

**NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE**

*(Accredited by NAAC, Approved by AICTE New Delhi, Affiliated to APJKTU)*

**Pampady, Thiruvilwamala(PO), Thrissur(DT), Kerala 680 588**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**



**COURSE OUTCOMES AND MAPPING**



**2015 REGULATION      KTU SYLLABUS**

**VISION OF THE INSTITUTION**

To mould true citizens who are millennium leaders and catalysts of change through excellence in education.

**MISSION OF THE INSTITUTION**

NCERC is committed to transform itself into a center of excellence in Learning and Research in Engineering and Frontier Technology and to impart quality education to mould technically competent citizens with moral integrity, social commitment and ethical values.

We intend to facilitate our students to assimilate the latest technological know-how and to imbibe discipline, culture and spiritually, and to mould them in to technological giants, dedicated research scientists and intellectual leaders of the country who can spread the beams of light and happiness among the poor and the underprivileged.

### **ABOUT DEPARTMENT**

- ◆ Established in: 2002
- ◆ Course offered : B.Tech in Computer Science and Engineering  
M.Tech in Computer Science and Engineering  
M.Tech in Cyber Security
- ◆ Approved by AICTE New Delhi and Accredited by NAAC
- ◆ Affiliated to the University of A P J Abdul Kalam Technological University.

### **DEPARTMENT VISION**

Producing Highly Competent, Innovative and Ethical Computer Science and Engineering Professionals to facilitate continuous technological advancement.

### **DEPARTMENT MISSION**

1. To Impart Quality Education by creative Teaching Learning Process
2. To Promote cutting-edge Research and Development Process to solve real world problems with emerging technologies.
3. To Inculcate Entrepreneurship Skills among Students.
4. To cultivate Moral and Ethical Values in their Profession.

### **PROGRAMME EDUCATIONAL OBJECTIVES**

- PEO1:** Graduates will be able to Work and Contribute in the domains of Computer Science and Engineering through lifelong learning.
- PEO2:** Graduates will be able to analyse, design and development of novel Software Packages, Web Services, System Tools and Components as per needs and specifications.
- PEO3:** Graduates will be able to demonstrate their ability to adapt to a rapidly changing environment by learning and applying new technologies.
- PEO4:** Graduates will be able to adopt ethical attitudes, exhibit effective communication skills, Team work and leadership qualities.

## PROGRAM OUTCOMES (POS)

### Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## PROGRAM SPECIFIC OUTCOMES (PSO)

**PSO1:** Ability to Formulate and Simulate Innovative Ideas to provide software solutions for Real-time Problems and to investigate for its future scope.

**PSO2:** Ability to learn and apply various methodologies for facilitating development of high quality

System Software Tools and Efficient Web Design Models with a focus on performance optimization.

**PSO3:** Ability to inculcate the Knowledge for developing Codes and integrating hardware/software products in the domains of Big Data Analytics, Web Applications and Mobile Apps to create innovative career path and for the socially relevant issues.

**FIRST YEAR- SEMESTER 1 & 2**

<b>SUBJECT CODE</b>	<b>MAPPING CODE</b>	<b>SUBJECT NAME</b>
MA101	C101	CALCULUS
PH100	C102	ENGINEERING PHYSICS
BE100	C103	ENGINEERING MECHANICS
BE101-05	C104	INTRODUCTION TO COMPUTING AND PROBLEM SOLVING
BE103	C105	INTRODUCTION TO SUSTAINABLE ENGINEERING
EC100	C106	BASICS OF ELECTRONICS ENGINEERING
PH110	C107	ENGINEERING PHYSICS LAB
CS110	C108	COMPUTER SCIENCE WORKSHOP
EC110	C109	ELECTRONICS ENGINEERING WORKSHOP
MA102	C110	DIFFERENTIAL EQUATIONS
CY100	C111	ENGINEERING CHEMISTRY
BE110	C112	ENGINEERING GRAPHICS
BE102	C113	DESIGN & ENGINEERING
ME100/ CS100	C114	BASICS OF MECHANICAL ENGINEERING/ BASICS OF COMPUTER PROGRAMMING
EE100	C115	BASICS OF ELECTRICAL ENGINEERING
ME110/ CS120	C116	MECHANICAL WORKSHOP/ COMPUTER PROGRAMMING LAB
CY110	C117	ENGINEERING CHEMISTRY LAB
EE110	C118	ELECTRICAL ENGINEERING WORKSHOP

## SEMESTER 1

### MA101 CALCULUS

SUBJECT CODE: C101	
COURSE OUTCOMES	
C101.1	Solve the convergent test in mathematical series
C101.2	Acquire the basic knowledge about three dimensional spaces and integral calculus of functions of more than one variables
C101.3	Understand about partial derivatives and its applications
C101.4	Solve problems in calculus of vector valued functions
C101.5	Apply multiple integrals to find area and volume
C101.6	Evaluate surface and volume integrals

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101.1	3	3	3	3	-	-	-	-	-	-	-	1
C101.2	3	3	3	3	-	-	-	-	-	-	-	1
C101.3	3	3	3	3	-	-	-	-	-	-	-	1
C101.4	3	3	3	3	-	-	-	-	-	-	-	1
C101.5	3	3	3	3	-	-	-	-	-	-	-	1
C101.6	3	3	3	3	-	-	-	-	-	-	-	1
C101	3.00	3.00	3.00	3.00	-	-	-	-	-	-	-	1.00

CO'S	PSO1	PSO2	PSO3
C101.1	-	-	2
C101.2	-	3	-
C101.3	3	2	-
C101.4	2	2	-
C101.5	2	2	-
C101.6	2	2	-
C101	2.25	2.2	2

## PH100 ENGINEERING PHYSICS

SUBJECT CODE: C102	
COURSE OUTCOMES	
C102.1	Compute the quantitative aspects of waves and oscillations in engineering systems.
C102.2	Understand the importance of properties of light
C102.3	Classify and describe the properties of semiconductor materials and its application
C102.4	Acquire knowledge of basic principal of quantum mechanics and statistical mechanics
C102.5	Realize the importance of application of Acoustics and Ultrasonic
C102.6	Develop a comprehension of the current basis of board knowledge in photonics

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C102.1	3	3	3	3	-	-	-	-	-	-	-	3
C102.2	3	3	3	3	-	-	-	-	-	-	-	3
C102.3	3	3	3	3	-	-	-	-	-	-	-	3
C102.4	3	3	3	3	-	-	-	-	-	-	-	3
C102.5	3	3	3	3	-	-	-	-	-	-	-	3
C102.6	3	3	3	3	-	-	-	-	-	-	-	3
C102	3.00	3.00	3.00	3.00	-	-	-	-	-	-	-	3.00

CO'S	PSO1	PSO2	PSO3
C102.1	2	-	-
C102.2	2	-	-
C102.3	2	2	2
C102.4	2	2	-
C102.5	2	-	-
C102.6	2	2	2
C102	2.00	2.00	2.00

**BE100 ENGINEERING MECHANICS**

<b>SUBJECT CODE: C103</b>	
<b>COURSE OUTCOMES</b>	
C103.1	Understand the fundamental concepts of engineering mechanics
C103.2	Identify appropriate structural system for studying a given problem
C103.3	Understand the properties and theorems associated with planar surfaces
C103.4	Students will able to solve problems involving friction
C103.5	Analyze problem associated with dynamics
C103.6	Understand the concepts connected with force systems in space

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C103.1	3	3	-	-	-	1	-	-	-	-	-	2
C103.2	3	3	3	-	-	2	-	-	-	-	-	3
C103.3	3	3	-	-	-	-	-	-	-	-	-	1
C103.4	3	3	2	-	-	3	2	-	-	-	-	2
C103.5	3	3	-	-	-	2	-	-	-	-	-	2
C103.6	3	3	3	-	-	3	-	-	-	-	-	2
C103	3.00	3.00	2.70	-	-	2.20	2.00	-	-	-	-	2.00

CO'S	PSO1	PSO2	PSO3
C103.1	2	-	-
C103.2	2	-	-
C103.3	2	-	-
C103.4	-	-	-
C103.5	-	-	-
C103.6	2	-	-
C103	2	-	-



**BE101-05 INTRODUCTION TO COMPUTING AND PROBLEM SOLVING**

<b>SUBJECT CODE: C104</b>	
<b>COURSE OUTCOMES</b>	
C104.1	To acquire the basic knowledge on digital computer and programming languages
C104.2	To design algorithmic solution to problems.
C104.3	To design Python programs from algorithms
C104.4	To design modular Python programs using functions
C104.5	To design and develop programs with Interactive Input and Output, utilizing arithmetic expression repetitions, decision making, arrays and recursive solutions
C104.6	To design programs using file Input and Output

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C104.1	3	-	-	-	-	-	-	-	-	-	-	2
C104.2	3	3	3	3	-	-	-	-	-	-	3	3
C104.3	3	3	3	3	-	-	-	-	-	-	3	3
C104.4	3	3	3	3	3	-	-	-	-	-	3	3
C104.5	3	3	3	3	3	-	-	-	-	-	3	3
C104.6	3	3	3	3	3	-	-	-	-	-	3	3
C104	3	3	3	3	3	-	-	-	-	-	3	2.83

CO'S	PSO1	PSO2	PSO3
C104.1	3	3	-
C104.2	3	3	3
C104.3	-	3	3
C104.4	3	3	2
C104.5	3	3	2
C104.6	3	3	2
C104	3	3	2.4

## BE103 INTRODUCTION TO SUSTAINABLE ENGINEERING

SUBJECT CODE: C105	
COURSE OUTCOMES	
C105.1	Understand the role of engineering in sustainable development and environmental protection
C105.2	Acquire knowledge in global environmental issues and the consequent threats to sustainable development
C105.3	Develop simple, efficient and indigenous solutions to assess and overcome threats to sustainability
C105.4	Apply engineering methods and eco-friendly solutions to maintain a green environment
C105.5	Understand the relevance of non-conventional energy sources for sustainable development of the society
C105.6	Describe the role of technology in the sustainable development of society and industry

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C105.1	-	-	-	-	-	3	3	3	-	-	-	3
C105.2	-	-	-	-	-	3	3	3	-	-	-	3
C105.3	-	-	-	-	-	3	3	3	-	-	-	3
C105.4	-	-	-	-	-	3	3	3	-	-	-	3
C105.5	-	-	-	-	-	3	3	3	-	-	-	3
C105.6	-	-	-	-	-	3	3	3	-	-	-	3
C105	-	-	-	-	-	3.00	3.00	3.00	-	-	-	3.00

CO'S	PSO1	PSO2	PSO3
C105.1	-	-	-
C105.2	-	-	-
C105.3	-	-	-
C105.4	-	-	-
C105.5	-	-	-
C105.6	-	-	-
C105	-	-	-

## EC100 BASICS OF ELECTRONICS ENGINEERING

SUBJECT CODE: C106	
COURSE OUTCOMES	
C106.1	Interpret the basic components of electronics
C106.2	Describe the working and characteristics of different diodes and BJT
C106.3	Recognize the working of rectifiers, power supplies, amplifiers and oscillators
C106.4	Identify analogue IC, Digital IC and Electronic instrumentation system.
C106.5	Explain the concepts in radio communication and satellite communication
C106.6	Define mobile communication, optical communication and entertainment electronics technology.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C106.1	3	2	-	3	-	-	-	-	-	-	-	2
C106.2	3	-	-	3	-	-	-	-	-	-	-	2
C106.3	3	2	-	3	-	-	-	-	-	-	-	2
C106.4	3	2	3	3	-	-	-	-	-	-	-	2
C106.5	3	-	3	3	-	-	-	-	-	-	-	2
C106.6	3	-	3	3	-	-	-	-	-	-	-	2
C106	3.00	2.00	3.00	3.00	-	-	-	-	-	-	-	2.00

CO'S	PSO1	PSO2	PSO3
C106.1	2	2	-
C106.2	2	-	-
C106.3	2	2	-
C106.4	2	2	3
C106.5	2	2	2
C106.6	-	-	2
C106	2.00	2.00	2.33

**PH110 ENGINEERING PHYSICS LAB**

<b>SUBJECT CODE: C107</b>	
<b>COURSE OUTCOMES</b>	
C107.1	Examine the basic physical quantities, such as voltage, frequency, temperature etc. and evaluate measurement accuracy.
C107.2	Measure and analyze the properties of electrical and acoustic waves and oscillations, and demonstrate resonance.
C107.3	Demonstrate wave-like properties of light and measure the wavelength of monochromatic light sources
C107.4	Understand the propagation of light through an optical fiber and measure its numerical aperture
C107.5	Examine the working of devices such as solar cells and photoelectric cells
C107.6	Experimentally set up and measure fundamental constants such as the Planck's constant.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C107.1	3	3	-	-	-	-	-	-	3	-	-	2
C107.2	3	3	-	-	-	-	-	-	3	-	-	2
C107.3	3	3	-	-	-	-	-	-	3	-	-	2
C107.4	3	3	-	-	-	-	-	-	3	-	-	2
C107.5	3	3	-	-	-	-	-	-	3	-	-	2
C107.6	3	3	-	-	-	-	-	-	3	-	-	2
C107	3.00	3.00	-	-	-	-	-	-	3.00	-	-	2.00

