Course Outcomes

First Semester

Course Code: PGCA-B1
Course Name: Computer Programming using C

CO#	Course outcomes
CO1	Student should be able to understand the logic building used in Programming.
CO2	Students should be able to write algorithms for solving various real life problems.
CO3	To convert algorithms into programs using C.

Course Code: PGCA-B2
Course Name: Computer Science Essentials

CO#	Course outcomes
CO1	Understanding the concept of input and output devices of Computers
CO2	Learn the basic concepts of Operating Systems and Database Systems
CO4	Learn basic word processing, Spreadsheet and Presentation Graphics Software skills.

Course Code: PGCA1917
Course Name: Discrete Structures &Optimization

CO#	Course outcomes
CO1	Apply the operations of sets and use Venn diagrams to solve applied problems; solve problems using the principle of inclusion-exclusion
CO2	Apply rules of inference, proof by contradiction, proof by cases, and write proofs using symbolic logic and Boolean Algebra
CO3	Solve counting problems by applying elementary counting techniques using the product and sum rules, permutations, combinations, the pigeon-hole principle.
CO4	Determine if a given graph is simple or a multigraph, directed or undirected, cyclic or acyclic, and determine the connectivity of a graph.

Course Code: PGCA1951
Course Name: Programming in Python

CO#	Course Outcomes
CO1	Familiar with Python environment, data types, operators used in Python.
CO2	Compare and contrast Python with other programming languages.
CO3	Learn the use of control structures and numerous native data types with their methods.
CO4	Design user defined functions, modules, and packages and exception handling methods.
CO5	Create and handle files in Python and learn Object Oriented Programming Concepts.

Course Code: PGCA1952
Course Name: Advanced Data Structures

CO#	Course outcomes
CO1	Choose appropriate data structures and algorithms and use it to design solution for a specific problem.
CO2	Execute the operations of hashing to retrieve data from data structure.
CO3	Design and analyze programming problem statements
CO4	Come up with analysis of efficiency and proofs of correctness
CO5	Comprehend and select algorithm design approaches in a problem specific manner.

Course Code: PGCA 1953
Course Name: Advanced Database Management System

CO#	Course outcomes
CO1	Express the basic concepts of DBMS and RDBMS.
CO2	Apply normalization theory to the normalization of a database
CO3	Apply the concept of Transaction Management & Recovery techniques in RDBMS.
CO4	Analyze various advanced databases prevailing in market, Big Data, Temporal Databases, Parallel and Distributed Databases, XML Database and multidimensional Databases
CO5	Demonstrate No SQL databases (Open Source)

Course Code: PGCA1905
Course Name: Technical Communication

CO#	Course outcomes
CO1	The objective of the course is to help the students become the independent users of English language.
CO2	Students will acquire basic proficiency in reading & listening, comprehension, writing and speaking skills.
CO3	Students will be able to understand spoken and written English language, particularly the language of their chosen technical field.
CO4	They will be able to converse fluently.
CO5	They will be able to produce on their own clear and coherent texts.

Course Code: PGCA1954
Course Name: Data Structures using Python Laboratory

CO#	Course outcomes
CO1	Understand the concept of data structures, python and apply algorithm for solving problems like Sorting, searching, insertion and deletion of data.
CO2	Implement linear and non-linear data structures for processing of ordered or unordered data.
CO3	Analyze various algorithms based on their time and space complexity.

Course Code: PGCA1955
Course Name: Advanced Database Management System Laboratory

CO#	Course outcomes
CO1	Implement query a database using SQL DML/DDL commands.
CO2	Analyze integrity constraints on a database
CO3	Develop PL/SQL programs including stored procedures, stored functions, cursors
CO4	Design new database and modify existing ones for new applications and reason about the efficiency of the result.
CO5	Implement various DBA roles/techniques

Course Code: PGCA1908
Course Name: Technical Communication Laboratory

CO#	Course outcomes
CO1	The objective of the course is to help the students become the independent users of English language.
CO2	Students will acquire basic proficiency in listening and speaking skills.
CO3	Students will be able to understand spoken English language, particularly the language of their chosen technical field.
CO4	They will be able to converse fluently
CO5	They will be able to produce on their own clear and coherent texts.

SEMESTER-II

Course Code: PGCA1909
Course Name: Web Technologies

CO#	Course Outcomes
CO1	Understand the basics of Internet and Web Services.
CO2	Describe and differentiate Programming Language and Markup Language.
CO3	Connect various web pages and web sites together.
CO4	Capture user input from the remote users.
CO5	Learn connectivity concepts of Front End and Back End.

