GOVT. COLLEGE FOR WOMEN, PARADE GROUND, JAMMU-180001, J&K.
(Erstwhile Maharani Mahila College)
Autonomous college under the University of Jammu
College for Potential for Excellence, 2016
(Estd. 1944)

Name of Department: Department of Computer Science

Programmes offered: 1. Bachelor of Computer Application
2. Bachelor of Science
3. Master of Computer Application

Programme Outcomes: The present Learning Outcome-based Curriculum Framework for bachelor's and masters degrees in Computer Science is intended to facilitate the students to achieve the following.

- To develop an understanding and knowledge of the basic theory of Computer Science and Information Technology with a good foundation on theory, systems and applications such as algorithms, data structures, data handling, data communication and computation.
- To develop the ability to use this knowledge to analyze new situations.

- To acquire necessary and state-of-the-art skills to take up industry challenges. The objectives and outcomes are carefully designed to suit the above-mentioned purpose.
- The ability to synthesize the acquired knowledge, understanding, and experience for a better and improved comprehension of the real-life problems
- To learn skills and tools like mathematics, statistics, physics, and electronics to find the solution, interpret the results, and make predictions for future developments.

Courses Offered:

a)Bachelor of Computer Application and Bachelors of Science

Computer Fundamentals(UBCATC101)	- To bridge the fundamental concepts of computers with the present level of knowledge of the students - Familiarize Operating Systems, Programming Languages, Peripheral Devices, Networking, Multimedia, and the Internet.
Programming in C-Language(UBCATC102)	- Understanding the functional hierarchical code organization. - Ability to define and manage the data structures based on the problem subject domain.
Practical based on UBCATC101 and UBCATC102(UBCAPC150)	- Hands-on experience on MS-suite. - Ability to work with textual information, characters, and strings.

	• Ability to work with arrays of complex objects.
Data structure using C-language(UBCATC201)	• Develop skills in the implementation and applications of data structures. • Implementation of basic algorithms for operations on arrays, linked list, stacks, queues, trees.
Digital Electronics(UBCATC202)	• To understand and examine the structure of various number systems and their applications in digital design. • The ability to understand, analyze and design various combinational and sequential circuits.
Practical based on UBCATC201 and UBCATC202(UBCAPC250)	• To enhance the programming skills and providing insights of computer organizations.
Fundamentals of Operating System (UBCATC301)	• To understand the basic components of a computer operating system and the interactions among the various components.
Database Management System(UBCATC302)	• To understand terms related to database design and management. • To understand the objectives of data and information management.
Practical based on UBCATC301 and UBCATC302(UBCAPC350)	• To learn how to manage a relational database management system (RDBMS).
Software Engineering(UBCATC401)	• Basic knowledge and understanding of the analysis and design of complex systems. • Ability to apply software engineering principles and techniques.
Object-oriented programming structures (UBCATC402)	• To describe the meaning of the object-oriented paradigm and create class hierarchies using the object-oriented design process
Practical based on UBCATC402 (UBCAPC450)	• To use an integrated development environment to write, compile, run and test object-oriented programs.
Computer networks and Internet (UBCATC501)	• To obtain a theoretical understanding of data communications and computer networks.
Practical based on UBCATC501 (UBCAPC550)	• Gaining practical experience in installation, monitoring, troubleshooting of the current LAN systems
Project(UBCAPC650)	• Developing the softwares for organisation
1.Artificial Intelligence 2.Advanced DBMS	• To apply the basic principles, models, and algorithms of AI to recognize, model and solve problems in the analysis and design of the information systems • Be able to develop new methods in databases based on the knowledge of the existing techniques.
1.PHP/SQL 2.Android Programming	• To write PHP scripts to handle HTML forms, write regular expressions including modifiers, operators, and metacharacters. • To install and configure android application development tools and develop user interfaces for the android program.
	• To design and implement programs that make strong use of the classes and objects.

1.Java Programming 2.Python Programming		• To understand python as a useful scripting language. To learn how to identify python object types.
1. Web- Technologies 2.Information Security		• To become familiar with client-server architecture and able to develop web applications using Java technologies. • To develop a basic understanding of security, cryptography, system attacks, and defense mechanism against them.
1. PC Assembly 2.Open System Software		• To be able to assemble/setup and upgrade personal computer systems. To diagnose and isolate faulty components. To optimize system performance and install/connect peripherals. • To get insight into the various open system software and their usage.

b)Master of Computer Application

OBJECT ORIENTED PROGRAMMING USING C++	MCACC101	• To understand how C++ improves C with object-oriented features. • To learn how to write inline functions for efficiency and performance.
DISCRETE MATHEMATICS	MCACC102	• To understand the basic concepts of sets, permutations, relations, graphs, trees, and finite state machines.
OPERATING SYSTEM	MCACC103	• To understand the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.
LAB BASED ON C++ AND OS	MCAPC150	• To implement concepts like polymorphism, class, inheritance, virtual functions, constructor and destructor, friend functions, virtual functions, and abstract classes, etc. • To implement various internal and external commands.
OPERATIONS RESEARCH	MCAEC104	• To identify and develop operation research models from the verbal description of the real system. • To understand the mathematical tools that are needed to solve optimization problems and proposed models.
NUMERICAL COMPUTING	MCAEC105	• To derive numerical methods for various mathematical operations and tasks.
E-COMMERCE	MCAEC106	• Understanding of retailing in e-commerce by analyzing branding and pricing strategies using and determining the effectiveness of the market research.
STATISTICAL FOUNDATION FOR COMPUTER SCIENCE	MCAFC105	• To critically analyze solutions, proofs, and programs in the field of computing. • To identify appropriate mathematical, analytical, or software tools and their use.
DATA STRUCTURES	MCACC201	• Develop skills in the implementation and applications of data structures.

