MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA

A College with Potential for Excellence

NAAC Accredited & ISO 21001: 2018 Certified

PROGRAMME REGISTER: 2023-26

DEPARTMENT OF COMPUTER SCIENCE

INDEX

PROGRAMME OUTCOMES

(POs)

2023-26

Students of all Undergraduate Programmes at the time of graduation will be able to possess

PO1: Essential Knowledge:

Have comprehensive discipline knowledge and understanding, the ability to engage with different schools of thought and to apply their knowledge in practice including in multidisciplinary or multi-professional contexts.

PO2: Creative, Critical Thinking and Problem-Solving Abilities:

Be effective problem-solvers, able to apply critical and evidence-based thinking to conceive innovative responses to future challenges.

PO3: Teamwork and Communication Skills:

Convey ideas and information effectively to a range of audiences for a variety of purposes and contribute in a positive and collaborative manner to achieving common goals.

PO4: Motivated, Self-directed, and Life-long Learning:

Exhibit life-long skills; broad-based multiple career oriented general skills; self and field-based learning skills; digital skills; preparedness for living, learning and working in any environment.

PO5: Professionalism and Leadership Readiness:

Engage in professional behaviour and have the potential to be entrepreneurial and take leadership roles in their chosen occupations and communities.

PO6: Intercultural and Ethical Competency:

Be responsible and effective global citizens whose personal values and practices are consistent with their roles as responsible members of society.

PO7: Self-awareness and Emotional Intelligence:

Be self-aware and reflective, flexible and resilient and act with integrity and take responsibility for their actions as empowered women.

PO8: Social Responsibility and Effective Citizenship:

Exhibit social responsibility and compassionate commitment; Be sensitive to and demonstrate institution in matters of environment, gender and other social issues to promote an equitable society and sustainable development.

PROGRAMME SPECIFIC OUTCOME

(PSOs)

2023-26

At the end of the programme students will be able to possess/exhibit:

PSO1: Quantitative Analysis:

Interpret principles, classifications, concepts, theories and mechanisms learnt.

PSO2: Practical and Analytical Skills:

Analyse hypotheses, procedures, properties, experimental facts and draw conclusions.

PSO3: Logical and Critical Thinking:

Apply knowledge and techniques in sample analysis, problem-solving, results, and production.

PSO4: Teamwork and Communication:

Develop communicative competence, creative and critical thinking, practical, technical and employability skills, social sensibility and responsibility.

Course Outcomes (COs)

B.Sc Programme

2023-26

S.No.	Sem	Course Code	Course Title	Course Outcomes (COs)
1	I	23SCCCEA14	Essentials and Applications of Mathematical, Physical & Chemical Sciences	**CO1:**Apply mathematical principles to solve various problems across complex numbers, trigonometry, vectors, and statistical analysis involving data sets.
				CO2: Summarize key physics principles, including measurements, motion, thermodynamics, wave behaviour, electromagnetism, atomic structure, and theories of the universe.
				CO3: Outline the fundamental concepts of chemistry and their relevance in daily life.
				CO4: Elaborate the interconnectedness of math, physics and chemistry and explain how they predict phenomena in diverse contexts.
				CO5: Discuss about computer evolution, including the internet, network types and understand ethical issues in network security, cryptography, privacy and data protection.
2	I	23SCCCAS14	Advances in Mathematical Physical & Chemical Sciences	**CO1:** Identify the applications of mathematics in physics and chemistry to solve real-world problems.
				CO2: Explain renewable energy generation, storage, energy-efficient materials and recent advancements in nanotechnology, biophysics, medical physics, and materials science.
				CO3: Outline computer-aided drug design, Nano sensors, chemical biology, the impact of chemical pollutants on ecosystems and human health, and methods for dye removal using catalysis.
				CO4: Elaborate the interconnectedness of math, physics and chemistry and apply these principles to explain phenomena in diverse contexts.
				CO5: Summarize the advanced computer science topics, such as number systems, signals, error detection and correction, multiplexing, transmission media, and networking devices.

