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Jaya Sakthi Engineering College

(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)
St. Mary's Nagar, Thiruninravur, (Near Avadi), Chennai - 602 024.
www.sakthiec.edu.in Email : info@sakthiec.edu.in

Date : 17 MAR 2022

CERTIFICATE

This is to certify that the programmes and course outcome of all programmes offered in this institution are stated and displayed on our college website and communicated to teacher and student.

Evidence attached:

1. Website link provided

Criterion In charge **IQAC Coordinator** **Principal**

PRINCIPAL
JAYA SAKTHI ENGINEERING COLLEGE
St. Mary's Nagar, Near Avadi,
Thiruninravur, Chennai-602 024.

1

VISION

To achieve Technical Education Excellence through Innovative Teaching, Research and Entrepreneurship who create wealth for our nation and develop a fulfilling global society.

MISSION

- To create a state of art educational institution contributing to innovation entrepreneurship, engineering and technology for our country.
- To Provide Quality Education, Self-discipline and Ethical values.
- To identify student's skills and encourage them through creative and enriching methodologies and share their knowledge to create new society.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VISION OF THE DEPARTMENT

To achieve Excellence in Computer Science and Engineering by Imparting Knowledge and providing quality technical education to cater the need of industry and society through research and development

MISSION OF THE DEPARTMENT

The Computer Science and Engineering Department is committed to

- Provide strong fundamentals and technical skills in Computer Science Engineering through effective teaching and learning methods.
- To transform lives of the students by nurturing ethical values, creativity and novelty to become Entrepreneurs and establish start-ups.
- Equip with knowledge required Inculcate problem solving and team building skills and promote life long learning with a sense of societal and ethical responsibilities.
- To habituate the students to focus on sustainable solutions to improve the quality of life and the welfare of the society
- To inculcate learning of the emerging technologies to pursue higher studies leading to lifelong learning

PROGRAMME OUTCOMES

Engineering Graduates will be able to:	
PO1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering Fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**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.
PO3	**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.
PO4	**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.
PO5	**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
PO6	**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.
PO7	**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.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and Norms of the engineering practice.
PO9	**Individual and team work:** Function effectively as an individual, and as a member or Leader in diverse teams, and in multidisciplinary settings.

PO10	**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.
PO11	**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.
PO12	**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.

Engineering Graduates will be able to:	
PSO1:	Exhibit design and programming skills to build and automate business solutions using cutting edge technologies.
PSO2:	Strong theoretical foundation leading to excellence and excitement towards research, to provide elegant solutions to complex problems.
PSO3:	Ability to work effectively with various engineering fields as a team to design, build and develop system applications.

Course Outcomes (COs)

BATCH: 2018-2022

Course Code:	C203	Reg-2017			AU Subject Code:	CS8391
Course Name:	DATA STRUCTURES					
Year:	2	Sem:	3	ODD	Course Year:	2019-2020

COURSE OBJECTIVES

S.No	Objectives
1	To understand the concepts of ADTs-learn linear data structure -List
2	To Learn linear data structures – stacks, and queues
3	To learn non linear data structure - Tree
4	To learn non linear data structure - Graph
5	To understand sorting, searching and hashing algorithms

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C203.1	Describe the concepts of List
C203.2	Summarize the details of stacks and queues
C203.3	Analyze the Tree data structure.
C203.4	Use the Graph to determine the shortest path
C203.5	Compare the various sorting, searching and hashing algorithms

Course Code:	C212	Reg-2017			AU Subject Code:	CS8451
Course Name:	DATABASE MANAGEMENT SYSTEM					
Year:	2	Sem:	4	EVEN	Course Year:	2019-2020

COURSE OBJECTIVES

S.No	Objectives

1	To understand the fundamentals of data models and to represent a database system using ER diagrams.
2	To learn SQL and relational database design.
3	To know the internal storage structures using different file and indexing techniques which will help in physical DB design.
4	To remember the fundamental concepts of transaction processing , concurrency control techniques and recovery procedures.
5	To have an introductory knowledge about the Storage and Query processing Techniques

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C212.1	Classify the modern and futuristic database applications based on size and complexity.
C212.2	Analyze queries using normalization criteria and determine to map ER model to Relational model to perform database design effectively.
C212.3	Explain how locking mechanism can be used.
C212.4	Compare various indexing strategies in different database systems.
C212.5	Summarize how advanced databases differ from traditional databases.

