

COURSE OUTCOMES

Semester	Course Code	Course Title	Hours	Credits
I	C1	PROBLEM SOLVING IN C	60	3

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand the evolution and functionality of a Digital Computer.
2. Apply logical skills to analyse a given problem
3. Develop an algorithm for solving a given problem.
4. Understand „C“ language constructs like Iterative statements, Array processing, Pointers, etc.
5. Apply „C“ language constructs to the algorithms to write a „C“ language program.

Semester	Course Code	Course Title	Hours	Credits
II	C2	DATA STRUCTURES USING C	60	3

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand available Data Structures for data storage and processing.
2. Comprehend Data Structure and their real-time applications - Stack, Queue, Linked List, Trees and Graph
3. Choose a suitable Data Structures for an application
4. Develop ability to implement different Sorting and Search methods
5. Have knowledge on Data Structures basic operations like insert, delete, search, update and traversal
6. Design and develop programs using various data structures
7. Implement the applications of algorithms for sorting, pattern matching etc

Semester	Course Code	Course Title	Hours	Credits
III	C3	DATABASE MANAGEMENT SYSTEMS	60	3

Course Learning Outcomes:

On completing the subject, students will be able to:

1. Gain knowledge of Database and DBMS.
2. Understand the fundamental concepts of DBMS with special emphasis on relational data model.
3. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database
4. Model database using ER Diagrams and design database schemas based on the model.
5. Create a small database using SQL.
6. Store, Retrieve data in database.

Semester	Course Code	Course Title	Hours	Credits
IV	C4	OBJECT ORIENTATED PROGRAMMI NG THROUGH JAVA	60	3

Course Learning Outcomes: At the end of this course student will:

1. Understand the benefits of a well-structured program
2. Understand different computer programming paradigms
3. Understand underlying principles of Object-Oriented Programming in Java
4. Develop problem-solving and programming skills using OOP concepts
5. Develop the ability to solve real-world problems through software development in high-level programming language like Java

Semester	Course Code	Course Title	Hours	Credits
IV	C5	OPERATING SYSTEMS	60	2

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Know Computer system resources and the role of operating system in resource management with algorithms
2. Understand Operating System Architectural design and its services.
3. Gain knowledge of various types of operating systems including Unix and Android.
4. Understand various process management concepts including scheduling, synchronization, and deadlocks.

5. Have a basic knowledge about multithreading.
6. Comprehend different approaches for memory management.
7. Understand and identify potential threats to operating systems and the security features design to guard against them.
8. Specify objectives of modern operating systems and describe how operating systems have evolved over time.
9. Describe the functions of a contemporary operating system

Semester	Course Code	Course Title	Hours	Credits
V	C5	Software Engineering	60	2

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to

- ✚ Study a body of knowledge relating to Software Engineering, Software reengineering, and maintenance.
- ✚ Understand the principles of large scale software systems, and the processes that are used to build them.
- ✚ Have skills in the most widely used approach to software construction object-orientation (OO), including OO requirement specifications, OO analysis, OO design, OO Programming, OO testing and maintenance
- ✚ Use tools and techniques for producing application software solutions from informal and semi-formal problem specifications.
- ✚ Engineering tools to analyze, evaluate, select and synthesize information sources for the purpose of developing a software system.

Semester	Course Code	Course Title	Hours	Credits
VI	C6	WebTechnology	60	2

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to

- ✚ Understand the concepts of internet
- ✚ Able to write static and dynamic pages
- ✚ Able to develop communicative forms
- ✚ Understand how to apply styles to the webpage.
- ✚ Able to design Blogs

Semester	Course Code	Course Title	Hours	Credits
I	1C	Information Technology	60	2

Course Learning Outcomes:

At the end of the course,

The students are expected to DEMONSTRATE the following cognitive abilities (thinking skill) and psychomotor skills.