3	II	23CSCCPC23	Problem Solving Using C	**CO1:** Understand the working of a digital computer and fundamental constructs of programming.
				CO2: Analyze and develop a solution to a given problem with suitable control structures.
				CO3: Apply the derived data types in program solutions.
				CO4: Use the 'C' language constructs in the right way.
				CO5: Apply the Dynamic Memory Management for effective memory utilization.
4	II	23CSP1PC21	Problem Solving Using C - Practical	**CO1:** Apply the derived data types in program solutions in C.
				CO2: Use the 'C' language syntaxes in the right way.
				CO3: Analyze and develop a solution to a given problem with suitable control structures in C.
5	II	23CSCCDL23	Digital Logic Design	**CO1:** Understand how to convert numbers from one radix to another radix and perform arithmetic operations.
				CO2: Simplify Boolean functions using Boolean algebra and k-maps Design adders and subtractors circuits.
				CO3: Analyze, design, and implement both basic arithmetic circuits and integrated ripple adder/subtractor circuits.
				CO4: Design combinational logic circuits such as decoders, encoders, multiplexers and demultiplexers.
				CO5: create truth tables and excitation tables for various flip-flops including RS, JK, T, and D flip-flops.
6	II	23CSP2DL21	Digital Logic Design - Practical	**CO1:** Demonstrate proficiency in designing, constructing, and testing digital logic circuits using simulation software.
				CO2: Apply theoretical knowledge of digital logic design concepts, to practical circuit implementations.
				CO3: Investigate the behavior and functionality of flip-flops within sequential circuits to analyze their operation and performance.
7	III	23CSCCPJ33	Object Oriented Programming Using Java	**CO1:** Use the syntax and semantics of java programming language and basic concepts of OOP.
				CO2: Develop reusable programs using the concepts of inheritance, polymorphism.
				CO3: Apply the concepts of packages, interface and Exception handling.

				CO4: Develop multithreaded applications with synchronization .
				CO5: Design Graphical User Interface using swing controls and event handling.
8	III	23CSP3PJ31	Object Oriented Programming Using Java - Practical	**CO1:** Apply Java basics, including loops, inheritance, and exception handling.
				CO2: Create multi-threaded applications using Thread and Runnable.
				CO3: Design interactive Java GUI applications with Swing components.
9	III	23CSCCDS33	Data Structures Using C	**CO1:** Understand various Data Structures for data storage and processing.
				CO2: Realize Linked List Data Structure for various operations.
				CO3: Analyze step by step and develop algorithms to solve real-world problems by implementing stacks and queues data structures.
				CO4: Understand and implement various searching & sorting techniques.
				CO5: Understand the Non-Linear Data Structures such as Binary Trees and Graphs.
10	III	23CSP4DS31	Data Structures Using C - Practical	**CO1:** Design and analyze the time and space efficiency of the data structure.
				CO2: Identify the appropriate data structure for a given problem.
				CO3: Gain practical knowledge in the application of data structures.
11	III	23CSCCCO33	Computer Organization	**CO1:** Identify different types of instructions.
				CO2: Differentiate between micro-programmed and hard-wired control units.
				CO3: Analyze the performance of the hierarchical organization of memory.
				CO4: Summarize different data transfer techniques.
				CO5: Demonstrate arithmetic operations on fixed - and floating-point numbers and illustrate concepts of parallel processing.
12	III	23CSP5CO31	Computer Organization - Practical	**CO1:** Explore Boolean algebra and its application in digital logic circuits, including logic gates, truth tables, and Boolean expressions.

