Gour Mahavidyalaya
Department of Computer Application
BCA (Hons.) CBCS

Semester	Topic	Course Outcome
I	DC1: Mathematics	After successfully completing this course, students will be able to: CO1: Understand Matrices, order, Types of matrices, Determinant, Eigen values and Eigenvectors CO2: Determine Logarithms, Laws of Logarithms with proofs, and related Problems. CO2: Solve problems utilizing the principles of Permutation and Combination CO3: Apply the fundamental theorem of Statistics and Probability. CO4: Understand the concepts of Vectors. CO5: Formulate the problems related to Analytical Geometry in Two Dimensions
	DC2: Introduction to Programming through C	After successfully completing this course, students will be able to: CO1: Understand algorithms and flowchart for solving problems using computers. CO2: Understand and can choose the loops and decision-making statements to solve the problem. C03: Implement different Operations on arrays and will use functions to solve the given problem. C04: Implement different Operations using pointers, ADT and file system to solve the given problem. CO5: To enrich the students in logic development required for programming. CO6: To help the students to build carrier in various branches of software development.
II	DC3: Data Structure & Algorithm	After successfully completing this course, students will be able to: CO1: Students will understand system related Programming such as Operating System functioning. CO2: Students will capable to develop problem solving abilities using a computer. CO3: To build the necessary skill set and analytical abilities for developing computer based solutions for real life problems. CO4: To imbibe quality software development practices. To create awareness about process and product standards. CO5: Students will train in professional skills related to Software Industry. CO6: To prepare necessary knowledge which is related to operating system and base for research and development in Computer Science.
	DC4: Digital Logic System	After completion of this course student will be able to: CO1: Solve problems based on interconversion of number systems. CO2: Reduce the expression using Boolean theorems. CO3: Reduce expressions using K maps in SOP and POS forms. CO4: Understand the operation of all types of Logic Gates, their families etc. CO5: Understand how to use Combinational Logic circuits using Logic Gates and using ICs.
III	DC5: Computer Organization & Architecture	After completion of this course student will be able to: CO1: Understand the working of different Sequential logic circuits CO2: Understand working operations of different types of Flip flops as a basic building block.

		CO3: Know the operations of shift registers and Binary Counters. CO4: Understand the basic Computer System and general organization of different blocks. CO5: To understand the organization of memory in the Computer system and know different types of Memories.
	DC6: Operating System	After completion of this course student will be able to: CO1: Master functions, structures and history of operating systems. CO2: Master understanding of design issues associated with operating systems. CO3: Master various process management concepts including scheduling, synchronization, deadlocks. CO4: Be familiar with multithreading. CO5: Understand concepts of memory management including virtual memory. CO6: Master system resources sharing among the users. CO7:Master issues related to file system interface and implementation, disk management. CO8: Be familiar with protection and security mechanisms. CO9: Understand the basics of Unix system administrator.
	DC7: Object Oriented Programming with C++	After completion of this course student will be able to: CO1: Understand and can choose the loops and decision-making statements to solve the problem. C02: Implement different Operations on arrays and will use functions to solve the given problem. C03: Implement different Operations using pointers, ADT and file system to solve the given problem. CO4: Understand the concept of object oriented programming. CO5: Use the benefits of object oriented design and understand when it is an appropriate methodology to use. CO6: Design object oriented solutions for small systems involving multiple objects.
IV	DC8: Discrete Mathematics	After successfully completing this course, students will be able to: CO1: Able to work with graphs and identify certain parameters. CO2: Develop the skill of converting mathematical problem graphically and vice versa. CO3: Motivates to solve real life problems. CO4: Develop suitable techniques of analysis of problems. CO5: Enable students to develop a positive attitude towards mathematics as an interesting and valuable subject to study. CO6: Develop the logical thinking of students. CO7: Apply mathematical foundations to design computer based algorithms. CO8: Perform certain algorithms, justify why these algorithms work, and give some estimates of the running times of these algorithms.
	DC9: Database Management System	After successfully completing this course, students will be able to: CO1: Understand the fundamental concepts of database. CO2: Understand user requirements and frame it in data model. CO3: Understand creations, manipulation and querying of data in databases CO4: Solve real world problems using appropriate set, function, and relational models. CO5: Design E-R Model for given requirements and convert the same into database tables. CO6: Use SQL.
	DC10: Introduction to Arduino sensors	After the completion of the course the student will be able to: CO1: To learn basic electronic concepts, breadboard and electronic components, and writing lab reports.