A. Remembers and states in a systematic way (Knowledge)

1. Describe the fundamental hardware components that make up a computer's hardware and the role of each of these components
2. understand the difference between an operating system and an application program, and what each is used for in a computer
3. Use technology ethically, safely, securely, and legally
4. Use systems development, word-processing, spreadsheet, and presentation software to solve basic information systems problems

Semester	Course Code	Course Title	Hours	Credits
II	2C	E- Commerce & Web Designing	60	2

Course Learning Outcomes:

1. Understand the foundations and importance of E-commerce
2. Define Internet trading relationships including Business to Consumer, Business-toBusiness, Intra-organizational
3. Describe the infrastructure for E-commerce
4. Discuss legal issues and privacy in E-Commerce
5. Understand the principles of creating an effective web page, including an in-depth consideration of information architecture

Semester	Course Code	Course Title	Hours	Credits
III	3C	Programming with C & CPP	60	2

Course Learning Outcomes:

1. Develop programming skills
2. Declaration of variables and constants use of operators and expressions
3. Learn the syntax and semantics of programming language
4. Be familiar with programming environment of C and C++
5. Ability to work with textual information (characters and strings) & arrays

Semester	Course Code	Course Title	Hours	Credits
IV	4CA	Object oriented Programming using Java	60	2

Course Learning Outcomes:

At the end of this course student will:

1. Understand the benefits of a well-structured program
2. Understand different computer programming paradigms
3. Understand underlying principles of Object-Oriented Programming in Java
4. Develop problem-solving and programming skills using OOP concepts
5. Develop the ability to solve real-world problems through software development in high-level programming language like Java

Semester	Course Code	Course Title	Hours	Credits
IV	4CB	Database Management Systems	60	2

Course Learning Outcomes:

1. Understand the role of a database management system in an organization.
2. Understand basic database concepts, including the structure and operation of the relational data model.
3. Understand and successfully apply logical database design principles, including ER diagrams and database normalization
4. Understand Functional Dependency and Functional Decomposition

Semester	Course Code	Course Title	Hours	Credits
V	5CA	C	60	2

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand the evolution and functionality of a Digital Computer.
2. Apply logical skills to analyse a given problem
3. Develop an algorithm for solving a given problem.
4. Understand „C“ language constructs like Iterative statements, Array processing, Pointers, etc.
5. Apply „C“ language constructs to the algorithms to write a „C“ language program.

Semester	Course Code	Course Title	Hours	Credits
V	5CB	Database Management Systems	60	2

Course Learning Outcomes:

1. Understand the role of a database management system in an organization.
2. Understand basic database concepts, including the structure and operation of the relational data model.
3. Understand and successfully apply logical database design principles, including ER diagrams and database normalization
4. Understand Functional Dependency and Functional Decomposition

Semester	Course Code	Course Title	Hours	Credits
V	5CC	Web Technology	60	2

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to

- ✚ Understand the concepts of internet
- ✚ Able to write static and dynamic pages
- ✚ Able to develop communicative forms
- ✚ Understand how to apply styles to the webpage.
- ✚ Able to design Blogs

Semester	Course Code	Course Title	Hours	Credits
VI	6CA	Tally	60	2

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to

1. To introduce the students to Basic of Accounts and the usage of Tally for accounting purpose.
2. To help students to work with well- known accounting software i.e. Tally ERP.9.Tally is an accounting package which is used for learning to maintain accounts.
3. Students will learn to create company, enter accounting voucher entries including advance voucher entries, do reconcile bank statement, do accrual adjustments, and also print financial statements, etc. in Tally ERP.9 software.
4. Demonstrate an understanding of various predefined inventory vouchers to suit the various business requirements and flexibility to create unlimited stock items, use simple

to complex conversion units and generate invoices with the required information and dimensions.

Semester	Course Code	Course Title	Hours	Credits
VI	6CB	e-Commerce	60	2

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to

1. Understand the foundations and importance of E-commerce
2. Define Internet trading relationships including Business to Consumer, Business-toBusiness, Intra-organizational
3. Describe the infrastructure for E-commerce
4. Discuss legal issues and privacy in E-Commerce

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to

Semester	Course Code	Course Title	Hours	Credits
VI	6CC	PHP & MySQL	60	2

- ✚ Understand the concepts of internet
- ✚ Able to apply styles of a webpage
- ✚ Able to design the applications with backend
- ✚ Understand how to apply styles to the webpage.
- ✚ Able to design websites

M.Sc.(Computer Science) Programme Outcomes

✚ Objectives

1. To produce software professionals enriched with knowledge and skill who can be employed in IT
2. Induct knowledge needed for problem solving techniques.
3. To develop entrepreneurs who can establish small Enterprises.
4. To develop equip students with right objective, logical thinking, right moral and ethical values with a sense of social responsibility.
5. To develop students to communicate effectively.
6. To enrich students in breadth and depth of knowledge in IT field.