				CO2: Utilize number system knowledge for designing and analyzing digital logic.
				CO3: Explore memory management techniques such as caching, virtual memory, and memory mapping, optimizing performance.
13	III	23CSCCOS33	Operating Systems	**CO1:** Demonstrate knowledge and comprehension of operating system functions.
				CO2: Analyze different process scheduling algorithms and apply them to manage processes and threads effectively.
				CO3: Create strategies to prevent, detect, and recover from deadlocks, and design solutions for inter-process communication and synchronization problems.
				CO4: Compare and contrast different memory allocation strategies and evaluate their effectiveness.
				CO5: Evaluate disk scheduling algorithms while implementing OS security measures.
14	III	23CSP6OS31	Operating Systems - Practical	**CO1:** Build shell program for process and file system management with system calls.
				CO2: Develop proficiency in writing shell scripts to automate system tasks, manage files and directories.
				CO3: Implement FIFO, LRU, and OPTIMAL page replacement algorithms in programs.
15	IV	23CSCCDM43	Database Management System	**CO1:** Differentiate between database systems and file based systems.
				CO2: Design a database using ER model.
				CO3: Apply relational model in database design.
				CO4: Use SQL commands for creating and manipulating data stored in databases.
				CO5: Create PL/SQL programs to work with databases.
16	IV	23CSP7DM41	Database Management System – Practical	**CO1:** Understand the basics of SQL and create database tables and to establish relationships between tables.
				CO2: Design and create relational database systems.
				CO3: Formulate queries using SQL DML/DDL/DCL commands.

17	IV	23CSCCSE43	Object Oriented Software Engineering	**CO1:** Understand and apply the fundamental principles of Object-Oriented Programming (OOP) concepts and Unified Modeling Language (UML) basics, in the development of software solutions.
				CO2: Analyze and specify software requirements, develop use cases and scenarios, apply object- oriented analysis and design (OOAD) principles.
				CO3: Familiar with the concept of test-driven development (TDD) and its practical implementation.
				CO4: Analyze and Evaluate Software Maintenance and Evolution Strategies.
				CO5: Apply Advanced Object-Oriented Software Engineering Concepts.
18	IV	23CSP8SE41	Object Oriented Software Engineering – Practical	**CO1:** Understand and develop various structure and behavior UML diagrams.
				CO2: Discuss and Analyse how to develop software requirements specifications for a given problem.
				CO3: Gain practical knowledge in system modeling.
19	IV	23CSCCCN43	Data Communications & Computer Networks	**CO1:** Understand and apply network applications, hardware, software, and reference models for network communication.
				CO2: Design and analyze data link layer protocols, multiple access protocols, and wireless LAN technologies.
				CO3: Design routing algorithms, congestion control algorithms, and evaluate network layer protocols for internetworking.
				CO4: Analyze transport service, transport protocols, and evaluate UDP and TCP in the internet.
				CO5: Understand and evaluate application layer protocols, including DNS, email, WWW, and network management protocols.
20	IV	23CSP9CN41	Data Communications & Computer Networks - Practical	**CO1:** Understand details and functionality of layered network architecture.
				CO2: Analyze performance of various communication protocols.
				CO3: Practice packet /file transmission between nodes.
21	V	23CSCCWI53	Web Interface Designing	**CO1:** Develop a solid understanding of web architecture, services, and the fundamental building blocks of the web.

			Technologies	**CO2:** Gain knowledge of various design components that enhance the visual appeal and user experience of a website.
				CO3: Acquire skills to create static websites and integrate dynamic behavior to improve functionality.
				CO4: Gain hands-on experience in designing and implementing interactive web pages for better user engagement.
				CO5: Learn how to install WordPress and effectively use various plugins to customize and enhance websites.
22	V	23CSP10WI51	Web Interface Designing Technologies - Practical	**CO1:** Design well-organized and visually appealing web pages using HTML and CSS.
				CO2: Build user-friendly and interactive web elements with forms, buttons, and multimedia integration.
				CO3: Install, configure, and manage website content effectively using WordPress tools and features.
23	V	23CSCCWA53	Web Applications Development Using PHP & MYSQL	**CO1:** Write and execute simple programs using PHP.
				CO2: Utilize regular expressions, manage exceptions, and validate data effectively in PHP.
				CO3: Apply built-in functions and develop user-defined functions for efficient programming.
				CO4: Write PHP scripts to manage and process data from HTML forms.
				CO5: Connect PHP with MySQL databases to create dynamic, database-driven web applications.
24	V	23CSP11WA51	Web Applications Development using PHP & MYSQL- Practical	**CO1:** Write PHP programs to handle user input, process forms, and generate dynamic content.
				CO2: Connect PHP with MySQL to perform CRUD operations and build data-driven web applications.
				CO3: Apply cookies, sessions, and other PHP features to create interactive and user-friendly websites.
25	V	23CSEC11IT53	Internet of Things	**CO1:** Understand key concepts, terminologies, and real-world applications of the Internet of Things (IoT).
				CO2: Gain hands-on experience in building IoT devices using various development boards.
				CO3: Understand and apply different wireless protocols used in IoT systems.
				CO4: Utilize sensors and actuators to design and implement IoT solutions using Arduino.

