IK. Gujral Punjab Technical University
Bachelor of Computer Applications (BCA
PROGRAM OUTCOMES (POs)
Program: BCA

1. Basic knowledge: An ability to apply knowledge of basic mathematics, science and domain knowledge to solve the computational problems.
2. Discipline knowledge: An ability to apply discipline –specific knowledge to solve core and/or applied computational problems.
3. Experiments and practice: An ability to plan and perform experiments and practices and to use the results to solve computational problems.
4. Tools Usage: Apply appropriate technologies and tools with an understanding of limitations.
5. Profession and society: Demonstrate knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional practice.
6. Environment and sustainability: Understand the impact of the computational solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.
7. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the professional practice.
8. Individual and team work: Function effectively as an individual, and as a member or leader in diverse/multidisciplinary teams.
9. Communication: An ability to communicate effectively.
10. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the context of technological changes.

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Course Code: UGCA1901
Course Name: Mathematics

Course Outcomes: After studying this course, students will be able to:

CO1 Define various mathematical notions.
CO2 Explain different terms used in basic mathematics.
CO3 Illustrate various operations and formulas used to solve mathematical problems.
CO4 Organize data in various models.
CO5 Prepare solutions for various real life problems.

Course Code: UGCA1902 Course Name: Fundamentals of Computer and IT

Course Outcomes:

CO1 Identify of input and output devices of Computers
CO2 Utilize the functioning of various components of computer system

CO3 Define the role of Operating system
CO4 Prepare documents using word processing, Spreadsheet and Presentation Graphics Software's.
CO5 Highlight the Internet safety, legally, and other issues.

Course Code: UGCA1903 Course Name: Problem Solving using C
Course Outcomes:
CO1 Express the logical flow used in Programming.
CO2 Design algorithms for solving various real life problems
CO3 Implement programs using C.
CO4 Choose the right data type and statements for programs.
CO5 Explain various concepts of C programming language.

Course Code: UGCA1904 Course Name: Workshop on Desktop Publishing
Course Outcomes: After studying this course, students will be able to:
CO1 Outline the characteristics of desktop publishing tools.
CO2 Identify the right components for designing documents.
CO3 Apply knowledge in designing various documents.
CO4 Prepare different types of graphic related documents.
CO5 Express the messages through graphical content
Course Code: UGCA1905 Course Name: Problem Solving using C Laboratory
CO1 Select the right statement for the program.
CO2 Experiment with different input values.
CO3 Test the output with boundary conditions.
CO4 Distinguish between various control statements and data types.
CO5 Implement programs for various problems.

Course Code: UGCA1906 Course Name: Fundamentals of Computer and IT Laboratory

CO1 Highlight the features of word processing, spreadsheet and presentation tools
CO2 Identify the right componets for its documents on editor, spread sheet and presentation software.
CO3 Prepare documents and apply formatting.
CO4 select the right tool for different requirements.
CO5 Apply various operations.

BTHU104/18 English Practical/Laboratory
Course Outcomes: The objective of this course is to introduce students to the theory, fundamentals• and tools of communication. To help the students become the independent users of English language

.• To develop in them vital communication skills which are integral to personal,• social and professional interactions. The syllabus shall address the issues relating to the Language of communication

.• Students will become proficient in professional communication such as• interviews, group discussions and business office environments, important reading skills as well as writing skills such as report writing, note taking etc. The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books

Course Code: HVPE101-18 Course Name: Human Values, De-addiction and Traffic Rules

CO1 To help the students appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.

CO2 To facilitate the development of a Holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Value based living in a natural way.

CO3 To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behavior and mutually enriching interaction with Nature.

Course Code: UGCA1907 Course Name: Fundamentals of Statistics

CO1 Highlight the need of studying & analyzing numbers.

CO2 Identify visualization tools for representing data.

CO3 Describe various statistical formulas.

CO4 Compute various statistical measures.

CO5 Compare result of different statistical measures.

Course Code: UGCA1908 Course Name: Computer System Architecture

CO1 Identify the various internal and peripheral components of computer system

CO2 Categorize different number system.

CO3 Outline the role of various components of computer system.

CO4 Identify micro-operations.

