



DANTULURI NARAYANA RAJU COLLEGE

(Autonomous)

BHIMAVARAM, W.G.DIST, ANDHRA PRADESH, INDIA, PIN- 534202.

(Accredited at 'B⁺⁺' level by NAAC)

(Affiliated to Adikavi Nannaya University, Rajamahendravaram)

COMPUTER SCIENCE

SEMESTER I

COURSE 1 – PROBLEM SOLVING IN C

CO	COURSE Outcomes (COs)	LEVEL
CO1	Understand the evolution and functionality of a Digital Computer.	L2
CO2	Apply logical skills to analyze a given problem	L3
CO3	Sketch an algorithm for solving a given problem.	L3
CO4	Understand „C“ language constructs like Iterative statements, Array processing, Pointers, etc.	L2
CO5	Apply C“ language constructs to the algorithms to write a “C“ language program	L3
CO6	Understand the memory allocation and deallocation concepts in C.	L2

SEMESTER II COURSE 2 –DATA STRUCTURES USING C

CO	COURSE Outcomes (COs)	LEVEL
CO1	Understand available Data Structures for data storage and processing.	L2
CO2	Understand Data Structure and their real-time applications - Stack, Queue, Linked List, Trees and Graph	L2
CO3	Choose a suitable Data Structures for an application	L3
CO4	Understand basic operations like insert, delete, search, update and traversal	L2
CO5	Sketch and develop programs using various data structures	L3
CO6	Apply the applications of algorithms for sorting, pattern matching etc.	L3



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SEMESTER III COURSE 3 - DATABASE MANAGEMENT SYSTEM

CO	COURSE Outcomes (COs)	LEVEL
CO1	Understand about Database and DBMS	L2
CO2	Understand the fundamental concepts of DBMS with special emphasis on relational data model.	L2
CO3	Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database	L2
CO4	Explain about ER Diagrams and design database schemas based on the model.	L2
CO5	Construct a small database using SQL.	L3
CO6	Discuss about Store, Retrieve data in database.	L2

SEMESTER IV COURSE 4 – OBJECT ORIENTED PROGRAMMING USING JAVA

CO	COURSE Outcomes (COs)	LEVEL
CO1	Understand the importance of encapsulation and information.	L2
CO2	Understand the benefits of a well-structured program	L2
CO3	Understand different computer programming paradigms	L2
CO4	Understand underlying principles of Object-Oriented Programming in Java	L2
CO5	Demonstrate the Structure of java program.	L2
CO6	Solve real-world problems through software development in high-level programming language like Java	L3

COURSE 5 – OPERATING SYSTEMS

CO	COURSE Outcomes (COs)	LEVEL
CO1	Understand fundamental concepts of operating systems	L2
CO2	Analyze process synchronization techniques and deadlocks	L4
CO3	Understand different approaches for memory management.	L2
CO4	Explain memory management techniques and file system design	L2
CO5	Understand protection mechanisms in operating systems	L2
CO6	Sketch the functions of a contemporary operating system.	L3



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SEMESTER V COURSE 6A –WEB INTERFACE DESIGNING TECHNOLOGIES

CO	COURSE Outcomes (COs)	LEVEL
CO1	Understand and appreciate the web architecture and services.	L2
CO2	Understand about various components of a website.	L2
CO3	Demonstrate skills regarding creation of a static website and an interface to dynamic website.	L2
CO4	Understand how to install word press and gain the knowledge of installing various plugins to use in their websites.	L2
CO5	Analyze the working with media-Adding, editing, deleting media elements	L4
CO6	Change the appearance of site using CSS.	L3

COURSE 7A –WEB APPLICATIONS DEVELOPMENT USING PHP & MYSQL

CO	COURSE Outcomes (COs)	LEVEL
CO1	Understand and appreciate the web architecture and services.	L2
CO2	Explain Python syntax and semantics and be fluent in the use of Python flow control and functions.	L2
CO3	Demonstrate proficiency in handling Strings and File Systems.	L3
CO4	Apply In-Built functions and Create User defined functions in PHP programming.	L3
CO5	Interpret the concepts of Object-Oriented Programming as used in Python.	L3
CO6	Apply concepts of Python programming in various fields related to IOT, Web Services and Databases in Python.	L3



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COURSE 6B –INTERNET OF THINGS

CO	COURSE Outcomes (COs)	LEVEL
CO1	Understand the IoT Fundamentals	L2
CO2	Analyze the architecture of IoT systems	L4
CO3	Understand various concepts, terminologies and architecture of IoT systems.	L2
CO4	Understand various applications of IoT	L2

COURSE 7B –APPLICATION DEVELOPMENT USING PYTHON

CO	COURSE Outcomes (COs)	LEVEL
CO1	Understand and appreciate the web architecture and services.	L2
CO2	Demonstrate proficiency in handling Strings and File Systems.	L3
CO3	Interpret the concepts of Object-Oriented Programming as used in Python.	L2
CO4	Apply concepts of Python programming in various fields related to IOT, Web Services and Databases in Python.	L3

COURSE 6C –DATA SCIENCE

CO	COURSE Outcomes (COs)	LEVEL
CO1	Understand the Fundamentals of Data Science	L2
CO2	Demonstrate proficiency with statistical analysis of data.	L2
CO3	Demonstrate skill in data management	L2
CO4	Apply data science concepts and methods to solve problems in real-world contexts and will communicate these solutions effectively	L3



