KJ's Educational Institute
K.J.College of Engineering & Management Research, Pune
Computer Department

Third Year of Computer Engineering(Course 2015)

(with effect from 2017-18)

Program Educational Objectives

1. To prepare globally competent graduates having strong fundamentals, domain knowledge, updated with modern technology to provide the effective solutions for engineering problems.
2. To prepare the graduates to work as a committed professional with strong professional ethics and values, sense of responsibilities, understanding of legal, safety, health, societal, cultural and environmental issues.
3. To prepare committed and motivated graduates with research attitude, lifelong learning, investigative approach, and multidisciplinary thinking.
4. To prepare the graduates with strong managerial and communication skills to work effectively as individual as well as in teams.

Program Outcomes

Students are expected to know and be able –

1. To apply knowledge of mathematics, science, engineering fundamentals, problem solving skills,algorithmic analysis and mathematical modeling to the solution of complex engineering problems.
2. To analyze the problem by finding its domain and applying domain specific skills
3. To understand the design issues of the product/software and develop effective solutions with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
4. To find solutions of complex problems by conducting investigations applying suitable techniques.
5. To adapt the usage of modern tools and recent software.
6. To contribute towards the society by understanding the impact of Engineering on global aspect.
7. To understand environment issues and design a sustainable system.
8. To understand and follow professional ethics.

9. To function effectively as an individual and as member or leader in diverse teams and interdisciplinarysettings.
10. To demonstrate effective communication at various levels.
11. To apply the knowledge of Computer Engineering for development of projects, and its finance andmanagement.
12. To keep in touch with current technologies and inculcate the practice of lifelong learning.

Program Specific Outcomes (PSO)

A graduate of the Computer Engineering Program will demonstrate-

PSO1: Professional Skills-The ability to understand, analyze and develop computer programs in theareas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying.

PSO2: Problem-Solving Skills- The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success.

PSO3: Successful Career and Entrepreneurship- The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies.

Theory of Computation

Course Objectives:
- To Study abstract computing models
- To learn Grammar and Turing Machine
- To learn about the theory of computability and complexity.

Course Outcomes:

On completion of the course, student will be able to–
- Able to design deterministic Turing machine for all inputs all outputs
- Able to subdivide problem space based on input subdivision using constraints
- Able to apply linguistic theory

Database Management Systems

Course Objectives :
- To understand the fundamental concepts of database management. These concepts include aspects of database design, database languages, and database-system implementation
- To provide a strong formal foundation in database concepts, technology and practice
- To give systematic database design approaches covering conceptual design, logical design and an overview of physical design
- Be familiar with the basic issues of transaction processing and concurrency control
- To learn and understand various Database Architectures and Applications
- To learn a powerful, flexible and scalable general purpose database to handle big data
.

Course Outcomes:

On completion of the course, student will be able to–
- Design E-R Model for given requirements and convert the same into database tables.
- Use database techniques such as SQL & PL/SQL.
- Use modern database techniques such as NOSQL.
- Explain transaction Management in relational database System.
- Describe different database architecture and analyses the use of appropriate architecturein real time environment.
- Students will be able to use advanced database Programming concepts   Big Data –HADOOP

Software Engineering and Project Management

Course Objectives:
- To learn and understand the principles of Software Engineering
- To be acquainted with methods of capturing, specifying, visualizing and analyzingsoftware requirements.
- To apply Design and Testing principles to S/W project development.
- To understand project management through life cycle of the project.
- To understand software quality attributes.

Course Outcomes:
On completion of the course, student will be able to–
- Decide on a process model for a developing a software project
- Classify software applications and Identify unique features of various domains
- Design test cases of a software system.
- Understand basics of IT Project management.
- Plan, schedule and execute a project considering the risk management.
- Apply quality attributes in software development life cycle.

Information Systems and Engineering Economics

Course Objectives:
- To prepare the students to various forms of the Information Systems and its application in organizations.
- To expose the students to the managerial issues relating to information systems and help them identify and evaluate various options in Information Systems.
- To Prepare engineering students to analyze cost / revenue data and should able to do economic analyses in the decision making process to justify or reject alternatives / projectson an economic basis for an organization.

Course Outcomes:
On completion of the course, student will be able to–
- Understand the need, usage and importance of an Information System to an organization.
- Understand the activities that are undertaken while managing, designing, planning, implementation, and deployment of computerized information system in an organization.
- Further the student would be aware of various Information System solutions like ERP, CRM, Data warehouses and the issues in successful implementation of these technology

solutions in any organizations

- Outline the past history, present position and expected performance of a company engagedin engineering practice or in the computer industry.
- Perform and evaluate present worth, future worth and annual worth analyses on one of more economic alternatives.
- Be able to carry out and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives.

Computer Networks

Course Objectives:
- To understand the fundamental concepts of networking standards, protocols and technologies.
- To learn different techniques for framing, error control, flow control and routing.
- To learn role of protocols at various layers in the protocol stacks.
- To learn network programming.
- To develop an understanding of modern network architectures from a design and performance perspective

Course Outcomes:
On completion of the course, student will be able to–
- Analyze the requirements for a given organizational structure to select the most appropriatenetworking architecture, topologies, transmission mediums, and technologies
- Demonstrate design issues, flow control and error control
- Analyze data flow between TCP/IP model using Application, Transport and Network Layer Protocols.
- Illustrate applications of Computer Network capabilities, selection and usage for varioussectors of user community.
- Illustrate Client-Server architectures and prototypes by the means of correct standards andtechnology.
- Demonstrate different routing and switching algorithms

Skill Development Lab

Course Objectives:
- To adapt the usage of modern tools and recent software.
- To evaluate problems and analyze data using current technologies
- To learn the process of creation of data-driven web applications using current technologies
- To understand how to incorporate best practices for building enterprise applications
- To learn how to employ Integrated Development Environment(IDE) for implementing andtesting of software solution

- To construct software solutions by evaluating alternate architectural patterns.

