis Processes for projects	L5
CO4	An ability to design and develop a complete object oriented applications	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2	1	2	2	_	2	_	_	_	_	2	2	3	3
CO2	3	3	3	3	2	1	_	_	_	_	_	2	3	2	3
CO3	3	3	3	3	3	2	2	_	2	1	_	3	3	3	3
CO4	3	3	3	1	2	1	1	_	_	_	_	2	3	3	3
AVG	3	2.75	2.5	2.25	2.25	1	1.25	0	0.5	0.25	0.5	2.25	2.75	2.75	3

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS P34 DIGITAL SYSEM DESIGN [Total no. of. Students: 84] [2nd Year, 3rd Semester]

Course Prerequisite: Basic Knowledge Electronics, digital logic, microprocessor and microcontroller.

Course Objective:
1. To introduce the fundamentals of digital system design.
2. To lay strong foundation to the combinational and sequential logic.
3. To educate from basic concepts to advanced system design.
4. To impart understanding of the hardware fundamentals of computer design.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the binary number systems and Boolean algebra	L2
CO2	Design combinational logic using only of universal gates, MSI gates and PLDs	L6
CO3	Design and implement sequential logic circuits of any complexity.	L6
CO4	Simulate and validate correctness of the digital circuits using VHDL packages.	L3&L4
CO5	Develop any prototypes using the state-of-the-art reconfigurable devices.	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO 1	PO 2	PO 3	PO4	PO 5	PO6	PO7	PO 8	PO 9	PO 10	PO11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	3	3	1	-	-	-	-	-	1	-	3	2	1	-
CO2	3	3	3	1	-	-	-	-	-	1	-	3	3	1	-
CO3	3	3	3	1	-	-	-	-	-	1	-	3	2	1	-
CO4	3	3	3	1	2	-	-	-	-	1	-	3	3	1	2
CO5	3	3	3	1	-	-	-	-	-	1	-	3	3	2	-
AVG	3	3	3	1	-	-	-	-	-	1	-	3	3	1	0.4

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS T35- Data Structures [Total no. of. Students: 84] [2nd Year, 3th Semester]

Course Prerequisite: Knowledge of programming, Data Structure and Algorithm

Course Objective:

1. To acquaint students with data structures used when programming for the storage and manipulation of data.

2. The concept of data abstraction and the problem of building implementations of abstract data types are emphasized.

3. To provide the knowledge of basic data structures and their implementations.

4. To understand the importance of data structures in context of writing efficient programs.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Selection of relevant data structures and combinations of relevant data structures for the given problems in terms of memory and run time efficiency.	L3
CO2	Apply data abstraction in solving programming problems	L4
CO3	It allows the ability to differentiate data structures and will enable developers to choose relevant one to find solution to problem	L3
CO4	Enable to design, implementation and performance of software applications.	L5
CO5	Understand deeper concepts to solve computational problems	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES

PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes

PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2	-	-	-	-	-	2	1	3	1
CO2	3	3	3	3	3	1	-	-	-	-	-	2	3	3	2
CO3	3	3	3	3	3	2	-	-	-	-	-	2	3	3	2
CO4	3	3	3	3	3	2	-	-	-	-	-	2	3	3	1
C05	3	3	2	3	3	3	-	-	-	-	-	2	2	2	1
AVG	3	3	2.8	3	3	2	0	0	0	0	0	2	2.4	2.8	1.4

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CST36- Computer Organization and Architecture) [Total no. of. Students: 84] [2nd Year, 3rd Semester]

Course Prerequisite: Digital System Design

Course Objective:
1. To provide an overview of computer hardware.
2. To give a methodical treatment of machine instructions, addressing techniques, and instruction sequencing.
3. To explain the basics of I/O data transfer synchronization.
4. To understand the common components and organizations used to implement memory and to know the implementation of instruction fetching and execution in a processor.
5. To provide details on use of pipelining and multiple functional units.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand basics of Computer Organization, concepts of program as sequences and operation of computers.	L2
CO2	Understand different ways of communication with I/O devices and standard I/O interfaces.	L2
CO3	Understand the basics of memory systems and cache Memories.	L2
CO4	Understand arithmetic and logical operations with integer and floating-point operands.	L6
CO5	Understand the basic processing unit, embedded and other large computing systems	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES		Program Specific Outcomes	
PO1	Engineering knowledge	PSO1	Foundation of mathematical concept
PO2	Problem analysis		
PO3	Design / development of solutions		
PO4	Conduct investigation of complex problem	PSO2	Foundation of computer system
PO5	Modern tool usage		
PO6	Engineer And Society		
PO7	Environment and sustainability		
PO8	Ethics	PSO3	Foundation of software development
PO9	Individual and team work		
PO10	Communication		
PO11	Project management and finance		
PO12	Life-long Learning		

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	–	–	3	–	2	–	–	–	–	2	2	3	2
CO2	3	3	–	3	3	–	–	–	–	–	–	–	3	3	2
CO3	3	3	–	3	2	–	2	–	–	–	–	–	3	3	2
CO4	3	2	3	2	–	–	2	–	–	–	–	–	3	2	1
C05	3	3	3	–	2	–	–	–	3	–	–	–	3	3	1
AVG	3	2.8	3	2.7	2.5	0	2	0	3	0	0	2	2.8	2.8	1.6

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS T32- ELECTRONIC DEVICES AND CIRCUITS LABORATORY) [Total no. of. Students:84] [2ⁿᵈ Year, 3ᵗʰ Semester]

Course Prerequisite: Basic concepts of semi conductor theory like carrier concentration, electrical conductivity, temperature dependence of carrier concentration and electrical conductivity in semiconductors and Hall effect are covered in this course

Course Objective:
1. To introduce the basic principle, operation and applications of electronic devices
2. To understand the concept of biasing and different types of biasing circuits used for BJT, JFET and MOSFET
3. To study the basic models of BJT, JFET and MOSFET
4. To understand the basic concept of feedback and operation of different types of amplifiers and oscillators
5. To understand the characteristics and applications of operational amplifiers

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the principles and applications of diodes, including their use in logic gates	L2
CO2	Comprehend the biasing techniques and small-signal models for BJTs and FETs.	L5
CO3	Analyse the operation and frequency response of RC-coupled and power amplifiers	L3
CO4	Understand the characteristics and applications of operational amplifiers	L2
CO5	Understand the characteristics, operation, and applications of special electronic devices	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO012	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex	Modern tool usage	The engineer and society	Environment and	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical	Foundation of computer	Foundation f software
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	2	2	-	-	-	1	2	1	1	3	3	2
CO2	3	3	3	2	2	-	-	-	1	2	1	1	3	3	2
CO3	3	3	3	3	2	-	-	-	1	2	1	1	3	3	2
CO4	3	3	3	3	3	-	-	-	1	2	1	1	3	3	3
C05	3	2	2	2	2	-	-	-	1	2	1	1	3	3	2
AVG	3	2.6	2.6	2.6	2.2	0	0	0	1	2	1	1	3	3	2.2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE OBJECTIVES

(CS P32- Data Structures Laboratory[Total no. of. Students: 84] [2nd Year, 3th Semester]

Course Prerequisite: Knowledge of programming, Data Structure and Algorithm

Course Objective:

1. To acquaint students with data structures used when programming for the storage and manipulation of data.

2. The concept of data abstraction and the problem of building implementations of abstract data types are emphasized.

3. To provide the knowledge of basic data structures and their implementations.

4. To understand the importance of data structures in context of writing efficient programs.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Selection of relevant data structures and combinations of relevant data structures for the given problems in terms of memory and run time efficiency.	L6
CO2	Ability to implement sorting and searching algorithms using relevant data structure.	L3
CO3	Ability to implement linear and non linear data structure, operation using c programs	L3
CO4	Ability to solve problem implementing appropriate data structure.	L3
CO5	Understand deeper concepts to solve computational problems	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2	1	1	2	1	1	2	1	3	3
CO2	3	3	3	3	3	1	1	2	1	-	2	2	3	3	2
CO3	3	3	3	3	3	2	2	1	2	1	2	2	3	3	2
CO4	3	3	3	3	3	2	1	-	1	2	2	2	3	3	2
C05	3	3	3	3	3	3	1	1	2	2	2	2	2	2	2
AVG	3	3	3	3	3	2	1.2	1	1.6	1.2	1.8	2	2.4	2.8	2.2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CSP33- Digital Design Laboratory) [Total no. of. Students: 84] [2nd Year, 3rd Semester]