				CO5: Develop and connect IoT devices with cloud services for data storage, processing, and remote management.
26	V	23CSP1211IT51	Internet of Things - Practical	**CO1:** Understand and implement projects using the Arduino UNO board, sensors, actuators, and shields.
				CO2: Create and simulate real-world IoT applications, such as traffic control systems and smart device automation, using Arduino and various sensors.
				CO3: Connect Arduino-based devices to cloud services and mobile applications like Blynk and ThingSpeak for remote monitoring and control.
27	V	23CSEC12DS53	Foundations of Data Science	**CO1:** Recognize the need for data science and explore various data collection strategies.
				CO2: Understand the basics of NoSQL databases and apply descriptive statistics for data analysis.
				CO3: Use Numpy methods to efficiently process and manipulate data in arrays.
				CO4: Leverage Pandas to compute and summarize descriptive statistics for data analysis.
				CO5: Apply advanced data manipulation and visualization techniques using Pandas to derive meaningful insights.
28	V	23CSP1312DS51	Foundations of Data Science - Practical	**CO1:** Evaluate Python IDEs for data science tasks.
				CO2: Work with Numpy arrays and Pandas DataFrames for data manipulation and analysis.
				CO3: Process, clean, and visualize data, including handling missing values and outliers.
29	V	23CSEC21IA53	IoT Applications Development & Programming	**CO1:** Understand the basic concepts and architecture of the Internet of Things (IoT).
				CO2: Learn about various sensors and the associated communication protocols used in IoT systems.
				CO3: Gain proficiency in using single-board computers for the development and implementation of IoT devices.
				CO4: Build IoT devices and applications using Node-RED, eliminating the need for complex coding.
				CO5: Design and implement a range of real-time IoT applications for practical use.
30	V	23CSP1421IA51	IoT Applications Development & Programming - Practical	**CO1:** Build and deploy IoT solutions using Raspberry Pi, Node-RED, and cloud services.
				CO2: Manage MySQL databases and visualize data with server-side applications and graphs.

				CO3: Create real-time IoT applications and integrate devices like Arduino with cloud platforms.
31	V	23CSEC22AP53	Application Development Using Python	**CO1:** Understand Python syntax, semantics, and effectively use flow control and functions.
				CO2: Demonstrate proficiency in handling strings and file system operations in Python.
				CO3: Create, run, and manipulate Python programs using core data structures like lists and dictionaries, and apply regular expressions.
				CO4: Comprehend and implement web programming and GUI concepts in Python.
				CO5: Utilize Python programming concepts in IoT applications, web services, and database management.
32	V	23CSP1522AP51	Application Development Using Python - Practical	**CO1:** Implement basic Python tasks like calculations, exception handling, and file operations.
				CO2: Develop interactive Tkinter GUI applications and use multithreading.
				CO3: Build Python programs for storing, searching, and modifying database records.

Course Outcomes (COs)

B.Com Programme

2023-26

S.No.	Sem	Course Code	Course Title	Course Outcomes (COs)
1	II	23CSCCOA23	Office Automation Tools	**CO1:** Understand the concept of Word Processor and use its features.
				CO2: Apply advanced features of Ms-Word to make day to day usage easier.
				CO3: Work comfortably with Ms-Excel Environment.
				CO4: Create worksheets and user advanced features of Excel.
				CO5: Build presentations and insert multimedia in them.
2	II	23CSP1OA21	Office Automation Tools - Practical	**CO1:** Demonstrate proficiency in using various office automation tools.
				CO2: Analyse data, create visualizations, and generate reports using spreadsheet software.
				CO3: Create and deliver professional presentations using presentation software
3	III	23CSCCEW33	E Commerce & Web Designing	**CO1:** Explain the foundation and importance of e-commerce.
				CO2: Explain how product detail models are programmed to be dynamic.
				CO3: Analyze the process of e payment and security management.
				CO4: Apply web designing concepts to create webpages.
				CO5: Display featured products correctly on a web page, using the bootstrap system.
4	III	23CSP2EW31	E Commerce & Web Designing - Practical	**CO1:** Understand the basics of web design.
				CO2: Excel in HTML and CSS.
				CO3: Create interactive web elements.