CO'S	PSO1	PSO2	PSO3
C107.1	-	-	-
C107.2	-	-	-
C107.3	-	-	-
C107.4	-	-	-
C107.5	-	-	-
C107.6	-	-	-
C107	-	-	-

## CS110 COMPUTER SCIENCE WORKSHOP

SUBJECT CODE: C108	
COURSE OUTCOMES	
C108.1	To identify common hardware components and their purpose
C108.2	To implement the algorithms studied in introduction to computing and problem solving course
C108.3	To implement control structures, Iterations, Recursive functions, Lists, Tuples and Dictionaries
C108.4	To implement the operations of files
C108.5	To gain sufficient awareness about latest software tools
C108.6	To develop the programs in python for common problems of reasonable complexity

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C108.1	3	-	3	-	3	-	-	-	-	-	-	3
C108.2	3	3	3	3	-	-	-	-	-	-	-	3
C108.3	3	3	3	3	-	-	-	-	-	-	-	3
C108.4	3	3	3	3	3	-	-	-	-	-	-	3
C108.5	3	-	-	3	3	-	-	-	-	-	-	3
C108.6	3	3	3	3	-	-	-	-	-	-	-	3
C108	3	3	3	3	3	-	-	-	-	-	-	3

CO'S	PSO1	PSO2	PSO3
C108.1	3	-	-
C108.2	3	3	3
C108.3	-	3	3
C108.4	-	3	3
C108.5	3	3	3
C108.6	-	2	3
C108	3	2.8	3

## EC110 ELECTRONICS ENGINEERING WORKSHOP

SUBJECT CODE: C109	
COURSE OUTCOMES	
C109.1	Understand the working of various electronic components and instruments
C109.2	Acquire knowledge to wire electronic circuits on bread board as per the circuit diagram and to design a dc power supply
C109.3	Design a dc power supply
C109.4	Design and implement basic transistor circuits
C109.5	Demonstrate soldering and printed circuit board design for electronic circuits.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C109.1	3	-	2	-	-	-	-	-	3	-	-	3
C109.2	3	-	2	-	-	-	-	-	3	-	-	3
C109.3	3	-	2	-	-	-	-	-	3	-	-	3
C109.4	3	-	2	-	-	-	-	-	3	-	-	-
C109.5	3	-	2	-	-	-	-	-	3	-	-	3
C109	3.00	-	2.00	-	-	-	-	-	3.00	-	-	3.00

CO'S	PSO1	PSO2	PSO3
C109.1	2	2	2
C109.2	2	2	2
C109.3	-	-	-
C109.4	-	-	-
C109.5	2	2	-
C109	2	2	2

## SEMESTER 2

### MA102 DIFFERENTIAL EQUATIONS

SUBJECT CODE: C110	
COURSE OUTCOMES	
C110.1	Solve homogenous linear differential equation with constant coefficients
C110.2	Solve non- homogenous linear differential equation with constant coefficients
C110.3	Determine Taylor and Fourier series expansion of functions and its applications
C110.4	Understand the concept and the solution of partial differential equations
C110.5	Analyze and solve one dimensional Wave equation
C110.6	Analyze and solve one-dimensional Heat equation

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C110.1	3	3	3	3	-	-	-	-	-	-	-	2
C110.2	3	3	3	3	-	-	-	-	-	-	-	2
C110.3	2	3	3	3	-	-	-	-	-	-	-	2
C110.4	3	3	3	3	-	-	-	-	-	-	-	2
C110.5	3	3	3	3	-	-	-	-	-	-	-	2
C110.6	3	3	3	3	-	-	-	-	-	-	-	2
C110	3.00	3.00	3.00	3.00	-	-	-	-	-	-	-	2.00

CO'S	PSO1	PSO2	PSO3
C110.1	2	2	-
C110.2	2	2	-
C110.3	2	2	2
C110.4	2	2	-
C110.5	-	-	-
C110.6	-	-	-
C110	2	2	2

## CY100 ENGINEERING CHEMISTRY

SUBJECT CODE: C111	
COURSE OUTCOMES	
C111.1	To understand various spectroscopic techniques like UV- Visible , IR , NMR, and its applications
C111.2	To apply the basic concepts of electrochemistry to explore its possible applications in various engineering fields
C111.3	To apply the knowledge of analytical method for characterizing a chemical mixture of a compound
C111.4	To apply the knowledge of conducting polymers and advanced polymers in engineering
C111.5	To understand about calorific value of fuels and lubricants and its properties
C111.6	To study various types of water treatment methods to develop skills for treating wastewater

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C111.1	3	2	-	3	-	3	-	-	-	-	-	2
C111.2	3	3	3	-	-	2	-	-	-	-	-	2
C111.3	2	-	2	3	-	-	-	-	-	-	-	2
C111.4	2	-	-	-	-	3	3	-	-	-	-	2
C111.5	3	3	3	2	-	3	3	2	-	-	-	3
C111.6	3	1	3	3	2	3	3	3	-	-	-	3
C111	2.70	2.25	2.75	2.75	2	2.8	3	2.5	-	-	-	2.3

CO'S	PSO1	PSO2	PSO3
C111.1	-	-	-
C111.2	-	-	-
C111.3	-	-	-
C111.4	-	-	-
C111.5	-	-	-
C111.6	-	-	-
C111	-	-	-



## BE110 ENGINEERING GRAPHICS

SUBJECT CODE: C112	
COURSE OUTCOMES	
C112.1	Understand Engineering Drawing Standards, dimensioning and preparation of drawings leading to illustration of Graphics as the communication language of Engineers
C112.2	Develop engineering drawings, leading to enhanced presentation skills of 3-D objects in 2-D plane / paper and improved visualizing of physical objects.
C112.3	Apply the principles of orthographic projections of lines, solids and sectioned views in the design of pipeline systems.
C112.4	Create isometric and perspective projections that help to reconstruct solutions to real-time engineering problems in 3D to provide better understanding.
C112.5	Create surface development of objects which will help to develop suitable models for industrial applications.
C112.6	Understand the concepts associated with intersection of surfaces and perspective projections

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C112.1	3	2	-	-	-	-	-	-	-	-	-	3
C112.2	3	-	-	-	-	-	-	-	-	-	-	2
C112.3	3	-	-	-	-	-	-	-	-	-	-	2
C112.4	3	-	-	3	3	-	-	-	3	3	-	3
C112.5	3	-	-	-	-	-	-	-	-	-	-	1
C112.6	3	-	-	-	-	-	-	-	-	-	-	1
C112	3.00	2.00	-	3.00	3.00	-	-	-	3.00	3.00	2.00	2.00

CO'S	PSO1	PSO2	PSO3
C112.1	-	-	-
C112.2	2	2	-
C112.3	2	2	-
C112.4	2	2	-
C112.5	-	-	2
C112.6	2	2	2
C112	2	2	2

**BE102 DESIGN AND ENGINEERING**

<b>SUBJECT CODE: C113</b>	
<b>COURSE OUTCOMES</b>	
C113.1	Understand the different elements involved in good designs and practice them when called for.
C113.2	Solve the different stages of Design and formulate detailed designs with solid modeling and visualization.
C113.3	Acquire knowledge about prototype and propose various stages towards final product design.
C113.4	Build a broader perspective of design covering the function, cost, environmental sensitivity, safety and factors other than from engineering analysis
C113.5	Identify product oriented and user oriented aspects that make the customer required design.
C113.6	Utilize various modern engineering methods and build basic knowledge of Intellectual Property Rights.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C113.1	3	-	3	3	-	-	-	-	-	-	-	3
C113.2	3	-	3	3	-	-	-	-	-	-	-	3
C113.3	2	-	3	3	-	-	-	-	-	-	-	3
C113.4	3	-	3	3	-	-	-	-	-	-	-	3
C113.5	3	-	3	3	-	-	-	-	-	-	-	3
C113.6	3	-	3	3	-	-	-	-	-	-	-	3
C113	3.00	-	3.00	3.00	-	-	-	-	-	-	-	3.00

CO'S	PSO1	PSO2	PSO3
C113.1	2	2	-
C113.2	-	2	-
C113.3	2	2	-
C113.4	-	2	-
C113.5	-	3	2
C113.6	-	3	2
C113	2	2.33	2

## ME100 BASICS OF MECHANICAL ENGINEERING

SUBJECT CODE: C114	
COURSE OUTCOMES	
C114.1	Understand the basic concept of thermodynamics
C114.2	Describe about basic principles of engines, turbines and compressors
C114.3	Differentiate refrigeration and air conditioning
C114.4	Understand the main components of automobiles
C114.5	List the different types of engineering material
C114.6	Describe the different methods of manufacturing

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C114.1	3	3	-	-	-	2	2	-	-	-	-	3
C114.2	3	3	-	-	-	2	2	-	-	-	-	3
C114.3	3	3	-	-	-	2	2	-	-	-	-	3
C114.4	3	2	-	-	-	2	2	-	-	-	-	3
C114.5	3	1	-	-	-	2	2	-	-	-	-	3
C114.6	3		-	-	-	2	2	-	-	-	-	3
C114	3.00	2.4	-	-	-	2	2	-	-	-	-	3.00

CO'S	PSO1	PSO2	PSO3
C114.1	2	2	3
C114.2	2	2	3
C114.3	2	2	3
C114.4	2	2	3
C114.5	2	-	-
C114.6	2	-	-
C114	2	2	3

## CS100 BASICS OF COMPUTER PROGRAMMING

SUBJECT CODE: C114	
COURSE OUTCOMES	
C114.1	To identify appropriate C language constructs such as Preprocessor, header files, data types and qualifiers to solve problems.
C114.2	To identify appropriate C language constructs such as arrays and Structures to solve problems.
C114.3	To identify appropriate C language constructs such as pointers for arrays and structures to solve problems.
C114.4	To analyze problems, identify subtasks and implement them as functions/procedures.
C114.5	To apply sorting & searching techniques to solve application programs.
C114.6	To apply the concept of file system for handling data storage for solving problems.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C114.1	3	3	3	3	-	-	-	-	-	-	-	-
C114.2	3	3	3	3	-	-	-	-	-	-	-	-
C114.3	3	3	3	3	-	-	-	-	-	-	-	-
C114.4	3	3	3	3	-	-	-	-	-	-	-	-
C114.5	-	-	3	3	-	-	-	-	-	-	-	-
C114.6	2	2	3	3	-	-	-	-	-	-	-	-
C114	2.8	2.8	3	3	-	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C114.1	3	3	3
C114.2	3	3	3
C114.3	3	3	3
C114.4	3	3	3
C114.5	-	-	3
C114.6	-	-	3
C114	3	3	3

## EE100 BASICS OF ELECTRICAL ENGINEERING

SUBJECT CODE: C115	
COURSE OUTCOMES	
C115.1	Solve the elementary concepts of electrical circuits
C115.2	Acquire knowledge in magnetic circuits and ac fundamentals
C115.3	Analysis of single phase and three phase circuits
C115.4	Acquire knowledge in basic power generation systems
C115.5	Understand the working and construction of transformers.
C115.6	Describe about dc machines

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C115.1	3	3	2	2	-	-	-	-	-	-	-	3
C115.2	3	3	2	2	-	-	-	-	-	-	-	3
C115.3	3	3	2	2	-	-	-	-	-	-	-	3
C115.4	3	3	2	2	-	-	-	-	-	-	-	3
C115.5	3	3	2	2	-	-	-	-	-	-	-	3
C115.6	3	3	2	2	-	-	-	-	-	-	-	3
C115	3.00	3.00	2.00	2.00	-	-	-	-	-	-	-	3.00

CO'S	PSO1	PSO2	PSO3
C115.1	-	-	-
C115.2	-	-	-
C115.3	-	-	-
C115.4	-	-	-
C115.5	-	-	-
C115.6	-	-	-
C115	-	-	-

## ME110 MECHANICAL ENGINEERING WORKSHOP

SUBJECT CODE: C116	
COURSE OUTCOMES	
C116.1	Examine various manufacturing processes in a basic mechanical engineering workshop, like smithy, carpentry, foundry and fitting
C116.2	Understand various hand tools used in basic mechanical engineering workshop sections, like smithy, carpentry, foundry and fitting.
C116.3	Choose different measuring devices necessary to carry out work in a workshop.
C116.4	Analyze the operations of various machine tools like lathe, milling, drilling and shaping machines.
C116.5	Acquire knowledge in assembling and disassembling machines like IC engines

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C116.1	3	3	3	-	-	-	-	-	3	-	-	3
C116.2	3	3	2	-	-	-	-	-	3	-	-	3
C116.3	3	3	3	-	-	-	-	-	3	-	-	3
C116.4	3	2	2	-	-	-	-	-	3	-	-	3
C116.5	3	2	3	-	-	-	-	-	3	-	-	3
C116	3.00	2.80	2.80	-	-	-	-	-	3.00	-	-	3.00