Course Code:	C302	**Reg-2017**			**AU Subject Code:**	CS8591
Course Name:	COMPUTER NETWORKS					
Year:	**3**	**Sem:**	**5**		**Course Year:**	**2020-2021**

COURSE OBJECTIVES

S.No	Objectives
1	To Understand the OSI Layer and functionalities of the physical layer to perform data communication.
2	To Learn the basics of the data link layer and its operations.
3	To Build the network using different components of networking devices.
4	To Comprehend the functions of network layer and routing protocols.
5	To Understand the various operations performed in the application layer.

COURSE OUTCOMES

CO No	Upon completion of the course, the students will be able to:
C302.1	Describe the concept of Reference Models and Network Topologies used to build the network.
C302.2	Illustrate how media access control and error control mechanism is used to perform communication reliably.
C302.3	Identify different network interfaces and routing protocols.
C302.4	Discuss the various services offered by the transport layer.
C302.5	Implement the application layer protocols and network security issues.

Course Code:	C313	**Reg-2017**			**AU Subject Code:**	CS8603
Course Name:	COMPILER DESIGN					
Year:	**3**	**Sem:**	**6**	**EVEN**	**Course Year:**	**2020-2021**

COURSE OBJECTIVES

S.No	Objectives
1	To Know about the various phases of compiler.
2	To study the various parsing techniques.
3	To understand intermediate code generation and run-time environment.
4	To learn to implement front-end of the compiler.
5	To study the characteristics of peer-to-peer and distributed shared memory systems.

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C313.1	Analyze the different phases of compiler and design a lexical analyzer for a sample language.
C313.2	Apply different parsing algorithms to develop the parsers for a given grammar.
C313.3	Describe syntax-directed translation and translation of expressions.
C313.4	Design a simple code generator and compare different algorithms.
C313.5	Choose the various code optimization techniques.

Course Code:	C402	Reg-2017			AU Subject Code:	CS8792
Course Name:	CRYPTOGRAPHY AND NETWORK SECURITY					
Year:	4	Sem:	7	ODD	Course Year:	2021-2022

COURSE OBJECTIVES

S.No	Objectives
1	To Understand the fundamentals of networks security, security architecture, threats and vulnerabilities and Cryptography techniques
2	To Apply the different cryptographic operations of symmetric cryptographic algorithms
3	To Apply the different cryptographic operations of public key cryptography
4	To Apply the various Authentication schemes to simulate different applications
5	To understand the various security practices and system security standards

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C402.1	Discuss the Substitution, Transposition cipher techniques
C402.2	Illustrate the Symmetric key cryptographic algorithm
C402.3	Solve t he algorithms of Public key cryptography
C402.4	Explain various message Authentication schemes
C402.5	Discuss the various security practices and system security standards

Course Code:	C410	Reg-2017			AU Subject Code:	CS8078
Course Name:	GREEN COMPUTING					
Year:	4	Sem:	8	EVEN	Course Year:	2021-2022

COURSE OBJECTIVES

S.No	Objectives
1	To learn the fundamentals of Green Computing.

2	To analyze the Green computing Grid Framework.
3	To understand the issues related with Green compliance.
4	To study and develop various case studies
5	To learn the fundamentals of Green Computing.

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C410.1	Adopt green computing practices to minimize negative impacts on the environment.
C410.2	Enhance the skill in energy saving practices in their use of hardware.
C410.3	Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.
C410.4	Explain the different ways to minimize equipment disposal requirements
C410.5	Develop the various Green IT Strategies and Applications

DEPARTMENT OF MECHANICAL ENGINEERING

VISION OF THE DEPARTMENT

To be known as a leading facilitator of mechanical engineering education, preparing students to satisfy societal needs and build intellectually competent research institutions with best proficiency and cutting-edge excellence.

MISSION OF THE DEPARTMENT

M	MISSION
M1	To educate, prepare, and facilitate the learning process so they can succeed as professionals
M2	To furnish the resources and environment needed for high-quality education to pursue a variety of professions as well as mechanical engineering research.
M3	To get students involved in academic and scholarly pursuits that will improve the department's reputation in the global market.