Course Outcomes:

On completion of the course, student will be able to–

- Evaluate problems and analyze data using current technologies in a wide variety of businessand organizational contexts.
- Create data-driven web applications
- Incorporate best practices for building applications
- Employ Integrated Development Environment(IDE) for implementing and testing of softwaresolution
- Construct software solutions by evaluating alternate architectural patterns

Database Management System Lab

Course Objectives:
- To develop basic, intermediate and advanced Database programming skills
- To develop basic Database administration skills
- To percept transaction processing

Course Outcomes:

On completion of the course, student will be able to–
- Develop the ability to handle databases of varying complexities
- Use advanced database Programming concepts

Computer Networks (CN)

Course Objectives:
- To establish communication among the computing nodes in P2P and Client-Server architecture
- Configure the computing nodes with understanding of protocols and technologies.
- Use different communicating modes and standards for communication
- Use modern tools for network traffic analysis
- To learn network programming.

Course Outcomes:

On completion of the course, student will be able to–
- Demonstrate LAN and WAN protocol behavior using Modern Tools.
- Analyze data flow between peer to peer in an IP network using Application, Transport andNetwork Layer Protocols.
- Demonstrate basic configuration of switches and routers.
- Develop Client-Server architectures and prototypes by the means of correct standards andtechnology.

Design and Analysis of Algorithms

Course Objectives:
- To develop problem solving abilities using mathematical theories
- To analyze the performance of algorithms
- To study algorithmic design strategies

Course Outcomes:
On completion of the course, student will be able to–
- Formulate the problem
- Analyze the asymptotic performance of algorithms
- Decide and apply algorithmic strategies to solve given problem
- Find optimal solution by applying various methods

Systems Programming and Operating System

Course Objectives:
1. To understand basics of System Programming.
2. To learn and understand data structures used in design of system software.
3. To learn and understand basics of compilers and tools.
4. To understand functions of operating system.
5. To learn and understand process, resource and memory management.

Course Outcomes:
On completion of the course, student will be able to–
1. Analyze and synthesize system software
2. Use tools like LEX & YACC.
3. Implement operating system functions.

Embedded Systems and Internet of Things

Course Objectives:
- To understand fundamentals of IoT and embedded system including essence, basic designstrategy and process modeling.
- To introduce students a set of advanced topics in embedded IoT and lead them to understandresearch in network.
- To develop comprehensive approach towards building small low cost embedded IoT system.
- To understand fundamentals of security in IoT,
- To learn to implement secure infrastructure for IoT

- To learn real world application scenarios of IoT along with its societal and economic impactusing case studies

On completion of the course, student will be able to–
- Implement an architectural design for IoT for specified requirement
- Solve the given societal challenge using IoT
- Choose between available technologies and devices for stated IoT challenge

Software Modeling and Design

Course Objectives:
- To understand and apply Object Oriented(OO) concept f or designing OO basedmodel/a
- To transform Requirement document to Appropriate design
- To understand different architectural designs and to transform them into proper model
- To choose and use modern design tools for project development and implementation.
- To choose and use appropriate test tool for testing web-based/desktop application

Course Outcomes:

On completion of the course, student will be able to–
- Analyze the problem statement (SRS) and choose proper design technique for designing web-based/ desktop application
- Design and analyze an application using UML modeling as fundamental tool
- Apply design patterns to understand reusability in OO design
- Decide and apply appropriate modern tool for designing and modeling
- Decide and apply appropriate modern testing tool for testing web-based/desktop application

Web Technology

Course Objectives:
- To understand the principles and methodologies of web based applications developmentprocess
- To understand current client side and server side web technologies
- To understand current client side and server side frameworks
- To understand web services and content management

Course Outcomes:
- On completion of the course, student will be able to–
- analyze given assignment to select sustainable web development design methodology
- develop web based application using suitable client side and server side web technologies
- develop solution to complex problems using appropriate method, technologies,frameworks, web services and content management

Seminar and Technical Communication

Course Objectives:

- To explore the basic principles of communication (verbal and non-verbal) and active,empathetic listening, speaking and writing techniques.
- To expose the student to new technologies, researches, products, algorithms, services

Course Outcomes:

On completion of the course, student will–

- be able to be familiar with basic technical writing concepts and terms, such as audienceanalysis, jargon, format, visuals, and presentation.
- be able to improve skills to read, understand, and interpret material on technology.
- improve communication and writing skills

Web Technology Lab

Course Objectives:

- To use current client side and server side web technologies
- To implement communication among the computing nodes using current client side andserver side technologies
- To design and implement web services with content management

Course Outcomes:

On completion of the course, student will be able to–

- develop web based application using suitable client side and server side web technologies
- develop solution to complex problems using appropriate method, technologies,frameworks, web services and content management

System Programming &Operating System Lab

Course Objectives:

- To implement basic language translator by using various needed data structures
- To implement basic Macroprocessor
- To design and implement Dynamic Link Libraries
- To implement scheduling schemes

Course Outcomes:

On completion of the course, student will be able to–

- Understand the internals of language translators
- Handle tools like LEX & YACC.
- Understand the Operating System internals and functionalities with implementation point ofview

Embedded Systems & Internet of Things Lab

Course Objectives:

- To understand functionalities of various single board embedded platforms fundamentals
- To develop comprehensive approach towards building small low cost embedded IoT system.
- To implement the assignments based on sensory inputs

Course Outcomes:

On completion of the course, student will be able to–

- Design the minimum system for sensor based application
- Solve the problems related to the primitive needs using IoT
- Develop full fledged IoT application for distributed environment