Course Objective:
1. To introduce the fundamentals of digital system design.
2. To lay strong foundation to the combinational and sequential logic.
3. To educate from basic concepts to advanced system design.
4. To impart understanding of the hardware fundamentals of computer design.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the binary number systems and Boolean algebra	L2
CO2	Design combinational logic using only of universal gates, MSI gates and PLDs	L6
CO3	Design and implement sequential logic circuits of any complexity	L6
CO4	Simulate and validate correctness of the digital circuits using VHDL packages	L5
CO5	Develop any prototypes using the state of the art reconfigurable devices	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES		Program Specific Outcomes	
PO1	Engineering knowledge	PSO1	Foundation of mathematical concept
PO2	Problem analysis		
PO3	Design / development of solutions		
PO4	Conduct investigation of complex problem		
PO5	Modern tool usage	PSO2	Foundation of computer system
PO6	Engineer And Society		
PO7	Environment and sustainability		
PO8	Ethics		
PO9	Individual and team work	PSO3	Foundation of software development
PO10	Communication		
PO11	Project management and finance		
PO12	Life-long Learning		

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Ability to understand the principles and working of computer systems	Ability to design and develop computer	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	–	1	–	–	–	–	–	–	2	2	3	3
CO2	3	3	3	–	3	–	2	–	–	–	–	2	3	3	3
CO3	3	3	3	3	2	–	2	–	–	–	–	1	3	3	3
CO4	3	3	2	2	–	–	–	–	–	–	–	2	3	2	3
CO5	3	3	3	–	–	–	–	–	–	–	–	1	3	3	3
AVG	3	3	2.8	1	1.2	0	0.8	0	0	0	0	1.6	2.8	2.8	3

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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

SEMESTER IV

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(MA T41- Mathematics –IV) [Total no. of. Students: 84] [2nd Year, 3rd Semester]

Course Prerequisite: Mathematics – III,

Course Objective:
1. 1. Importance of problems in Partial Differential Equations
2. Problem solving techniques of PDE
3. To make the students knowledgeable in the areas of Boundary Value Problems like vibrating string (wave equation), heat equation in one and two dimensions.
4. To acquaint the students with the concepts of Theory of sampling.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the different types of PDE and will be able to solve problems occurring in the area of engineering and technology.	L2
CO2	Know sampling theory and apply to solve practical problems in engineering and technology.	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES		Program Specific Outcomes	
PO1	Engineering knowledge	PSO1	Foundation of mathematical concept
PO2	Problem analysis		
PO3	Design / development of solutions		
PO4	Conduct investigation of complex problem		
PO5	Modern tool usage	PSO2	Foundation of computer system
PO6	Engineer And Society		
PO7	Environment and sustainability		
PO8	Ethics		
PO9	Individual and team work	PSO3	Foundation of software development
PO10	Communication		
PO11	Project management and finance		
PO12	Life-long Learning		

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	–	3	3	–	-	–	–	–	–	2	3	2	1
CO2	2	3	–	2	3	–	–	–	–	–	–	2	3	2	1
AVG	2	3	0	2.5	3	0	0	0	0	0	0	2	3	2	2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CST42- MICROPROCESSORS AND MICROCONTROLLERS) [Total no. of. Students: 84] [2nd Year, 4th Semester]

Course Prerequisite: Basic Electronics Engineering

Course Objective:
1. To understand the architectures and the instruction set of 8085 microprocessors.
2. To understand the architectures and the instruction set of 8086 microprocessors.
3. To understand the architectures and the instruction set of 8051 microcontrollers.
4. To learn the assembly language program using 8085, 8086, and 8051 instructions.
5. To learn the interfacing of microprocessors and microcontrollers with various devices.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the inner working components of the microprocessor and microcontrollers.	L2
CO2	Develop the assembly language program using the 8085 instructions set.	L6
CO3	Develop the assembly language program using the 8086 instructions set.	L6
CO4	Develop the assembly language program using the 8051 instructions set.	L6
CO5	Develop the various I/O programs for 8085, 8086, and 8051.	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	–	–	–	–	–	–	–	3	3	2	3
CO2	2	2	1	2	–	–	–	–	–	–	–	3	3	2	3
CO3	2	2	1	2	–	–	–	–	–	–	–	3	3	2	3
CO4	2	2	1	2	–	–	–	–	–	–		3	3	2	3
C05	2	2	1	2	–	–	–	–	–	–	–	3	3	2	3
AVG	2.2	2.2	1.4	2.2	0	0	0	0	0	0	0	3	3	2	3

HEAD OF THE DEPARTMENT

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS T43 AUTOMATA LANGUAGES AND COMPUTATION [Total no. of. Students: 84] [2nd Year, 4th Semester]

Course Prerequisite: Knowledge to use data structures, mathematical foundation of computer science.

Course Objective:
1. To understand the foundation of computing
2. To realize the theoretical knowledge behind the computation
3. To understand the construction of formal languages
4. To apply this mathematical model for various computing research environment

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Analyze problems related to decidability and computability, including the concepts of decidable and undecidable problems, and recognize the limits of computational power.	L4
CO2	Understand the basics of computational complexity, including complexity classes such as P, NP, and NP-complete, and apply these concepts to problem-solving.	L2
CO3	Demonstrate a deep understanding of the basic concepts of automata theory, formal languages, and computation, including finite automata, regular expressions, context-free grammars, and Turing machines.	L3
CO4	Critically evaluate and compare various computational models and their limitations, and articulate the significance of theoretical results in the broader context of computer science..	L4

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical	Foundation of computer system	Foundation of software
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO 12	PSO 1	PS O2	PSO 3
CO1	3	3	3	3	2	1	-	2	-	-	-	-	3	3	-
CO2	3	3	3	2	2	-	-	-	-	1	-	1	3	2	2
CO3	3	2	-	-	3	-	-	-	3	-	-	2	3	3	2
CO4	3	2	2	3	3	-	2	3	2	-	-	-	3	2	3
AVG	3	2.5	2	2	2.5	0.25	0.5	1.25	1.25	0.25	-	0.75	3	2.5	1.75

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS T44- Design and Analysis of Algorithm [Total no. of. Students: 84] [2nd Year, 4th Semester]

Course Prerequisite: Knowledge of programming, Data Structure and Algorithm

Course Objective:

1. Analyze the asymptotic performance of algorithm.

2. To write rigorous correctness proofs for algorithms.

3. Demonstrate a familiarity with major algorithms and data structure.

4. To apply important algorithmic design paradigms and method of analysis.

5. Synthesize efficient algorithms in common engineering design situation.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Selection of relevant algorithm technique and combinations of relevant data structures for the given problems in terms of memory and run time efficiency.	L4,L5
CO2	Apply data abstraction in solving programming problems.	L3
CO3	Synthesize greedy algorithms and analyze them.	L4
CO4	Derive and solve recurrences describing the performance of divide and conquer algorithms.	L5
CO5	Apply dynamic -programming algorithms when an algorithmic design situation call for it.	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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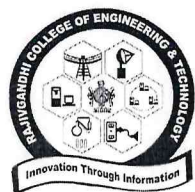Affiliated to Pondicherry University and Approved by AICTE, New Delhi

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2	2	2	2	2	3	2	1	3	1
CO2	3	3	3	3	3	1	2	2	3	1	1	2	3	3	2
CO3	3	3	3	3	3	2	1	2	1	1	2	2	3	3	2
CO4	3	3	3	2	3	2	1	2	1	1	1	2	3	3	1
C05	3	3	3	2	3	2	1	2	1	1	1	2	2	2	1
AVG	3	3	3	2.6	3	1.8	1.4	2	1.6	1.2	1.6	2	2.4	2.8	1.4

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CST45- **OBJECT ORIENTED PROGRAMMING**) [Total no. of. Students: 84] [2nd Year, 4th Semester]

Course Prerequisite: Knowledge of object oriented programming and JAVA language.