✚ Outcomes

1. Ability to understand the general principles of Computer Science
2. Ability to develop own programming skills and computer applications
3. Ability to provide up to date technologies, methodologies for the advance career prospects
4. Ability to develop in professional, ethical, moral and social responsibilities
5. Ability to communicate effectively
6. Develop the Intellectual Skills for effectively problem solving

✚ 7. Ability to design, analyze, implement the candidate system
MCS 101 DATA STRUCTURES IN C Instruction 4 periods / week Credits 5 Internal 30 marks
University Exam 70 marks Total 100 Marks

✚ **Objective** 1. To impart programming skills using the basics of C language. 2. To make them study the need of data structures in different programming levels. 3. To impart the knowledge of dynamic memory allocation using pointers 4. Ability to work with arrays and structures. 5. To develop using the right one in different data structure available. 6. To train them using data structures such as arrays, linked lists, stacks and queues. 7. To develop the skill of applying algorithm of sorting and searching.

MCS 102 OBJECT ORIENTED PROGRAMMING WITH JAVA Instruction 4 periods / week
Credits 4 Internal 30 marks University Exam 70 marks Total 100 Marks

✚ **Objectives** The course is designed to meet the objectives of 1. learning to program in an object-oriented programming language 2. focusing those who already have some experience with another programming language, and who now wish to move on to an object-oriented one 3. learning object-oriented programming language by using Java

MCS 103 COMPUTER ORGANIZATION Instruction 4 periods / week Credits 5 Internal 30
marks University Exam 70 marks Total 100 Marks

✚ **Objectives** The course is designed to meet the objectives of 1. Helping the students to develop an understand the nature and characteristics of the organisation and design of the digital computer systems, 2. focusing on the organisation and instruction set architecture of the CPU.

MCS 104 DISCRETE MATHEMATICAL STRUCTURES Instruction 4 periods / week Credits
4 Internal 30 marks University Exam 70 marks Total 100 Marks

✚ **Objectives** The course is designed to meet the objectives of 1. To extend student's Logical and Mathematical maturity and ability to deal with abstraction and to introduce most of the basic terminologies used in computer science courses and application of ideas to solve practical problems. 2. Apply logical reasoning to solve a variety of problems.

MCS 105 SOFTWARE ENGINEERING Instruction 4 periods / week Credits 5 Internal 30 marks
University Exam 70 marks Total 100 Marks

✚ **Objectives** The course is designed to meet the objectives of 1. The need of software engineering, its different life cycles and different phases, 2. to measure cost, efforts, time and team management etc, 3. Testing and maintenance techniques of big projects and 4. Different risks and its management systems

✚ **MCS 201 WEB TECHNOLOGIES** Instruction 4 periods / week Credits 4 Internal 30 marks
University Exam 70 marks Total 100 Marks

✚ **Objectives** The course is designed to meet the objectives of 1. To complete an in-depth knowledge of web technology 2. To know and to have the idea for different web application that most web developers are likely to use 3. To be aware of, and to have used, the enhancements of the web applications 4. To know the different types of web application software.

✚ **MCS 202 DATABASE MANAGEMENT
SYSTEMS**

Instruction 4 periods / week Credits 5 Internal 30 marks University Exam 70 marks Total

100 Marks

✚ Objectives

- The course is designed to meet the objectives of
- 1. the need of a database management system (DBMS)
- 2. the concept of data normalization
- 3. the concept of entity relationships
- 4. the concept of a client/server database, and
- 5. the concepts of MongoDB

MCS 203 OPERATING SYSTEMS

✚ Instruction 4 periods / week Credits 5 Internal 30 marks University Exam 70 marks

Total

✚ 100 Marks

✚ Objectives

✚ The course is designed to meet the objectives of APPRECIATE

- ✚** 1. understanding the role of an operating system
- ✚** 2. making aware of the issues in management of resources like processor, memory and input-output
- ✚** 3. understanding file management techniques.