5	IV	23CSCCDB43	DBMS with Oracle	**CO1:** Explain the fundamental concepts of database systems, distinguishing them from file-based systems.
				CO2: Realise the relational model and its components, including domains, attributes, tuples, and relations.
				CO3: Describe the Entity-Relationship (ER) model and create ER diagrams to represent entities, relationships, and constraints.
				CO4: Acquire advanced proficiency in SQL, including nested queries, different types of joins, and the implementation of SQL functions (Date, Numeric, String, Conversion functions).
				CO5: Develop proficiency in PL/SQL, including an understanding of its introduction, structure, control structures, and the creation of procedures, functions, packages, and triggers.
6	IV	23CSP3DB41	DBMS with Oracle - Practical	**CO1:** Retrieve information from the provided database tables using SQL queries.
				CO2: Apply SQL JOIN operations to connect tables and obtain data spanning multiple entities.
				CO3: Develop skills in updating data using SQL procedures, handling exceptions, and maintaining additional tables.
7	V	23CSECBA53	Business Analytics	**CO1:** Develop a solid foundation in business analytics and gain insights into business intelligence processes.
				CO2: Utilize statistical methods and data mining techniques to analyze data and derive actionable business intelligence.
				CO3: Explore and apply predictive modeling through case studies to solve real-world business challenges.
				CO4: Acquire proficiency in using OLAP tools for data analysis and decision-making.
				CO5: Implement diverse analytical techniques to address complex business problems effectively.
8	V	23CSP4BA51	Business Analytics - Practical	**CO1:** Identify, categorize, and analyze variables using MS Excel and R for effective data management.
				CO2: Apply statistical techniques like mean, median, and standard deviation using MS Excel to analyze data.
				CO3: Gain hands-on experience in creating, manipulating, and visualizing data in R and Excel for business analysis.
9	V	23CSECCS53	Cyber Security	**CO1:** Analyze and assess the cybersecurity requirements of an organization to ensure comprehensive protection of its digital assets.

				CO2: Identify software vulnerabilities and evaluate security solutions to mitigate risks and prevent exploitation effectively.
				CO3: Monitor and evaluate the performance of cybersecurity systems, troubleshoot issues, and optimize system functionality.
				CO4: Design and implement cybersecurity measures using advanced tools for information assurance, cyber forensics, and system protection.
				CO5: Gain expertise in addressing network and distributed system attacks, implementing defenses, and conducting forensic investigations.
10	V	23CSP5CS51	Cyber Security - Practical	**CO1:** Proficiently use command-line tools and network analysis software for IT infrastructure security.
				CO2: Gain hands-on experience in network traffic analysis, SQL injection, and configuring security solutions like OSSEC.
				CO3: Apply cybersecurity frameworks to manage logs and implement security policies within organizations.
11	V	23CSECMA53	Mobile Applications Development	**CO1:** Understand the core concepts, architecture, and features of the Android operating system.
				CO2: Set up and configure the Android development environment and essential tools for application development.
				CO3: Design and implement engaging user interfaces using layouts, controls, and advanced UI components.
				CO4: Utilize Android's UI components to build interactive and user-friendly applications.
				CO5: Develop, test, and publish Android applications, including those integrated with databases for enhanced functionality.
12	V	23CSP6MA51	Mobile Applications Development - Practical	**CO1:** Develop Android apps with various layouts and interactive UI components for user-friendly interfaces.
				CO2: Integrate advanced Android features like content providers, services, and sensors to build rich applications.
				CO3: Implement CRUD operations and JSON parsing to build dynamic, data-driven Android applications.
13	V	23CSECBC53	Block Chain Technology	**CO1:** Classify and analyze various types of software architectures and their applications in modern systems.
				CO2: Understand the principles and techniques of different types of cryptography for secure communication.