CO'S	PSO1	PSO2	PSO3
C116.1	-	-	-
C116.2	-	-	-
C116.3	-	-	-
C116.4	-	-	-
C116.5	-	-	-
C116	-	-	-

## CS120 COMPUTER PROGRAMMING LAB

SUBJECT CODE: C116	
COURSE OUTCOMES	
C116.1	To implement algorithms those uses the concepts decision making, branching and looping of C language.
C116.2	To implement algorithms those uses the concepts arrays and strings of C language
C116.3	To implement algorithms those uses the concept functions of C language.
C116.4	To implement algorithms those uses the concepts structures and unions of C language.
C116.5	To implement algorithms those uses the concept pointers of C language.
C116.6	To implement algorithms those uses the concepts files, memory allocation, bit-level programming of C language.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C116.1	3	3	3	3	-	-	-	-	-	-	-	-
C116.2	3	3	3	3	-	-	-	-	-	-	-	-
C116.3	3	3	3	3	-	-	-	-	-	-	-	-
C116.4	3	3	3	3	-	-	-	-	-	-	-	-
C116.5	3	3	3	3	-	-	-	-	-	-	-	-
C116.6	3	3	3	3	-	-	-	-	-	-	-	-
C116	3	3	3	3	-	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C116.1	3	3	3
C116.2	3	3	3
C116.3	3	3	3
C116.4	3	3	3
C116.5	3	3	3
C116.6	3	3	3
C116	3	3	3

**CY110 ENGINEERING CHEMISTRY LAB**

<b>SUBJECT CODE: C117</b>	
<b>COURSE OUTCOMES</b>	
C117.1	Understand and measure the quality of water and environmental pollution.
C117.2	Analyze and identify unknown compounds from spectral measurements.
C117.3	Examine different polymers for industrial applications.
C117.4	Calculate the strength and pH of unknown solutions using different instrumental methods.
C117.5	Experimentally find out the percentage of metal present in metal ore.
C117.6	Demonstrate theoretical concepts of Engineering Chemistry.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C117.1	2	2	2	3	-	2	2	-	3	-	-	2
C117.2	2	2	2	3	-	2	2	-	3	-	-	2
C117.3	2	2	2	3	-	2	2	-	3	-	-	2
C117.4	2	2	2	3	-	2	2	-	3	-	-	2
C117.5	2	2	2	3	-	2	2	-	3	-	-	2
C117.6	2	2	2	3	-	2	2	-	3	-	-	2
C117	2.00	2.00	2.00	3.00	-	2.00	2.00	-	3.00	-	-	2.00

CO'S	PSO1	PSO2	PSO3
C117.1	-	-	-
C117.2	-	-	-
C117.3	-	-	-
C117.4	-	-	-
C117.5	-	-	-
C117.6	-	-	-
C117	-	-	-



## EE110 ELECTRICAL ENGINEERING WORKSHOP

SUBJECT CODE: C118	
COURSE OUTCOMES	
C118.1	Understand about power supplies and their limitations, standard voltages and their tolerances, safety aspects of electrical systems and the importance of protective measures in wiring systems
C118.2	Examine different configurations of wires, cables and other accessories used in wiring circuits and wire simple lighting circuits for domestic buildings
C118.3	Acquire knowledge about light and power circuits to control and measure circuit parameters such as current, voltage and power
C118.4	Describe about backup power supplies in domestic installations
C118.5	Experimentally understand all aspects of energy conservation in electrical systems

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C118.1	3	3	3	-	-	-	-	-	3	-	-	3
C118.2	3	3	2	-	-	-	-	-	3	-	-	3
C118.3	3	3	3	-	-	-	-	-	3	-	-	3
C118.4	3	2	2	-	-	-	-	-	3	-	-	3
C118.5	3	2	3	-	-	-	-	-	3	-	-	3
C118	3.00	2.80	2.80	-	-	-	-	-	3.00	-	-	3.00

CO'S	PSO1	PSO2	PSO3
C118.1	-	-	-
C118.2	-	-	-
C118.3	-	-	-
C118.4	-	-	-
C118.5	-	-	-
C118	-	-	-

**SECOND YEAR- SEMESTER 3 & 4**

<b>SUBJECT CODE</b>	<b>MAPPING CODE</b>	<b>SUBJECT NAME</b>
MA201	<b>C201</b>	LINEAR ALGEBRA & COMPLEX ANALYSIS
CS201	<b>C202</b>	DISCRETE COMPUTATIONAL STRUCTURES
CS203	<b>C203</b>	SWITCHING THEORY AND LOGIC DESIGN
CS205	<b>C204</b>	DATA STRUCTURES
CS207	<b>C205</b>	ELECTRONICS DEVICES & CIRCUITS
HS210	<b>C206</b>	LIFE SKILLS
CS231	<b>C207</b>	DATA STRUCTURES LAB
CS233	<b>C208</b>	ELECTRONICS CIRCUITS CODE
MA202	<b>C209</b>	PROBABILITY DISTRIBUTIONS, TRANSFORMS AND NUMERICAL METHODS
CS202	<b>C210</b>	COMPUTER ORGANIZATION AND ARCHITECTURE
CS204	<b>C211</b>	OPERATING SYSTEMS
CS206	<b>C212</b>	OBJECT ORIENTED DESIGN AND PROGRAMMING
CS208	<b>C213</b>	PRINCIPLES OF DATABASE DESIGN
HS200	<b>C214</b>	BUSINESS ECONOMICS
CS232	<b>C215</b>	FREE AND OPEN SOURCE SOFTWARE LAB
CS234	<b>C216</b>	DIGITAL SYSTEM LAB

### SEMESTER 3

#### MA201 LINEAR ALGEBRA & COMPLEX ANALYSIS

SUBJECT CODE: C201	
COURSE OUTCOMES	
C201.1	Solve any given system of linear equations
C201.2	Solve problems to find the Eigen values of a matrix and how to diagonalization matrix
C201.3	Identify analytic functions and Harmonic functions.
C201.4	Acquire ability to evaluate real definite Integrals as application of Residue Theorem
C201.5	Gain knowledge to identify conformal mappings
C201.6	Find regions that are mapped under certain Transformations

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C201.1	3	3	3	3	-	-	-	-	-	-	-	3
C201.2	3	3	3	3	-	-	-	-	-	-	-	3
C201.3	3	3	3	3	-	-	-	-	-	-	-	3
C201.4	3	3	3	3	-	-	-	-	-	-	-	3
C201.5	3	3	3	3	-	-	-	-	-	-	-	3
C201.6	3	3	3	3	-	-	-	-	-	-	-	3
C201	3.00	3.00	3.00	3.00	-	-	-	-	-	-	-	3.00

CO'S	PSO1	PSO2	PSO3
C201.1	2	-	-
C201.2	2	2	-
C201.3	2	2	-
C201.4	2	2	-
C201.5	2	2	-
C201.6	2	2	2
C201	2	2	2

## CS201 DISCRETE COMPUTATIONAL STRUCTURES

SUBJECT CODE: C202	
COURSE OUTCOMES	
C202.1	Identify and apply operations on discrete structures such as sets, relations and functions in different areas of computing
C202.2	Solve problem using counting techniques and Combinatorics and apply recurrence relation to solve the problems in different domain
C202.3	Solve problems using algebraic structures.
C202.4	Solve problems using Boolean algebra and Lattices
C202.5	Verify the validity of an argument using propositional and predicate logic.
C202.6	Construct proofs using direct proof, proof by contraposition, proof by contradiction and proof by cases, and by mathematical induction

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C202.1	3	3	3	3	-	-	-	-	-	-	-	2
C202.2	3	3	3	3	-	2	-	-	-	-	-	-
C202.3	3	3	3	3	-	2	-	-	-	-	-	-
C202.4	3	3	3	3	-	2	-	-	-	-	-	-
C202.5	3	3	3	3	-	-	-	-	-	-	-	-
C202.6	3	3	3	3	-	-	-	-	-	-	-	-
C202	3	3	3	3	-	2	-	-	-	-	-	2

CO'S	PSO1	PSO2	PSO3
C202.1	3	3	-
C202.2	2	2	-
C202.3	2	2	-
C202.4	2	-	-
C202.5	2	3	-
C202.6	2	2	-
C202	2.16	2.4	-

## CS203 SWITCHING THEORY AND LOGIC DESIGN

SUBJECT CODE: C203	
COURSE OUTCOMES	
C203.1	Understand the arithmetic operations using different number systems.
C203.2	Apply the basic concepts of Boolean Algebra.
C203.3	Design simple combinational circuits such as Adders, Subtractors, Code converters, Decoders, Multiplexers, Magnitude Comparators etc.
C203.4	Acquire the knowledge of different flip-flops, state diagram and state reduction technique.
C203.5	Design sequential circuits such as different types of counters, shift registers, serial adders and sequence generators.
C203.6	Use Hardware Description Language for describing simple logic circuits. Students can apply algorithms for addition/subtraction operations on Binary, BCD and Floating-point numbers.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C203.1	3	2	-	-	-	-	-	-	-	-	-	-
C203.2	3	2	-	-	-	-	-	-	-	-	-	-
C203.3	-	2	3	-	-	-	-	-	-	-	-	-
C203.4	3	2	-	-	-	-	-	-	-	-	-	-
C203.5	-	2	3	-	-	-	-	-	-	-	-	-
C203.6	-	-	2	-	3	-	-	-	-	-	-	-
C203	3	2	2.67	-	3	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C203.1	3	2	-
C203.2	3	2	-
C203.3	-	3	2
C203.4	3	2	-
C203.5	-	3	2
C203.6	-	2	3
C203	3	2.33	2.67

## CS205 DATA STRUCTURES

SUBJECT CODE: C204	
COURSE OUTCOMES	
C204.1	Analyze performance of algorithms and design efficient programs to solve problems.
C204.2	Use appropriate data structures like arrays,linked list,stacks and queues to solve real world problems efficiently.
C204.3	Categorize different memory management techniques and the implementations of linear datastructures.
C204.4	Represent and manipulate data using nonlinear data structures like trees and graphs to design algorithms for various applications.
C204.5	Illustrate and understand various techniques for searching and sorting.
C204.6	Illustrate various hashing algorithms

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C204.1	3	3	3	2	2	-	-	-	-	-	-	2
C204.2	3	3	3	2	3	-	-	-	-	-	-	2
C204.3	3	3	3	2	3	-	-	-	-	-	-	2
C204.4	3	3	3	2	2	-	-	-	-	-	-	2
C204.5	3	3	-	2	3	-	-	-	-	-	-	2
C204.6	3	2	3	2	2	-	-	-	-	-	-	2
C204	3	2.83	3	2	2.5	-	-	-	-	-	-	2

CO'S	PSO1	PSO2	PSO3
C204.1	3	3	2
C204.2	2	3	3
C204.3	-	3	2
C204.4	-	3	-
C204.5	3	-	-
C204.6	-	3	-
C204	2.67	3	2.33

## CS207 ELECTRONICS DEVICES & CIRCUITS

SUBJECT CODE: C205	
COURSE OUTCOMES	
C205.1	To introduce to the students the fundamental concepts of electronic devices and circuits for engineering applications.
C205.2	To develop the skill of analysis and design of various analog circuits using electronic devices
C205.3	To provide comprehensive idea about working principle, operation and applications of electronic circuits
C205.4	To equip the students with a sound understanding of fundamental concepts of operational amplifiers
C205.5	To expose to the diversity of operations that operational amplifiers can perform in a wide range of applications
C205.6	To expose to a variety of electronic circuits/systems using various analog ICs

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C205.1	3	-	3	2	2	2	-	-	2	-	-	-
C205.2	3	3	3	2	2	2	-	-	2	-	-	-
C205.3	3	3	3	2	2	2	-	-	2	-	-	-
C205.4	3	3	3	2	2	2	-	-	2	-	-	-
C205.5	3	3	3	2	2	2	-	-	2	-	-	-
C205.6	3	3	3	2	2	2	-	-	2	-	-	-
C205	3	3	3	2	2	2	-	-	2	-	-	-

CO'S	PSO1	PSO2	PSO3
C205.1	3	3	2
C205.2	3	3	2
C205.3	3	3	2
C205.4	3	3	2
C205.5	3	3	2
C205.6	3	3	2
C205	3	3	2

## HS210 LIFE SKILLS

SUBJECT CODE: C206	
COURSE OUTCOMES	
C206.1	Acquire knowledge to communicate effectively and make effective presentation
C206.2	Acquire knowledge to write different types of reports
C206.3	Identify how to face an interview and can make effective group discussion
C206.4	Capable of critically think on a particular problem and solve it.
C206.5	Work in groups & teams and can handle engineering ethics and human values