Course Objective:
1. To understand the concepts of object oriented programming
1. To expertise the programming skills through JAVA language
2. To understand the challenges in developing object oriented programming.
3. To design programs using GUI concepts.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	An ability to conceptualize the problem in terms of object oriented features	L2
CO2	Implement the concepts the concepts multithreading and /or handle runtime errors for java applications.	L3
CO3	An ability to use an event handling concepts in real time applications.	L3
CO4	An ability to develop real time GUI applications using applets, AWT, JDBC and swings.	L6

PO AND PSO OVERVIEW

	PROGRAM OUTCOMES
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

	Program Specific Outcomes
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2	2	1	2	2	2	2	2	2	3	3	2	3	3
CO2	2	2	3	2	2	2	2	—	2	—	2	2	3	3	2
CO3	1	2	3	2	2	1	2	—	2	3	2	2	3	3	1
CO4	1	2	3	2	2	2	2	3	2	3	3	2	3	2	1
AVG	1.75	2	2.75	1.75	2	1.75	2	1.25	2	2	2.5	2.25	2.75	2.75	1.75

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CST46- Graphics and image processing) [Total no. of. Students: 84] [2nd Year, 4th Semester]

Course Prerequisite: Knowledge of programming, Data Structure and Algorithm

Course Objective:
1. To learn, develop, design and implement two dimensional graphical structures.
2. To understand the components of Graphics and Image Processing applications.
3. To design innovative applications such as animation.
4. To learn the hardware and software facilities available for Graphics and Image Processing applications.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Acquainted Graphics and Image Processing domains	L2
CO2	Understand the major intricacies of Graphics and Image Processing	L2
CO3	Able to convert verbal descriptions to images and vice versa	L3

PO AND PSO OVERVIEW

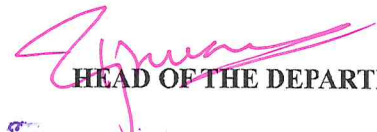| PROGRAM OUTCOMES		Program Specific Outcomes	
PO1	Engineering knowledge	PSO1	Foundation of mathematical concept
PO2	Problem analysis		
PO3	Design / development of solutions		
PO4	Conduct investigation of complex problem		
PO5	Modern tool usage	PSO2	Foundation of computer system
PO6	Engineer And Society		
PO7	Environment and sustainability		
PO8	Ethics		
PO9	Individual and team work	PSO3	Foundation of software development
PO10	Communication		
PO11	Project management and finance		
PO12	Life-long Learning		

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Understand the principles and working of computer	Ability to design and develop computer	Software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	–		–	3	–	2	–	–	–	–	2	2	3	–
CO2	3	1	–	–	3	–	–	–	–	–	–	2	3	3	–
CO3	3	–	–	–	2	–	-	–	–	–	–	1	3	3	–
AVG	3	0.3	0	0	2.7	0	0.7	0	0	0	0	1.7	2.7	3	0

HEAD OF THE DEPARTMENT

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CSP42- MICROPROCESSORS AND MICROCONTROLLERS LABORATORY) [Total no. of. Students: 84] [2nd Year, 4th Semester]

Course Prerequisite: Basic Electronics Engineering

Course Objective:
1. To understand the architectures and the instruction set of 8085 microprocessors.
2. To understand the architectures and the instruction set of 8086 microprocessors.
3. To understand the architectures and the instruction set of 8051 microcontrollers.
4. To learn the assembly language program using 8085, 8086, and 8051 instructions.
5. To learn the interfacing of microprocessors and microcontrollers with various devices.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the inner working components of the microprocessor and microcontrollers.	L2
CO2	Develop the assembly language program using the 8085 instructions set.	L6
CO3	Develop the assembly language program using the 8086 instructions set.	L6
CO4	Develop the assembly language program using the 8051 instructions set.	L6
CO5	Develop the various I/O programs for 8085, 8086, and 8051.	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	–	–	–	–	–	–	–	3	3	2	3
CO2	2	2	1	2	–	–	–	–	–	–	–	3	3	2	3
CO3	2	2	1	2	–	–	–	–	–	–	–	3	3	2	3
CO4	2	2	1	2	–	–	–	–	–	–		3	3	2	3
C05	2	2	1	2	–	–	–	–	–	–	–	3	3	2	3
AVG	2.2	2.2	1.4	2.2	0	0	0	0	0	0	0	3	3	2	3

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS P42- Design and Analysis of Algorithm Laboratory[Total no. of. Students: 84] [2nd Year, 4th Semester]

Course Prerequisite: Knowledge of programming, Data Structure and Algorithm

Course Objective:

1. To acquaint students with algorithm techniques when programming for the storage and manipulation of data..

2. The concept of data abstraction and the problem of building implementations of abstract data types are emphasized.

3. Demonstrate a familiarity with major algorithms and data structure.

4. To apply important algorithmic design paradigms and method of analysis.

5. Synthesize efficient algorithms in common engineering design situation.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Selection of relevant algorithm technique and combinations of relevant data structures for the given problems in terms of memory and run time efficiency.	L4,L5
CO2	Apply data abstraction in solving programming problems.	L3
CO3	Synthesize greedy algorithms and analyze them.	L4
CO4	Derive and solve recurrences describing the performance of divide and conquer algorithms.	L5
CO5	Apply dynamic -programming algorithms when an algorithmic design situation call for it.	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2	2	2	2	2	3	2	1	3	1
CO2	3	3	3	3	3	1	2	2	3	1	1	2	3	3	2
CO3	3	3	3	3	3	2	1	2	1	1	2	2	3	3	2
CO4	3	3	3	2	3	2	1	2	1	1	1	2	3	3	1
C05	3	3	3	2	3	2	1	2	1	1	1	2	2	2	1
AVG	3	3	3	2.6	3	1.8	1.4	2	1.6	1.2	1.6	2	2.4	2.8	1.4

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS P43- OBJECT ORIENTED PROGRAMMING LABORATORY) [Total no. of. Students: 84] [2nd Year, 4th Semester]

Course Prerequisite: Knowledge of object oriented programming and JAVA language.

Course Objective:
1. To understand the concepts of object oriented programming
1. To expertise the programming skills through JAVA language
2. To understand the challenges in developing object oriented programming.
3. To design programs using GUI concepts.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	An ability to understand the basics of object-oriented programming using JAVA.	L2
CO2	Apply the concepts of classes, Java, JDK Components and develop Simple Java Programs	L6
CO3	Develop Multi threading Programming and Interfaces.	L6
CO4	An ability to develop real time GUI applications using applets, AWT, JDBC and swings.	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

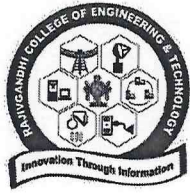| Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO 12	PSO 1	PSO 2	PSO 3
CO1	1	1	1	–	–	–	–	–	2	2	–	–	1	2	1
CO2	1	1	1	–	–	–	–	–	2	2	–	–	1	2	1
CO3	2	2	3	3	–	–	–	–	2	3	2	2	2	2	2
CO4	3	3	3	3	3	–	–	–	3	3	3	3	3	3	3
AVG	1.75	1.75	2	1.5	0.75	0	0	0	2.25	2.5	1.25	1.25	1.75	2.25	1.75

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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

SEMESTER V

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CST51- Operating Systems) [Total no. of. Students: 86] [3rd Year, 5th Semester]

Course Prerequisite: Should have knowledge about disc operating systems and computer organization and architecture.