CO5 Comment on the design of Combinational & Sequential circuits

Course Code: UGCA1909 Course Name: Object Oriented Programming using C++

CO1 Outline the role of programming for solving real world problems.

CO2 Explain Object oriented approach for finding Solutions to various problems with the help of C++ language.

CO3 Implement computer based solutions to various real-world problems using C++

CO4 Select the right Object Oriented Concept for optimal solution.

CO5 Review different solutions for a common problem

Course Code: UGCA1910 Course Name: Object Oriented Programming using C++ Laboratory

CO1 Design the classes.
CO2 Illustrate the concept of memory representation for objects
CO3 Implement programs using OOP concepts for various problems.
CO4 Implement file handling in C++
CO5 Select the right data types to represent class properties.

Course Code: UGCA1911 Course Name: Fundamentals of Statistics Laboratory
CO1 Create Frequency table and Graphs for data representation.
CO2 Apply various statistical operations using statistical tool like excel.
CO3 Compute various statistical measures using statistical tool like excel
CO4 Analyze real life data usign statistical tool
CO5 Prepare data in different formats and styles

Course Code: UGCA1912 Course Name: Computer System Architecture Laboratory
CO1 Identify various types of Gates and Circuits
CO2 Higlight the functioning of various gates and circuits
CO3 Validate the outcome of various gates and circuits
CO4 Differentiate between the various types of gates and circuits
CO5 Outline the use of each type of gate and circuit
EVS102-18 Environmental Studies Course Outcomes:
1. Students will enable to understand environmental problems at local and national level through literature and general awareness.
2. The students will gain practical knowledge by visiting wildlife areas, environmental institutes and various personalities who have done practical work on various environmental Issues.
3. The students will apply interdisciplinary approach to understand key environmental issues and critically analyze them to explore the possibilities to mitigate these problems.
4. Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world

Course Code: UGCA1913 Course Name: Computer Networks
CO1 Highlight the characteristics of various protocols.
CO2 Define different network technologies and their application.
CO3 Identify Hardware and software components for designing network.
CO4 Compare the performace of different network media
CO5 Implement various configutaion settings

Course Code: UGCA1914 Course Name: Programming in Python

CO1 Explain environment, data types, operators used in Python.

CO2 Compare Python with other programming languages.

CO3 Outline the use of control structures and numerous native data types with their methods.

CO4 Design user defined functions, modules, files, and packages and exception handling methods.

CO5 Write solutions for Object Oriented Programming Concepts.

Course Code: UGCA1915 Course Name: Data Structures

CO1 Apply appropriate constructs of Programming language, coding standards for application development

CO2 Select appropriate data structures for problem solving and programming

CO3 Illustrate the outcome of various operations on data structures.

CO4 Identify appropriate searching and/or sorting techniques for wide range of problems and data types.

CO5 Differentiate between various types of data structures

Course Code: UGCA1916 Course Name: Computer Networks Laboratory

CO1 Outline the key features of various protocols

CO2 Implement network configuration settings for an operating system

CO3 Prepare different types of cables for netwroking.

CO4 Design network model using network simulation tool

CO5 Implement various setting on FTP, Proxy and other servers.

Course Code: UGCA1917 Course Name: Programming in Python Laboratory

CO1 Outline various programming constructs like data types and control structures of Python.

CO2 Implement different data structures.

CO3 Implement modules and functions.

CO4 Illustrate concept of object oriented programming.

CO5 Implement file handling.

Course Code: UGCA1918 Course Name: Data Structures Laboratory

CO1 Implement Dynamic memory allocation.

CO2 Create different data structures in C/ C++

CO3 Implement various operations of all data structures

CO4 Illustrate the outcome of various operations with the help of examples.

CO5 Write programs to implement various types of searching and sorting algorithms

Course Code: UGCA1919 Course Name: PC Assembly & Troubleshooting

CO1 Identify various components of computer systems.