Engineering Graduates will be able to:	
PSO1:	To enable students to apply their knowledge and practical abilities in fields including design, thermal, manufacturing, and industrial engineering
PSO2:	Analyse, design, develop and implement the concepts of mechanical systems and processes towards product development.
PSO3:	Graduates will be proficient in the use of contemporary tools and will have a wide awareness of management concerns that are involved in the creation of infrastructure with interdisciplinary areas.

BATCH: 2018-2022

Course Code:	ME220	Reg-2017		AU Subject Code:	ME8351
Course Name:	MANUFACTURING TECHNOLOGY – I				
Year:	2	Sem: 3	ODD	Course Year:	2019-2020

COURSE OBJECTIVES

Sl. No.	Objectives
1	To establish the concepts of basic manufacturing processes and fabrication techniques, such as metal casting,
2	To identify with the different types of metal joining
3	To illustrate the generation of metal forming type of equipment.
4	To clarify the sheet metal processes.
5	To illustrate the manufacturing of plastic components.

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C204.1	Clarify different metal casting processes, associated defects, merits and demerits.
C204.2	Evaluate different metal joining processes.
C204.3	Review various hot working and cold working methods of metals
C204.4	Clarify various sheet metal making processes.
C204.5	Distinguish various methods of manufacturing plastic components

BATCH: 2018-2022

Course Code:	ME230	R-2017		AU Subject Code:	CE8395
Course Name:	STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS				
Year:	2	Sem: 4	ODD	Course Year:	2019-2020

COURSE OBJECTIVES

Sl.No	Objectives

1	To understand the basic concepts of stress, strain, principal stresses and principal planes
2	To study the concept of shearing force and bending moment due to external loads in determinate beams and their effect on stresses.
3	To determine stresses and deformation in circular shafts and helical spring due to torsion .
4	To compute slopes and deflections in determinate beams by various methods.
5	To study the stresses and deformations induced in thin and thick shells

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C214.1	Illustrate the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes
C214.2	Interpret the load transferring mechanism in beams and stress distribution due to shearing force and bending moment
C214.3	Apply basic equation of simple torsion in designing of shafts and helical spring
C214.4	Calculate the slope and deflection in beams using different methods
C214.5	Distinguish between thin and thick shells for the applied internal and external pressures

BATCH: 2018-2022

Course Code:	ME335	Reg-2017		AU Subject Code:	ME8595
Course Name:	THERMAL ENGINEERING – II				
Year:	3	Sem: 5	ODD	Course Year:	2020-2021

COURSE OBJECTIVES

Sl.No	Objectives
1	To apply the thermodynamic concepts for Nozzles, Boilers, Turbines.
2	To understand the concept of utilizing residual heat in thermal systems.
3	To understand the concept of utilizing steam turbines and uses.
4	To understand the concept of Heat pumps and Heat exchangers.
5	To execute the thermodynamic concepts of refrigeration and Air Conditioning Systems

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C301.1	Solve problems in Steam Nozzle
C301.2	Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters.
C301.3	Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems.
C301.4	Summarize the concept of Cogeneration, Working features of Heat pumps and Heat exchangers
C301.5	Solve problems using refrigerant table / charts and psychometric charts

BATCH: 2018-2022

Course Code:	ME340	Reg-2017	AU Subject Code:	ME8691
Course Name:	COMPUTER AIDED DESIGN AND MANUFACTURING			
Year:	3	Sem : 6	EVEN	Course Year: 2020-2021

COURSE OBJECTIVES

Sl. No.	Objectives
1	To provide an overview of how computers are being used in mechanical component design.
2	To understand the application of computers in various aspects of Manufacturing viz., Design, Proper planning, Manufacturing cost, Layout .
3	To develop the Material Handling system and manufacturing systems
4	To develop the Cellular Manufacturing systems
5	To provide an overview of how computers are being used in mechanical component design .