Course Objective:
1. To have an overview of different types of operating systems
2. To know the components of an operating system.
3. To have a thorough knowledge of process management
4. To have a thorough knowledge of storage management
5. To know the concepts of I/O and file systems.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Gain the knowledge of different types of operating systems.	L2
CO2	A clear understanding of program, process and thread. Exploring CPU scheduling algorithms.	L4
CO3	Able to realize the need for Process Synchronization and the various constructs for Process Synchronization and handling of deadlocks	L3
CO4	Have an insight into real and virtual memory management techniques	L6
CO5	Gain knowledge about File systems, I/O and Disk Scheduling	L5

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO 8	PO9	PO 10	PO11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2	-	-	-	-	-	2	1	3	1
CO2	3	3	3	3	3	1	-	-	-	-	-	2	3	3	2
CO3	3	3	3	3	3	2	-	-	-	-	-	2	3	3	2
CO4	3	3	3	3	3	2	-	-	-	-	-	2	3	3	1
C05	3	2	2	3	2	2	-	-	-	-	-	2	2	2	1
AVG	3	2.8	2.8	3	2.8	1.8	0	0	0	0	0	2	2.4	2.8	1.4

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CST52- COMPUTER NETWORKS) [Total no. of. Students: 86] [3nd Year, 5th Semester]

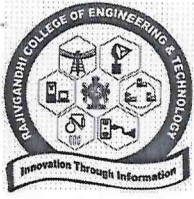**Course Prerequisite**: Programming Language

Course Objective:
1. Given an environment, after analyzing the channel characteristics, appropriate channel access mechanisms and da link protocols are chosen to design a network.
2. Given an environment, analyzing the network structure and limitations, an appropriate routing protocol is chosen obtain better throughput.
3. Given various load characteristics and network traffic conditions, decide the transport protocols and timers to be used.
4. Given the requirements of the user, an appropriate Internet protocol and proper security options are chosen.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	A student should able to analyze the requirement of various hardware components and software to be developed to establish a network.	L2
CO2	Discuss how data flows from one node to another node with regards to data link layer	L2
CO3	A student should able to analyze the working conditions of a network and able to provide the solutions to improve the performance of the network.	L4
CO4	Compare the different transport layer protocols and their applicability based on user requirements	L4
CO5	Describe the working of various application layer protocols	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	1	2	2	–	3	3	3	3	2	2
CO2	3	3	2	2	2	1	2	–	–	2	3	3	2	2	2
CO3	3	3	–	1	2	–	2	–	–	2	3	3	–	1	2
CO4	3	3	3	2	3	–	–	2	–	2	3	3	3	2	3
AVG	3	3	–	2	2	1	–	2	2	2	3	3	–	2	2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS T53- DATABASE MANAGEMENT SYSTEMS [Total no. of. Students: 86] [3rd Year, 5th Semester]

Course Prerequisite: Knowledge of programming, web applications and Protocols.

Course Objective:

1. To solve queries using Query languages
2. To understand normalization concepts
3. To understand concepts of transactions and concurrency control
4. To understand database authorization and recovery concepts
5. To understand indexing and hashing concepts

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Classify modern and futuristic database applications based on size and complexity	L4
CO2	Design a database from a Universe of Discourse, using ER diagrams	L6
CO3	Map ER model into Relations and to normalize the relations	L2
CO4	Create a physical database from a design using DDL statements with appropriate key, domain and referential integrity constraints	L6
CO5	Analyze different ways of writing a query and justify which is the effective and efficient way	L4

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO 1	PO 2	PO3	PO4	PO 5	PO6	PO 7	PO 8	PO9	PO 10	PO11	PO 12	PSO1	PSO 2	PSO3
CO1	3	3	3	_	3	2	-	3	3	_	3	3	2	3	2
CO2	3	2	3	3	3	3	_	_	3	3	3	3	-	3	2
CO3	3	3	-	-	3	3	3	_	3	_	3	3	3	3	2
CO4	2	2	3	2	3	_	2	3	2	2	_	_	3	2	3
C05	3	3	2	3	3	2	_	_	3	2	_	3	1	3	1
AVG	2.8	2.6	2.2	1.6	3	2	1	1.2	2.8	1.4	1.8	2.4	1.8	2.8	2

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CST54- Language Translators) [Total no. of. Students: 86] [3rd Year, 5^{rth} Semester]

Course Prerequisite: Microprocessor and microcontrollers

Course Objective:
1. To gain basic features of system software (assemblers/loaders/linkers/compilers)

2. To gain knowledge on data structures required for implementation of system software like assemblers/loaders/compliers

3. To understand the design of assemblers.

4. To understand the role of loaders and linkers in Loading, relocation and linking.

5. To understand the various phases of designing a compiler

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Design and implement assemblers for different computer architectures	L6
CO2	Design and implement loaders	L6
CO3	Understand the major phases of compilation, particularly lexical analysis, parsing, semantic analysis, and code generation.	L2
CO4	Use formal attributed grammars for specifying the syntax and semantics of programming languages, and their impact on compiler design.	L3
CO5	Understand how the machine code translation occurs.	L2
CO6	Develop system programs.	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES		Program Specific Outcomes	
PO1	Engineering knowledge	PSO1	Foundation of mathematical concept
PO2	Problem analysis		
PO3	Design / development of solutions		
PO4	Conduct investigation of complex problem		
PO5	Modern tool usage	PSO2	Foundation of computer system
PO6	Engineer And Society		
PO7	Environment and sustainability		
PO8	Ethics		
PO9	Individual and team work	PSO3	Foundation of software development
PO10	Communication		
PO11	Project management and finance		
PO12	Life-long Learning		

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	–	3	–	–	–	–	–	–	–	3	3	2
CO2	3	3	3	–	3	–	–	–	–	–	–	–	3	3	2
CO3	3	3	2	1	2	–	2	–	–	–	–	–	3	2	2
CO4	3	2	3	2	–	–	2	–	–	–	–	–	2	2	2
C05	3	3	3	1	2	–	–	–	3	–	–	–	3	3	1
CO6	3	3	3	–	2	–	–	–	3	–	–	–	3	3	1
AVG	3	2.8	2.8	0.7	2	0	0.7	0	1	0	0	0.0	2.8	2.7	1.7

HEAD OF THE DEPARTMENT
Computer Science Engineering
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CST55-SOFTWARE ENGINEERING) [Total no. of. Students: 86] [3nd Year, 5th Semester]

Course Prerequisite: Knowledge of Computer Programming

Course Objective:
1. Identify, formulate, and solve software engineering problems, including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements
2. Elicit, analyze, and specify software requirements through a productive working relationship with various software project stakeholders.
3. Need to function effectively as a team member
4. Understanding the professional, ethical, and social responsibility of a software engineer
5. Participate in designing, deploying, and maintaining a medium-scale software development project.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the inner working components of the microprocessor and microcontrollers.	L2
CO2	Develop the assembly language program using the 8085 instructions set.	L2
CO3	Develop the assembly language program using the 8086 instructions set.	L6
CO4	Develop the assembly language program using the 8051 instructions set.	L3
CO5	Develop the various I/O programs for 8085, 8086, and 8051.	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	1	–	–	–	–	–	–	–	2	3	2	3
CO2	3	3	3	1	–	–	–	–	–	–	–	3	3	3	3
CO3	3	3	3	1	–	–	–	–	–	–	2	3	3	3	3
CO4	3	3	3	2	–	–	–	–	–	–	3	3	3	2	3
C05	3	3	3	1	–	–	–	–	–	1	–	1	3	2	3
AVG	3	3	3	1.2	0	0	0	0	0	0.2	1	2.4	3	2.4	3

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS P51- Operating Systems Laboratory[Total no. of. Students: 86] [3rd Year, 5th Semester]

Course Prerequisite: NIL

Course Objective:
1. To develop and debug ,C programs created on UNIX platform
2. To familiarize students with the architechture of UNIX OS
3. To Provide necessary skills for developing and debugging programs in UNIX.
4. To have a thorough knowledge of storage management
5. To know the concepts of I/O and file systems.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Gain the knowledge of different types of operating systems.	L2
CO2	A clear understanding of program, process and thread. Exploring CPU scheduling algorithms.	L4
CO3	Able to realize the need for Process Synchronization and the various constructs for Process Synchronization and handling of deadlocks	L3
CO4	Have an insight into real and virtual memory management techniques	L6
CO5	Gain knowledge about File systems, I/O and Disk Scheduling	L5