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C206.1	-	-	2	-	-	2	3	3	-	-	2	2
C206.2	-	-	2	3	-	2	3	3	-	-	2	2
C206.3	-	-	2	3	-	2	3	3	-	-	2	2
C206.4	-	-	2	-	-	2	3	3	-	-	2	2
C206.5	-	-	2	3	-	2	3	3	-	-	2	2
C206	-	-	2.00	3.00	-	2.00	3.00	3.00	-	-	2.00	2.00

CO'S	PSO1	PSO2	PSO3
C206.1	-	-	-
C206.2	-	-	-
C206.3	-	-	-
C206.4	-	-	-
C206.5	-	-	-
C206	-	-	-



**CS231 DATA STRUCTURES LAB**

<b>SUBJECT CODE: C207</b>	
<b>COURSE OUTCOMES</b>	
C207.1	Understand the importance of structure and abstract data type, and their basic usability in different applications.
C207.2	Analyze and differentiate different algorithms based on their time complexity.
C207.3	Implement linear and non linear data structures using linked lists.
C207.4	Understand and apply various data structure such as stacks, queues, trees, graphs, etc. to solve various computing problems.
C207.5	Implement various kinds of searching and sorting techniques, and decide when to choose which technique.
C207.6	Identify and use a suitable data structure and algorithm to solve a real world problem.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C207.1	3	3	3	-	-	-	-	3	3	3	-	-
C207.2	2	2	3	-	-	-	-	3	2	3	-	-
C207.3	3	3	3	-	3	-	-	3	3	3	-	-
C207.4	2	3	3	2	2	-	-	-	-	-	-	-
C207.5	3	3	3	3	3	-	-	3	3	3	-	-
C207.6	3	2	3	-	2	-	-	3	2	3	-	-
C207	2.67	2.67	3	2.5	2.5	-	-	3	2.6	3	-	-

CO'S	PSO1	PSO2	PSO3
C207.1	-	3	2
C207.2	2	3	3
C207.3	-	-	2
C207.4	-	3	-
C207.5	3	-	-
C207.6	-	3	3
C207	2.5	3	2.5

**CS233 ELECTRONICS CIRCUITS LAB**

SUBJECT CODE: C208	
COURSE OUTCOMES	
C208.1	Rate your knowledge about clipper and clamper circuits
C208.2	Rate your knowledge to design inverting and non-inverting amplifier circuits using opamp
C208.3	Rate your understanding about applications of multi-vibrator circuit
C208.4	Rate your knowledge to design RC phase shift oscillator
C208.5	Rate your knowledge about diode, RC circuits
C208.6	Rate your knowledge about regulator circuits

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C208.1	3	3	3	2	2	2	-	-	2	2	-	-
C208.2	3	3	3	2	2	2	-	2	2	2	-	2
C208.3	3	3	3	2	2	2		-	2	2	2	2
C208.4	3	3	3	2		2	2	-	2	3	-	-
C208.5	3	3	3	2	2	2	2	-	2	3	2	2
C208.6	3	3	3	2	2	2	-	-	2	-	-	-
C208	3	3	3	2	2	2	2	2	2	2.4	2	2

CO'S	PSO1	PSO2	PSO3
C208.1	-	2	2
C208.2	-	2	2
C208.3	2	2	2
C208.4	2	1	2
C208.5	2	1	3
C208.6	2	2	2
C208	2	1.57	2.17

## SEMESTER 4

### MA202 PROBABILITY DISTRIBUTIONS, TRANSFORMS AND NUMERICAL METHODS

SUBJECT CODE: C209	
COURSE OUTCOMES	
C209.1	Understand the concept of discrete probability distribution.
C209.2	Acquire knowledge about the concept of continuous probability distribution.
C209.3	Analyze Fourier integrals and transforms in various engineering applications
C209.4	Understand the concept and applications of Laplace transforms
C209.5	Acquire knowledge to solve various engineering problems using various numerical methods like Newton- Raphson Method, Lagrange's Interpolation formula, Newton's Forward & Backward difference formula.
C209.6	Solve various engineering problems using various numerical methods like Gauss Elimination, Gauss Seidal Iteration Method etc.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C209.1	3	3	3	3	-	-	-	-	-	-	-	3
C209.2	3	3	3	3	-	-	-	-	-	-	-	3
C209.3	3	3	3	3	-	-	-	-	-	-	-	3
C209.4	3	3	3	3	-	-	-	-	-	-	-	3
C209.5	3	3	3	3	-	-	-	-	-	-	-	3
C209.6	3	3	3	3	-	-	-	-	-	-	-	3
C209	3.00	3.00	3.00	3.00	-	-	-	-	-	-	-	3.00

CO'S	PSO1	PSO2	PSO3
C209.1	2	2	-
C209.2	2	2	-
C209.3	2	2	-
C209.4	3	3	-
C209.5	3	3	-
C209.6	3	3	3
C209	2.5	2.5	3

## CS202 COMPUTER ORGANIZATION AND ARCHITECTURE

SUBJECT CODE: C210	
COURSE OUTCOMES	
C210.1	To identify the basic structure and functional units of a digital computer. And analyze the effect of addressing modes on the execution time of a program
C210.2	To design processing unit using the concepts of ALU and control logic design.
C210.3	To select appropriate interfacing standards for I/O devices.
C210.4	To identify the pros and cons of different types of Memory systems and understand mapping functions.
C210.5	To select appropriate interfacing standards for I/O devices.
C210.6	To identify the roles of various functional units of a computer in instruction execution. And analyze the types of control logic design in processors.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C210.1	3	2	2	-	-	-	-	-	-	-	-	2
C210.2	3	3	-	-	2	-	-	-	-	-	-	2
C210.3	3	2	-	-	2	-	-	-	-	-	-	2
C210.4	3	2	2	-	-	-	-	-	-	-	-	2
C210.5	3	3	3	-	-	-	-	-	-	-	-	-
C210.6	3	2	-	-	2	-	-	-	-	-	-	2
C210	3	2.3	2.3	-	2	-	-	-	-	-	-	2

CO'S	PSO1	PSO2	PSO3
C210.1	3	-	-
C210.2	3	-	2
C210.3	3	-	2
C210.4	-	-	-
C210.5	2	3	-
C210.6	2	3	-
C210	2.6	3	2

## CS204 OPERATING SYSTEMS

SUBJECT CODE: C211	
COURSE OUTCOMES	
C211.1	Identify the significance of operating system in computing devices and exemplify the communication between application programs and hardware devices through system calls.
C211.2	Apply knowledge of Process on Inter Process Communication.
C211.3	Compare and illustrate Synchronization process and Classical Synchronization Problems.
C211.4	Analyze CPU Scheduling to illustrate various process scheduling algorithms.
C211.5	Learn the concept of Memory Management.
C211.6	Appreciate the need of access control and protection in an operating system. To apply and illustrate appropriate memory and file management schemes and various disk scheduling algorithms

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C211.1	3	-	-	-	-	-	-	-	-	-	-	2
C211.2	3	2	-	3	2	-	-	-	-	-	-	3
C211.3	3	3	-	2	2	-	-	-	-	-	-	2
C211.4	3	2	3	3	2	-	-	-	-	-	-	2
C211.5	3	2	-	-	-	-	-	-	-	-	-	3
C211.6	3	2	2	2	3	-	-	3	-	-	-	3
C211	3	2.2	2.5	2.5	2.25	-	-	3	-	-	-	2.5

CO'S	PSO1	PSO2	PSO3
C211.1	2	3	-
C211.2	3	3	-
C211.3	3	3	-
C211.4	3	3	-
C211.5	2	3	-
C211.6	3	3	3
C211	2.67	3	3

## CS206 OBJECT ORIENTED DESIGN AND PROGRAMMING

SUBJECT CODE: C212	
COURSE OUTCOMES	
C212.1	To apply object oriented principles in software design process.
C212.2	To develop Java programs for real applications using java constructs and libraries.
C212.3	To understand and apply various object oriented features like inheritance, data abstraction, encapsulation and polymorphism to solve various computing problems using Java language
C212.4	To implement Exception Handling in java
C212.5	Use graphical user interface and Event handling in Java
C212.6	To develop and deploy Applet in java

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C212.1	3	3	-	-	-	-	-	-	-	-	-	-
C212.2	3	-	3	-	-	-	-	-	-	-	-	-
C212.3	-	3	-	3	3	-	-	-	-	-	-	-
C212.4	-	-	-	3	3	-	-	-	-	-	-	-
C212.5	-	-	3	-	-	-	-	-	-	-	-	-
C212.6	-	-	3	-	-	-	-	-	-	-	-	-
C212	3	3	3	3	3	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C212.1	-	2	-
C212.2	2	2	2
C212.3	2	2	2
C212.4	-	-	3
C212.5	-	-	2
C212.6	-	-	3
C212	2	2	2.4

**CS208 PRINCIPLES OF DATABASE DESIGN**

<b>SUBJECT CODE: C213</b>	
<b>COURSE OUTCOMES</b>	
C213.1	Define, explain and illustrate the fundamental concepts of databases.
C213.2	Construct an E-R model from specifications to perform the transformation of the conceptual model into corresponding logical data structures.
C213.3	Model and design a relational database following the design principles.
C213.4	Develop queries for relational database in the context of practical applications.
C213.5	Define, explain and illustrate fundamental principles of data organization, query optimization and concurrent transaction processing.
C213.6	Acquire knowledge about the latest trends in databases.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C213.1	-	3	3	3	3	-	-	-	-	-	-	-
C213.2	3	3	3	-	-	-	-	-	-	-	-	-
C213.3	3	3	3	3	3	-	-	-	-	-	-	-
C213.4	3	3	3	3	2	-	-	-	-	-	-	-
C213.5	3	2	2	2	2	-	-	-	2	-	-	-
C213.6	3	2	2	2	3	-	-	-	-	-	-	-
C213	3	2.67	2.67	2.16	2.16	-	-	-	2	-	-	-

CO'S	PSO1	PSO2	PSO3
C213.1	3	3	3
C213.2	-	3	3
C213.3	3	-	-
C213.4	-	3	3
C213.5	3	-	-
C213.6	-	-	2
C213	3	3	2.75

## HS200 BUSINESS ECONOMICS

SUBJECT CODE: C214	
COURSE OUTCOMES	
C214.1	Understand the prospective engineers with elementary Principles of Economics and Business Economics.
C214.2	Acquaint the students with tools and techniques that are useful in their profession in Business Decision Making which will enhance their employability;
C214.3	Apply business analysis to the “firm” under different market conditions;
C214.4	Apply economic models to examine current economic scenario and evaluate policy options for addressing economic issues
C214.5	Gain understanding of some Macroeconomic concepts to improve their ability to understand the business climate
C214.6	Prepare and analyze various business tools like balance sheet, cost benefit analysis and rate of returns at an elementary level

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C214.1	-	1	2	-	-	2	2	2	-	2	2	2
C214.2	-	1	2	-	-	2	2	2	-	2	2	2
C214.3	-	1	2	-	-	2	2	2	-	2	2	2
C214.4	-	1	2	-	-	2	2	2	-	2	2	2
C214.5	-	1	2	-	-	2	2	2	-	2	2	2
C214.6	-	1	2	-	-	2	2	2	-	2	2	2
C214	-	1.00	2.00	-	-	2.00	2.00	2.00	-	2.00	2.00	2.00

CO'S	PSO1	PSO2	PSO3
C214.1	-	-	-
C214.2	-	-	-
C214.3	-	-	-
C214.4	-	-	-
C214.5	-	-	-
C214.6	-	-	-
C214	-	-	-



## CS232 FREE AND OPEN SOURCE SOFTWARE LAB

SUBJECT CODE: C215	
COURSE OUTCOMES	
C215.1	To identify and apply various Linux Commands
C215.2	To develop shell scripts and GUI for specific needs
C215.3	To apply tools like GIT version control
C215.4	To implement basic level application deployment, kernel configuration and installation, packet management and installation etc.
C215.5	To understand formulating scripts for text processing and regular expression using Perl, Awk commands
C215.6	To apply the scripting language to solve real world problems

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C215.1	3	3	3	2	-	-	-	3	3	3	-	3
C215.2	2	-	3	-	3	-	-	3	3	3	-	3
C215.3	3	-	3	-	3	-	-	3	3	3	-	3
C215.4	3	-	2	2	3	-	-	3	3	3	-	3
C215.5	2	-	3	-	3	-	-	3	3	3	-	3
C215.6	3	3	3	2	3	-	-	3	3	3	-	3
C215	2.67	3	2.83	2	3	-	-	3	3	3	-	3