MCS 204 COMPUTER NETWORKS

✚ Instruction 4 periods / week Credits 4 Internal 30 marks University Exam 70 marks

Total

✚ 100 Marks

✚ Objectives

✚ The course is designed to meet the objectives of

- ✚** 1. understanding the state-of-the-art in network protocols, architectures, and applications
- ✚** 2. examining and studying of different protocols in OSI and TCP/IP.
- ✚** 3. understanding of network addressing, mapping etc
- ✚** 4. understanding error control, flow control, packet recovery etc.
- ✚** 5. understanding the structure of LAN, WAN and MAN, and
- ✚** 6. understanding internetworking of devices

MCS 205 DESIGN AND ANALYSIS OF ALGORITHMS

✚ Instruction 4 periods / week Credits 5 Internal 30 marks University Exam 70 marks

Total

✚ 100 Marks

✚ Objectives

✚ The course is designed to meet the objectives of

- ✚** 1. learning specification of the concept of algorithm and analysis of its computational complexity
- ✚** 2. learning design principles of algorithms and their application to computing problems
- ✚** 3. making analysis accessible to all levels of readers.

MCS 301 PYTHON PROGRAMMING

✚ **Instruction 4 periods / week Credits 5 Internal 30 marks University Exam 70 marks**

Total

✚ **100 Marks**

✚ **Objectives**

✚ The course is designed to meet the objectives of

- ✚ 1. Install and run the Python interpreter
- ✚ 2. Create and execute Python programs
- ✚ 3. Understand the concepts of file I/O
- ✚ 4. Be able to read data from a text file using Python
- ✚ 5. Plot data using appropriate Python visualization libraries

MCS 302.NET PROGRAMMING

✚ **Instruction 4 periods / week Credits 5 Internal 30 marks University Exam 70 marks**

Total

✚ **100 Marks**

✚ **Objectives**

✚ The course is designed to meet the objectives of

- ✚ 1. Set up a programming environment and Configure ASP.net programs.
- ✚ 2. Creating ASP.Net applications using standard .net controls.
- ✚ 3. Develop a data driven web application.
- ✚ 4. Connecting to data sources and managing them.
- ✚ 5. Maintain session and controls related information for user used in multi-user web applications
- ✚ 6. Understand the fundamentals of developing modular application by using object oriented methodologies

MCS 303 OBJECT ORIENTED MODELLING AND DESIGNING USING UML

✚ **Instruction 4 periods / week Credits 5 Internal 30 marks University Exam 70 marks**

Total

✚ **100 Marks**

✚ **Objectives**

✚ The course is designed to meet the objectives of

- ✚ 1. To understand the object oriented concepts for designing object oriented models.
- ✚ 2. To understand the use of UML (Unified Modeling Language) for object oriented analysis and design.
- ✚ 3. To describe the step by step object oriented methodology of software development from problem statement through analysis, system design, and class design.
- ✚ 4. To understand the concept of different patterns for constructing software architectures through object oriented models.
- ✚ 5. To understand the problems, communicating with application experts, modeling enterprises, preparing documentation, and designing programs by using object oriented models.

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MCS 304.1 ARTIFICIAL INTELLIGENCE

✚ **Instruction 4 periods / week Credits 4 Internal 30 marks University Exam 70 marks**
Total

✚ **100 Marks**

✚ **Objectives**

✚ The course is designed to meet the objectives of

- ✚ 1. To introduce the fundamental concepts of artificial intelligence;
- ✚ 2. To equip students with the knowledge and skills in logic programming using Prolog;
- ✚ 3. To explore the different paradigms in knowledge representation and reasoning

MCS 304.2 MICROPROCESSORS AND INTERFACING

✚ **Instruction 4 periods / week Credits 4 Internal 30 marks University Exam 70 marks**
Total

✚ **100 Marks**

✚ **Objectives**

✚ The course is designed to meet the objectives of

- ✚ 1. To introduce 8085 architecture and programming in assembly language.
- ✚ 2. To introduce basic concepts of interfacing memory and peripheral devices to a microprocessor.
- ✚ 3. To introduce serial and parallel bus standards.
- ✚ 4. To introduce 8051 microcontroller.
- ✚ 5. To introduce various advanced processor architectures such as 80X86, Pentium and Multicore Processors.