Course Code: PGCA1956
Course Name: Linux Administration

CO#	Course outcomes
CO1	Understand the technical details of Linux operating system
CO2	Work with various Linux command and understand file hierarchical structuring
CO3	Administrate user, manage and configure packages in Linux
CO4	Know and configure the various internet services.

Course Code: PGCA1932
Course Name: Information Security and Cyber Law

CO#	Course outcomes
CO1	Acquire knowledge about various Information Systems.
CO2	Understand the key security requirements of Confidentiality, Integrity &Availability.
CO3	Demonstrate the concept of Intrusion Detection & Intrusion Prevention.
CO4	Apply Symmetric Encryption techniques.
CO5	Describe the concept of Security policies and Cyber Laws.

Course Code: PGCA1914
Course Name: Web Technologies Laboratory

CO#	Course Outcomes
CO1	Understand Static and Dynamic concepts of web designing.
CO2	Develop ability to retrieve data from a database and present it online.
CO3	Design web pages that apply various dynamic effects on the web site.
CO4	Solve complex and large problems using Scripting Language & Markup Language.

Course Code: PGCA1922
Course Name: Advanced Java Laboratory

CO#	Course outcomes
CO1	Learn the advanced features of Java and write the programs.
CO2	Work with API and implement Serialization concept of Java.
CO3	Learn Java Generics and develop Projects.
CO4	Understand to use digital marketing for developing effective digital and social media strategies

Course Code: PGCA1957
Course Name: Linux System Administration Laboratory

CO#	Course outcomes
CO1	Install Linux desktop and Linux server operating system.
CO2	Use various commands for performing different operations
CO3	Work with various Linux administration commands
CO4	Install and configure various servers in Linux environment

SEMESTER-III

Course Code: PGCA1925
Course Name: Advanced Computer Networking

CO#	Course outcomes
CO1	Familiar with the different Network Models.
CO2	Understand different protocols working at Medium Access Sub layer.
CO3	Learn the concept of network routing through algorithms.
CO4	Learn and understand Internet protocols and network security.

Course Code: PGCA1926
Course Name: Artificial Intelligence & Soft Computing

CO#	Course outcomes
CO1	Understand the significance and domains of Artificial Intelligence and knowledge representation.
CO2	Examine the useful search techniques; learn their advantages, disadvantages and comparison.
CO3	Develop the skills to gain a basic understanding of neural network theory and fuzzy logic theory.
CO4	Apply artificial neural networks and fuzzy logic theory for various problems.
CO5	Determine the use of Genetic algorithm to obtain optimized solutions to problems.

Course Code: PGCA1927
Course Name: Theory of Computation

CO#	Course outcomes
CO1	Use basic concepts of formal languages of finite automata techniques.
CO2	Design Finite Automata's for different Regular Expressions and Languages.
CO3	Construct context free grammar for various languages.
CO4	**S**olve various problems of applying normal form techniques, push down automata and Turing Machines.
CO5	**S**olve computational problems regarding their computability and complexity and prove the basic results of the theory of computation.

Course Code: PGCA1928
Course Name: Advanced Computer Networking Laboratory

CO#	Course outcomes
CO1	Familiarize themselves with the different Network Models.
CO2	Understand working of different devices used to set up LAN.
CO3	Learn the concept of network routing.
CO4	Learn and understand Internet protocols and network security.

Course Code: PGCA1929
Course Name: Artificial Intelligence & Soft Computing Laboratory

CO#	Course outcomes
CO1	Develop the skills to gain a basic understanding of neural network theory and fuzzy logic theory.
CO2	Apply artificial neural networks and fuzzy logic theory for various problems.
CO3	Determine the use of Genetic algorithm to obtain optimized solutions to problems.

Course Code: PGCA1930
Course Name: Software Project Management (ELECTIVE-I)

CO#	Course outcomes
CO1	Understand and practice the process of project management
CO2	Develop the scope of work, provide accurate cost estimates and to plan the various activities.
CO3	Understand and use risk management analysis techniques that identify the factors that put a project at risk and to quantify the likely effect of risk on project timescales
CO4	Identify the resources and people required for a project and to produce a work plan and resource schedule.