		CO2: To learn how the Arduino platform works in terms of the physical board and libraries and the IDE CO3: To develop skills to design and implement various smart system applications CO4: basic elements of arduino, i/o functions and interrupts working with LED and buttons CO5: analog & digital communication with arduino and UART, I2C& SPI communication protocol CO6: integration of sensors and actuators with arduino
V	DC11: Data Communication & Networking	After successfully completing this course, students will be able to CO1: Students will get acquainted with fundamentals of Networking like PAN, LAN, MAN, WAN, topologies and Home & Business applications of Networks. CO2: Students will clear their basic concepts about the standards, their need & types of standards. CO3: Students will know the design issues for the layers, layered architecture of the Network Models & functions performed at each layer. CO4: Students will come to know the role played by different addresses at different layers of the network models. CO5: Students will understand very basic networking hardware like transmission media types & tools description. CO6: Students will be able to understand the need and importance of protocols at each layer in the communicating computers.
	DC12: Computer Graphics	After successfully completing this course, students will be able to: CO1: Understand how to use graphics objects represented in computer. CO2: Will able to correlate between user and computer through graphics. CO3: Able to increase the productivity through graphics. CO4: Understand programmer's perspective of working of computer graphics. CO5: Compare various graphics algorithm used in 2D and 3D Be able to understand fundamentals of graphics used in various real life applications. CO6: Understand and identify the performance characteristics of graphics algorithms.
	DSE1-E2: Introduction to Python Programming	After successfully completing this course, students will be able to: CO1: Understand why Python is a useful scripting language for developers. CO2: Learn how to use lists, tuples, and dictionaries in Python programs. CO3: Learn how to identify Python object types. CO4: Learn how to use indexing and slicing to access data in Python programs. CO5: Define the structure and components of a Python program. CO6: Learn how to write loops and decision statements in Python. CO7: Learn how to write functions and pass arguments in Python. CO8: Learn how to build and package Python modules for reusability. CO9: Learn how to design object-oriented programs with Python classes.
	DSE2- E2: Intelligent System	After undergoing the course, Students will be able to: CO1: Learn the use of AI in different real life problems. CO2: Use the heuristic search techniques for AI related problems. CO3: Analyze and formalize the problem (as a state space, graph, etc.) and select the appropriate search method. CO4 : Choose an appropriate problem-solving method. CO5 : Know how knowledge is represented in computer system and different knowledge-representation scheme.
	SEC-1: Sensor Network & IOT	After undergoing the course, Students will be able to: CO1: Examine the potential business opportunities that IoT can uncover. CO2: Identify how IoT differs from traditional data collection systems. CO3: Use real IoT protocols for communication CO4: Determine the right sensors and communication protocols to use in a particular IoT system.

		CO5: Establish data migration techniques from IoT devices to the cloud. CO6: Implement security features to protect data stored in the cloud. CO7: Understanding the fundamentals of Internet of things and Its architecture CO8: Understand of IOT Protocols and IOT Applications
VI	DC13: Software Engineering	After undergoing the course, Students will be able to: CO1: Understand basic concepts of software engineering. CO2: Implement Software life cycle models and have a knowledge of different phases of Software life cycle. CO3: Calculate the cost & staff for a particular project at the start. CO4: Schedule their software in an appropriate way & make it track. CO5: Make an unambiguous SRS (software requirement specification) after collecting requirements of any client.
	DC14: Web Design	After the completion of the course the student will be able to: CO1: envision, evaluate, and communicate interaction design ideas within a web-based environment using industry-standard tools. CO2: Provide a insight on the basics of Internet CO3: Ability to understand the basics of web page creation CO4: Acquire knowledge on creating cascading style sheets CO5: Ability to work with XML CO6: Ability to work with Java Script
	DSE3-E2: Introduction to Data Science	After undergoing the course, Students will be able to: CO1: Summarize the basic concepts of data science and its importance. CO2: Analyze the data quantitatively or categorically , measure of averages, variability. CO3: Identify different trends in scatter plots, strengths of association between two numerical variables. CO4: Classify the concepts of data science and its importance. CO5: Build and assess data-based models. CO6: Execute statistical analyses with professional statistical software. CO7: Demonstrate skill in data management.
	DSE - 4: Project	After undergoing the course, Students will be able to: CO1: Work with a group to solve a problem. CO2: Utilise the technical resources. CO3: Write technical/training reports. CO4: Give oral presentation related to the work completed.
	SEC - 2: Introduction to PHP	After undergoing the course, Students will be able to: CO1: Analyze the construction of a web page and relate how PHP and HTML combine to produce the web page. CO2: Compare and contrast PHP variable types, and relate the advantages and disadvantages of PHP variables with local or global scope. CO3: Formulate, design and create PHP control structures, including selection and iterative structures CO4: Create PHP programs that use various PHP library functions, and that manipulate files and directories. CO5: PHP Arrays PHP Functions

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