COMPUTER SYSTEM ARCHITECTURE	MCACC202	• To demonstrate computer architecture concepts related to the design of modern processors, memories, and IO.
JAVA PROGRAMMING	MCACC203	• To design and implement programs that make strong use of the classes and objects.
LAB BASED ON DS AND JAVA	MCAPC250	• Develop skills in the implementation and applications of data structures. • To design and implement programs that make strong use of the classes and objects.
ELECTIVES OFFERED BY OTHER DEPARTMENTS (COMMUNICATION SKILLS IN ENGLISH)	MCAEC204	• To train the students in communication and personality skills
R PROGRAMMING	MCAFC205	• To navigate and optimize R integrated development environment studio. • To import external data into R for data processing and statistical analysis.
COMPUTER HARDWARE AND TROUBLESHOOTING	MCAFC206	• To understand the basic concepts of computer hardware, networking and apply their knowledge about computer peripherals. • To identify, rectify problems onboard.
SOFTWARE ENGINEERING	MCACC301	• Basic knowledge and understanding of the analysis and design of complex systems. • Ability to apply software engineering principles and techniques.
ADVANCED DATABASE MANAGEMENT SYSTEM	MCACC302	• Be able to develop new methods in databases based on the knowledge of the existing techniques.
DESIGN AND ANALYSIS OF ALGORITHMS	MCACC303	• To analyze the asymptomatic performance of the algorithms. • To apply important algorithmic design paradigms and method of analysis.
LAB BASED ON DBMS & DESIGN AND ANALYSIS OF ALGORITHMS	MCAPC350	• To learn how to manage a relational database management system (RDBMS). • To synthesize efficient common engineering design situations.
PARALLEL COMPUTING	MCAEC304	• To be able to apply basic algorithmic techniques and design algorithms in shared as well as distributed memory environment.
IMAGE PROCESSING	MCAEC305	• To understand the needs of image transformation. • To develop any image processing application.
DATA WAREHOUSE & DATA MINING	MCAEC306	• To design a data warehouse with dimensional modeling and apply OLAP operations. • To compare and evaluate different data mining techniques like clustering, classification, association and prediction.
PYTHON PROGRAMMING	MCAFC305	• To understand python as a useful scripting language. To learn how to identify python object types.
PHP /MY SQL	MCAFC306	• To write PHP scripts to handle HTML forms, write regular expressions including modifiers, operators, and metacharacters. • To understand the basic concepts of how a database stores information via tables and to retrieve or manipulate data from one or more

		tables.
COMPUTER NETWORKS	MCACC401	• To obtain a theoretical understanding of data communications and computer networks.
ARTIFICIAL INTELLIGENCE	MCACC402	• To apply the basic principles, models, and algorithms of AI to recognize, model and solve problems in the analysis and design of the information systems
THEORY OF COMPUTATION	MCACC403	• To analyze and design Finite Automata, Turing Machines, Push-down Automata, Formal Languages, and Grammars.
MINOR PROJECT	MCAPC450	
ELECTIVE OFFERED BY OTHER DEPARTMENTS	MCAEC404	
CURRENT TRENDS AND TECHNOLOGY	MCAFC405	• To be able to describe the changes in technology and their impacts on businesses and consumers.
INTERNET OF THINGS	MCAFC406	• To discuss the architecture, operations, and business benefits of an IoT solution.
ANDROID PROGRAMMING	MCACC501	• To install and configure android application development tools and develop user interfaces for the android program.
FUNDAMENTALS OF MICROPROCESSORS	MCACC502	• To understand instruction sets and addressing modes. • To understand microcontroller based system design for various applications.
COMPUTER GRAPHICS	MCACC503	• To explain the core concepts of computer graphics including viewing, projection, perspectives, modeling and transformations in 2D and 3D.
LAB OF COMPUTER GRAPHICS & ANDROID	MCAPC550	• To apply the concepts of color models, line clipping, polygon clipping, and circle generation. • To install and configure android application development tools and develop user interfaces for the android program.
COMPILER DESIGN	MCAEC504	• To understand the concepts of lexical analysis, parsing techniques, symbol tables, error recovery, code generation, and code optimization.
CLOUD COMPUTING	MCAEC505	• To explain the core issues of cloud computing such as security, privacy, and interoperability. • To explain, analyze and evaluate various cloud computing models.
SOFT COMPUTING	MCAEC506	• To conceptualize and parametrize various problems to be solved through basic soft computing techniques.