CO'S	PSO1	PSO2	PSO3
C215.1	3	3	3
C215.2	2	3	3
C215.3	3	2	3
C215.4	3	-	3
C215.5	2	3	3
C215.6	3	3	3
C215	2.67	2.8	3

**CS234 DIGITAL SYSTEM LAB**

SUBJECT CODE: C216	
COURSE OUTCOMES	
C216.1	To familiarize with different logic gates and IC's
C216.2	To design digital circuits such as adders, subtractors.
C216.3	Understand the concepts and will be capable of designing counters that are event driven.
C216.4	To acquire knowledge and will be capable of designing counters that are clock driven.
C216.5	Understand the concepts and will be capable of designing counters and shift registers
C216.6	Students will be capable of designing high level digital systems using hardware language.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C216.1	3	3	-	2	-	-	-	-	-	-	-	-
C216.2	3	3	3	2	-	-	-	-	-	-	-	-
C216.3	3	3	3	2	-	-	-	-	-	-	-	-
C216.4	3	3	3	2	2	-	-	-	-	-	-	-
C216.5	3	3	3	2	2	-	-	-	-	-	-	-
C216.6	3	3	3	2	2	-	-	-	-	-	-	-
C216	3	3	3	2	2	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C216.1	3	2	-
C216.2	3	2	-
C216.3	-	3	2
C216.4	3	2	-
C216.5	-	3	2
C216.6	-	2	3
C216	3	2.33	2.33

**THIRD YEAR- SEMESTER 5 & 6**

<b>SUBJECT CODE</b>	<b>MAPPING CODE</b>	<b>SUBJECT NAME</b>
CS301	C301	THEORY OF COMPUTATION
CS303	C302	SYSTEM SOFTWARE
CS305	C303	MICROPROCESSOR AND MICROCONTROLLERS
CS307	C304	DATA COMMUNICATION
CS309	C305	GRAPH THEORY AND COMBINOTRICS
CS361	C306	SOFT COMPUTING
CS365	C307	OPTIMIZATION TECHNIQUES
CS367	C308	LOGIC FOR COMPUTER SCIENCE
CS341	C309	DESIGN PROJECT
CS331	C310	SYSTEM SOFTWARE LAB
CS333	C311	APPLICATION SOFTWARE AND DEVELOPMENT LAB
CS302	C312	DESIGN AND ANALYSIS OF ALGORITHMS
CS304	C313	COMPILER DESIGN
CS306	C314	COMPUTER NETWORKS
CS308	C315	SOFTWARE ENGG. & PROJECT MANAGEMENT
HS300	C316	PRINCIPLES OF MANAGEMENT
CS364	C317	MOBILE COMPUTING
CS366	C318	NATURAL LANGUAGE PROCESSING
CS368	C319	WEB TECHNOLOGIES
CS352	C320	COMPREHENSIVE EXAM
CS332	C321	MICROPROCESSOR LAB
CS334	C322	NETWORK PROGRAMMING LAB

## SEMESTER 5

### CS301 THEORY OF COMPUTATION

SUBJECT CODE: C301	
COURSE OUTCOMES	
C301.1	To identify various formal languages such as regular, context-free, context sensitive and unrestricted languages.
C301.2	Designing finite state automata, regular grammar, regular expression and Myhill- Nerode relation representations for regular languages
C301.3	Implement the concept of pumping lemma for regular language and represent context free grammar for context free languages
C301.4	Design push-down automata and context-free grammar representations for context-free languages.
C301.5	Design Turing Machines for accepting recursively enumerable languages.
C301.6	To Acquire knowledge about the usage of various types of Turing machines and their working and to identify the notions of decidability and undecidability of problems, Halting problem

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C301.1	3	-	-	-	-	-	-	-	-	-	-	3
C301.2	-	3	3	2	-	-	-	-	-	-	-	3
C301.3	-	3	3	3	-	-	-	-	-	-	-	3
C301.4	-	3	3	2	2	-	-	-	-	-	-	3
C301.5	-	3	3	3	-	-	-	-	-	-	-	3
C301.6	-	3	3	2	-	-	-	-	-	-	-	3
C301	3	3	3	2.4	2	-	-	-	-	-	-	3

CO'S	PSO1	PSO2	PSO3
C301.1	3	-	-
C301.2	3	2	-
C301.3	3	2	-
C301.4	3	3	-
C301.5	3	3	-
C301.6	3	3	-
C301	3	2.6	-

## CS303 SYSTEM SOFTWARE

SUBJECT CODE: C302	
COURSE OUTCOMES	
C302.1	To identify and classify different software into different categories.
C302.2	To design, analyze and implement two pass assembler
C302.3	To design, analyze and implement one pass and multi pass assembler.
C302.4	To design, analyze and implement linkers and loaders
C302.5	To design, analyze and implement macro processors.
C302.6	To critique the features of modern editing /debugging tools.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302.1	3	-	-	-	-	-	-	-	-	-	-	-
C302.2	3	3	3	2	-	-	-	-	-	-	-	-
C302.3	3	3	3	2	-	-	-	-	-	-	-	-
C302.4	3	3	3	-	-	-	-	-	-	-	-	-
C302.5	3	3	3	-	-	-	-	-	-	-	-	-
C302.6	3	2	-	-	-	-	-	-	-	-	-	-
C302	3	2.8	3	2	-	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C302.1	3	-	-
C302.2	3	2	-
C302.3	3	2	-
C302.4	3	2	-
C302.5	3	2	-
C302.6	3	-	-
C302	3	2	-

## CS305 MICROPROCESSOR AND MICROCONTROLLERS

SUBJECT CODE: C303	
COURSE OUTCOMES	
C303.1	To describe different modes of operations of a typical microprocessor.
C303.2	To design and develop 8086 assembly language programs using software interrupts and various assembler directives
C303.3	To develop Interface microprocessors with various external devices.
C303.4	To analyze and compare the features of microprocessors and microcontrollers
C303.5	To analyse different addressing modes of 8051
C303.6	To design and develop assembly language programs using 8051 microcontroller.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C303.1	2	-	-	-	-	-	-	-	-	-	-	-
C303.2	-	2	-	-	-	-	-	-	-	-	-	-
C303.3	-	-	3	-	-	-	-	-	-	-	-	-
C303.4	-	2	-	-	-	-	-	-	-	-	-	-
C303.5	2	-	3	-	-	-	-	-	-	-	-	-
C303.6	2	-	-	-	-	-	-	-	-	-	-	-
C303	2	2	3	-	-	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C303.1	2	-	3
C303.2	2	-	3
C303.3	3	-	2
C303.4	2	-	2
C303.5	-	2	2
C303.6	2	3	2
C303	2.2	2.5	2.83

## CS307 DATA COMMUNICATION

SUBJECT CODE: C304	
COURSE OUTCOMES	
C304.1	Analyze the fundamental communication model and transmission impairments in communication system
C304.2	Acquire knowledge and select transmission media based on transmission impairments and channel capacity.
C304.3	Analyze and Compare the different signal encoding techniques
C304.4	Illustrate and Use various multiplexing techniques for a real time use.
C304.5	Implement suitable error detection and error correction algorithms to achieve error free data communication
C304.6	Learn and explain different switching techniques and spread spectrum techniques.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C304.1	3	3	3	2	-	3	-	-	-	-	-	3
C304.2	3	3	2	2	-	3	-	-	-	-	-	2
C304.3	3	3	3	3	-	2	-	-	-	-	-	2
C304.4	3	3	3	3	-	2	-	-	-	-	-	2
C304.5	3	3	3	3	3	-	-	-	-	-	-	3
C304.6	3	3	3	2	-	-	-	-	-	-	-	2
C304	3	3	2.83	2.5	3	2.5	-	-	-	-	-	2.33

CO'S	PSO1	PSO2	PSO3
C304.1	-	2	-
C304.2	-	-	-
C304.3	3	-	-
C304.4	-	3	-
C304.5	3	3	-
C304.6	3	-	-
C304	3	2.67	-

**CS309 GRAPH THE THEORY AND COMBINOTRICSCS**

<b>SUBJECT CODE: C305</b>	
<b>COURSE OUTCOMES</b>	
C305.1	Demonstrate the knowledge of properties of graphs.
C305.2	Demonstrate the knowledge of characterization of graphs.
C305.3	Demonstrate the knowledge of properties and characterization of trees.
C305.4	Distinguish between planar and non-planar graphs and solve problems.
C305.5	Use graphs for solving real life problems.
C305.6	Develop efficient algorithms for graph related problems in different domains of engineering and science.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C305.1	3	-	-	-	-	-	-	-	-	-	-	-
C305.2	3	-	-	-	-	-	-	-	-	-	-	-
C305.3	3	-	-	-	-	-	-	-	-	-	-	-
C305.4	-	3	3	3	-	-	-	-	-	-	-	-
C305.5	-	3	3	3	-	-	-	-	-	-	-	-
C305.6	-	3	3	3	-	-	-	-	-	-	-	-
C305	3	3	3	3	-	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C305.1	3	-	-
C305.2	3	-	-
C305.3	3	-	-
C305.4	-	3	3
C305.5	-	3	3
C305.6	-	3	3
C305	3	3	3



**CS361 SOFTCOMPUTING**

<b>SUBJECT CODE: C306</b>	
<b>COURSE OUTCOMES</b>	
C306.1	To acquire knowledge in fundamentals of artificial neural networks
C306.2	To analyze various neural network architectures
C306.3	To acquire knowledge in the usage of various operations on fuzzy systems
C306.4	To learn the implementation of Fuzzy membership functions
C306.5	To identify fuzzy rules and to illustrate the methods of fuzzy inference systems
C306.6	To learn the genetic algorithm concepts and their applications

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C306.1	3	2	-	2	-	-	-	-	-	-	2	3
C306.2	3	2	-	2	2	-	-	-	2	-	-	3
C306.3	3	3	-	2	3	-	-	-	2	-	2	3
C306.4	2	2	2	3	2	-	-	-	2	-	2	3
C306.5	3	2	-	2	2	2	-	-	2	-	-	3
C306.6	2	3	2	2	2	2	-	-	2	-	2	3
C306	2.67	2.33	2	2.16	2.2	2	-	-	2	-	2	3

CO'S	PSO1	PSO2	PSO3
C306.1	3	2	-
C306.2	3	2	-
C306.3	3	2	2
C306.4	3	3	3
C306.5	3	3	3
C306.6	3	3	3
C306	3	2.5	2.75

## CS365 OPTIMIZATION TECHNIQUES

SUBJECT CODE: C307	
COURSE OUTCOMES	
C307.1	Organize and make decision for optimization problem
C307.2	Understand and apply various functions of optimization Functions
C307.3	Analyze and apply unconstrained functions and Linear Programming
C307.4	Learn the various tests for optimality and apply
C307.5	Analyze the Network by linear programming and shortest route
C307.6	Apply GA for optimized solution in various problems

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C307.1	3	3	3	3	3	-	-	-	-	-	-	-
C307.2	3	3	3	3	3	-	-	-	-	-	-	-
C307.3	3	3	3	3	3	-	-	-	-	-	-	-
C307.4	3	3	3	3	3	-	-	-	-	-	-	-
C307.5	3	3	3	3	3	-	-	-	-	-	-	-
C307.6	3	3	3	3	3	-	-	-	-	-	-	-
C307	3	3	3	3	3	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C307.1	3	3	-
C307.2	3	3	-
C307.3	3	3	-
C307.4	3	3	-
C307.5	3	3	-
C307.6	3	3	-
C307	3	3	-

**CS367 LOGIC FOR COMPUTER SCIENCE**

<b>SUBJECT CODE: C308</b>	
<b>COURSE OUTCOMES</b>	
C308.1	Students are able to acquire knowledge about logic and its importance
C308.2	Students are able to acquire fundamental concepts in propositional logic and apply resolution techniques.
C308.3	Students are able to acquire fundamental concepts in predicate logic and apply resolution techniques.
C308.4	Students are able to acquire fundamental concepts in temporal logic and apply resolution techniques.
C308.5	Students are able to use the concept of program verification and apply that concepts in real world scenarios
C308.6	Students are able to acquire knowledge in modal logic

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C308.1	3	3	2	3	-	-	-	-	-	-	-	-
C308.2	2	2	3	-	-	-	-	-	-	-	-	-
C308.3	3	2	3	2	-	-	-	-	-	-	-	-
C308.4	2	3	3	3	-	-	-	-	-	-	-	-
C308.5	-	2	2	2	-	-	-	-	-	-	-	-
C308.6	2	2	2	2	-	-	-	-	-	-	-	-
C308	2.4	2.33	2.5	2.4	-	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C308.1	2	2	2
C308.2	3	-	-
C308.3	3	-	-
C308.4	3	-	-
C308.5	2	2-	-
C308.6	2	2	-
C308	2.5	2	2

## CS341 DESIGN PROJECT

SUBJECT CODE: C309	
COURSE OUTCOMES	
C309.1	To understand the engineering aspects of design with reference to simple products.
C309.2	To apply innovation in design of products, processes or systems
C309.3	To understand different CASE tools required for various levels of design
C309.4	To implement design that add value to products and solve technical problems
C309.5	To design and manage creative teams and project processes effectively and efficiently
C309.6	To develop high quality documentation and present a clear view effectively to all ranges of audiences.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C309.1	3	3	3		2	2	3	3	3	3	3	3
C309.2	3	3	3	2	2	2	3	3	3	3	3	3
C309.3	3	3	2	2	3	-	-	3	3	3	3	3
C309.4	3	2	3	3	2	2	3	3	3	3	3	3
C309.5	-	-	-	-	-	-	-	3	3	3	3	3
C309.6	2	-	-	-	-	2	-	3	3	3	3	3
C309	2.8	2.5	2.5	2.3	2.2	2	3	3	3	3	3	3