CO2 Differentiate between types of processors required for different computer systems.
CO3 Explain the steps to install, connect and configure various peripheral devices
CO4 Execute the troubleshooting issues in Computer Systems
CO5 Explain how resources can be shared over network

Course Code: UGCA1920 Course Name: PC Assembly & Troubleshooting Laboratory

CO1 Identify key component of computer system while assembling a system.
CO2 Implement installation and configuration of computer system
CO3 Perform installation, configuration and sharing of peripheral devices.
CO4 Solve troubleshooting issues in Computer Systems
CO5 Execute dual booting

Course Code: UGCA1921 Course Name: Software Engineering

CO1 Highlight the need of software engineering
CO2 Outline the phases and activities involved in the conventional software life cycle models
CO3 Design documents for various phases of software life cycle.
CO4 Compute the complexity of the software based on multiple metrices.
CO5 Identify the tools needed for different types of documents required in software engineering

Course Code: UGCA1922 Course Name: Database Management Systems

CO1 Define the basic concepts of DBMS.
CO2 Design SQL queries.
CO3 Illustrate the concept of data normalization with the help of real life examples.
CO4 Explain the concept of transaction management.
CO5 Outline features of advanced database management systems

Course Code: UGCA1923 Course Name: Operating Systems

CO1 Discuss the evaluation of operating systems.
CO2 Explain different resource managements performed by operating system.
CO3 Describe the architecture in terms of functions performed by different types of operating systems.
CO4 Analyze the performance of different algorithms used in design of operating system components.
CO5 Compare the key properties of different types of Operating Sysytems.

Course Code: UGCA1924 Course Name: Software Engineering Laboratory

CO1 Identify the scope and objective of different domains that have impact on society
CO2 Create data flow diagrams
CO3 Compute software complexity using latest tools
CO4 Design a software engineering process life cycle.
CO5 Implement specification, design, implementation, and testing process using latest tools

Course Code: UGCA1925 Course Name: Database Management Systems Laboratory

CO1 Differentiate between DDL, DML and DCL commands
CO2 Implement DDL, DML and DCL commands
CO3 Write integrity constraints on a database
CO4 Design Databases and Tables in relational model for some project related to society welfare
CO5 Implement PL/SQL.

Course Code: UGCA1926 Course Name: Operating Systems Laboratory
CO1 Implement the installation and configuration of different operating systems.
CO2 Write programs for different scheduling algorithms.
CO3 Execute various commands in Vi editor
CO4 Implement the dual boot installation
CO5 Execute commands in shell programming
Course Code: UGCA1927 Course Name: Web Designing
CO1 Create pages with simple tags in HTML
CO2 Design webpages with multiple sections or frames
CO3 Explain how to link webpages through hypertext or images a links
CO4 Outline the key web designing concepts using java script
CO5 Design forms with special controls using HTML
Course Code: UGCA1928 Course Name: Web Designing Laboratory
CO1 Design pages with simple tags in HTML
CO2 Create web pages with Auido and Video content in it.
CO3 Illustrate the movement from one web page to another
CO4 Implement advanced web designing concepts using java script
CO5 Execute a small web pased project for the benefit of society
Course Code: UGCA1929 Course Name: Programming in PHP
CO1 Outline the importance and benefits of PHP
CO2 Compare Client Side Script & Server Side Script.
CO3 Explain the use of control structures, data types used in PHP.
CO4 Implement database connectivity.
CO5 Develop Dynamic Website that can interact with different kinds of Database Languages.
Course Code: UGCA1930 Course Name: Programming in PHP Laboratory
CO1 Write scripts for basic web page designs
CO2 Design the work flow of web page with the help of various control statements
CO3 Differentiate between client side and server side scripting
CO4 Illustrate the concept of static and dynamic websites
CO5 Implement the database concepts in PHP
Course Code: UGCA1931 Course Name: Data Warehouse and Mining
CO1 Highlight the need of Data Warehousing & Mining
CO2 Differentiate between the Transactional and Analytical data models.
CO3 Identify the real life applications where data mining can be applied.
CO4 Apply different data mining algorithms on wide range of data sets.
CO5 Explain the role of visualization in data representation and analysis.

Course Code: UGCA1937 Course Name: Data Warehouse and Mining Laboratory

CO1 Identify different data mining tools used to analyze data.

CO2 Implement classification/ Clustering techniques in R/ Weka

CO3 Create visualization for representing data.

CO4 Execute various data preprocessing techniques

CO5 Analyze the data which has direct impact on the society

Course Code: UGCA1932 Course Name: Programming in Java

CO1 Define various Object Oriented concepts in Java Programming.