Course Code: PGCA1971
Course Name: Optimization Techniques (ELECTIVE-I)

CO#	Course outcomes
CO1	Formulate and solve linear programming problems
CO2	Frame and resolve the transportation and assignment problems
CO3	Understand the Project Management problems using CPM
CO4	Find solution to two person zero-sum games

Course Code: PGCA1972
Course Name: Data Mining and Business Intelligence (ELECTIVE-I)

CO#	Course outcomes
CO1	Understand basic concepts of data warehouse and business intelligence
CO2	Perform various data warehouse-related problems
CO3	Analyze data and relate to real-world scenario
CO4	Deriving intrinsic facts from data

Course Code: PGCA1973
Course Name: Enterprise Resource Planning (ELECTIVE-I)

CO#	Course outcomes
CO1	Analyse a business processes of different functional areas
CO2	Understand ERP & Related Technologies
CO3	ERP Implementation Strategies
CO4	Use and apply this knowledge in E Commerce & E Governance related applications.

Course Code: PGCA1933
Course Name: Mobile Application Development (ELECTIVE-II)

CO#	Course outcomes
CO1	Know the components and structure of mobile application development frameworks for Android and iOS based mobiles.
CO2	Understand how to work with various mobile application development frameworks.
CO3	Design and implement the user interfaces of mobile applications.
CO4	Develop useful mobile applications using Google Android and Eclipse simulator.

Course Code: PGCA1934
Course Name: Mobile Application Development Laboratory (ELECTIVE-II)

CO#	Course outcomes
CO1	Understand how to work with various mobile application development frameworks.
CO2	Develop mobile applications using GUI and Layouts
CO3	Learn the basic and important design concepts and issues of development of mobile applications.
CO4	Analyze and discover own mobile app for simple needs.

Course Code: PGCA1935
Course Name: Simulation & Modelling (ELECTIVE-II)

CO#	Course outcomes
CO1	Identify the paradigms and approaches used to design the simulation.
CO2	Understand the various types of simulation, techniques and methods.
CO3	Apply concepts of computer simulation for types of inputs, system models, output behavior and performance estimation
CO4	Test the goodness of a simulation by analyzing the simulated data.

Course Code: PGCA1936
Course Name: Simulation & Modelling Laboratory (ELECTIVE-II)

CO#	Course outcomes
CO1	Understand the use of software tools for modelling and analysis of mathematical concepts for engineering application.
CO2	Know how to simulate any discrete system using queuing systems.
CO3	Model and analyze simple engineering concepts and its importance in engineering applications.
CO4	Develop skills to apply simulation software to construct and execute goal-driven system models.

Course Code: PGCA1921
Course Name: E-Commerce & Digital Marketing (ELECTIVE-II)

CO#	Course outcomes
CO1	Understand various applications and scope of ecommerce.
CO2	Acquire knowledge of various payment modes used in ecommerce today.
CO3	Learn to develop, evaluate, and execute a comprehensive digital marketing strategy and plan
CO4	Describe how and why to use digital marketing for multiple goals within a larger marketing and/or media strategy, Developing effective digital and social media strategies
CO5	Understand the major digital marketing channels - online advertising: Digital display, video, mobile, search engine, and social media

Course Code: PGCA 1974
Course Name: e-Commerce and Digital Marketing Laboratory (ELECTIVE-II)

CO#	Course Outcomes
CO1	Understand of implementation of ecommerce applications.
CO2	Learn to develop and implement digital marketing strategy and plan
CO3	Implement and developing effective digital and social media strategies
CO4	Implementation and working on the social, and security issues concerning the digital marketing and e-commerce.

Course Code: PGCA1931
Course Name: Software Testing & Quality Assurance (ELECTIVE-II)

CO#	Course outcomes
CO1	Understand various approaches of software testing and quality assurance for software development.
CO2	Create test strategies, design test cases, prioritize and execute them.
CO3	Identify various risks involved with software projects and build risk management
CO4	Plan and execute software management and configuration activities.

Course Code: PGCA1975
Course Name: Software Testing & Quality Assurance Laboratory (ELECTIVE-II)

CO#	Course outcomes
CO1	Understand various approaches of software testing and quality assurance for software development.
CO2	Create test strategies, design test cases, prioritize and execute them.
CO3	Identify various risks involved with software projects and build risk management
CO4	Plan and execute software management and configuration activities.

