CHANDIGARH ENGINEERING COLLEGE CGC, LANDRAN, MOHALI
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Chandigarh Engineering College-CGC
Landran, Mohali, Punjab

Sr No.	CourseCode	PTU code	Subject Name
1	C101	PGCA1917	DISCERETE STRUCTURE AND OPTIMIZATION
2	C102	PGCA1951	PYTHON
3	C103	PGCA1952	ADVANCE DATA STRUCTURE
4	C104	PGCA1953	ADVANCED DATABASE MANAGEMENT SYSTEM
5	C105***	PGCA1905	TECHNICAL COMMUNICATION
6	C106*	PGCA1954	DATA STRUCTURE USING PYTHON LAB
7	C107*	PGCA1955	ADVANCE DATABASE MANAGEMENT SYSTEM LAB
8	C108	PGCA1908	TECHNICAL COMMUNICATION LAB
9	C109	PGCA1909	WEB TECHNOLOGIES
10	C110	PGCA1920	DESIGN AND DATA STRUCTURE
11	C111	PGCA1918	ADVANCED JAVA
12	C112	PGCA1956	LINUX ADMINISTRATION
13	C113	PGCA1932	INFORMATION SECURITY AND CYBER LAW
14	C114*	PGCA1914	WEB TECHNOLOGIES LABORATORY
15	C115*	PGCA1922	ADVANCED JAVA LABORATORY
16	C116*	PGCA1957	LINUX SYSTEM ADMINISTRATION LABORATORY
17	C201	PGCA1925	ADVANCED COMPUTER NETWORKING
18	C202	PGCA1926	ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING
19	C203	PGCA1927	THEORY OF COMPUTATION
20	C204*	PGCA1928	COMPUTER NETWOKING LABORATORY
21	C205*	PGCA1929	ARTIFICIAL INTELLIGENCE & SOFT COMPUTING LABORATORY
22	C206	PGCA1930	SOFTWARE PROJECT MANAGEMENT
23	C207	PGCA1921	E-COMMERCE AND DIGITAL MARKETING
24	C208*	PGCA 1974	E-COMMERCE AND DIGITAL MARKETING LAB
25	C209	PGCA-1976	MACHINE LEARNING AND DATA ANALYTICS AND PYTHON
26	C210	PGCA1958	ADVANCED WEB TECHNOLOGIES
27	C211*	PGCA1977	MACHINE LEARNING AND DATA ANALYTICS USING PYTHON LABORATORY
28	C212*	PGCA1960	ADVANCED WEB TECHNOLOGIES LABORATORY
29	C213	PGCA1967	IOT & BLOCK CHAIN TECHNOLOGY
30	C214*	PGCA1968	IOT & BLOCK CHAIN TECHNOLOGY LABORATORY

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Discrete Structures & Optimization(PGCA1917):C101	Year of Study: 2022-2023
Course Code	**Course Outcomes**
C101.1	Develop the logic building concepts used in Programming
C101.2	Build algorithms for solving various real life problems.
C101.3	Analyze C Generics and develop Projects.
C101.4	Determine the logic behind the language with concept

Programming in Python(PGCA1951): C102	Year of Study: 2022-2023
Course Code	**Course Outcomes**
C102.1	Demonstrate Python environment, data types, operators used in Python
C102.2	Compare and contrast Python with other programming languages.
C102.3	Explain the use of control structures and numerous native data types with theirmethods.
C102.4	Design user defined functions, modules, and packages and exception handlingmethods.
C102.5	Construct and handle files in Python and learn Object Oriented ProgrammingConcepts

Advanced Data Structures (PGCA1952):C103	Year of Study: 2022-2023
Course Code	**Course Outcomes**
C103.1	Choose appropriate data structures and algorithms and Apply it to designsolution for a specific problem.
C103.2	Analyze the operations of hashing to retrieve data from data structure.
C103.3	Design and analyze programming problem statements
C103.4	Explain with analysis of efficiency and proofs of correctness
C103.5	Evaluate and select algorithm design approaches in a problem specific manner.

Advanced Database Management System(PGCA1953):C104	Year of Study: 2022-2023
Course Code	**Course Outcomes**
C104.1	Explain the basic concepts of DBMS and RDBMS
C104.2	Apply normalization theory to the normalization of a database
C104.3	Analyze the concept of Transaction Management & Recovery techniques inRDBMS
C104.4	Analyze the concept of Transaction Management & Recovery techniques in RDBMS
C104.5	Develop and implement No SQL databases (Open Source)

Course Code	Course Outcomes
C102.3	Explain the use of control structures and numerous native data types with their methods.
C102.4	Design user defined functions, modules, and packages and exception handling methods.
C102.5	Construct and handle files in Python and learn Object Oriented Programming Concepts

Advanced Data Structures (PGCA1952):C103   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C103.1	Choose appropriate data structures and algorithms and Apply it to design solution for a specific problem.
C103.2	Analyze the operations of hashing to retrieve data from data structure.
C103.3	Design and analyze programming problem statements
C103.4	Explain with analysis of efficiency and proofs of correctness
C103.5	Evaluate and select algorithm design approaches in a problem specific manner.