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2	-	-	-	-	-	2	1	3	1
CO2	3	3	3	3	3	1	-	-	-	-	-	2	3	3	2
CO3	3	3	3	3	3	2	-	-	-	-	-	2	3	3	2
CO4	3	3	3	3	3	2	-	-	-	-	-	2	3	3	1
C05	3	2	2	3	2	2	-	-	-	-	-	2	2	2	1
AVG	3	2.8	2.8	3	2.8	1.8	0	0	0	0	0	2	2.4	2.8	1.4

HEAD OF THE DEPARTMENT

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CSP52- COMPUTER NETWORKS LABORATORY) [Total no. of. Students: 86] [3nd Year, 5th Semester]

Course Prerequisite: Programming Language

Course Objective:
1. Given an environment, after analyzing the channel characteristics, appropriate channel access mechanisms and data link protocols are chosen to design a network.
2. Given an environment, analyzing the network structure and limitations, an appropriate routing protocol is chosen to obtain better throughput.
3. Given various load characteristics and network traffic conditions, decide the transport protocols and timers to be used.
4. Given the requirements of the user, an appropriate Internet protocol and proper security options are chosen.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Evaluate the performance of Ethernet LAN and Wireless LAN through simulation.	L5
CO2	Evaluate the performance of the GSM and CDMA models through simulation.	L5
CO3	Develop Java programs for CRC and RSA algorithms	L3
CO4	Develop java programs for Bellman-ford and leaky bucket algorithms, socket programming using TCP and UDP.	L3

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	–	–	1	–	–	–	–	–	–	1	–	–	2
CO2	1	2	–	–	1	–	–	–	–	–	–	1	–	–	2
CO3	1	1	–	–	1	–	–	–	–	–	–	1	–	–	2
CO4	1	1	–	–	1	–	–	–	–	–		1	–	–	2
AVG	1.0	1.5	-	-	1.0	0	0	0	0	0	0	1.0	0	0	2.0

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS P53- Database Management System Laboratory [Total no. of. Students: 86] [3rd Year, 5th Semester]

Course Prerequisite: To prepare students for the challenges of designing, programming the database skills using the tools .

Course Objective:

1.Understand the basic concepts and the applications of database systems.

2. Master the basics of SQL and construct queries using SQL.

3.Understand the relational database design principles.

4.Familiar with the basic issues of transaction processing and concurrency control.

5.Familiar with database storage structures and access techniques.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Apply the database concepts, technology and create the relations by specifying primary and foreign keys.	L3
CO2	Construct a database by using data definition, data manipulation and control languages.	L6
CO3	Design a Database application and retrieve the values with the help of queries using SQL.	L6
CO4	Implement, analyze and evaluate the project developed for an application.	L4

PO AND PSO OVERVIEW

	PROGRAM OUTCOMES
)1	Engineering knowledge
)2	Problem analysis
)3	Design / development of solutions
)4	Conduct investigation of complex problem
)5	Modern tool usage
)6	Engineer And Society
)7	Environment and sustainability
)8	Ethics
)9	Individual and team work
)10	Communication
11	Project management and finance
12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	3	-	-	-	3	-	2	3	-	3	3
CO2	2	3	3	2	3	-	-	-	-	-	-	3	-	2	1
CO3	3	3	3	2	2	2	-	-	2	-	3	3	-	3	3
CO4	3	3	2	2	3	1	-	-	-	-	-	3	-	3	3
AVG	2.7	3	2.5	2	2.7	0.7	-	-	1.2	-	1.2	3	-	2.7	2.5

HEAD OF THE DEPARTMENT

SEMESTER VI

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CST61- Enterprise Solutions) [Total no. of. Students: 86] [3rd Year, 6rth Semester]

Course Objective:
1. To make the students to get familiar with the industry project platforms and to write codes.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand basic concepts of SAP, Oracle, PeopleSoft and Siebel.	L2
CO2	Write code in SAP, Oracle, PeopleSoft, and Siebel.	L2
CO3	Ready to cope up with industrial application development	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES		Program Specific Outcomes	
PO1	Engineering knowledge	PSO1	Foundation of mathematical concept
PO2	Problem analysis		
PO3	Design / development of solutions		
PO4	Conduct investigation of complex problem		
PO5	Modern tool usage	PSO2	Foundation of computer system
PO6	Engineer And Society		
PO7	Environment and sustainability		
PO8	Ethics		
PO9	Individual and team work	PSO3	Foundation of software development
PO10	Communication		
PO11	Project management and finance		
PO12	Life-long Learning		

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	3	–	–	–	–	1	–	–	1	2	3	–
CO2	2	3	2	1	–	–	–	–	1	–	–	1	2	3	–
CO3	2	2	2	2	–	–	–	–	1	–	–	1	2	3	–
AVG	2.3	2.7	2.0	2.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	2.0	3.0	0.0

HEAD OF THE DEPARTMENT

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS T62- EMBEDDED SYSTEMS) [Total no. of. Students: 86] [3r^d Year, 6th Semester]

Course Prerequisite: Knowledge Microprocessor and Microcontroller, Computer Organization.

Course Objective:.
1. To understand the architecture of embedded processors, microcontrollers and peripheral devices
2. To learn programming the embedded processor in assembly
3. To understand the challenges in developing operating systems for embedded systems
4. To learn programming the embedded systems in high level language such as C

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the concepts of embedded processors with microcontrollers.	L2
CO2	Learn the programming details of microcontrollers.	L2
CO3	Develop embedded programs for various embedded processors	L3
CO4	Developing operating systems for embedded systems.	L3
CO5	Understand both programming concept and specification of hardware.	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	2	_	3	_	2	2	_	2	2	3	-	3	3
CO2	3	3	3	2	3	_	_	2	2	3	3	3	-	3	2
CO3	3	3	2	3	2	3	2	3	3	2	3	3	-	3	2
CO4	3	2	3	2	3	2	2	_	3	2	_	2	3	2	1
C05	3	2	3	3	2	2	2	2	3	_	_	2	3	3	1
AVG	3	2	2.6	2	2.6	1.4	1.6	1.8	2.2	1.8	1.6	2.6	1.2	2.8	1.8

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS T63- WEB TECHNOLOGY [Total no. of. Students: 86] [3rd Year, 6th Semester]

Course Prerequisite: Knowledge of programming, web applications and Protocols.

Course Objective:

1. To learn and program features of web programming languages.

2. To understand the major components of internet and associated protocols.

3. To design an innovative application for web.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Acquainted with client side and server-side programming languages for web	L2
CO2	Understand the major components and protocols of internet application.	L2
CO3	Designing of web services.	L1
CO4	Create scripts using JavaScript in a web page.	L1
CO5	Design forms and check for data accuracy.	L1

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	_	_	3	_	3	3	3	_	3	2	2	3	2
CO2	3	3	_	3	3	2	_	_	2	_	2	3	-	3	2
CO3	3	3	2	1	2	3	2	_	_	_	3	2	3	3	2
CO4	2	2	3	2	_	_	2	_	_	_	_	_	3	2	1
C05	3	3	2	3	3	_	_	_	3	_	_	3	3	3	1
AVG	2.8	2.2	1.4	1.8	2.2	1	1.4	0.6	1.6	0	1.6	2	2.2	2.8	1.6

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CSE61- OBJECT ORIENTED ANALYSIS AND DESIGN) [Total no. of. Students: 86] [3rd Year, 6th Semester]

Course Prerequisite: Knowledge of object oriented design and analysis processes.