CO'S	PSO1	PSO2	PSO3
C309.1	3	-	3
C309.2	3	3	3
C309.3	3	-	3
C309.4	3	3	3
C309.5	-	3	3
C309.6	-	-	3
C309	3	3	3

**CS331 SYSTEM SOFTWARE LAB**

SUBJECT CODE: C310	
COURSE OUTCOMES	
C310.1	To distinguish different software into different categories.
C310.2	To design, analyze and implement one pass, two pass or multi pass assembler.
C310.3	To design, analyze and implement loader and linker
C310.4	To design, analyze and implement macro processors.
C310.5	To critique the features of modern editing /debugging tools.
C310.6	Able to trace the path of a source code to object code and the executable file

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C310.1	-	3	-	-	-	-	-	-	-	-	-	-
C310.2	-	-	2	-	-	-	-	-	-	-	-	-
C310.3	-	-	2	2	-	-	-	-	-	-	-	-
C310.4	3	2	-	-	-	-	-	-	-	-	-	-
C310.5	-	-	3	-	-	-	-	-	-	-	-	-
C310.6	2	3	3	-	-	-	-	2	-	-	-	-
C310	2.5	2.67	2.5	2	-	-	-	2	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C310.1	2	2	-
C310.2	2	3	-
C310.3	3	3	-
C310.4	3	3	-
C310.5	-	-	2
C310.6	2	-	2
C310	2.4	2.75	2

**CS333 APPLICATION SOFTWARE AND DEVELOPMENT LAB**

<b>SUBJECT CODE: C311</b>	
<b>COURSE OUTCOMES</b>	
C311.1	Design a database for a given problem using database design principles.
C311.2	Implement database for a given problem.
C311.3	Apply stored programming concepts (PL-SQL) using Cursors and Triggers.
C311.4	Use graphical user interface, Event Handling and Database connectivity to develop and deploy applications.
C311.5	Use graphical user interface, Event Handling and Database connectivity to develop and deploy applets.
C311.6	Develop medium-sized project in a team.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311.1	-	-	3	3	-	-	-	-	-	-	-	-
C311.2	-	-	3		-	-	-	-	-	-	-	-
C311.3	-	3	3	3	2	-	-	-	-	-	-	-
C311.4	-	3	3	3	-	-	-	-	-	-	-	-
C311.5	-	3	3	3	-	-	-	-	-	-	-	-
C311.6	-		3	3	-	-	-	-	3	-	-	-
C311	-	3	3	3	2	-	-	-	3	-	-	-

CO'S	PSO1	PSO2	PSO3
C311.1	-	3	-
C311.2	-	-	3
C311.3	3	-	-
C311.4	3	-	-
C311.5	3	-	-
C311.6	-	-	3
C311	3	3	3

## SEMESTER 6

### CS302 DESIGN AND ANALYSIS OF ALGORITHM

SUBJECT CODE: C312	
COURSE OUTCOMES	
C312.1	To Analyze a given algorithm and express its time and space complexities and also analyze different recurrence methods.
C312.2	To use the Master's Theorem to find the complexity and to design different types of trees.
C312.3	To Apply traversals, shortest path finding algorithms into graphs.
C312.4	To Analyze different algorithm methods like dynamic programming and divide and conquer strategies.
C312.5	To Implement Optimization problems using Greedy strategy.
C312.6	To Design efficient algorithms using Back Tracking and Branch Bound Techniques for solving problems and to apply computational problems into P, NP, NP-Hard and NP-Complete.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C312.1	3	3	3	2	2	-	-	-	-	-	-	-
C312.2	3	3	3	2	-	-	-	-	-	-	-	-
C312.3	3	3	3	2	2	-	-	-	-	-	-	-
C312.4	3	3	3	2	2	-	-	-	-	-	-	-
C312.5	3	3	3	2	2	-	-	-	-	-	-	-
C312.6	3	3	3	2	-	-	-	-	-	-	-	-
C312	3	3	3	2	2	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C312.1	3	3	-
C312.2	3	3	-
C312.3	3	3	-
C312.4	3	3	-
C312.5	3	3	-
C312.6	3	3	-
C312	3	3	-

## CS304 COMPILER DESIGN

SUBJECT CODE: C313	
COURSE OUTCOMES	
C313.1	To acquire the knowledge on concepts and different phases of compilation with compile time error handling.
C313.2	To design lexical analyzer for a language and can represent language tokens using regular expressions, context free grammar and finite automata
C313.3	To acquire the knowledge on top down and bottom up parsers, and can develop appropriate parser to produce parse tree representation of the input.
C313.4	To generate intermediate code for statements in high level language.
C313.5	To design syntax directed translation schemes for a given context free grammar
C313.6	To apply optimization techniques to intermediate code and generate machine code for high level language program.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C313.1	3	3	-	-	-	-	-	-	-	-	-	-
C313.2	2	3	3	2	3	-	-	-	-	-	-	-
C313.3	3	3	3	-	-	-	-	-	-	-	-	-
C313.4	2	3	3	3	3	-	-	-	-	-	-	-
C313.5	3	3	3	3	-	-	-	-	-	-	-	-
C313.6	3	3	-	3	3	-	-	-	-	-	-	-
C313	3	3	3		3	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C313.1	3	-	-
C313.2	3	3	-
C313.3	3	3	
C313.4	-	-	3
C313.5	-	3	-
C313.6	-	3	3
C313	3	3	3



## CS306 COMPUTER NETWORKS

SUBJECT CODE: C314	
COURSE OUTCOMES	
C314.1	Visualise the different aspects of networks, protocols and network design models.
C314.2	Examine various Data Link layer design issues and Data Link protocols.
C314.3	Compare and select appropriate routing algorithms for a network.
C314.4	Learn various advanced internetworking concepts like IP addressing, subnetting and QoS and apply it in designing network
C314.5	Examine the important aspects and functions of internet control protocol.
C314.6	Analyze the various features and functions of transport and application layer in network.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C314.1	3	3	3	-	3	2	-	-	-	-	-	2
C314.2	2	3	3	3	3		-	-	-	-	-	2
C314.3	3	3	3	3	-	2	-	-	-	-	-	2
C314.4	3	3	3	2	3	3	-	2	-	-	-	3
C314.5	3	2	3	3	-	-	-	-	-	-	-	3
C314.6	3	2	2	2	2	-	-	-	-	-	-	2
C314	2.83	2.67	2.83	2.6	2.75	2.33	-	2	-	-	-	2.33

CO'S	PSO1	PSO2	PSO3
C314.1	3	-	-
C314.2	3	-	-
C314.3	3	-	-
C314.4	-	3	-
C314.5	-	2	-
C314.6	-	3	-
C314	3	2.67	-

**CS308 SOFTWARE ENGINEERING AND PROJECT MANAGEMENT**

<b>SUBJECT CODE: C315</b>	
<b>COURSE OUTCOMES</b>	
C315.1	To Analyze a problem, define and identify the computing requirements appropriate to its solution using software life cycle models.
C315.2	To understand various process models and identify phases of software development.
C315.3	To apply the planning phase and translate a requirement specification to a design using an appropriate software engineering methodology.
C315.4	To demonstrate various coding standards and appropriate testing strategy for the given software system.
C315.5	To apply different maintenance process and risk management activities.
C315.6	To develop software projects based on current technology by managing resources economically and keeping ethical values.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C315.1	3	3	3	-	-	3	-	-	2	2	-	3
C315.2	2	3	-	-	-	-	-	-	3	-	-	-
C315.3	-	-	3	3	3	3	-	-	-	-	3	-
C315.4	3	-	3	-	3	-	-	-	3	-	-	-
C315.5	-	-	-	3	3	-	-	-	-	-	2	-
C315.6	-	-	3	3	3	3	-	-	-	3	3	3
C315	2.67	3	3	3	3	3	-	-	2.67	2.5	2.67	3

CO'S	PSO1	PSO2	PSO3
C315.1	3	-	-
C315.2	3	-	-
C315.3	-	3	-
C315.4	-	-	3
C315.5	3	-	-
C315.6	-	-	3
C315	3	3	3

## HS300 PRINCIPLES OF MANAGEMENT

SUBJECT CODE: C316	
COURSE OUTCOMES	
C316.1	To analyze people and organizations for achieving competitive advantage.
C316.2	To analyze and evaluate management theories and practices.
C316.3	To develop ability to critically analyze the plan and make decisions for organizations.
C316.4	To analyze Organizing for decision making.
C316.5	To formulate staffing and related HRD functions
C316.6	Lead employees, subordinates and propose control activities in organisations.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C316.1	-	-	-	-	-	3	3	2	3	3	3	-
C316.2	-	3	-	-	3	-	-	-	-	-	3	3
C316.3	-	3	3	-	-	-	-	-	-	3	3	-
C316.4	-	-	-	-	-	3	-	-	3	3	3	3
C316.5	-	-	-	-	-	-	-	-	-	-	-	-
C316.6	-	-	-	-	-	3	-	3	3	3	3	3
C316	-	3	3	-	3	3	3	2.5	3	3	3	3

CO'S	PSO1	PSO2	PSO3
C316.1	3	2	-
C316.2	3	2	-
C316.3	3	2	-
C316.4	3	2	-
C316.5	3	2	-
C316.6	3	2	-
C316	3	2	-

## CS364 MOBILE COMPUTING

SUBJECT CODE: C316	
COURSE OUTCOMES	
C317.1	To acquire knowledge about various mobile computing applications, services and architecture
C317.2	To Understand about various wireless communication systems and techniques
C317.3	To use various routing protocols and acquire knowledge about protocol architectures used in Wireless LAN technology
C317.4	To learn about concepts in mobile internet and IP.
C317.5	To use key platforms and protocols for mobile application development
C317.6	To understand various security issues in mobile computing and new technological trends for next generation cellular networks

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C317.1	3	-	-	-	-	-	-	-	-	-	-	-
C317.2	3	3	3	3	2	-	-	-	-	-	-	-
C317.3	3	2	-	2	2	-	-	-	-	-	-	-
C317.4	3	2	2	2	2	-	-	-	-	-	-	-
C317.5	3	3	3	3	3	-	-	-	-	-	-	-
C317.6	3	3	3	3	3	3	-	-	-	-	-	-
C317	3	2.67	2.75	2.6	2.4	3	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C317.1	-	-	-
C317.2	2	-	-
C317.3	-	-	-
C317.4	-	-	2
C317.5	2	-	3
C317.6	2	-	-
C317	2	-	2.5

## CS366 NATURAL LANGUAGE PROCESSING

SUBJECT CODE: C318	
COURSE OUTCOMES	
C318.1	To identify the fundamental concepts of Natural Language Processing
C318.2	To illustrate grammars and different parsing methods
C318.3	To analyze various ambiguity resolution strategies and other strategies for semantic interpretation
C318.4	To identify various strategies in semantic interpretation
C318.5	Design algorithms for NLP tasks inferring world knowledge and discourse structure
C318.6	To Evaluate concepts of NLP with its applications and develop useful

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C318.1	3	-	-	-	-	-	-	-	-	-	-	2
C318.2	3	2	-	-	-	-	-	-	-	-	-	2
C318.3	3	3	2	3	-	-	-	-	-	-	-	2
C318.4	2	3	2	-	-	-	-	-	-	-	-	2
C318.5	3	2	3	3	-	-	-	-	-	-	-	2
C318.6	3	-	2	-	2	2	-	2	-	-	-	3
C318	2.83	2.5	2.25	3	2	2	-	2	-	-	-	2.16

CO'S	PSO1	PSO2	PSO3
C318.1	2	-	-
C318.2	-	-	-
C318.3	3	2	-
C318.4	3	2	-
C318.5	3	2	-
C318.6	2	2	3
C318	2.6	2	3

## CS368 WEB TECHNOLOGIES

SUBJECT CODE: C319	
COURSE OUTCOMES	
C319.1	To understand different component in web technology and learn about CGI and CMS.
C319.2	To develop interactive web pages using HTML/XHTML
C319.3	To design a web page using cascading style sheets.
C319.4	To develop user interactive websites using Javascript and JQuery
C319.5	To acquire knowledge about different information interchange formats like XML and JSON
C319.6	To develop web applications using PHP.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C319.1	3	3	-	-	-	-	-	-	-	-	-	2
C319.2	3	-	3	-	3	-	-	-	-	-	-	-
C319.3	3	-	3	-	3	-	-	-	-	-	-	-
C319.4	3	-	3	-	3	-	-	-	-	-	-	-
C319.5	3	3	-	-	-	-	-	-	-	-	-	-
C319.6	3	-	3	-	3	-	-	-	-	-	-	-
C319	3	3	3	-	3	-	-	-	-	-	-	2