				CO3: Enhance understanding of the foundational technologies and mechanisms behind blockchain systems.
				CO4: Explore blockchain storage methods and evaluate their advantages for secure and efficient data management.
				CO5: Gain insights into the practical applications of blockchain technology across diverse industries.
14	V	23CSP7BC51	Block Chain Technology - Practical	**CO1:** Gain expertise in creating crypto tokens, Ethereum smart contracts, and Bitcoin wallets for secure blockchain transactions.
				CO2: Implement blockchain solutions with Hyperledger for designing and managing business networks.
				CO3: Build, deploy, and manage scalable private multichain blockchain networks for enterprise applications.

Mapping of COs with PSOs & POs
B.Sc Programme

S.No.	Sem	Course Code	Course Title	COs	PSOs	POs
1	I	23SCCCEA14	Essentials and Applications of Mathematical, Physical & Chemical Sciences	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
2	I	23SCCCAS14	Advances in Mathematical Physical & Chemical Sciences	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
3	II	23CSCCPC23	Problem Solving Using C	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
4	II	23CSP1PC21	Problem Solving Using C - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
5	II	23CSCCDL23	Digital Logic	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8

			Design	CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
6	II	23CSP2DL21	Digital Logic Design - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
7	III	23CSCCPJ33	Object Oriented Programming Using Java	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
8	III	23CSP3PJ31	Object Oriented Programming Using Java - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
9	III	23CSCCDS33	Data Structures Using C	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
10	III	23CSP4DS31	Data Structures Using C - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8

				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
11	III	23CSCCCO33	Computer Organization	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
12	III	23CSP5CO31	Computer Organization - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
13	III	23CSCCOS33	Operating Systems	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
14	III	23CSP6OS31	Operating Systems - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
15	IV	23CSCCDM43	Database Management System	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8

16	IV	23CSP7DM41	Database Management System – Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
17	IV	23CSCCSE43	Object Oriented Software Engineering	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
18	IV	23CSP8SE41	Object Oriented Software Engineering – Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
19	IV	23CSCCCN43	Data Communications & Computer Networks	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
20	IV	23CSP9CN41	Data Communications & Computer Networks	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
21	V	23CSCCWI53	Web Interface Designing Technologies	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8

				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
22	V	23CSP10WI51	Web Interface Designing Technologies - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
23	V	23CSCCWA53	Web Applications Development Using PHP & MYSQL	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
24	V	23CSP11WA51	Web Applications Development Using PHP & MYSQL- Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
25	V	23CSEC11IT53	Internet of Things	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
26	V	23CSP1211IT51	Internet of Things - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
27	V	23CSEC12DS53	Foundations of Data Science	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8

				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
28	V	23CSP1312DS51	Foundations of Data Science - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
29	V	23CSEC21IA53	IoT Applications Development & Programming	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
30	V	23CSP1421IA51	IoT Applications Development & Programming - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
31	V	23CSEC22AP53	Application Development Using Python	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
32	V	23CSP1522AP51	Application Development Using Python - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8

				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8

Mapping of COs with PSOs & POs
B.Com Programme

S.No.	Sem	Course Code	Course Title	COs	PSOs	POs
1	II	23CSCCOA23	Office Automation Tools	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
2	II	23CSP1OA21	Office Automation Tools - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
3	III	23CSCCEW33	E Commerce & Web Designing	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
4	III	23CSP2EW31	E Commerce & Web Designing - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
5	IV	23CSCCDB43	DBMS with Oracle	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8

				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
6	IV	23CSP3DB41	DBMS with Oracle - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
7	V	23CSECBA53	Business Analytics	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
8	V	23CSP4BA51	Business Analytics - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
9	V	23CSECCS53	Cyber Security	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
10	V	23CSP5CS51	Cyber Security - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
11	V	23CSECMA53	Mobile	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8

			Applications Development	CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
12	V	23CSP6MA51	Mobile Applications Development - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
13	V	23CSECBC53	Block Chain Technology	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
14	V	23CSP7BC51	Block Chain Technology - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8

