DEPARTMENT OF COMPUTER SCIENCE: PALAMURU UNIVERSITY

COURSE OBJECTIVES & OUTCOMES OF

MCA PROGRAMME

SEMESTER-I

PCC101 Mathematical Foundations of Computer Science

Course Objectives

1. To learn logic theory and Boolean algebra related to computer science
2. To understand relations and functions
3. To gain insights into recurrence relation
4. To comprehend algebraic structure
5. To study graph theory and concepts of trees

Course Outcomes – Students will learn to

1. Solve logic problems
2. Represent the relations and functions
3. Create recurrence relation
4. Apply algebraic structures
5. Work on various graph and tree concepts

PCC102 Data Structures using C

Course Objectives

1. To learn the features of C
2. To learn the linear and non-linear data structures
3. To explore the applications of linear and non-linear data structures
4. To learn to represent data using graph data structure
5. To learn the basic sorting and searching algorithms

Course Outcomes - Upon completion of the course, students will be able to:

1. Implement linear and non-linear data structure operations using C

2. Suggest appropriate linear / non-linear data structure for any given data set.
3. Apply hashing concepts for a given problem
4. Modify or suggest new data structure for an application
5. Appropriately choose the sorting algorithm for an application

PCC103 Object Oriented Programming using Java

Course Objectives

1. Learn the basics of object oriented programming
2. Study Java I/O mechanisms
3. Explore Java API
4. Develop graphics based Java programs
5. Learn swing framework

Course Outcomes

1. Explain OOPs features and concepts
2. Write basic Java programs
3. Write I/O programs in Java
4. Use various built-in Java classes and methods
5. Create window based Java programs

PCC104 Computer Architecture

Course Objectives

1. Learn the basics of data representation
2. Study register transfer micro operations
3. Explore CPU
4. Comprehend computer arithmetic algorithms
5. Learn I/O organization

Course Outcomes

1. Apply data representation methods
2. Write logic diagrams for microoperations

3. Write general register organization diagrams

4. Analyze computer arithmetic algorithms.

5. Explain I/O organization

PCC105 Probability and Statistics

Course Objectives

1. Understand the Linear Algebra concepts through vector spaces.

2. Basic concepts of probability and concepts of various discrete and continuous probability distributions.

3. Learning sampling procedure and various kinds of estimate techniques.

4. Learning hypotheses testing and acquiring knowledge of basic statistical Inference and its applications.

5. The concept of association between two variables and forecast future values by regression equations.

Course Outcomes

1. Understanding of Linear Algebra will boost the ability to understand and apply various data science algorithms.

2. Calculate probabilities by applying probability laws and theoretical results, knowledge of important discrete and continuous distributions, their inter relations with real time applications.

3. Understanding the use of sample statistics to estimate unknown parameters.

4. Become proficient in learning to interpret outcomes.

5. Compute and interpret Correlation Analysis, regression lines and multiple regression analysis with applications.

PCC106 Managerial Economics and Accountancy

Course Objectives

1. To learn important concepts of Managerial Economics and apply them to evaluate business decisions.

2. To understand various parameters that determine the consumers' behavior.

3. To evaluate the factors that affect production

4. To understand the concepts of capital budgeting and payback period.

5. To study the concepts of various book-keeping methods.

Course Outcomes

1. Apply the fundamental concepts of managerial economics to evaluate business decisions Understand types of Demand and factors related to it.