Advanced Database Management System(PGCA1953):C104   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C104.1	Explain the basic concepts of DBMS and RDBMS
C104.2	Apply normalization theory to the normalization of a database
C104.3	Analyze the concept of Transaction Management & Recovery techniques in RDBM
C104.4	Analyze the concept of Transaction Management & Recovery techniques in RDBM
C104.5	Develop and implement No SQL databases (Open Source)

Technical Communication(PGCA1905):C105***   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C105***.1	Demonstrate the Basics of Technical Communication
C105***.2	Develop the basic proficiency in reading & listening
C105***.3	Formulate in order to comprehend spoken and written English language, particularly the language of their chosen technical field.
C105***.4	Select various techniques to enhance verbal communication
C105***.5	Make use of various software's for Technical communication

Course Code	Course Outcomes
C106*.1	Demonstrate the concept of data structures, python and apply algorithm for solving problems like Sorting, searching, insertion and deletion of data.
C106*.2	Make use of linear and non-linear data structures for processing of ordered or unordered data.
C106*.3	Analyze various algorithms based on their time and space complexity.

Advanced Database Management System Laboratory(PGCA 1955): C107*   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C107*.1	Construct query a database using SQL DML/DDL commands
C107*.2	Analyze integrity constraints on a database
C107*.3	Develop PL/SQL programs including stored procedures, stored functions, cursors
C107*.4	Design new database and modify existing ones for new applications and reason about the efficiency of the result.
C107*.5	Inspect various DBA roles/techniques

Course Code	Course Outcomes
C108*.1	Demonstrate the Basics of Technical Communication

C108*.2	Develop the basic proficiency in reading & listening, comprehension, writing and speaking skills among students
C108*.3	Formulate in order to comprehend spoken and written English language, particularly the language of their chosen technical field
C108*.4	Select various techniques to enhance verbal communication
C108*.5	Make use of various soft wares for Technical communication

Web Technologies(PGCA1909):C109   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C109.1	Demonstrate the basics of Internet and Web Services
C109.2	Explain and Distinguish Programming Language and Mark-up Language.
C109.3	Construct various web pages and web sites together.
C109.4	Show user input from the remote users.
C109.5	Discuss connectivity concepts of Front End and Back End.

Design & Analysis of Algorithms(PGCA1920):C110   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C110.2	Develop Algorithms using iterative/recursive approach
C110.3	Design algorithm using an appropriate design paradigm for solving agiven problem
C110.4	Classify problems as P, NP or NP Complete

Advanced Java(PGCA1918):C111   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C111.1	Explain the advanced features of Java and write the programs.
C111.2	Construct API and implement Serialization concept of Java
C111.3	Analyze Java Generics and develop Projects.
C111.4	Make use of digital marketing for developing effective digital and social media strategies

Linux Administration(PGCA1956):C112   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C112.1	Demonstrate the technical details of Linux operating system
C112.2	Experiment with various Linux command and understand file hierarchicalstructuring
C112.3	Create user, manage and configure packages in Linux
C112.4	Classify and configure the various internet services.

Information Security & Cyber Law(PGCA1932):C113   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C113.1	Identify issues involved in the field of information security.
C113.2	Explain the key security requirements of Confidentiality, Integrity&Availability.
C113.3	Demonstrate the concept of Intrusion Detection & Intrusion Prevention.
C113.4	Discuss the concept of Security policies and Cyber Laws.

Web Technologies Laboratory(PGCA1914):C114*   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C114*.1	Discuss Static and Dynamic concepts of web designing.
C114*.2	Develop ability to retrieve data from a database and present it online.
C114*.3	Construct web pages that apply various dynamic effects on the web site.
C114*.4	Classify complex and large problems using Scripting Language & Mark-up Language.

Advanced Java Laboratory(PGCA1922):C115*   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C115*.1	Classify problems as P, NP or NP Complete

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Course Code	Course Outcomes
C115*.2	Explain the advanced features of Java and write the programs.
C115*.3	Construct API and implement Serialization concept of Java.
C115*.4	Analyze Java Generics and develop Projects.

PGCA1957 Linux Administration Laboratory(PGCA1957):C116*   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C116*.1	Make use of digital marketing for developing effective digital and socialmedia strategies
C116*.2	Experiment with various commands for performing different operation
C116*.3	Apply various Linux administration commands
C116*.4	Build and configure various servers in Linux environment

PGCA1925 Advanced Computer Networking(PGCA1925):C201   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C201.2	List different protocols working at Medium Access Sub Layer.
C201.3	Elaborate the concept of network routing through algorithms.
C201.4	Explain Internet protocols and network security

PGCA1926 Artificial Intelligence & Soft Computing(PGCA1926):C202   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C202.1	Understand the significance and domains of Artificial Intelligence andknowledge representation.
C202.2	Examine the useful search techniques; learn their advantages, disadvantages and comparison.
C202.3	Develop the skills to gain a basic understanding of neural network theoryand fuzzy logic theory.
C202.4	Apply artificial neural networks and fuzzy logic theory for various problems.
C202.5	Determine the use of Genetic algorithm to obtain optimized solutions toproblems.

