NARAYANA ENGINEERING COLLEGE::GUDUR
NAAC 'A' GRADE (AUTONOMOUS)
Dhurjati Nagar, Gudur, Tirupati Dist., AP - 524101

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

COURSE OUTCOMES (R24 Regulation)

(NECRM.C.A24)

COURSE NAME: MATHEMATICAL FOUNDATIONS OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING (24MC101)

24MC101	MATHEMATICAL FOUNDATIONS OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING
CO _1	Describe Linear Algebra & Vector Spaces concepts.**(BL-2)**
CO_ 2	Demonstrate Analytic Geometry & Matrix Decomposition.**(BL-2)**
CO _3	Understand descriptive statistics (**BL-2)**
CO _4	Understand statistical methods and probability **(BL-2)**
CO _5	Illustrate Statistical and probability distributions**.(BL-3)**

COURSE NAME: COMPUTER ORGANIZATION AND ARCHITECTURE (24MC102)

24MC102	COMPUTER ORGANIZATION AND ARCHITECTURE
CO _1	Analyze how the functional units of a computer operate, interact, and communicate.**(BL-4)**
CO_ 2	Identify the representation of numbers and perform arithmetic operations.**(BL-3)**
CO _3	Interpret the functional architecture of computing system.**(BL-2)**
CO _4	Define a logic for assembly language programming**.(BL-1)**
CO _5	Analyze the memory organization of computer system.**(BL-4)**

COURSE NAME: DATABASE MANGEMENT SYSTEMS (24MC103)

24MC103	DATABASE MANGEMENT SYSTEMS
CO _1	Describe database technologies and database design.**(BL-2)**
CO_ 2	Demonstrate Relational Database Management Systems.**(BL-2)**
CO _3	Construct queries, procedures for database creation in RDBMS**.(BL-3)**
CO _4	Apply normalization on database design and Demonstrate transaction management.**(BL-3)**
CO _5	Demonstrate concurrency control techniques and techniques for database recovery and indexing.**(BL-2)**

COURSE NAME: DATA STRUCTURES (24MC104)

24MC104	DATA STRUCTURES
CO _1	Understand basic concepts of data structures and algorithm analysis. **(BL - 2)**
CO_ 2	Develop the applications using stacks and queues. **(BL - 3)**
CO _3	Demonstrate use of different types of linked lists. **(BL - 2)**
CO _4	Apply the tree data structures for various applications. **(BL - 3)**
CO _5	Apply the graph data structures for various applications. **(BL - 3)**

COURSE NAME: OPERATING SYSTEMS (24MC105)

24MC105	OPERATING SYSTEMS
CO _1	Describe the concept operating system and operating system design. **(BL-2)**
CO_ 2	Analyze Process and CPU Scheduling, Process Coordination with concurrencies. **(BL-3)**
CO _3	Identify and evaluate Memory Management and Virtual Memory. **(BL-3)**
CO _4	Organize File System Interface. **(BL-3)**
CO _5	Understand Mass Storage Structure and Protection Mechanism. **(BL-2)**

COURSE NAME: PYTHON PROGRAMMING (24MC106)

24MC106	PYTHON PROGRAMMING
CO _1	mmarize the fundamental concepts of python programming. **(BL - 2)**
CO_ 2	ply the basic elements and constructs the python to solve logical problems**.(BL-3)**
CO _3	ganize data using different data structures of python. **(BL - 3)**
CO _4	plement the files modules and packages in programming. **(BL - 3)**
CO _5	ply object-oriented concepts to build simple applications. **(BL - 3)**

COURSE NAME: COMMUNICATION SKILL LAB (24MC107)

24MC107	COMMUNICATION SKILL LAB
CO _1	To understand the communication concepts and to develop the students' competence in communication at an advanced level
CO_ 2	To participate in Team activities that leads to the development of collaborative work skills
CO _3	To develop strategies appropriately to improve Listening skills and Spoken Skills
CO _4	To provide the knowledge on Presentation Skills, Group Discussion, Interview Skills

	and Resume Writing
CO _5	To improve skills to write resume, cover letter and Technical report

COURSE NAME: DATABASE MANAGEMENT SYSTEMS LAB (24MC108)

24MC108	DATABASE MANAGEMENT SYSTEMS LAB
CO _1	Utilizing Data Definition Language (DDL), Data Manipulation Language (DML), and Data Control Language (DCL) commands effectively within a database environment **(BL3)**
CO_ 2	Constructing and execute queries to manipulate and retrieve data from databases **(BL3)**
CO _3	Develop application programs using PL/SQL **(BL3)**
CO _4	Analyze requirements and design custom Procedures, Functions, Cursors, and Triggers, leveraging their capabilities to automate tasks and optimize database functionality **(BL4)**
CO _5	Establish database connectivity through JDBC(Java Database Connectivity) **(BL3)**

COURSE NAME: DATA STRUCTURES LAB (24MC109)