2. Identify different types of markets and determine price –output under perfect competition.

3. Determine working capital requirement and payback

4. Analyze and interpret financial statements through ratios

LCC151 Data Structures using C Lab

Course Objectives

1. To understand and implement basic data structures using C

2. To apply linear and non-linear data structures in problem solving.

3. To learn to implement functions and recursive functions by means of data structures

4. To implement searching and sorting algorithms

CourseOutcomes - Upon completion of the course, the students will be able to:

1. Write basic and advanced programs in C

2. Implement functions and recursive functions in C

3. Implement data structures using C

4. Choose appropriate sorting algorithm for an application and implement it in a modularized way

LCC152 Java Programming Lab

Course Objectives

1. Learn how to write simple java programs

2. Learn how to write multithreaded programs

3. Learn how to write I/O programs

4. Learn how to write serialization programs

5. Learn how to write program using URL class

Course Outcomes

1. Be able to write simple java programs

2. Be able to write multithreaded programs

3. Be able to write I/O programs

4. Be able to write serialization programs

5. Be able to write URL class program

HSC153 Soft Skills Lab

Course Objectives

1. Learn conversational skills

2. Learn reading strategies

3. Learn time management

4. Learn stress management

5. Learn career planning

Course Outcomes

1. Express conversational skills

2. Specify reading strategies

3. Perform time management

4. Perform stress management

5. Explore career planning

SEMESTER-II

PCC201 Operating Systems

Course Objectives

1. To gain the understanding of operating system and unix operating system in specific

2. To comprehend the details of process.

3. To learn the types and architecture of computer memory

4. To study file system and its implementation

5. To realize the operating system concepts into case studies.

Course Outcomes – Learners on completion of the course, be able to

1. Explain operating systems and Unix OS, illustrate the workings of various OS components.

2. Analyze the process, its states and process scheduling algorithms.

3. Demonstrate paging, demand paging, page replacement and segmentation with illustrations.

4. Elaborate the file access and allocation methods and mass storage structures.

5. Describe concrete implementations of Linux system and Windows 7.

PCC202 Database Management System

Course Objectives

1. Introduce database concepts along with ER modelling

2. Learn about relational databases and SQL query language

3. Define advanced SQL

4. Study DB transactions and explore concurrency concepts

5. Introduce NoSQL

Course Outcomes

1. Explain the DB concepts and model requirements as ER-model

2. Suggest relational algebra queries from text specification

3. Write SQL queries for the given questions

4. Elaborate indexing and hashing and describe concurrency control concepts

5. Comprehend NoSQL technology

PCC203 Design and Analysis of Algorithms

Course Objectives

1. Learn algorithms time complexity

2. Learn divide and conquer approach
3. Learn greedy method
4. Learn dynamic programming
5. Learn backtracking

Course Outcomes

1. Carry out algorithms time complexity
2. Explain divide and conquer approach
3. Illustrate greedy method
4. Elaborate dynamic programming
5. Explore backtracking

PCC204 Artificial Intelligence

Course Objectives

1. Learn python programming
2. Learn problem solving strategies
3. Learn propositional, predicate calculus and knowledge representation
4. Learn probability theory
5. Learn machine learning and learn NLP

Course Outcomes

1. Write python programs
2. Solve search problems
3. Apply propositional, predicate calculus and knowledge representation
4. Analyze probability theory
5. Explore machine learning and explain NLP

