Mankar College
Department of Computer Science

Course Outcomes and Program Outcomes

Course Outcome of the Curriculum (Honours)

The students would be able to understand the following on the completion of the courses:

Semester I

	COURSE		COURSE OUTCOME	
	Course Code	**Course Name**		
1.	**CC-1**	**Programming Fundamentals using C / C++**	**CO1**	Understanding the fundamental concepts of programming in C.
			CO2	Developing skills to write programs in C in order to solve simple problems.
			CO3	Grasping the differences between Procedural Programming (C Language) and Object-Oriented Programming (C++).
			CO4	Understanding the fundamental concepts of programming C++.
			CO5	Developing skills to write programs inC++ in order to solve simple problems.
2.	**CC-2**	**Computer System Architecture**	**CO1**	Introducing the hardware design and operation of digital circuits (sequential and combinational).
			CO2	Learning the organization and architecture of Central Processing Unit.
			CO3	Learning the organization and architecture of Memory Unit and Input/output Unit.

			CO4	Developing the skills to write Assembly Language Programming to perform simple operations.
			CO5	Having the complete understanding of the architecture of a basic computer system and the coordination between its various components.

Semester –II

	COURSE		**COURSE OUTCOME**	
	Course Code	**Course Name**		
3.	**CC-3**	**Programming in Java**	**CO1**	Introducing the architecture and features of JAVA in order to differentiate between previously learned Programming languages and Java.
			CO2	Learning the principles of Object-Oriented Programming (such as Classes, Inheritance, Interfaces etc.).
			CO3	Developing the ability to apply Object Oriented Programming concepts to solve problems using JAVA.
			CO4	Learning about various exceptions one might encounter while running a Java program and the techniques used to handle them.
			CO5	Designing Applet and event handling mechanisms in programs.
4.	**CC-4**	**Discrete Structure**	**CO1**	Acquiring knowledge about discreet mathematical structures (such as graphs, sets, trees etc.,) which effective in solving problems in discrete domain.
			CO2	Developing mathematical reasoning using propositional logic, Inference theory, mathematical induction etc.

			CO3	Gaining knowledge about various counting techniques such as Permutation, Combination, Pigeon hole principle, recurrence relations. etc.
			CO4	Understanding the growth of functions and the various asymptotic notations used to represent their complexity in terms of time and space.
			CO5	Developing the ability to model real-life problems mathematically in order to solve them using computers.

Semester- III

	Course		**Course Outcome**	
	Course Code	**Course Name**		
5.	**CC-5**	**Data Structures**	**CO1**	Learning about the design, operation and application of various linear and non-linear data structures in C (such as stack, queue, tree etc.,)
			CO2	Learning to develop recursive functions for simple problems and analyzing their advantages and limitations.
			CO3	Learning about the various searching and sorting algorithms and analyzing their time and space complexities and the differences between them.
			CO4	Learning about Hashing techniques, Hash functions and their efficiency of mapping.
			CO5	Developing the ability to identify the appropriate data structure for a given real-life problem.

6.	**CC-6**	**Operating Systems**	**CO1**	Understanding the organization of the Operating System and its role in managing the interaction and operation of the various components of a computer system.
			CO2	Understanding the concept of Process in OS and the process management issues handled by the OS such as process schedulingand deadlock.
			CO3	Understanding the concepts associated with memory management strategies of the OS such as paging, segmentation etc. and virtual memory.
			CO4	Understanding the structure of File Systems and directories implemented by the OS and various file operations and access techniques.
			CO5	Analyzing the security strategies used by the OS to protect its resources from threats and attacks.
7.	**CC-7**	**Computer Networks**	**CO1**	To be familiar with thebasic concepts of Computer Networking such as layered network architecture, network topologies, OSI reference model and TCP/IP protocol suite.
			CO2	Learning the fundamental concepts and techniques involved in the transmission of digital data between two machines.
			CO3	Understanding various routing protocols governing the transmission of data across each layer of the network architecture.
			CO4	Understanding various error control protocols that detect or prevent erroneous transmission of data across the layers of the network architecture.
			CO5	Developing the skills to analyze and simulate the aforementioned protocols in any programing language.

8.	**SEC-1**	**Programming in Python**	**CO1**	Understanding the concept of problem solving and learning the strategies involved in systematic problem solving and documentation.
			CO2	Learning about various techniques of problem solving and programming methodologies (such as top-down, bottom-up).
			CO3	Understanding the fundamental concepts of programming in Python.
			CO4	Developing skills to solve simple problems using problem solving strategies and programming in Python.

Semester IV

	Course		**Course Outcome**	
	Course Code	**Course Name**		
9.	**CC-8**	**Design and Analysis of Algorithms**	**CO1**	Understanding various algorithm design techniques (such as Greedy method, Divide and Conquer, Dynamic programming etc.) and their applications.
			CO2	Analyzing the performance of various algorithm design techniques.
			CO3	Gaining an overview of complexity classes in order to classify various real-life problems.
			CO4	Developing the ability to design proper algorithms suitable for specific problems and analyzing their performance.
10.	**CC-9**	**Software Engineering**	**CO1**	Learning the elementary features of a Software, analyzing its life cycle and realizing the pre-requisites of developing a software.