24MC109	DATA STRUCTURES LAB
CO _1	Apply the Arrays for solving the problems**. (BL -3)**
CO_ 2	Implement searching and sorting algorithms for given applications**. (BL -3)**
CO _3	Apply the stacks and queues and linked lists for solving the given applications**. (BL -3)**
CO _4	Implement operations on trees and graphs for given applications. **(BL -3)**

COURSE NAME: PYTHON PROGRAMMING LAB (24MC110)

24MC110	PYTHON PROGRAMMING LAB
CO _1	Understanding and use of python- Basic Concepts**(BL -2)**
CO_ 2	Solve the concepts of python functions and data structures**(BL -3)**
CO _3	Understand the concepts of files, modules, multithreading and regular expressions **(BL -2)**
CO _4	Solve the concepts of class and exception handling **(BL -3)**

SEMESTER-II

COURSE NAME: ADVANCED JAVA PROGRAMMING (24MC201)

24MC201	ADVANCED JAVA PROGRAMMING
CO _1	Constructprogramsonclasses,inheritance,polymorphismandinterfaces.(BL-3)
CO_ 2	Develop packages, handling of Exceptions.(BL-3)
CO _3	Construct programs using multi-threading and Applets.(BL-3)
CO _4	Develop database applications using JDBC and Servlets.(BL 3)
CO _5	Design enterprise application using Java Server Pages(JSP).(BL 3)

COURSE NAME: ARTIFICIALINTELLIGENCE (24MC202)

24MC202	ARTIFICIALINTELLIGENCE
CO _1	Describe applications of Artificial Intelligence.(BL-2)
CO_ 2	Evaluate problem solving strategies in AI.(BL-3)
CO _3	Illustrate problem reduction techniques.(BL-2)
CO _4	List the logic concepts.(BL-2)
CO _5	Analyze the current knowledge representation techniques in AI.(BL-3)

COURSE NAME: MOBILE APPLICATION DEVELOPMENT (24MC203)

24MC203	MOBILE APPLICATION DEVELOPMENT
CO _1	Identify various concepts of mobile programming that make it unique from programming for other platforms,
CO_ 2	Critique mobile applications on their design pros and cons,
CO _3	Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces
CO _4	Program mobile applications for the Android operating system that use basic and advanced phone features, and
CO _5	Deploy applications to the Android marketplace for distribution.

COURSE NAME: SOFTWARE ENGINEERING (24MC204)

24MC204	SOFTWARE ENGINEERING
CO _1	Identify the best suitable Process Methodology for developing a quality-oriented software solution **(BL-3)**
CO_ 2	Sketch the requirements analysis model for a project work by using various modelling diagrams. **(BL-3)**
CO _3	Apply the standard design principles based on the suitable architectural styles for

	given specifications. **(BL-3)**
CO _4	Describe the standard Golden rules for developing the user interface. **(BL-2)**
CO _5	Apply testing principles on software project and identify various software metrics **(BL-3)**

COURSE NAME: OBJECT ORIENTED ANALYSIS AND DESIGN (24MC212)

24MC212	OBJECT ORIENTED ANALYSIS AND DESIGN
CO _1	Define the concepts of object model.(BTL-2)
CO_ 2	Identify the classes and vocabulary of the problem domain. (BTL-2)
CO _3	Sketch the class and object diagrams for various applications. (BTL-3)
CO _4	Apply the basics of behavioural modelling to behavioural diagrams. (BTL-3)
CO _5	Sketch the model various components and deployment diagram for the applications.(BTL-3)

COURSE NAME: BIG DATA ANALYTICS (24MC214)

24MC214	BIG DATA ANALYTICS
CO _1	To explore the fundamental concepts of Big Data**.(BL-2)**
CO_ 2	To Learn Basic concepts of Hadoop. **(BL-2)**
CO _3	To Write Hadoop MapReduc ePrograms for analyzing Big data. **(BL-2)**
CO _4	To Explore Hadoop Environment. **(BL-2)**
CO _5	To Learn fundamentals of HBase and Zookeeper. **(BL-2)**

COURSE NAME: ADVANCED JAVA PROGRAMMING LAB (24MC206)

24MC206	ADVANCED JAVA PROGRAMMING LAB
CO _1	Construct programs using Class, object and Constructor relationship in Object Oriented Programming.
CO_ 2	Implement basic knowledge of Operations, Expressions, Control-flow, and Strings with the help of Java in Object Oriented Programming.
CO _3	Analyze the significance of various key words and implement reusability of code, Encapsulation and polymorphism technique in OOPs.
CO _4	Implements Interface , exception handling in Java
CO _5	Implement Multithreading ,packages and Applet (Web program in java) Programming concept in Java.