PCC205 Machine Learning

Course Objectives

1. Learn regression techniques
2. Learn dimensionality reduction methods

3. Learn classification schemes

4. Learn clustering mechanisms

5. Learn evaluation metrics

Course Outcomes

1. Solve regression problems

2. Apply dimensionality reduction methods

3. Analyze classification schemes

4. Explore clustering mechanisms

5. Explain evaluation metrics

PCC206 Operations Research

Course Objectives

1. Learn linear programming

2. Learn transportation problem

3. Learn assignment problem

4. Learn dynamic programming

5. Learn gaming theory

Course Outcomes

1. Solve linear problems

2. Apply transportation problems

3. Analyze assignment problems

4. Explore dynamic programming

5. Explain gaming theory

LCC251 Operating Systems Lab

Course Objectives

1. Learn shell commands and scripting

2. Learn CPU scheduling algorithms

3. Learn memory management algorithms

4. Learn synchronization problems

5. Explore file allocation strategies and disk scheduling algorithms

Course Outcomes

1. Be able to execute shell commands and write shell scripts

2. Be able to write programs on CPU scheduling

3. Be able to create memory management algorithms

4. Be able to execute programs to demonstrate synchronization problems

5. Be able to implement file allocation methods and be able to create disk scheduling algorithms

LCC252 AI with Python Lab

Course Objectives

1. Learn machine learning algorithms in python

2. Learn supervised algorithm programming

3. Learn unsupervised algorithm programming

4. Learn NLP programming

5. Learn neural network programming

Course Outcomes

1. Write machine learning algorithms in python

2. Write supervised algorithm programming

3. Write unsupervised algorithm programming

4. Write NLP programming

5. Write neural network programming

LCC253 Database Management Systems Lab

Course Objectives

1. Learn SQL queries

2. Learn PL/SQL stored procedures

3. Learn Triggers

4. Learn report generation methods

5. Learn database application creation

Course Outcomes

1. Write SQL queries

2. Write stored procedures

3. Write triggers

4. Use file locking and table locking facilities

5. Create small full-fledged database application

SIP321 Summer Internship

Intended Learning Outcomes

Upon successful completion of the internship, you should be able to

1. Communicate a practical understanding of how a technology actually operates

2. Demonstrate the ability to integrate and apply theoretical knowledge and skills developed in various courses to real-world situations in a business organization

3. Exhibit the ability to effectively work in a professional environment and demonstrate work ethic and commitment in a work-based environment

4. Demonstrate the ability to successfully complete internship assignments.

5. Reflect on personal and professional development needs and set strategic goals for advancing along an intended career path

6. Communicate effectively in a professional environment in both English and regional language, orally and in writing.

SEMESTER-III

PCC301 Software Engineering

Course Objectives

1. Learn the software problem and addressing it through various software processes
2. Study the SRS and software architecture
3. Understand planning and designing a software project
4. Comprehend the testing strategies and the need for performing testing
5. Learn how to carry out reengineering to the system and maintain it

Course Outcomes – Students will learn to

1. Apply software processes to solve software problem
2. Create SRS document and software architecture
3. Perform software planning in terms of staffing and scheduling
4. Create test cases and procedures
5. Re-engineer the developed software

PCC302 Computer Networks

Course Objectives

1. Comprehend the fundamentals of computer networks
2. Learn the aspects relevant to physical and datalink layer
3. Understand network layer and its significance and functionality
4. Study transport layer and its operations
5. Learn the protocols implemented at application layer

Course Outcomes - Upon completion of the course, students will be able to:

1. Elaborate the network model
2. Explain transmission media and functions of datalink layer
3. Create routing tables based on DVR and LSR
4. Describe TCP and UDP protocols
5. Explain application layer protocols

PCC303 Artificial Intelligence

Course Objectives:

To familiarize the principles of Artificial Intelligence

To study the techniques for knowledge representation and inference

To learn the techniques involved in the creation of intelligent systems

To study different applications like Game Playing Expert Systems, machine learning and natural language processing

Course outcomes : Student will be able to

Identify problems that are amenable to solution by AI method

Understand and analyze working of an AI technique

Formalize a given problem in the language/framework of different AI methods

PCC304 Web Technologies

Course Objectives

1. Learn basics of HTML and DHTML
2. Understand the workings of event model
3. Study the java scripting language
4. Learn the VB scripts
5. Comprehend the active server pages

Course Outcomes

1. Write HTML and DHTML programs
2. Create programs on event models
3. Implement java script programs
4. Write VB script programs
5. Create ASP programs

PEC311 Software Quality and Testing

Course Objectives

1. Learn the essentials of software quality

2. Study methods to integrate software quality activities in the project

3. Understand the software quality metrics

4. Learn building software testing strategy

5. Comprehend testing various artifacts of a software project

Course Outcomes

1. Explain the essentials of software quality

2. Elaborate the methods to integrate software quality activities in the project

3. Describe the software quality metrics

4. Discuss building software testing strategy

5. Perform testing various artifacts of a software project

PEC312 Distributed Systems

Course Objectives:

1. Understand the architecture, processes and communication of distributed system

2. Learn the naming and synchronization strategies

3. Study fault tolerance, and distributed object based system

4. Learn distributed file system and distributed web based system

5. Comprehend the distributed coordination based system and map reduce

Course Outcomes:

1. Explain the architecture, processes and communication of distributed system

2. Elaborate the naming and synchronization strategies

3. Describe the fault tolerance and distributed object based system

4. Discuss the distributed file system and distributed web based system

5. Explain distributed coordination based system and map reduce

PEC313 Internet of Things

Course Objectives:

1. Discuss fundamentals of IoT and its applications and requisite infrastructure

2. Describe Internet principles and communication technologies relevant to IoT

3. Discuss hardware and software aspects of designing an IoT system

4. Describe concepts of cloud computing and Data Analytics

5. Discuss business models and manufacturing strategies of IoT products

Course Outcomes: Student will be able to

1. Understand the various applications of IoT and other enabling technologies.

2. Comprehend various protocols and communication technologies used in IoT

3. Design simple IoT systems with requisite hardware and C programming software

4. Understand the relevance of cloud computing and data analytics to IoT

5. Comprehend the business model of IoT from developing a prototype to launching a product.

EC323 Image Processing

Course Objectives:

1. Understand image processing fundamentals

2. Understand image transforms

3. Understand image enhancement

4. Understand image restoration and feature extraction

5. Understand image reconstruction

Course Outcomes:

1. Learn image processing fundamentals

2. Learn image transforms

3. Learn image enhancement

4. Learn image restoration and feature extraction

5. Learn image reconstruction

PEC321 Network Security

Course Objectives:

1. Understand the significant aspects of network security

2. Comprehend secret and public key cryptography

3. Learn hash functions and digital signatures

4. Study the digital signatures and smart cards

5. Comprehend the applications of network applications

Course Outcomes:

1. Explain the fundamentals of network security

2. Elaborate the concepts secret and public key cryptography

3. Elucidate the hash functions digital signatures

4. Describe the digital signatures and smart cards

5. Explain the applications of network security

PEC421 Cyber Security

Course Objectives

1. Understand the policies and security evolution

2. Learn cyber security objectives and guidance

3. Study policy catalog and issues

4. Comprehend cyber management and infrastructure issues

5. Learn the cyber security case studies

Course Outcomes

1. Explain the policies and security evolution

2. Describe cyber security objectives and guidance

3. Discuss policy catalog and issues

4. Elaborate cyber management and infrastructure issues

5. Elucidate the case studies on cyber security

PEC314 Information Retrieval System

Course Objectives

1. Understand IR strategies

2. Study basic retrieval utilities

3. Learn cross language IR

4. Comprehend efficiency aspects

5. Learn distributed IR

Course Outcomes

1. Explain IR strategies

2. Elucidate basic retrieval utilities

3. Discuss cross language IR

4. Describe efficiency aspects

5. Elaborate distributed IR

PEC324 Natural Language Processing

Course Objectives

1. Learn elementary probability and information theory

2. Study the linguistic essentials

3. Comprehend statistical inference and word sense disambiguation

4. Understand evaluation measures and markov models

5. Learn probabilistic context free grammars

Course Outcomes – Learners on completion of the course, be able to

1. Explain elementary probability and information theory

2. Discuss the linguistic essentials

3. Describe statistical inference and word sense disambiguation

4. Elaborate evaluation measures and markov models

5. Elucidate probabilistic context free grammars

LCC351 Computer Networks Lab

Course Objectives:

1. Understand basic commands of networks

2. Learn socket program implementation

3. Understand connection oriented socket programs

4. Learn connectionless socket programs

5. Understand DNS implementation

Course Outcomes - Upon completion of the course, the students will be able to:

1. Execute basic commands of networks
2. Implement socket program implementation
3. Execute connection oriented socket programs
4. Implement connection less socket programs
5. Execute DNS implementation

LCC352 Software Engineering Lab

Course Objectives:

1. Learn use case diagram
2. Learn class and object diagram
3. Understand sequence and collaboration diagrams
4. Study state-chart and activity diagrams
5. Comprehend component and deployment diagrams

Course Outcomes:

1. Apply use case diagram
2. Apply class and object diagram
3. Apply sequence and collaboration diagrams
4. Apply state-chart and activity diagrams
5. Apply component and deployment diagrams

SEMESTER- IV

PEC411 Block Chain Technologies

Course Objectives

1. Learn the basic concept of Cryptographic Hash Functions, Hash Pointers
2. Study Elliptic Curve Digital Signature Algorithm.

3. A technical overview of decentralized digital currencies like Bitcoin, as well as their broader economic, legal and financial context.

4. To get an insight into the working of the Bitcoin network Wallet

5. Comprehend Bitcoin mining and distributed consensus for reliability.

Course Outcomes:

1. Learn the basics of hash functions

2. Learn the importance of digital signature

3. Understand the structure of a blockchain.

4. Learn different ways of storing Bitcoin keys, security measures.

5. Learn how Bitcoin relies on mining.

PEC412 Big Data Analytics

Course Objectives:

1. Understand big data fundamentals

2. Understand Learn hadoop ecosystem

3. Understand mapreduce and hbase fundamentals

4. Understand database concepts related to big data

5. Understand NoSQL fundamentals

Course Outcomes:

1. Learn how to handle big data

2. Learn hadoop ecosystem

3. Learn mapreduce and hbase fundamentals

4. Learn database concepts related to big data

5. Learn NoSQL fundamentals

PEC413 Cloud Computing

Course Objectives:

1. Learn the cloud computing services including resource virtualization

2. Study the scaling, planning and file system and storage

3. Understand database technology and security issues

4. Comprehend portability issues and programming model case study

5. Learn the enterprise architecture and its related information

Course Outcomes:

1. Elaborate the cloud computing services and resource virtualization
2. Explain the scaling, planning and file system and storage
3. Describe the database technology and security issues
4. Elucidate portability issues and programming model case study
5. Discuss the enterprise architecture and its related information

PEC414 Optimization Techniques

Course Objectives:

1. Understand the optimization basics
2. Understand optimization using calculus
3. Understand dynamic programming and its applications
4. Understand integer programming
5. Understand advanced optimization techniques

Course Outcomes:

1. Learn the optimization basics
2. Learn optimization using calculus
3. Learn dynamic programming and its applications
4. Learn integer programming
5. Learn advanced optimization techniques

PEC421 Cyber Security

Course Objectives:

1. Understand the policies and security evolution
2. Learn cyber security objectives and guidance
3. Study policy catalog and issues
4. Comprehend cyber management and infrastructure issues
5. Learn the cyber security case studies

Course Outcomes:

1. Explain the policies and security evolution
2. Describe cyber security objectives and guidance
3. Discuss policy catalog and issues
4. Elaborate cyber management and infrastructure issues
5. Elucidate the case studies on cyber security

PEC422 Digital Forensics

Course Objectives:

1. Understand the basic digital forensics and techniques for conducting the forensic examination on different digital devices.
2. Understand how to examine computing investigations
3. Understand data acquisition
4. Understand processing crimes
5. Understand forensics tools

Course Outcomes:

1. Know how to apply forensic analysis tools to recover important evidence for identifying computer crime.
2. To be well-trained as next-generation computer crime investigators.
3. Learn data acquisition
4. Learn processing crimes
5. Learn forensics tools

PEC423 Deep Learning

Course Objectives:

1. Learn deep learning basics and optimization algorithms
2. Understand deep learning computation, CNNs and modersn CNNs
3. Study recurrent neural networks and its modern versions
4. Learn computer vision