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C310.1	Explain the 2D and 3D transformation, clipping algorithm, Manufacturing models and Metrics
C310.2	Explain the fundamentals of parametric curves, surfaces and Solids
C310.3	Discuss the different types of Standard systems used in CAD
C310.4	Apply NC & CNC programming concepts to develop part program for Lathe & Milling Machines
C310.5	Discuss the different types of techniques used in Cellular Manufacturing and FMS

BATCH: 2018-2022

Course Code:	ME450	Reg-2017	AU Subject Code:	ME8791
Course Name:	MECHATRONICS			
Year:	4	Sem: 7	ODD	Course Year: 2021-2022

COURSE OBJECTIVES

Sl. No.	ves
1	To impart knowledge about the elements and techniques involved in Mechatronics systems
2	Which are very much essential to understand the emerging field of automation?
3	To Apply the new techniques involved in Mechatronics systems
4	To know the method of programming the microprocessor and also the design, modeling
5	Analysis of basic electrical, hydraulic & pneumatic Systems which enable the students to understand the concept of Mechatronics.

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C403.1	Discuss the applications of Electronics, Electrical, Mechanical and Computer Systems for the Control of Mechanical, Electronic Systems and sensor technology
C403.2	Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram, Addressing Modes of Microprocessor and Microcontroller.
C403.3	Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and various Device interfacing
C403.4	Explain the architecture, programming and application of programmable logic Controllers to problems and challenges in the areas of Mechatronics engineering.
C403.5	Discuss various Actuators and Mechatronics system using the knowledge and Skills acquired through the course and also from the given case studies

BATCH: 2018-2022

Course Code:	ME458	Reg-2017			AU Subject Code:	ME8791
Course Name:	ENTREPRENEURSHIP DEVELOPMENT					
Year:	4	SEMESTER	8	EVEN	Course Year:	2021-2022

COURSE OBJECTIVES

Sl. No.	Objectives
1	Expound The Types Of Entrepreneurships And Economic Growth
2	Importance Of Motivation And Training On The Entrepreneurship Development
3	Selecting A Good Business Opportunity and Marker Survey Research
4	Explain term loan ,importance of taxation
5	Formulate the business incubators-government policy for small scale industries

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C212.1	Expound The Types of Entrepreneurships And Economic Growth
C212.2	Importance Of Motivation And Training On The Entrepreneurship Development
C212.3	Selecting A Good Business Opportunity and Marker Survey Research
C212.4	Explain term loan ,importance of taxation
C212.5	Formulate the business incubators-government policy for small scale industries

DEPARTMENT OF BIOMEDICAL ENGINEERING

VISION OF THE DEPARTMENT

To achieve academic excellence in the field of biomedical engineering and to produce industry ready Engineers with ethical values by imparting best quality of technical education.

MISSION OF THE DEPARTMENT

- To create excellent and innovative biomedical engineers to meet current and future demands of biomedical industry and society.
- To inculcate leadership and entrepreneurship qualities in students.
- To nurture and develop the spirit and innovation and creativity among biomedical engineering students.
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PROGRAMME OUTCOMES

Engineering Graduates will be able to:	
PSO1:	Exhibit design and programming skills to build and automate business solutions using cutting edge technologies.
PSO2:	Strong theoretical foundation leading to excellence and excitement towards research, to provide elegant solutions to complex problems.
PSO3:	Ability to work effectively with various engineering fields as a team to design, build and develop system applications.

Course Outcomes (COs)

BATCH: 2020-2024

Course Code:	C319	Reg-2017		AU Subject Code:	BM8351
Course Name:	ANATOMY AND HUMAN PHYSIOLOGY				
Year:	2	SEMESTER	3	ODD	Course Year:	2021-2022

COURSE OBJECTIVES

Sl. No.	Objectives
1	To identify all the organelles of an animal cell and their function.
2	To understand structure and functions of the various types of systems of human body.
3	To demonstrate their knowledge of importance of anatomical features and physiology of human systems

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C319.1	Students would be able to explain basic structure and functions of cell
C319.2	Students would be learnt about anatomy and physiology of various systems of human body
C319.3	Students would be able to explain interconnect of various systems

Course Code:	C322	Reg-2017			AU Subject Code:	BM8302
Course Name:	PATHOLOGY AND MICROBIOLOGY					
Year:	2	SEMESTER	3	ODD	Course Year:	2021-2022

COURSE OBJECTIVES

Sl. No.	Objectives
1	Gain a knowledge on the structural and functional aspects of living organisms.
2	Know the etiology and remedy in treating the pathological diseases
3	Empower the importance of public health.

COURSE OUTCOMES

CO No	Upon the successful completion of the course, students will be able to
C322.1	Analyze structural and functional aspects of living organisms
C322.2	Explain the function of microscope
C322.3	Discuss the importance of public health.