COURSE NAME: ARTIFICIAL INTELLIGENCE LAB (24MC207)

24MC207	ARTIFICIAL INTELLIGENCE LAB
CO _1	State applications of Artificial Intelligence
CO_ 2	Enumerate problem solving strategies in AI
CO _3	Illustrate problem reduction techniques
CO _4	Apply knowledge representation techniques to solve real world problems
CO _5	Apply Computational Intelligence techniques to solve real-world problems

COURSE NAME: MOBILE APPLICATION DEVELOPMENT LAB (24MC208)

24MC208	ARTIFICIAL INTELLIGENCE LAB
CO _1	**Understand and use mobile development environments** to build, test, and debug mobile applications.
CO_ 2	**Design intuitive user interfaces (UIs)** using mobile UI components and layouts for enhanced user experience.
CO _3	**Develop interactive mobile applications** using event handling, activities, fragments, and intents.
CO _4	**Implement data storage mechanisms** such as shared preferences, local databases (SQLite/Room), and file handling.
CO _5	**Integrate mobile applications with web APIs and network services** for data exchange and cloud-based interactions.

SEMESTER- III

COURSE NAME: COMPUTER NETWORKS (24MC301)

24MC301	COMPUTER NETWORKS
CO _1	Choose suitable transmission media depending on the requirements.(BL-2)
CO_ 2	Determine the errors in data transfer between source and destination. (BL-3)
CO _3	Obtain the skills of sub netting and routing mechanisms. (BL-2)
CO _4	Illustrate reliable, unreliable communication on public networks. (BL-3)
CO _5	Demonstrate the elements of socket programming, principles of protocols. (BL-3)

COURSE NAME: FULL STACK DEVELOPMENT (24MC302)

24MC302	FULL STACK DEVELOPMENT
CO _1	Gain knowledge to develop dynamic web pages using HTML, CSS**(BL-2)**
CO_ 2	Learn the basics of Java Script**(BL-2)**
CO _3	Demonstrate server-side scripting with PHP language**(BL-2)**
CO _4	Gain knowledge of server-side scripting, validation of forms**(BL-2)**
CO _5	Working with XML and processing of XML Data .**(BL-3)**

COURSE NAME: DATA SCIENCE (24MC303)

24MC303	DATA SCIENCE
CO _1	Memorize the statistics concepts applicable to data science **(BL-1)**
CO_ 2	Demonstrate data analysis, manipulation and visualization of data using Python libraries such as Pandas, Matplotlib and Plotly etc. **(BL-2)**
CO _3	Enumerate machine learning algorithms. **(BL-1)**
CO _4	Analyze the various applications of data science**. (BL-4)**
CO _5	To demonstrate the clustering algorithms .**(BL-3)**

COURSE NAME: SOFTWARE PROJECT MANAGEMENT (24MC310)

24MC310	SOFTWARE PROJECT MANAGEMENT
CO _1	Analyze the concept of software management economics.(BL-4)
CO_ 2	Determine how to improve software economics.(BL-3)
CO _3	Analyze life cycle phases in project development and artifact sets.(BL-4)
CO _4	Define the workflow of the process and project organization responsibilities.(BL-1)
CO _5	Illustrate the project metrics and process instrumentation. (BL-1)

COURSE NAME: CLOUD COMPUTING (24MC312)

24MC312	CLOUD COMPUTING
CO _1	**Remembe**r the **key dimensions** of the challenge of Cloud Computing**(BL-2)**
CO_ 2	**Apply** of the economics, financial, and technological implications for **selecting cloud computing for own organization(BL-2)**
CO _3	**Illustrate** the financial, technological, and organizational capacity of employer's for actively **initiating and installing cloud-based applications.(BL-2)**
CO _4	**Demonstrate** of own organizations needs for capacity **building and training in cloud computing-related Areas(BL-3)**
CO _5	**Assessment** of Cloud resources management and scheduling of the cloud resources and **Storage systems in Cloud(BL-2)**

COURSE NAME: DATA SCIENCE LAB (24MC306)

24MC306	DATA SCIENCE LAB
CO _1	Create python programs on Numpy, pandas, MatplotLib and Plotly.
CO_ 2	Write python basic programs using regression.
CO _3	Apply python control structures for classification techniques.
CO _4	Implement programs on clustering techniques using python.

COURSE NAME: FULL STACK DEVELOPMENT LAB (24MC305)

24MC305	FULL STACK DEVELOPMENT LAB
CO _1	Build a web page on their own and using validations
CO_ 2	Apply basic responsive programs using Angular Js
CO _3	Apply the concepts for writing the programs using XML
CO _4	Build the server side applications with data base connectivity using forms

COURSE NAME: COMPUTER NETWORKS LAB (24MC304)

24MC304	COMPUTER NETWORKS LAB
CO _1	Define basic concepts of networking **(BL-3)**
CO_ 2	Apply error detection control techniques**(BL-3)**
CO _3	Apply packet routing techniques **(BL-3)**
CO _4	Develop Client Server programming **(BL-3)**

SEMESTER- IV

COURSE NAME: CYBER SECURITY (24MC401)

24MC401	CLOUD COMPUTING
CO _1	Illustrate the Cyber security and troubleshooting of Cyber Security(BL-4)
CO_ 2	Design of new security approaches and Security Tools in Cyber Crimes(BL-6)
CO _3	Applying Computer Forensics and practices to the environment (BL-4)
CO _4	Ability to implement Computer forensics to protect Devices form atTacks(BL-3)
CO _5	Ability how to Implement Protect the network from both internal and external attacks(BL-1)