SEMESTER-IV

Course Code: PGCA1976
Course Name: Machine Learning and Data Analytics using Python

CO#	Course outcomes
CO1	Learn Machine Learning concepts
CO2	Understand the difference between supervised and unsupervised learning
CO3	Learn clustering and classification algorithms
CO4	Analyse data using Python Numpy, Panda Libraries
CO5	Visualize data using matplotlib library of Python

Course Code: PGCA 1958
Course Name: Advanced Web Technologies

CO#	Course outcomes
CO1	Understand client-side and server-side programming.
CO2	Learn to represent web data and XML document handling.
CO3	Understand AJAX and relevance.
CO4	Develop a dynamic webpage by the use of java PHP and MySQL.
CO5	Able to learn how to perform basic CRUD database operations in a Dynamic Website.
CO6	Learn about web services and their development.

Course Code: PGCA1977
Course Name: Machine Learning and Data Analytics using Python Laboratory

CO#	Course outcomes
CO1	Develop knowledge of various learning models of data.
CO2	Implement a wide variety of learning algorithms.
CO3	Understand how to evaluate models generated from data.
CO4	Apply the algorithms to a real-world problems.
CO5	Optimize the models learned and report on the expected accuracy that can be achieved by applying the models.

Course Code: PGCA 1960
Course Name: Advanced Web Technologies Laboratory

CO#	Course Outcomes
CO1	Understand the advance concepts of website development.
CO2	Provide skills to design and develop dynamic web sites.
CO3	Work independently for database programming for web applications
CO4	Understand concepts of jQuery methods, AJAX, Bootstrap and REACT
CO5	Connect Website with an Database Server and perform basic CRUD operations.
CO6	Develop market ready website, to be used by clients.

Course Code: PGCA1937
Course Name: Cloud Computing (ELECTIVE-III)

CO#	Course outcomes
CO1	Understand the basic concept and importance of cloud computing.
CO2	Access the suitability of migrating to a cloud solution for different applications.
CO3	Compare and evaluate the virtualization technologies.
CO4	Monitor and manage the cloud resources, applications and data while addressing the security concerns.
CO5	Use cloud solutions offered by industry leaders for various applications.

Course Code:PGCA 1938
Course Name: Cloud Computing Laboratory (ELECTIVE-III)

CO#	Course outcomes
CO1	Learn the use of cloud computing tools offered by industry leaders.
CO2	Develop and deploy cloud applications using popular cloud platforms.
CO3	Configuration of the virtual machines on the cloud and building of a private cloud.

Course Code: PGCA1963
Course Name: Digital Image Processing (ELECTIVE-III)

CO#	Course outcomes
CO1	Understand the need for various image transforms along with properties
CO2	Learn different techniques employed for the enhancement of images
CO3	Understand the rapid advances in Machine vision
CO4	Analyze images in multiresolution environment
CO5	Learn image compression techniques

Course Code: PGCA1964
Course Name: Digital Image Processing Laboratory (ELECTIVE-III)

CO#	Course Outcomes
CO1	Implement the various operations which can be performed on images.
CO2	Apply filters on images as per the requirement
CO3	Implement different techniques employed for the enhancement of images
CO4	Develop an Image Processing Application

Course Code: PGCA1965
Course Name: NLP and Speech Recognition (ELECTIVE-III)

CO#	Course outcomes
CO1	Learn basics of natural language processing
CO2	Understand the text normalization, use of edit distance, and regular expressions
CO3	Learn Naive bayes and sentiment classification algorithms
CO4	Familiarize with chatbots and phonetics
CO5	Learn the concept of speech recognition and text to speech conversion.

Course Code: PGCA1966
Course Name: NLP and Speech Recognition Laboratory (ELECTIVE-III)

CO#	Course outcomes
CO1	Develop knowledge of various learning models of data.
CO2	Understand a wide variety of learning algorithms.
CO3	Understand how to evaluate models generated from data.
CO4	Apply the algorithms to a real-world problems.

Course Code: PGCA1967
Course Name: IOT & Blockchain Technology (ELECTIVE-III)

CO#	Course outcomes
CO1	Understand the terminology and enabling technologies of IoT and Blockchain
CO2	Enumerate the steps involved in IoT system design methodology
CO3	Gain Knowledge about the working of bit coin crypto currency
CO4	Describe domain specific applications of IoT and Blockchain

Course Code: PGCA1968
Course Name: IOT & Blockchain Technology Laboratory (ELECTIVE-III)

CO#	Course Outcomes
CO1	Learn and Use IoT sensors and remotely monitor data and control devices.
CO2	Develop real life IoT based projects.
CO3	Understand blockchain technology and develop blockchain based solutions.

CO4	Build and deploy IoT based blockchain applications for on-premise and cloud based architecture.