5. Comprehend GANs

Course Outcomes:

1. Learn deep learning basics and optimization algorithms
2. Understand deep learning computation, CNNs and modersn CNNs
3. Study recurrent neural networks and its modern versions
4. Learn computer vision
5. Comprehend GANs

PEC424 Enterprise Architecture

Course Objectives:

1. Learn the fundamentals of EA
2. Study the business architecture
3. Understand the organizational structure of EA
4. Comprehend enterprise engineering
5. Gain insights into cloud computing opportunities for EA

Course Outcomes:

1. Learn the fundamentals of EA
2. Study the business architecture
3. Understand the organizational structure of EA
4. Comprehend enterprise engineering
5. Gain insights into cloud computing opportunities for EA

OE431 Professional Ethics

Course Objectives:

1. Learn the developments of legal profession in India
2. Study the seven lamps of advocacy
3. Understand disciplinary proceedings
4. Comprehend the accountancy for lawyers
5. Gain insights into safety and risk

Course Outcomes:

1. Explain the developments of legal profession in India
2. Describe the seven lamps of advocacy
3. Elaborate disciplinary proceedings
4. Elucidate the accountancy for lawyers
5. Discuss insights into safety and risk

OE432 Constitution of India

Course Objectives:

1. Learn the basics of the constitution
2. Understand the structure of the union government
3. Comprehend the state government structure
4. Gain insights into local administration
5. Study about the election commission

Course Outcomes:

1. Explain the basics of the constitution
2. Elucidate the structure of the union government
3. Elaborate the state government structure
4. Describe the local administration
5. Discuss the election commission

OE433 Disaster Management

Course Objectives:

1. To learn about various types of natural and man-made disasters.
2. To know pre- and post-disaster management for some of the disasters.
3. To know about various information and organisations in disaster management in India.
4. To get exposed to technological tools and their role in disaster management.

Course Outcomes:

After competing this course, student will be

1. Acquainted with basic information on various types of disasters

2. Knowing the precautions and awareness regarding various disasters
3. Decide first action to be taken under various disasters
4. Familiarised with organisation in India which are dealing with disasters
5. Able to select IT tools to help in disaster management

OE434 Organization Behaviour

Course Objectives:

1. Learn management process and functions
2. Study decision making and negotiations
3. Comprehend psychological contract
4. Understand models of organization behaviour
5. Gain insights into organization design

Course Outcomes:

1. Explain management process and functions
2. Discuss decision making and negotiations
3. Describe psychological contract
4. Elaborate models of organization behaviour
5. Elucidate the organization design

OE435 Intellectual Property and Cyber Law

Course Objectives:

1. Learn the fundamentals of intellectual property
2. Study the basics of international instruments of IPR
3. Understand the laws concerning copyright in India
4. Comprehend the IP in trademarks
5. Gain insights into the concept of patent

Course Outcomes:

1. Explain the fundamentals of intellectual property
2. Elaborate the basics of international instruments of IPR

3. Describe the laws concerning copyright in India
4. Discuss the IP in trademarks
5. Explain the concept of patent

OE436 Environmental Science

Course Objectives:

1. Learn the scope and importance of environmental studies
2. Study about the environment and natural resources
3. Understand the environmental pollution
4. Comprehend the regional and sectoral issues concerning environment
5. Gain insights into social issues and the environment

Course Outcomes:

1. Explain the scope and importance of environmental studies
2. Elaborate the environment and natural resources
3. Describe the environmental pollution
4. Discuss the regional and sectoral issues concerning environment
5. Explain the social issues and the environment

Proj401 Project Work

Course Outcome:

After completion of Eight weeks of Project work, students are able to:

1. Collect the Data through Preliminary Investigation
2. Analyse and Design the Collected Data
3. Create the Software Design of the Project
4. Create the Database Design
5. Implement the Design of the project by writing code
6. Perform Testing of the Project
7. Implement the developed software in the real world