MCS 305.1 CRYPTOGRAPHY AND NETWORK SECURITY

✚ **Instruction 4 periods / week Credits 4 Internal 30 marks University Exam 70 marks**
Total

✚ **100 Marks**

✚ **Objectives**

✚ The course is designed to meet the objectives of

- ✚ 1. security breaches can be very expensive in terms of business disruption and the financial losses that may result,
- ✚ 2. increasing volumes of sensitive information are transferred across the internet or intranets connected to it,
- ✚ 3. networking that make use of internet links are becoming more popular because they are cheaper than dedicated leased lines. This, however, involves different users sharing internet links to transport their data,
- ✚ 4. directors of business organizations are increasingly required to provide effective information security.

MCS 305.2 Blockchain Technology

✚ **Instruction 4 periods / week Credits 4 Internal 30 marks University Exam 70 marks**
Total

✚ **100 Marks**

✚ **Objectives**

- ✚ The course is designed to meet the objectives of
- ✚ 1. To introduce the concept of Blockchain
- ✚ 2. To overcome the problems of centralization
- ✚ 3. To introduce the concept of Bitcoin
- ✚ 4. To make them familiar with Bitcoin network, payments, clients and APIs.

MCS 401 DATA MINING AND BIG DATA

✚ **Instruction 4 periods / week Credits 5 Internal 30 marks University Exam 70 marks**
Total

✚ **100 Marks**

✚ **Objectives**

- ✚ The course is designed to meet the objectives of
- ✚ 1. understand classical models and algorithms in data warehousing and data mining,
- ✚ 2. enable students to analyse the data, identify the problems, and choose the relevant models and algorithms to apply,
- ✚ 3. assess the strengths and weaknesses of various methods and algorithms and to analyse their behaviour.
- ✚ 4. conceptualization and summarization of big data, big data computing technologies.

MCS 402.1 INTERNET OF THINGS

✚ **Instruction 4 periods / week Credits 5 Internal 30 marks University Exam 70 marks**
Total

✚ **100 Marks**

✚ **Objectives**

- ✚ The course is designed to meet the objectives of
- ✚ 1. To introduce the concept of IoT
- ✚ 2. To introduce the concept of M2M
- ✚ 3. To understand the logical design
- ✚ 4. To make them familiar with IoT devices, endpoints and designing

MCS 402.2 CLOUD COMPUTING

✚ **Instruction 4 periods / week Credits 5 Internal 30 marks University Exam 70 marks**
Total

✚ **100 Marks**

✚ **Objectives**

- ✚ The course is designed to meet the objectives of
- ✚ 1. The student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet
- ✚ 2. cloud concepts capabilities across the various cloud service models including Iaas,Paas,Saas,
- ✚ 3. developing cloud based software applications on top of cloud platforms.

MCS 403.1 MACHINE LEARNING

✚ **Instruction 4 periods / week Credits 4 Internal 30 marks University Exam 70 marks**
Total

✚ **100 Marks**

✚ **Objectives**

✚ The course is designed to meet the objectives of

- ✚ 1. To introduce to the students the basic concepts and fundamentals of machine learning
- ✚ 2. To develop skills of implementing machine learning techniques
- ✚ 3. To familiarize the students with latest technologies
- ✚ 4. To implement machine learning solutions to classification, regression and Clusteing

MCS 403.2 MOBILE COMPUTING WITH ANDROID

✚ **Instruction 4 periods / week Credits 4 Internal 30 marks University Exam 70 marks**

Total

✚ **100 Marks**

✚ **Objectives**

✚ The course is designed to meet the objectives of

- ✚ 1. To introduce the concept of mobile android
- ✚ 2. To introduce the concept of different views of android.
- ✚ 3. To understand the designing aspects of android mobiles
- ✚ 4. To make them familiar with SMS, email, service, binding and deploying