CO'S	PSO1	PSO2	PSO3
C319.1	-	-	3
C319.2	3	3	3
C319.3	-	2	3
C319.4	3	3	3
C319.5	-	2	3
C319.6	3	3	3
C319	3	2.6	3

**CS352 COMPREHENSIVE EXAM**

SUBJECT CODE: C320	
COURSE OUTCOMES	
C320.1	To understand fundamental aspects of engineering problems or situation and to analyze how to deal with it.
C320.2	To learn theoretical concepts and complexities behind computation process using grammatical constructs and automata.
C320.3	To design the internal organization, operations, processor logic design and control logic design behind a computer.
C320.4	To learn fundamental purpose, structure, functions and the key design issues of an operating system.
C320.5	To understand and compare linear and non-linear data structures, their applications, various sorting and searching methods.
C320.6	To implement theory and applications of database management systems.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C320.1	3	3	3	-	-	-	3	-	2	3	3	3
C320.2	3	3	3	2	2	-	-	-	-	3	-	3
C320.3	3	2	2	3	2	-	-	-	-	3	-	2
C320.4	3	2	3	2	2	-	-	3	-	3	-	3
C320.5	3	3	3	2	2	-	-	-	-	3	-	2
C320.6	3	3	3	2	2	-	-	-	2	3	-	3
C320	3	2.67	2.83	2.2	2	-	3	3	2	3	3	2.67

CO'S	PSO1	PSO2	PSO3
C320.1	3	3	3
C320.2	3	3	-
C320.3	3	3	-
C320.4	3	3	3
C320.5	3	3	3
C320.6	3	3	3
C320	3	3	3

**CS332 MICROPROCESSOR LAB**

SUBJECT CODE: C321	
COURSE OUTCOMES	
C321.1	Get the basic knowledge of 8086 microprocessor programming and understand how to use trainer kit.
C321.2	Acquire the basic knowledge of 8051 microprocessor programming and understand how to use trainer kit.
C321.3	Acquiring the basic knowledge of programming students can apply it to program advanced controllers.
C321.4	Get the basic knowledge of Microprocessor & Microcontroller interfacing.
C321.5	To select, describe and apply the interfacing applications for developing their projects.
C321.6	Implementation of stepper motor interfacing, ADC/DAC interfacing and sensor interfacing with 8251

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C321.1	3	2	-	-	-	-	-	-	-	-	-	-
C321.2	3	3	2	-	-	-	-	-	-	-	-	-
C321.3	3	3	3	2	-	-	-	-	-	-	-	-
C321.4	3	2	-	-	-	-	-	-	-	-	-	-
C321.5	3	2	2	2	-	-	-	-	-	-	2	2
C321.6	3	2	-	-	-	-	-	-	-	-	2	2
C321	3	2.33	2.33	2	-	-	-	-	-	-	2	2

CO'S	PSO1	PSO2	PSO3
C321.1	2	-	-
C321.2	2	-	-
C321.3	-	-	3
C321.4	2	-	-
C321.5	-	-	3
C321.6	-	-	3
C321	2	-	3

**CS334 NETWORK PROGRAMMING LAB**



<b>SUBJECT CODE: C322</b>	
<b>COURSE OUTCOMES</b>	
C322.1	Demonstrate network configuration tools
C322.2	Analyses the network programming skill
C322.3	Use network related commands and configuration files in Linux Operating System.
C322.4	Develop operating system and network application programs
C322.5	Analyze network traffic using network monitoring tools.
C322.6	Identify the network trouble shooting command

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C322.1	3			-	-	-	-	-	-	-	-	-
C322.2	3			-	-	-	-	-	-	-	-	-
C322.3		3	3	-	-	-	-	-	-	-	-	-
C322.4		3	3	-	-	-	-	-	-	-	-	-
C322.5	3		2	-	-	-	-	-	-	-	-	-
C322.6		2		-	-	-	-	-	-	-	-	-
C322	3	2.67	2.67	-	-	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C322.1	3	2	-
C322.2	2	3	-
C322.3	2	3	-
C322.4	-	-	3
C322.5	-	-	3
C322.6	-	-	2
C322	2.33	2.67	2.67

**FOURTH YEAR- SEMESTER 7 & 8**

<b>SUBJECT CODE</b>	<b>MAPPING CODE</b>	<b>SUBJECT NAME</b>
CS401	<b>C401</b>	COMPUTER GRAPHICS
CS403	<b>C402</b>	PROGRAMMING PARADIGM
CS405	<b>C403</b>	COMPUTER SYSTEM ARCHITECTURE
CS407	<b>C404</b>	DISTRIBUTED COMPUTING
CS409	<b>C405</b>	CRYPTOGRAPHY AND NETWORK SECURITY
CS463	<b>C406</b>	DIGITAL IMAGE PROCESSING
CS465	<b>C407</b>	BIO INFORMATICS
CS467	<b>C408</b>	MACHINE LEARNING
CS451	<b>C409</b>	SEMINAR AND PROJECT PRILIMINARY
CS431	<b>C410</b>	COMPILER DESIGN LAB
CS402	<b>C411</b>	DATA MINNING AND WAREHOUSING
CS404	<b>C412</b>	EMBEDDED SYSTEMS
CS464	<b>C413</b>	ARTIFICIAL INTELLIGENCE
CS468	<b>C414</b>	CLOUD COMPUTING
CS472	<b>C415</b>	PRINCIPLES OF INFORMATION SECURITY
CS492	<b>C416</b>	PROJECT

**CS401 COMPUTER GRAPHICS**

<b>SUBJECT CODE: C401</b>	
<b>COURSE OUTCOMES</b>	
C401.1	Demonstrate Various Graphics Devices
C401.2	Analyze and implement algorithms for Line, Circle, Polygon drawing
C401.3	Apply geometrical transformation on 2D Objects
C401.4	Analyze and implement algorithms for clipping and illustrate 3D graphics representations.
C401.5	Apply various projection techniques on 3D objects and hidden line elimination techniques.
C401.6	Demonstrate the various concepts of image processing

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C401.1	3	-	2	-	-	-	-	-	-	-	-	3
C401.2	3	-	3	2	3	-	-	-	-	-	-	-
C401.3	3	-	3	-	3	-	-	-	-	-	-	2
C401.4	3	3	2	-	2	-	-	-	-	-	-	2
C401.5	3	2	3	-	3	-	-	-	-	-	-	3
C401.6	3	3	3	3	3	-	-	-	-	-	-	3
C401	3	2.67	2.67	2.5	2.8	-	-	-	-	-	-	2.6

CO'S	PSO1	PSO2	PSO3
C401.1	3	-	-
C401.2	3	-	-
C401.3	-	3	-
C401.4	-	3	-
C401.5	-	-	3
C401.6	3	-	-
C401	3	3	3

**CS403 PROGRAMMING PARADIGM**

SUBJECT CODE: C402	
COURSE OUTCOMES	
C402.1	To acquire the knowledge of Scope and binding of names in different programming languages. To analyze control flow structures in different programming languages.
C402.2	To appraise data types in different programming languages.
C402.3	To acquire the knowledge of Subroutines and Co- routines.
C402.4	To appraise constructs in functional, logic and scripting languages.
C402.5	To analyze object oriented constructs in different programming languages.
C402.6	To Learn different concurrency constructs.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C402.1	2	2	3	-	-	-	-	-	-	-	-	-
C402.2	3	3	3	-	3	-	-	-	-	-	-	2
C402.3	3	-	2	-	-	-	-	-	-	-	-	-
C402.4	3	-	3	-	3	-	-	-	-	-	-	3
C402.5	3	-	2	-	-	-	-	-	-	-	-	-
C402.6	2	-	3	-	3	-	-	-	-	-	-	2
C402	2.67	2.5	2.67	-	3	-	-	-	-	-	-	2.33

CO'S	PSO1	PSO2	PSO3
C402.1	3	3	-
C402.2	3	-	-
C402.3	3	-	-
C402.4	3	-	-
C402.5	3	-	-
C402.6	3	3	-
C402	3	3	-

**CS405 COMPUTER SYSTEM ARCHITECTURE**

<b>SUBJECT CODE: C403</b>	
<b>COURSE OUTCOMES</b>	
C403.1	To understand concepts of different parallel computer models.
C403.2	To analyze the advanced processor technologies and understand the importance of memory hierarchy
C403.3	To analyze different multiprocessor system interconnecting mechanisms and discuss protocols for enforcing cache coherence
C403.4	To analyze different message passing mechanisms
C403.5	To analyze and design different pipe lining techniques
C403.6	To appraise concepts of multithreaded and data flow architectures

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C403.1	3	3	3	3	-	-	-	-	-	-	-	-
C403.2	3	2	3	2	-	-	-	-	-	-	-	-
C403.3	3	3	2	3	2	-	-	-	-	-	-	-
C403.4	3	3	3	3	2	-	-	-	-	-	-	-
C403.5	3	2	3	3	-	-	-	-	-	-	-	-
C403.6	3	2	2	3	-	-	-	-	-	-	-	-
C403	3	2.5	2.67	2.83	2	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C403.1	2	-	-
C403.2	3	3	-
C403.3	3	2	-
C403.4	2	-	-
C403.5	3	-	-
C403.6	3	2	-
C403	2.67	2.3	-

#### CS407 DISTRIBUTED COMPUTING

<b>SUBJECT CODE: C404</b>
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COURSE OUTCOMES	
C404.1	Distinguish distributed computing paradigm from other computing paradigms
C404.2	Identify the core concepts of distributed systems
C404.3	Illustrate the mechanisms of inter process communication in distributed system
C404.4	apply appropriate distributed system principles in ensuring transparency, consistency and fault-tolerance in distributed file system
C404.5	Compare concurrency control mechanisms in distributed transaction environment
C404.6	Demonstrate the need for Mutual exclusion and election algorithms

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C404.1	3	-	-	-	-	-	-	-	-	-	-	-
C404.2	3	-	-	-	-	-	-	-	-	-	-	-
C404.3	2	3	-	-	-	-	-	-	-	-	-	-
C404.4	-	-	3	-	-	-	-	-	-	-	-	-
C404.5	-	3	3	-	-	-	-	-	-	-	-	-
C404.6	-	2	2	-	-	-	-	-	-	-	-	-
C404	2.67	2.67	2.67	-	-	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C404.1	3	-	-
C404.2	2	-	-
C404.3	-	3	-
C404.4	-	3	-
C404.5	3	-	-
C404.6	-	3	-
C404	2.67	3	-

SUBJECT CODE: C405	
COURSE OUTCOMES	
C405.1	To summarize different classical encryption techniques
C405.2	To identify mathematical concepts for different cryptographic algorithms.
C405.3	To demonstrate cryptographic algorithms for encryption/key exchange
C405.4	To summarize different authentication and digital signature schemes.
C405.5	To identify security issues in network, transport and application layers and outline appropriate security protocols.
C405.6	Describe the fundamentals of networks security, security architecture, threats and vulnerabilities

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C405.1	3	3	-	-	-	-	-	-	-	-	-	-
C405.2	3	3	-	-	-	-	-	-	-	-	-	-
C405.3	-	3	-	3	-	-	-	3	-	-	-	-
C405.4	2	-	2	-	-	-	-	-	-	-	-	-
C405.5	3	3	-	-	-	-	-	-	-	-	-	-
C405.6	2	2	2	-	-	-	-	-	-	-	-	-
C405	2.6	2.8	2	3	-	-	-	3	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C405.1	3	-	2
C405.2	3	2	2
C405.3	3	-	2
C405.4	2	2	2
C405.5	2	2	2
C405.6	3	2	-
C405	2.67	2	2

**CS463 DIGITAL IMAGE PROCESSING**

<b>SUBJECT CODE: C406</b>	
<b>COURSE OUTCOMES</b>	
C406.1	Acquire knowledge on different methods for image acquisition, storage and representation in digital devices and computers
C406.2	Appreciate role of image transforms in representing, highlighting, and modifying image features
C406.3	Interpret the mathematical principles in digital image enhancement and apply them in spatial domain and frequency domain
C406.4	Apply various methods for segmenting image and identifying image components
C406.5	Summarize different reshaping operation on the image and their practical applications
C406.6	Identify image representation techniques that enables encoding and decoding images

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C406.1	3	2	-	-		-	-	-	-	-	-	-
C406.2	3	-	3	3	2	-	-	-	-	-	-	-
C406.3	3	-	2	3	3	-	-	-	-	-	-	-
C406.4	3	2	3	3	2	-	-	-	-	-	-	-
C406.5	2	3	3	3	3	-	-	-	-	-	2	3
C406.6	2	2	3	3	3	-	-	-	-	-	3	3
C406	2.67	2.25	2.8	3	2.6	-	-	-	-	-	2.5	3