Mapping of Courses with PSOs
B. Sc Programme

Course Title	PSO1 Quantitative Analysis	PSO2 Practical and Analytical Skills	PSO3 Logical, Critical Thinking	PSO4 Teamwork and Communication
Essentials and Applications of Mathematical, Physical & Chemical Sciences (EA)	✔	✔	✔	✔
Advances in Mathematical Physical & Chemical Sciences (AS)	✔	✔	✔	✔
Problem Solving Using C (PC)	✔	✔	✔	✔
Problem Solving Using C - Practical (PC - P1)	✔	✔	✔	✔
Digital Logic Design (DL)	✔	✔	✔	✔
Digital Logic Design - Practical (DL - P2)	✔	✔	✔	✔
Object Oriented Programming Using Java (PJ)	✔	✔	✔	✔
Object Oriented Programming Using Java - Practical (PJ - P3)	✔	✔	✔	✔
Data Structures Using C (DS)	✔	✔	✔	✔
Data Structures Using C - Practical (DS - P4)	✔	✔	✔	✔
Computer Organization (CO)	✔	✔	✔	✔
Computer Organization - Practical (CO - P5)	✔	✔	✔	✔
Operating Systems (OS)	✔	✔	✔	✔
Operating Systems - Practical (OS - P6)	✔	✔	✔	✔
Database Management System (DM)	✔	✔	✔	✔
Database Management System – Practical (DM - P7)	✔	✔	✔	✔
Object Oriented Software Engineering (SE)	✔	✔	✔	✔
Object Oriented Software Engineering – Practical (SE - P8)	✔	✔	✔	✔
Data Communications & Computer Networks (CN)	✔	✔	✔	✔
Data Communications & Computer Networks - Practical (CN - P9)	✔	✔	✔	✔

Web Interface Designing Technologies (WI)	✔	✔	✔	✔
Web Interface Designing Technologies - Practical (WI - P10)	✔	✔	✔	✔
Web Applications Development Using PHP & MYSQL (WA)	✔	✔	✔	✔
Web Applications Development using PHP & MYSQL- Practical (WA -P11)	✔	✔	✔	✔
Internet of Things (IT)	✔	✔	✔	✔
Internet of Things - Practical (IT - P12)	✔	✔	✔	✔
Foundations of Data Science (DS)	✔	✔	✔	✔
Foundations of Data Science - Practical (DS - P13)	✔	✔	✔	✔
IoT Applications Development & Programming (IA)	✔	✔	✔	✔
IoT Applications Development & Programming - Practical (IA - P14)	✔	✔	✔	✔
Application Development Using Python(AP)	✔	✔	✔	✔
Application Development Using Python - Practical (AP - P15)	✔	✔	✔	✔

Mapping of Courses with PSOs
B. Com Programme

Course Title	PSO1 Quantitative Analysis	PSO2 Practical and Analytical Skills	PSO3 Logical, Critical Thinking	PSO4 Teamwork and Communication
Office Automation Tools (OA)	✔	✔	✔	✔
Office Automation Tools - Practical (OA - P1)	✔	✔	✔	✔
E Commerce & Web Designing (EW)	✔	✔	✔	✔
E Commerce & Web Designing - Practical (EW - P2)	✔	✔	✔	✔
DBMS with Oracle (DB)	✔	✔	✔	✔
DBMS with Oracle - Practical (DB - P3)	✔	✔	✔	✔
Business Analytics (BA)	✔	✔	✔	✔
Business Analytics - Practical (BA - P4)	✔	✔	✔	✔
Cyber Security (CS)	✔	✔	✔	✔
Cyber Security - Practical (CS - P5)	✔	✔	✔	✔
Mobile Applications Development (MA)	✔	✔	✔	✔
Mobile Applications Development - Practical (MA - P6)	✔	✔	✔	✔
Block Chain Technology (BC)	✔	✔	✔	✔
Block Chain Technology - Practical (BC - P7)	✔	✔	✔	✔