Course Objective:
1. To learn the concept of Object Oriented Software Development Process
2. To get acquainted with UML Diagrams
3. To understand Object Oriented Analysis Processes.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand Object Oriented Software Development Process	L2
CO2	Gain exposure to Object Oriented Methodologies & UML Diagrams	L2
CO3	To apply Object Oriented Analysis Processes for projects	L5
CO4	An ability to design and develop a complete object oriented applications	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2	1	2	2	2	2	–	–	–	–	2	2	3	3
CO2	3	3	3	3	2	2	–	–	–	–	–	2	3	3	3
CO3	3	2	3	1	3	2	2	1	2	3	2	3	3	3	3
CO4	3	2	3	3	2	3	2	–	–	3	2	2	3	3	3
AVG	3	2.25	2.5	2.25	2.25	2.2 5	1.5	0.2 5	0.5	1.5	1	2.25	2.75	3	3

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ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CSE63-E-BUSINESS) [Total no. of. Students: 86] [3nd Year, 6th Semester]

Course Prerequisite: Knowledge in business

Course Objective:
1. To explore the technical and business-related implications of electronically mediated commerce.
2. To enable the student to trace the development of electronic business from its origins in electronic data interchange to its current growing importance.
3. To explore the potential of electronic business for future development and the development of the 'Information Society'
4. To introduce the strategic, cultural, legal, and ethical issues facing business organizations in their daily use of the Internet.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the concepts of e-business, its infrastructure, and strategy	L2
CO2	Appreciate business models for business-to-business (B2B) and business-to-consumer (B2C) e-commerce.	L1,L2
CO3	Evaluate e-business scenarios and propose appropriate e-business investment strategies	L5
CO4	Appreciate and understand topics related to e-business such as supply chain management, customer relationship management change management, E-procurement, and e-marketing.	L1,L2
CO5	Understand the sectoral and regional differences in e-business applications.	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	1	3	–	–	–	–	–	3	3	3	3	2
CO2	3	2	3	2	2	–	–	–	–	–	3	3	3	3	2
CO3	3	3	3	3	3	–	–	–	–	–	2	3	3	3	2
CO4	3	2	3	1	2	–	–	–	–	–	3	3	3	3	2
C05	3	3	3	3	2	–	–	–	–	1	–	3	3	3	2
AVG	3	2.4	3	2	2.4	0	0	0	0	0.2	2.2	3	3	3	2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CSP61- Enterprise Solutions Laboratory) [Total no. of. Students: 86] [3rd Year, 6rth Semester]

Course Objective:
1. To make the students to get familiar with the industry project platforms and to write codes.
2. Write code in SAP, Oracle, PeopleSoft, and Siebel.

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COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand basic concepts of SAP, Oracle, PeopleSoft and Siebel.	L2
CO2	Write code in SAP, Oracle, PeopleSoft, and Siebel.	L2
CO3	Ready to cope up with industrial application development	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES		Program Specific Outcomes	
PO1	Engineering knowledge	PSO1	Foundation of mathematical concept
PO2	Problem analysis		
PO3	Design / development of solutions		
PO4	Conduct investigation of complex problem		
PO5	Modern tool usage	PSO2	Foundation of computer system
PO6	Engineer And Society		
PO7	Environment and sustainability		
PO8	Ethics		
PO9	Individual and team work	PSO3	Foundation of software development
PO10	Communication		
PO11	Project management and finance		
PO12	Life-long Learning		

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	3	2	–	–	1	2	2	3	3	3
CO2	3	3	2	3	2	–	2	–	–	2	2	2	3	3	3
CO3	3	3	1	2	2	3	–	–	2	2	–	–	3	3	3
AVG	3	3	2	2.3	2	2	1.3	0.0	0.7	1.7	1.3	1.3	3	3	3

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS P62 - EMBEDDED SYSTEMS LABORATORY [Total no. of. Students: 86] [3rd Year, 6th Semester]

Course Prerequisite: To prepare students for the challenges of designing, programming, and troubleshooting embedded systems.

Course Objective:

1. To understand the architecture of embedded processors, microcontrollers and peripheral devices.

2. To learn programming the embedded processor in assembly.

3. To understand the challenges in developing operating systems for embedded systems.

4. To learn programming the embedded systems in high level language such as C.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the concepts of embedded processors with microcontrollers.	L2
CO2	Understand the programming details of microcontrollers	L2
CO3	Develop embedded programs for various embedded processors.	L3
CO4	Understand the concepts of RTOS, including task scheduling.	L2
CO5	Ability to design, implement and test fully functional embedded systems.	L3&L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO 1	PO 2	PO3	PO4	PO 5	PO6	PO7	PO8	PO9	PO 10	PO11	PO 12	PSO1	PSO 2	PSO3
CO1	1	1	1	1	3	-	-	-	1	-	2	3	-	3	3
CO2	2	1	1	1	2	1	-	-	-	-	-	-	-	3	1
CO3	2	2	2	2	2	2	-	-	2	-	2	-	-	3	3
CO4	2	1	1	1	-	1	-	-	-	-	-	-	-	3	3
C05	2	-	2	3	2	-	-	-	-	-	-	-	-	3	3
AVG	1.8	0.8	1.4	1.6	1.8	0.8	-	-	0.6	-	0.8	0.6	-	3	2.6

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS P63 WEB TECHNOLOGY LABORATORY [Total no. of. Students: 86] [3rd Year, 6th Semester]

Course Prerequisite: Knowledge to use networking and basic HTML tags.

Course Objective:

1.Design and develop static and dynamic web pages.

2 Familiarize with Client-Side Programming, Server-Side Programming, Active server Pages.

3 Learn Database Connectivity to web applications

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the concepts of HTML5, CSS, JavaScript, XML, PHP and develop JavaScript programs.	L3
CO2	Develop XML program to display student information using CSS.	L3
CO3	Develop PHP program to keep track of the number of visitors visiting the web page, Digital Clock, simple calculator, matrix addition, multiplication, transpose	L3
CO4	Install IIS servers (Apache Tomcat server) and execute the programs from the server itself.	L3

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	–	3	3	-	3	3	–	3	3	2	3	2
CO2	3	-	-	-	2	3	–	–	2	-	3	3	-	1	2
CO3	3	2	-	-	3	-	-	–	3	–	-	3	3	-	2
CO4	3	2	2	3	3	–	-	3	2	-	–	–	3	2	3
AVG	3	1.7	1.2	0.7	2.7	1.5	-	1.5	2.5	-	1.5	2.2	2	1.5	2.2

HEAD OF THE DEPARTMENT

SEMESTER VII

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-2019

COURSE OBJECTIVES

(CS P71- Artificial Intelligence [Total no. of. Students: 85] 4th Year, 7th Semester]

Course Prerequisite: Knowledge of programming, Artificial and Algorithm

Course Objective:

1. To search and discover intelligent characteristics of existing AI projects, Intelligent agents.
2. To understand different search strategies for a problem.
3. To understand different Knowledge Representation schemes for typical AI problems
4. To design and implement a typical AI problem to be solved Using Machine Learning Techniques

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	To search and discover intelligent characteristics of existing AI projects, Intelligent agents.	L4
CO2	To understand different search strategies for a problem.	L1
CO3	To understand different Knowledge Representation schemes for typical AI problems	L2
CO4	To design and implement a typical AI problem to be solved Using Machine Learning Techniques	L5

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO 8	PO9	PO 10	PO11	PO 12	PSO 1	PS O2	PS O3
CO1	3	3	3	3	3	2	2	-	2	2	3	2	1	3	3
CO2	3	3	3	3	3	1	2	-	3	1	1	2	3	3	3
CO3	3	3	3	3	3	2	1	-	1	1	2	2	3	3	2
CO4	3	3	3	2	3	2	1	-	1	1	1	2	3	3	2
AVG	3	3	3	2.6	3	1.8	1.4	0	1.6	1.2	1.6	2	2.4	2.8	2.5

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS T72-COMPUTER HARDWARE & NETWORK TROUBLESHOOTING [Total no. of. Students: 85] [4th Year, 7th Semester]

Course Prerequisite: To study the fundamentals of PC hardware and Peripherals.

Course Objective:

1. To understand the working principles of hardware devices and components.

2. To understand the system resources and their uses.

3. To bridge the gap between the theoretical study of Computer Organization and the practical study of the hardware components in use.