Theory of computation(PGCA1927):C203   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C203.1	Make Use of basic concepts of formal languages for finite automatatechniques
C203.2	Design Finite Automata's for different Regular Expressions and Languages
C203.3	Construct context free grammar for various languages
C203.4	Solve various problems of applying normal form techniques, push down automata and Turing Machines
C203.5	Solve computational problems regarding their computability and complexity and prove the basic results of the theory of computation

Advanced Computer Networking Laboratory(PGCA1928):C204*   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C204*.1	Discuss different Network Models
C204*.2	Understand working of different devices used to set up LAN.
C204*.3	Apply the concept of network routing
C204*.4	Examine and understand Internet protocols and network security.

Artificial Intelligence & Soft Computing Laboratory(PGCA1929):C205*   **Year of Study: 2022-2023**

Course Code	Course Outcomes
C205*.1	Develop the skills to gain a basic understanding of neural network theory and fuzzy logic theory.
C205*.2	Apply artificial neural networks and fuzzy logic theory for various problems

Course Code	Course Outcomes
C205*.3	Determine the use of Genetic algorithm to obtain optimized solutions to problems
C205*.4	Construct and test auto associative network for input vector

Software Project Management(PGCA1930):C206 Year of Study: 2022-2023

Course Code	Course Outcomes
C206.1	Understand and practice the process of project management
C206.2	Develop the scope of work, provide accurate cost estimates and to plan the various activities.
C206.3	Understand and use risk management analysis techniques that identify thefactors that put a project at risk and to quantify the likely effect of risk on project timescales
C206.4	Identify the resources and people required for a project and to produce a work plan and resource schedule.

E-COMMERCE AND DIGITAL MARKETING (PGCA1921):C207 Year of Study: 2022-2023

Course Code	Course Outcomes
C207.1	Understand various applications and scope of ecommerce.
C207.2	Acquire knowledge of various payment modes used in ecommerce today.
C207.3	Learn to develop, evaluate, and execute a comprehensive digital marketingstrategy and plan
C207.4	Describe how and why to use digital marketing for multiple goals within alarger marketing and/or media strategy, Developing effective digital and social media strategies
C207.5	Understand the major digital marketing channels - online advertising: Digital display, video, mobile, search engine social media

E-COMMERCE AND DIGITAL MARKETING LAB (PGCA 1955):C208 Year of Study: 2022-2023

Course Code	Course Outcomes
C208.1	Understand of implementation of ecommerce applications.
C208.2	Learn to develop and implement digital marketing strategy and plan
C208.3	Implement and developing effective digital and social media strategies
C208.4	Implementation and working on the social, and security issues concerningthe digital marketing and e-commerce

Machine Learning and Data Analytics using Python(PGCA1976):C209 Year of Study: 2022-2023

Course Code	Course outcomes
C209.2	Understand the difference between supervised and unsupervised learning
C209.3	Learn clustering and classification algorithms
C209.4	Analyze data using Python Numpy, Panda Libraries
C209.5	Visualize data using matplotlib library of Python

Advanced Web Technologies (PGCA1958):C210 Year of Study: 2022-2023

Course Code	Course Outcomes
C210.1	Understand client-side and server-side programming.
C210.2	Learn to represent web data and XML document handling.
C210.3	Understand AJAX and relevance.
C210.4	Develop a dynamic webpage by the use of java PHP and MySQL.
C210.5	Able to learn how to perform basic CRUD database operations in a Dynamic
C210.6	Learn about web services and their development.

Machine Learning and Data Analytics using python lab (PGCA1977):C211*	Year of Study: 2022-2023
Course Code	**Course Outcomes**
C211*.1	Develop knowledge of various learning models of data.
C211*.2	Implement a wide variety of learning algorithms.
C211*.3	Understand how to evaluate models generated from data.
C211*.4	Apply the algorithms to a real-world problems.
C211*.5	Optimize the models learned and report on the expected accuracy that canbe achieved by applying the models.

Advanced Web Technologies(PGCA1960):C212	Year of Study: 2022-2023
Course Code	**Course Outcomes**
C212.1	Understand the advance concepts of website development.
C212.2	Provide skills to design and develop dynamic web sites.
C212.3	Work independently for database programming for web applications
C212.4	Understand concepts of jQuery methods, AJAX, Bootstrap and REACT
C212.5	Connect Website with an Database Server and perform basic CRUD operations.
C212.6	Develop market ready website, to be used by clients.

IOT & Block chain Technology (PGCA1967):C213	Year of Study: 2022-2023	
Course Code	**Course Outcomes**	
C213.2	Enumerate the steps involved in IoT system design methodology	
C213.3	Gain Knowledge about the working of bit coin crypto currency	
C213.4	Describe domain specific applications of IoT and Block chain	

IOT & Block chain Technology Lab (PGCA1968):C214*	Year of Study: 2022-2023
Course Code	**Course Outcomes**
C214*.2	Develop real life IoT based projects.
C214*.3	Understand block chain technology and develop block chain based solutions.
C214*.4	Build and deploy IoT based block chain applications for on premise andcloud based architecture