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COURSE 7C –PYTHON FOR DATA SCIENCE

CO	COURSE Outcomes (COs)	LEVEL
CO1	Identify the need for data science and solve basic problems using Python built-in data types and their methods.	L2
CO2	Sketch an application with user-defined modules and packages using OOP concept	L3
CO3	Use efficient storage and data operations using NumPy arrays.	L3
CO4	Apply powerful data manipulations using Pandas.	L3
CO5	Complete data pre-processing and visualization using Pandas	L3

SEMESTER I COURSE 1 – PROBLEM SOLVING IN C LAB

CO	COURSE Outcomes (COs)	LEVEL
CO1	understand and trace the execution of programs written in C language	L2
CO2	Apply Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor	L3
CO3	Analze programs that perform operations using derived data types.	L4
CO4	Apply algorithms using c programming Language	L3

SEMESTER II COURSE 2 –DATA STRUCTURES USING C LAB

CO	COURSE Outcomes (COs)	LEVEL
CO1	Apply data structures for problem solving.	L3
CO2	Analyze the time and space efficiency of the data structure	L4
CO3	Identity the appropriate data structure for given problem	L2
CO4	Understand the concept of Dynamic memory management, data types, algorithms, Big O notation.	L2



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SEMESTER III COURSE 3 - DATABASE MANAGEMENT SYSTEM LAB

CO	COURSE Outcomes (COs)	LEVEL
CO1	Apply Basic DDL, DML and DCL commands	L3
CO2	Understand Data selection and operators used in queries and restrict data retrieval and control the display order	L2
CO3	Understand the PL/SQL architecture and write PL/SQL code for procedures, triggers, cursors, exception handling etc..	L2
CO4	Understand the normalization of databases through various case studies	L2

SEMESTER IV COURSE 4 – OBJECT ORIENTED PROGRAMMING USING JAVA LAB

	COURSE Outcomes (COs)	LEVEL
CO1	Apply fundamental algorithmic problems including type casting, inheritance, and polymorphism.	L3
CO2	Understand generic programming, templates, file handling.	L2
CO3	Demonstrate the implementation of constructors, destructors and operator overloading.	L3
CO4	Analyze solutions for a range of problems using objects and classes.	L4

COURSE 5 – OPERATING SYSTEMS LAB

	COURSE Outcomes (COs)	LEVEL
CO1	Understand the basics of operating systems like kernel, shell, types and views of operating systems	L2
CO2	Describe the various CPU scheduling algorithms and remove deadlocks.	L2
CO3	Explain various memory management techniques and concept of thrashing	L2
CO4	Explain the various features of distributed OS like Unix, Linux, windows etc.	L2



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SEMESTER V COURSE 6A –WEB INTERFACE DESIGNING TECHNOLOGIES LAB

	COURSE Outcomes (COs)	LEVEL
CO1	Explain the history of the internet and related internet concepts that are vital in understanding web development.	L2
CO2	Use the concepts of JavaScript and Java	L3
CO3	Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet.	L3
CO4	Discuss the insights of internet programming and implement complete application over the web.	L2

COURSE 7A –WEB APPLICATIONS DEVELOPMENT USING PHP & MYSQL LAB

	COURSE Outcomes (COs)	LEVEL
CO1	Apply Basic DDL, DML and DCL commands.	L3
CO2	Discuss the insights of internet programming and implement complete application over the web.	L2
CO3	Understand the features like functions, forms in PHP.	L2
CO4	Understand Files, OOPs concepts , Cookies, Sessions and Data base.	L2

COURSE 6B –INTERNET OF THINGS LAB

	COURSE Outcomes (COs)	LEVEL
CO1	Explain the function blocks, three-layer model and five-layer model of IoT	L2
CO2	Extend an understanding of various communication network: HAN, NAN, FAN, WAN and WSNs	L2
CO3	Apply simple programs in IOT	L3
CO4	Understand various concepts, terminologies and architecture of IoT systems.	L2



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COURSE 7B –APPLICATION DEVELOPMENT USING PYTHON LAB

	COURSE Outcomes (COs)	LEVEL
CO1	understand the high-performance programs designed to strengthen the practical expertise.	L2
CO2	understand a range of Object-Oriented Programming, as well as in-depth data and information processing techniques.	L2
CO3	Explain the basic concepts scripting and the contributions of scripting language	L2
CO4	Apply concepts of Python programming in various fields related to IOT, Web Services and Databases in Python.	L3

COURSE 6C –DATA SCIENCE LAB

	COURSE Outcomes (COs)	LEVEL
CO1	Understand discrete structures such as sets, relations, and lattices.	L2
CO2	Explain basics of Graph theory and how it can be used to visualize and simplify problems.	L2
CO3	Analyse and study various proof techniques.	L4
CO4	Describe of basic algorithmic complexity.	L2

COURSE 7C –PYTHON FOR DATA SCIENCE LAB

	COURSE Outcomes (COs)	LEVEL
CO1	Apply python programming constructs to build small to large scale applications	L3
CO2	Use one-dimensional and multi -dimensional Numpy arrays, and pandas series and data frames	L3
CO3	Apply data loading, cleaning ,transformation and merging	L3
CO4	Sketch different plots for basic exploratory data analysis	L3