CO'S	PSO1	PSO2	PSO3
C406.1	2	-	2
C406.2	2	2	3
C406.3	3	2	-
C406.4	-	2	3
C406.5	-	3	2
C406.6	-	2	3
C406	2.33	2.2	2.6

## CS465 BIO INFORMATICS

<b>SUBJECT CODE: C407</b>
<b>COURSE OUTCOMES</b>



C407.1	Interpret the concepts of bioinformatics
C407.2	Identify different types of biological sequence
C407.3	Analyses multiple sequences and find conserved regions
C407.4	Acquire knowledge on algorithms used in bioinformatics
C407.5	Analyses genomic sequences and identify encoded gene regions
C407.6	Predict RNA and Protein secondary structures

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C407.1	3	3	-	-	-	-	-	-	-	-	-	-
C407.2	-	3	3	3	-	-	-	-	-	-	-	-
C407.3	-	3	2	3	-	-	-	-	-	-	-	-
C407.4	3	-	2	-	-	-	-	-	-	-	-	-
C407.5	2	3	3	3	-	-	-	-	-	-	-	-
C407.6	2	3	3	3	3	-	-	-	-	-	-	-
C407	2.5	3	2.6	3	3	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C407.1	-	-	-
C407.2	2		-
C407.3	3	2	-
C407.4	2	3	-
C407.5	3	3	-
C407.6	2	3	3
C407	2.4	2.75	3

## CS467 MACHINE LEARNING

SUBJECT CODE: C408	
COURSE OUTCOMES	
C408.1	To understand various learning approaches and to learn the concepts of supervised learning

C408.2	To acquire knowledge about various dimensionality reduction techniques.
C408.3	To learn about various performance measures and to apply various techniques like Bayesian classification used in machine learning.
C408.4	To apply theoretical concepts of decision trees to find best split and to understand the concepts of artificial neural networks
C408.5	To Enumerate the concepts of classifier models like SVM and HMM
C408.6	To understand different clustering algorithms and applying it in real world problems.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C408.1	3	-	3	3	3	-	-	-	-	-	-	-
C408.2	3	3	3	3	2	-	-	-	-	-	-	-
C408.3	3	2	3	3	3	-	-	-	-	-	-	-
C408.4	3	2	3	3	3	-	-	-	-	-	-	-
C408.5	3	-	3	3	3	-	-	-	-	-	-	-
C408.6	3	2	3	3	3	-	-	-	-	-	-	-
C4083	3	2.25	3	3	2.83	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C408.1	3	3	3
C408.2	-	3	3
C408.3	2	3	3
C408.4	3	3	3
C408.5	2	2	-
C408.6	3	3	3
C408	2.6	2.83	3

#### CS451 SEMINAR AND PROJECT PRILIMINARY

<b>SUBJECT CODE: C409</b>	
<b>COURSE OUTCOMES</b>	
C409.1	To analyze current topics of professional interest and propose a work plan to solve it

C409.2	To apply theories, methods and knowledge bases from multiple fields to a single question or problem
C409.3	To develop ability to synthesize, evaluate and reflect on information
C409.4	To understand and identify the project requirements and goals
C409.5	To learn to work in a team in a professional manner.
C409.6	To understand a professional topic and present it effectively before the audience

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C409.1	3	3	3	3	-	-	2	2	2	3	2	2
C409.2	2	2	3	3	3	-	2	2	2	3	2	2
C409.3	-	-	2	3		-	-	-	3	-	-	-
C409.4	-	3	-	3	2	2	-	-	1	-	3	2
C409.5	-	-	-	-	-	2	-	3	3	3	3	3
C409.6	-	-	-	-	2	2	-	2	3	3	-	3
C409	2.5	2.67	2.67	3	2.33	2	2	2.25	2.33	3	2.5	2.4

CO'S	PSO1	PSO2	PSO3
C409.1	3	3	3
C409.2	3	3	3
C409.3	3	3	3
C409.4	-	-	3
C409.5	-	-	3
C409.6	-	-	3
C409	3	3	3

### CS431 COMPILER DESIGN LAB

SUBJECT CODE: C410	
COURSE OUTCOMES	
C410.1	To Implement Lexical analyser for a given language.
C410.2	To Apply the knowledge of Lex and Yacc tools to develop programs.
C410.3	To Develop different parsers for a given language.
C410.4	To Apply code optimization techniques for programs
C410.5	To Demonstrate intermediate and machine level code generation for programs.

C410.6	To generate machine level code.
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CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C410.1	3	2	3	2	3	-	-	3	3	3	-	3
C410.2	3	3	3	-	3	-	-	3	3	3	-	3
C410.3	3	3	3	3	2	-	-	3	3	3	-	3
C410.4	3	-	2	-	3	-	-	3	3	3	-	3
C410.5	3	2	2	-	3	-	-	3	3	3	-	3
C410.6	3	2	2	-	3	-	-	3	3	3	-	3
C410	3	2.4	2.5	2.5	2.83	-	-	3	3	3	-	3

CO'S	PSO1	PSO2	PSO3
C410.1	3	2	-
C410.2	3	2	-
C410.3	3	2	-
C410.4	3	2	-
C410.5	3	2	-
C410.6	3	2	-
C410	3	2	-

## SEMESTER 8

### CS402 DATAMONING AND WAREHOUSING

<b>SUBJECT CODE: C411</b>	
<b>COURSE OUTCOMES</b>	
C411.1	To identify the key process of Data mining and Warehousing and its applications

C411.2	To apply appropriate techniques to convert raw data into suitable format for practical data mining tasks
C411.3	To analyze various classification algorithms and apply in appropriate domain
C411.4	To analysis and evaluate the performance of various classification methods using performance metrics
C411.5	To make use of the concept of association rule mining in real world scenario
C411.6	To select appropriate clustering and algorithms for various applications and extend data mining methods to the new domains of data

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C411.1	3	3			2	-	-	-	-	-	-	2
C411.2	3	2	3	3	2	-	-	-	-	-	-	3
C411.3	3	3	3	3	3	-	-	-	-	-	-	2
C411.4	3	3	3	3	3	-	-	-	-	-	-	3
C411.5	3	3	3	3	3	-	-	-	-	-	-	2
C411.6	3	3	2	3	3	-	-	-	-	-	-	3
C411	3	2.83	2.8	3	2.67	-	-	-	-	-	-	2.5

CO'S	PSO1	PSO2	PSO3
C411.1	3	-	-
C411.2	-	-	3
C411.3	-	3	3
C411.4	3	3	-
C411.5	-	3	3
C411.6	-	3	3
C411	3	3	3

#### CS404 EMBEDDED SYSTEM

SUBJECT CODE: C412	
COURSE OUTCOMES	
C412.1	To demonstrate the role of individual components involved in a typical embedded system.

C412.2	To analyze the characteristics of different computing elements and select the most appropriate one for an embedded system.
C412.3	To model the operation of a given embedded system.
C412.4	To substantiate the role of different software modules in the development of an embedded system.
C412.5	To develop simple tasks to run on an RTOS.
C412.6	To acquire knowledge of Networks for embedded systems. To examine the latest trends prevalent in embedded system design

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C412.1	3	3	-	-	-	-	-	-	-	-	-	-
C412.2	3	3	3	3	3	-	-	-	-	-	-	-
C412.3	3	3	3	3	-	-	-	-	-	-	-	-
C412.4	-	3	-	3	3	-	-	-	-	-	-	-
C412.5	3	-	-	3	3	-	-	-	-	-	-	2
C412.6	3	3	2	3	-	-	-	-	-	-	-	3
C412	2.83	2.6	3	3	2.4	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C412.1	3	3	-
C412.2	2	2	3
C412.3	2	-	-
C412.4	-	-	3
C412.5	3	3	3
C412.6	3	-	3
C412	2.6	2.67	3

#### CS464 ARTIFICIAL INTELLIGENCE

<b>SUBJECT CODE: C413</b>	
<b>COURSE OUTCOMES</b>	
C413.1	To understand the scope and limits of the artificial intelligence (AI) field

C413.2	To analyze the applicability, strengths, and weaknesses of the basic knowledge representation
C413.3	To interpret the role of knowledge representation, problem solving, and learning
C413.4	To understand various search algorithms (uninformed, informed, and heuristic) for problem solving
C413.5	To acquire knowledge in various learning concepts.
C413.6	To comprehend the fundamentals of Natural Language Processing

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C413.1	3	3	-	-	-	-	-	-	-	-	-	-
C413.2	3	2	3	2	3	-	-	-	-	-	-	-
C413.3	3	3	3	3	2	-	-	-	-	-	-	-
C413.4	3	3	2	3	2	-	-	-	-	-	-	-
C413.5	3	3	2	3	3	-	-	-	-	-	-	-
C413.6	3	3	-	-	-	-	-	-	-	-	-	-
C413	3	2.83	2.5	2.75	2.5	-	-	-	-	-	-	-

CO'S	PSO1	PSO2	PSO3
C413.1	3	-	-
C413.2	3	2	-
C413.3	3	2	-
C413.4	3	-	-
C413.5	3	2	-
C413.6	3	3	-
C413	3	2.25	-

## CS468 CLOUD COMPUTING

<b>SUBJECT CODE: C414</b>
<b>COURSE OUTCOMES</b>

C414.1	To identify the significance of implementing virtualization techniques.
C414.2	To acquire knowledge in interpreting the various cloud computing models and service
C414.3	To identify the various public cloud platforms and software environments
C414.4	To acquire knowledge about applying appropriate cloud programming methods to solve big data problems
C414.5	To identify the need of security mechanisms in cloud.
C414.6	To illustrate the use of various cloud services available online.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C414.1	3	3	2	2	3	-	-	-	-	-	-	2
C414.2	3	2	2	3	3	-	-	-	-	-	-	2
C414.3	3	2	2		3	-	-	-	-	-	-	2
C414.4	2	2	3	3	3	-	-	-	-	-	-	2
C414.5	3	3	-	-	-	-	-	2	-	-	-	2
C414.6	3	3	3	3	3	-	-	2	3	3	3	2
C414	2.83	2.5	2.4	2.75	3	-	-	2	3	3	3	2

CO'S	PSO1	PSO2	PSO3
C414.1	2	3	-
C414.2	3	3	-
C414.3	3	3	-
C414.4	3	3	-
C414.5	3	3	-
C414.6	3	3	3
C414	2.83	3	3

**CS472 PRINCIPLES OF INFORMATION SECURITY**

**SUBJECT CODE: C415**



COURSE OUTCOMES	
C415.1	Identify the common computer threats faced today and implement access control mechanisms
C415.2	Interpret the foundational theory behind information security policy to design a secure system.
C415.3	Identify the potential vulnerabilities in software in a given security scenario, and evaluate on their effectiveness.
C415.4	Identify the different types of malwares like Viruses, Worms and Trojans and their propagation mechanisms.
C415.5	Justify the relevance of security in various domains like Wireless LAN and Cellphones.
C415.6	Develop secure web services and perform secure e-transactions.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C415.1	3	3	2	2	2	2	-	-	-	-	-	2
C415.2	3	3	3	2	2	2	-	-	-	-	-	-
C415.3	2	3	3	2	2	2	-	-	-	-	-	-
C415.4	2	2	2	-	2	2	-	2	-	-	-	-
C415.5	2	2	2	2	2	-	-	2	-	-	-	3
C415.6	2	2	2	2	2	2	-	2	-	-	-	3
C415	2.33	2.5	2.33	2	2	2	-	2	-	-	-	2.67

CO'S	PSO1	PSO2	PSO3
C415.1	3	2	2
C415.2	3	2	-
C415.3	3	2	-
C415.4	3	-	-
C415.5	3	-	-
C415.6	3	2	-
C415	3	2	2

**CS492 PROJECT**

**SUBJECT CODE: C416**

COURSE OUTCOMES	
C416.1	To understand the different stages of a software development cycle in practical life.
C416.2	To learn to think various aspects of application areas and to generate, develop and evaluate ideas and information.
C416.3	To understand the use of different technologies and tools in design.
C416.4	To learn to works as a team and solve computation problems with good quality products.
C416.5	To acquire knowledge on skills to communicate and present ideas effectively to audiences.
C416.6	To learn to explore problems from different sectors, analyze and find solutions and get updated throughout the life.

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C416.1	3	2	2	2	3	2	-	2	3	3	2	2
C416.2	-	3	3	2	-	2	-	-	-	-	2	3
C416.3	3	2	-	-	3	-	-	-	-	-	-	3
C416.4	2	3	3	2	-	3	-	3	3	3	3	3
C416.5	-	-	-	-	-	-	-	-	-	3	-	-
C416.6	3	3	3	2	3	-	-	-	-	-	2	3
C416	2.75	2.6	2.75	2	3	2.33		2.5	3	3	2.25	2.8

CO'S	PSO1	PSO2	PSO3
C416.1	2	2	3
C416.2	3	3	3
C416.3	3	3	-
C416.4	-	3	2
C416.5	-	3	-
C416.6	3	3	3
C416	2.75	2.83	2.75