4. To practice the troubleshooting of hardware and network bugs in real life.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Map the theoretical concepts of Computer Organization and Microprocessors to the Personal Computer organization.	L5
CO2	Develop device drivers for any of the existing or new devices that is interfaced.	L3&L6
CO3	Troubleshoot any kind of systems and networking bugs in practice.	L4
CO4	Understand the system components, resource management, optimize system resource effectively in professional.	L2
CO5	To prepare students for practical, real life trouble shooting tasks, equipping them with necessary skill to address hardware and networking issues effectively.	L4

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO 1	PO 2	PO3	PO4	PO 5	PO6	PO7	PO8	PO9	PO 10	PO11	PO 12	PSO1	PSO 2	PSO3
CO1	3	2	2	2	3	—	3	3	3	—	3	2	-	3	2
CO2	3	3	3	3	3	2	—	2	2	3	2	3	-	3	3
CO3	3	3	3	3	3	2	3	3	2	-	3	3	-	3	3
CO4	3	3	3	3	3	2	2	2	2	3	2	2	-	3	3
C05	3	3	3	3	3	3	2	2	1	-	3	2	-	3	3
AVG	3	2.8	2-8	2.8	3	1.8	2	2.4	2	1.2	2.6	2.4	-	3	2.8

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CST73- Platform Technology) [Total no. of. Students: 85] [4th Year, 7^{rth} Semester]

Course Objective:
1. To understand the various types of applications
2. To get expertise in visual programming
3. To understand the functionalities of middleware platform

.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	An ability to analyze and apply the programming skills in various application development	L6
CO2	An ability to use the programming techniques, skills, and modern engineering tools necessary for engineering practice.	L6
CO3	An ability to design and develop a windows and web application.	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES		Program Specific Outcomes	
PO1	Engineering knowledge	PSO1	Foundation of mathematical concept
PO2	Problem analysis		
PO3	Design / development of solutions		
PO4	Conduct investigation of complex problem		
PO5	Modern tool usage	PSO2	Foundation of computer system
PO6	Engineer And Society		
PO7	Environment and sustainability		
PO8	Ethics		
PO9	Individual and team work	PSO3	Foundation of software development
PO10	Communication		
PO11	Project management and finance		
PO12	Life-long Learning		

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	3	–	–	–	–	1	–	–	1	2	3	–
CO2	2	3	2	1	–	–	–	–	1	–	–	1	2	3	–
CO3	2	2	2	2	–	–	–	–	1	–	–	1	2	3	–
AVG	2.3	2.7	2.0	2.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	2.0	3.0	0.0

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS E77 -NETWORK PROTOCOLS [Total no. of. Students: 85] [4th Year, 7th Semester]

Course Prerequisite: To provide a solid foundation for understanding and working with network protocol.

Course Objective:

1. To ensure that students have better understanding of various Internet protocols.

2. Various standards and protocols will be covered.

3. Able to design, implement, and analyze communication network protocols.

4. Should have knowledge on computer networks with its layers and its corresponding protocols.

5. To understand the secure communications and protect against common network attacks.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the fundamentals of network architecture and protocols.	L2
CO2	Have the capability of designing and analyzing data transmission protocols and data link control protocols.	L4&L6
CO3	Have knowledge of various network protocols including TCP/IP, and demonstrate the skills to design and evaluate network protocols.	L5&L6
CO4	To analysis & manage network traffic using network tools.	L4
CO5	Understand the security implications of network protocol and learn how to mitigate potential risk.	L2

PO AND PSO OVERVIEW

	PROGRAM OUTCOMES		Program Specific Outcomes
PO1	Engineering knowledge		
PO2	Problem analysis		
PO3	Design / development of solutions	PSO1	Foundation of mathematical concept
PO4	Conduct investigation of complex problem		
PO5	Modern tool usage		
PO6	Engineer And Society	PSO2	Foundation of computer system
PO7	Environment and sustainability		
PO8	Ethics		
PO9	Individual and team work		
PO10	Communication	PSO3	Foundation of software development
PO11	Project management and finance		
PO12	Life-long Learning		

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO 12	PSO1	PSO 2	PSO3
CO1	3	3	3	3	3	1	3	3	2	3	3	3	-	3	1
CO2	3	3	3	3	3	-	3	3	1	3	2	1	-	3	1
CO3	3	3	3	3	3	-	2	3	-	2	2	2	-	3	-
CO4	3	3	3	3	3	1	2	2	-	3	-	2	-	3	-
C05	3	3	3	3	3	1	2	3	1	2	-	2	-	3	-
AVG	3	3	3	3	3	0.6	2.4	2.8	1	2	0.4	2	-	3	0.4

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-2019

COURSE OBJECTIVES

(CS P71- Artificial Intelligence Laboratory[Total no. of. Students: 85] 4th Year, 7th Semester]

Course Prerequisite: Knowledge of programming, Artificial and Algorithm

Course Objective:

1. To search and discover intelligent characteristics of existing AI projects, Intelligent agents.
2. To understand different search strategies for a problem.
3. To understand different Knowledge Representation schemes for typical AI problems
4. To design and implement a typical AI problem to be solved Using Machine Learning Techniques

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	To search and discover intelligent characteristics of existing AI projects, Intelligent agents.	L4
CO2	To understand different search strategies for a problem.	L1
CO3	To understand different Knowledge Representation schemes for typical AI problems	L2
CO4	To design and implement a typical AI problem to be solved Using Machine Learning Techniques	L5

PO AND PSO OVERVIEW

PROGRAM OUTCOMES		Program Specific Outcomes	
PO1	Engineering knowledge		
PO2	Problem analysis	PSO1	Foundation of mathematical concept
PO3	Design / development of solutions		
PO4	Conduct investigation of complex problem		
PO5	Modern tool usage		
PO6	Engineer And Society	PSO2	Foundation of computer system
PO7	Environment and sustainability		
PO8	Ethics		
PO9	Individual and team work		
PO10	Communication	PSO3	Foundation of software development
PO11	Project management and finance		
PO12	Life-long Learning		

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2	2	-	2	2	3	2	1	3	3
CO2	3	3	3	3	3	1	2	-	3	1	1	2	3	3	3
CO3	3	3	3	3	3	2	1	-	1	1	2	2	3	3	2
CO4	3	3	3	2	3	2	1	-	1	1	1	2	3	3	2
AVG	3	3	3	2.6	3	1.8	1.4	0	1.6	1.2	1.6	2	2.4	2.8	2.5

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS P72 COMPUTERS AND NETWORK TROUBLESHOOTING LABORATORY) [Total no. of. Students: 85] [4th Year, 7th Semester]

Course Prerequisite: identify the computer components, assemble and dissemble computers and hardware diagnosing.

Course Objective:
1. To identify and differentiate between types of hardware components.
2. To learn safely disassemble a computer and property handle each component.
3. To diagnostic tools and software to identify and troubleshoot in hardware problems.
4. Learn to navigate and configure BIOS setting for system optimization and troubleshooting.
5. Gain experience in upgrading hardware components and updating software/firmware

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understand the functions of various computer hardware components	L2
CO2	Demonstrate proficiency in assembling and disassembling computer systems, ensuring proper handling and installation of components	L3
CO3	Understand the common hardware issues and apply appropriate troubleshooting techniques to repair or replace faulty components.	L2
CO4	Demonstrate proficiency in navigating and configuring BIOS setting and troubleshoot boot related issues.	L3
CO5	Develop the skill to perform routine maintenance on hardware and software and execute upgrades to improve system performance.	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO 8	PO 9	PO 10	PO11	PO 12	PSO 1	PSO 2	PSO3
CO1	3	-	-	-	3	-	-	2	1	-	2	-	-	3	-
CO2	3	3	2	-	3	-	-	2	2	-	3	-	-	3	-
CO3	3	3	3	3	3	-	-	2	2	-	3	-	-	3	-
CO4	3	3	3	3	1	-	-	2	2	-	1	-	-	2	3
C05	3	3	3	3	2	-	-	2	-	-	3	-	-	3	3
AVG	3	2.4	2.2	1.8	2.4	-	-	2	1.4	-	2.4	-	-	2.8	1.2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CSP73- Platform Technology Laboratory) [Total no. of. Students: 85] [4th Year, 7rth Semester]

Course Objective:
1. To understand the various types of applications
2. To get expertise in visual programming
3. To understand the functionalities of middleware platform