			CO2	Gaining an overview of the fundamental processes involved in Software Project Management (such as planning, estimating, scheduling etc.).
			CO3	Developing idea about the prospective risks that might be incurred in software development and the strategies to identify, eliminate and manage them.
			CO4	Learning concepts of Software Quality Management, Software metrics and Testing techniques that assure that the developed software has achieved the intended goal.
			CO5	Acquiring skills to develop high quality software that fulfill the objectives while adhering to all specifications.
11.	**CC-10**	**Database Management System**	**CO1**	Realizing the characteristics of database, data models and the architecture of database systems.
			CO2	Learning Entity Relationship Modelling to analyze database by means of visual representation.
			CO3	Learning Relationalmodel concepts, relational constraints and relational algebra.
			CO4	Understanding functional dependencies and normalizing database to understand its internal structure.
			CO5	Understanding the transaction processing of database and strategies for concurrency control and recovery.
12.	**SEC-2**	**UNIX / Linux Programming**	**CO1**	Revisiting the basic concepts of Operating systems and understanding the differences between UNIX/Linux and other OS.
			CO2	Understanding the user management system of UNIX/Linux and learning about different types of user, their rights and the related commands.

			CO3	Understanding the File system management of UNIX/Linux, File permissions and disk quotas.
			CO4	To be familiar with the basic concepts of Shell and learning Shell programming in order to solve simple problems.

Semester V

	Course		**Course Outcome**	
	Course Code	**Course Name**		
13.	**CC-11**	**Internet Technologies**	**CO1**	Revisiting some of the concepts of Java such as use of Objects, Array and Array list class.
			CO2	Learning the core concepts of programming in Java script including event handling.
			CO3	Learning fundamental concepts of JDBC to establish connectivity with database.
			CO4	Learning core concepts of programming in JSP and Java beans.
			CO5	To be familiar with modern tools involved in creating simple and functional websites.
14.	**CC-12**	**Theory of Computation**	**CO1**	Understanding the theory of formal language for a machine and learning the basic operation on language.
			CO2	Learning Deterministic and non-deterministic finite automata, their inter-conversion and their relationship with regular languages.
			CO3	Learning the fundamental concepts of context-free grammars and languages and their ambiguities.

			CO4	Learning about Push down Automata and Turing machines as a model of computation for solving problems in computer science.
15.	**DSE-1**	**Microprocessor**	**CO1**	Learning the internal architecture of 8085 Microprocessor, system bus architecture and memory and I/O interfaces.
			CO2	Learning the Register organization, instruction formats and understanding the working and operation of microprocessors.
			CO3	Developing the ability to write Assembly language programs to solve simple problems.
			CO4	Learning the concepts of memory interfacing and cache controllers.
			CO5	Learning the concepts of I/O interfacing, interrupt controller and communication interfaces.
16.	**DSE-2**	**Numerical Methods**	**CO1**	Learning various numerical techniques that can be used to solve complex computational problems.
			CO2	Analyzing the performance of the numerical techniques and assessing their accuracy.
			CO3	Identify the strengths and limitations of the numerical techniques.
			CO4	Developing skills to identify and use appropriate numerical techniques when solving computational problems.

Semester VI

	Course		**Course Outcome**
	Course Code	**Course Name**	

17.	**CC-13**	**Artificial Intelligence**	**CO1**	Understanding the background of Artificial Intelligence, its application and the players involved in the system (such as agents, environment etc.).
			CO2	Learning various heuristic algorithms (such as Hill Climbing, Best First search etc.) for problem solving by means of searching solution spaces.
			CO3	Learning knowledge representation and reasoning while dealing with uncertainties and inconsistencies.
			CO4	Understand the basics of Natural Language Processing and the AI techniques used for it.
			CO5	Cultivating the interest of students in harnessing the potentiality of computers and developing Intelligent systems to solve real life problems.
18.	**CC-14**	**Computer Graphics**	**CO1**	Learning the basic elements of Computer Graphics and its real-life application.
			CO2	To be familiar with the hardware equipment associated with graphics such as Raster and Random scan display devices and different I/O devices.
			CO3	Learning the fundamental techniques of drawing basic elements and 2D and 3D Geometric and Viewing Transformations.
			CO4	Developing the ability to mathematically model various regular and irregular objects and systems using geometric modelling and enhancing graphics by using Visible Surface determination and Surface rendering.
			CO5	Developing the skills to create meaningful interactive computer graphics and animation.
19.	**DSE-3**	**Soft Computing**	**CO1**	Grasping the complexity of real-life problems and the inability of conventional methods to solve them.

			CO2	Understanding the basic principles involved in the design of Soft Computing techniques that make them suitable to obtain optimal solutions in limited amount of time.
			CO3	Learning the basic concepts of Fuzzy Logic and understanding the operation of Fuzzy Inference Systems that are prevalently used in many machines.
			CO4	Learning the basic concepts of Artificial Neural Network
			CO5	Learning the basic concepts of Genetic Algorithm and perceiving the effectiveness of Multi-objective Genetic Algorithms in solving complex real-life problems with multiple conflicting objectives.
20.	**DSE-4**	**Project Work / Dissertation**	**CO1**	Exposing the students to work on a practical problem and solving it using the concepts learnt in previous subjects.
			CO2	Encouraging to get innovative solutions for problems.
			CO3	Developing skills to identify the appropriate tools and techniques that can be used to solve a specific problem.
			CO4	Encouraging teamwork and leadership qualities in the students.
			CO5	Developing technical writing skills.