CO2 Compare different data types in java.

CO3 Differentiate between built-in and user defined functions/methods, interfaces and packages etc.

CO4 Outline the importance of exception handling in programs.

CO5 Explain advanced concepts like multithreading, applet used in java.

Course Code: UGCA1938 Course Name: Programming in Java Laboratory

CO1 Execute Core Java concepts.

CO2 Illustrate the role of differentdata type, operators and control statement in java with the help of programs.

CO3 Write programs to hadle exceptions

CO4 Implement multithreading in java

CO5 Execute interfaces and packages.

Course Code: UGCA1934 Course Name: Computer Graphics

CO1 Identify different types of Input and Output devices.

CO2 Outline the key characteristics of virtual relaity.

CO3 Explain different algorithms to draw shapes like line, circle, point, etc.

CO4 Differentiate between 2-D and 3-D coordinate system

CO5 Define projection.

Course Code: UGCA1940 Course Name: Computer Graphics Laboratory

CO1 Implement algorithms for drawing basic shapes like circle, line and point.

CO2 Write programs to implement 2-D and 3-D corrdibate transformations.

CO3 Design basic shapes for logo's

CO4 Develop programs for basic animations using C or C++

CO5 Design a small gaming project.

Course Code: UGCA1936 Course Name: Cloud Computing

CO1 Define the concept of cloud computing.

CO2 Outline the benefits if migrating to a cloud solution for different applications.

CO3 Compare different virtualization technologies.

CO4 Identify various resources needed to build cloud.

CO5 Explain various security threats to cloud.

Course Code: UGCA1942 Course Name: Cloud Computing Laboratory

CO1 Identify major commercial projects in the field of cloud computing

CO2 Design basic cloud applications

CO3 Execute basic functionalities of open source tools like Open Stack.

CO4 Implement virtualization

CO5 Define major services provided by cloud service provider.

Course Code: UGCA1943 Course Name: Android Programming

CO1 Prepare environment for working on Android OS.

CO2 Highlight various security issues in Android platform.

CO3 Design innovative User Interface and develop activity for android app.

CO4 Outline the steps for creating database applications.

CO5 Write programs for basic Android based applications.

Course Code: UGCA1944 Course Name: Android Programming Laboratory

CO1 Prapare environment for working on Android OS.

CO2 Program basic Android based applications.

CO3 Highlight various security issues in Android platform.

CO4 Implement database applications.

CO5 Design innovative User Interface and develop activity for android app.

Course Code:

UGCA1945 Course Name: Artificial Intelligence

CO1 Highlight the significance and domains of Artificial Intelligence and knowledge representation.

CO2 Outline the advantages and disadvantages of various search techniques.

CO3 Identify various Expert Systems and AI applications.

CO4 Define the role of AI in different areas like NLP, Pattern Recognition etc.

CO5 Select the right AI tool for different AI based application

Course Code: UGCA1951 Course Name: Artificial Intelligence Laboratory

CO1 Identify right tool for different AI based problems.

CO2 Develop basic applications using AI tools.

CO3 Represent various real life problem domains using logic based techniques and use this to perform inference or planning.

CO4 Outline the use of Bayesian approach to solve uncertain problems.

CO5 Implement basic Natural Language processing programs.

Course Code: UGCA1947 Course Name: Digital Marketing

CO1 Highlight the key elements of a digital marketing strategy.

CO2 Choose the right platform for digital marketing

CO3 Identify the major digital marketing channels.

CO4 Design content for digital marketing.

CO5 Develop digital marketing strategy and plan.

Course Code: UGCA1950 Course Name: Machine Learning

CO1 Define the concept of machine learning

CO2 Outline the key characteristics of machine learning algorithms

CO3 Compare the performance of different machine learning algorithms

CO4 Design solution for basic problems using machine learning algorithms

CO5 Explain the concept of reinforcement learning

Course Code: UGCA1956 Course Name: Machine Learning Laboratory

CO1 Differentiate between various data types.

CO2 Implement programs for various Learning algorithms.

CO3 Compare different machine learning algorithms.

CO4 Choose the right algorithm for different problems.

CO5 Apply Machine Learning algorithms to solve real world problems.