.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	An ability to analyze and apply the programming skills in various application development	L6
CO2	An ability to use the programming techniques, skills, and modern engineering tools necessary for engineering practice.	L6
CO3	An ability to design and develop a windows and web application.	L2

PO AND PSO OVERVIEW

PROGRAM OUTCOMES		Program Specific Outcomes	
PO1	Engineering knowledge	PSO1	Foundation of mathematical concept
PO2	Problem analysis		
PO3	Design / development of solutions		
PO4	Conduct investigation of complex problem		
PO5	Modern tool usage	PSO2	Foundation of computer system
PO6	Engineer And Society		
PO7	Environment and sustainability		
PO8	Ethics		
PO9	Individual and team work	PSO3	Foundation of software development
PO10	Communication		
PO11	Project management and finance		
PO12	Life-long Learning		

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	3	2	–	–	1	2	2	3	3	3
CO2	3	3	2	3	2	–	2	–	–	2	2	2	3	3	3
CO3	3	3	1	2	2	3	–	–	2	2	–	–	3	3	3
AVG	3	3	2	2.3	2	2	1.3	0.0	0.7	1.7	1.3	1.3	3	3	3

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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

SEMESTER VIII

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 18-19

COURSE OBJECTIVES

(CST81- Engineering Economics and Management) [Total no. of. Students: 85] [4th Year, 8th Semester]

Course Prerequisite: Should have knowledge on basic business and accounts

Course Objective:
1. Acquire knowledge of economics to facilitate the process of economic decision making
2. To provides the students with knowledge of basic economic problems and the relationship between engineering technology and economics.
3. Alerts the students to understand the demand determinants and the methods of demand forecasting of a product.
4. To give knowledge to the students about various costs for determining the manufacturing of a product.
5. To guide the students for accounting the depreciation and providing the funds for replacement of necessary and depreciated machinery and equipment.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Understands the functions, roles, needs, scope and evolution of Economics and Management.	L2
CO2	Understand the importance, purpose and hierarchy of planning.	L2
CO3	Discuss Decision making, Organizing, Staffing, Directing and Controlling.	L3
CO4	Understand various interest rate methods and implement the suitable one and can able to prepare the balance sheet	L6
CO5	Estimate various depreciation values of commodities.	L5
CO6	Select the best economic model from various available alternatives.	L4

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	3	2	2	-	-	2	3	–	–	–	3	3	2	1
CO2	3	3	2	2	-	-	-	2	-	2	-	2	-	3	2
CO3	3	3	3	3	3	–	2	2	–	2	–	–	3	3	2
CO4	-	2	3	2	3	–	2	3	2	–	2	2	3	3	2
CO5	3	3	3	3	2	-	-	-	-	-	-	-	3	1	1
CO6	2	3	2	3	-	-	-	2	-	1	-	2	3	1	1
AVG	2.75	2.8	2.6	2.6	2.66	0	2	2.25	2	1.66	2	2	3	2.2	1.6

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS T83 -INFORMATION SECURITY) [Total no. of. Students: 85] [4TH Year, 8th Semester]

Course Prerequisite: Need for information security, Network security, Operating system and protocols

Course Objective:
1. To provide an understanding of principal concepts, major issues, technologies and basic approaches in information security.
2. Develop an understanding of information assurance as practiced in computer operating systems, distributed systems, networks and representative applications.
3. Gain familiarity with prevalent network and distributed system attacks, defenses against them and forensics to investigate the aftermath.
4. Develop a basic understanding of cryptography, how it has evolved and some key encryption techniques used today.
5. Develop an understanding of security policies (such as authentication, integrity and confidentiality), as well as protocols to implement such policies in the form of message exchanges.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	To master information security governance, and related legal and regulatory issues	L2
CO2	To be familiar with how threats to an organization are discovered, analyzed, and dealt with	L4
CO3	To be familiar with network security threats and countermeasures	L4
CO4	To be familiar with network security designs using available secure solutions (such as PGP, SSL, IPSec, etc)	L4
CO5	To be familiar with advanced security issues and technologies (such as DDoS attack detection and containment, and anonymous communications,)	L4

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	3	3	3	-	2	2	2	3	2	-	3	-	3	3
CO2	-	3	3	3	3	2	2	3	2	3	3	3	-	3	2
CO3	3	3	2	3	2	3	3	3	3	2	3	3	-	3	2
CO4	3	3	3	3	3	3	2	—	3	2	3	2	1	3	3
C05	3	3	3	3	3	2	2	2	3	2	3	2	3	3	3
AVG	1.8	3	2.8	3	2.2	2.4	2.2	2	2.8	2.2	2.4	2.6	.6	3	2.6

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS E84- Mobile Computing - [Total no. of. Students: 85] [4th Year, 8th Semester]

Course Prerequisite: Solid foundation in networking ,Software engineering, wireless networks standards.

Course Objective:

1. To teach the basics of mobile computing ideas and best practices.
2. To teach the emerging wireless network standards.
3. To introduce the various models and data management concepts of mobile computing.
4. To learn the routing and secure protocols of mobile networking. To give knowledge to the students about various costs for determining the manufacturing of a product.
5. To learn the fundamentals of mobile networking protocols, mobile IP addressing, location-based services, and seamless connectivity across different network types.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Gain a comprehensive understanding of the technologies and architectures that underpin mobile computing, including mobile operating systems, mobile networks (3G, 4G, and beyond), and mobile hardware components.	L2
CO2	Learn to develop mobile applications across different platforms (iOS, Android, etc.) using appropriate development environments, frameworks, and best practices.	L2
CO3	Design intuitive and effective user interfaces tailored for mobile devices, considering factors such as screen size, input methods (touch, gestures), and usability principles.	L6
CO4	Understand the fundamentals of mobile networking protocols, mobile IP addressing, location-based services, and seamless connectivity across different network types.	L2
CO5	Analyze real-world mobile services and applications in various domains such as healthcare, finance, education, and entertainment, focusing on their impact and usability..	L4

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	3	2	3	2	2	2	3	3	2	3	1	3	3
CO2	3	3	3	2	3	2	3	2	2	2	-	2	1	3	3
CO3	1	2	3	-	3	—	1	2	1	2	2	3	-	3	3
CO4	-	2	3	1	3	—	2	3	2	3	2	3	1	3	3
CO5	3	3	3	3	2	2	3	2	1	3	-	1	1	3	2
AVG	1.6	2.6	3	1.2	1.8	1.2	2.2	2.2	1.8	2.6	1.2	2.4	0.8	3	2.8

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018-19

COURSE OBJECTIVES

(CS E85- GRID COMPUTING [Total no. of. Students: 85] [4th Year, 8th Semester]

Course Prerequisite: Knowledge of Network Protocol, Networking.

Course Objective:

1. To understand Grid Architecture.

2. To understand different types of grids.

3. To know Grid standards.

4. To apply grid computing in various areas.

COS	Upon successful completion of this course, students should be able to:	LEVEL
CO1	Create a Grid Middleware architecture	L6
CO2	Explain the services offered by grid	L2
CO3	To utilize grid for various applications	L3
CO4	Design the networking based on the requirements.	L6

PO AND PSO OVERVIEW

PROGRAM OUTCOMES	
PO1	Engineering knowledge
PO2	Problem analysis
PO3	Design / development of solutions
PO4	Conduct investigation of complex problem
PO5	Modern tool usage
PO6	Engineer And Society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long Learning

Program Specific Outcomes	
PSO1	Foundation of mathematical concept
PSO2	Foundation of computer system
PSO3	Foundation of software development

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO Mapping with PO and PSO

	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning	Foundation of mathematical concept	Foundation of computer system	Foundation of software development
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	1	3	3	1	3	3	_	3	2	2	3	2
CO2	3	-	_	3	3	2	_	_	2	_	2	3	-	-	2
CO3	3	3	2	2	3	-	2	_	_	_	3	3	1	3	2
CO4	3	2	3	2	_	_	2	_	_	2	2	_	3	2	1
AVG	3	2.3	2.6	2	2.25	1.25	1.25	0.75	1.25	0.5	2.5	2	1.5	2	1.75

HEAD OF THE DEPARTMENT