Mapping of Courses with POs
B. Sc Programme

Course	PO1 Essential Knowledge	PO2 Creative, Critical thinking and Problem-solving abilities	PO3 Teamwork and Communication skills	PO4 Motivated, Self-directed and Life-long Learning	PO5 Professionalism and Leadership Readiness	PO6 Intercultural and Ethical Competency	PO7 Self-awareness and Emotional Intelligence	PO8 Social Responsibility and Effective Citizenship
EA	✔	✔	✔	✔	✔	✔	✔	✔
AS	✔	✔	✔	✔	✔	✔	✔	✔
PC	✔	✔	✔	✔	✔	✔	✔	✔
PC - P1	✔	✔	✔	✔	✔	✔	✔	✔
DL	✔	✔	✔	✔	✔	✔	✔	✔
DL - P2	✔	✔	✔	✔	✔	✔	✔	✔
PJ	✔	✔	✔	✔	✔	✔	✔	✔
PJ - P3	✔	✔	✔	✔	✔	✔	✔	✔
DS	✔	✔	✔	✔	✔	✔	✔	✔
DS - P4	✔	✔	✔	✔	✔	✔	✔	✔
CO	✔	✔	✔	✔	✔	✔	✔	✔
CO - P5	✔	✔	✔	✔	✔	✔	✔	✔
OS	✔	✔	✔	✔	✔	✔	✔	✔
OS - P6	✔	✔	✔	✔	✔	✔	✔	✔
DM	✔	✔	✔	✔	✔	✔	✔	✔
DM - P7	✔	✔	✔	✔	✔	✔	✔	✔
SE	✔	✔	✔	✔	✔	✔	✔	✔
SE - P8	✔	✔	✔	✔	✔	✔	✔	✔
CN	✔	✔	✔	✔	✔	✔	✔	✔
CN - P9	✔	✔	✔	✔	✔	✔	✔	✔
WI	✔	✔	✔	✔	✔	✔	✔	✔

WI - P10	✔	✔	✔	✔	✔	✔	✔	✔
WA	✔	✔	✔	✔	✔	✔	✔	✔
WA - P11	✔	✔	✔	✔	✔	✔	✔	✔
IT	✔	✔	✔	✔	✔	✔	✔	✔
IT - P12	✔	✔	✔	✔	✔	✔	✔	✔
DS	✔	✔	✔	✔	✔	✔	✔	✔
DS - P13	✔	✔	✔	✔	✔	✔	✔	✔
IA	✔	✔	✔	✔	✔	✔	✔	✔
IA - P14	✔	✔	✔	✔	✔	✔	✔	✔
AP	✔	✔	✔	✔	✔	✔	✔	✔
AP - P15	✔	✔	✔	✔	✔	✔	✔	✔

Mapping of Courses with POs

B. Com Programme

Course	PO1 Essential Knowledge	PO2 Creative, Critical thinking and Problem-solving abilities	PO3 Teamwork and Communication skills	PO4 Motivated, Self-directed and Life-long Learning	PO5 Professionalism and Leadership Readiness	PO6 Intercultural and Ethical Competency	PO7 Self-awareness and Emotional Intelligence	PO8 Social Responsibility and Effective Citizenship
OA	✔	✔	✔	✔	✔	✔	✔	✔
OA - P1	✔	✔	✔	✔	✔	✔	✔	✔
EW	✔	✔	✔	✔	✔	✔	✔	✔
EW - P2	✔	✔	✔	✔	✔	✔	✔	✔
DB	✔	✔	✔	✔	✔	✔	✔	✔
DB - P3	✔	✔	✔	✔	✔	✔	✔	✔
BA	✔	✔	✔	✔	✔	✔	✔	✔
BA - P4	✔	✔	✔	✔	✔	✔	✔	✔
CS	✔	✔	✔	✔	✔	✔	✔	✔
CS - P5	✔	✔	✔	✔	✔	✔	✔	✔
MA	✔	✔	✔	✔	✔	✔	✔	✔
MA-P6	✔	✔	✔	✔	✔	✔	✔	✔
BC	✔	✔	✔	✔	✔	✔	✔	✔
BC - P7	✔	✔	✔	✔	✔	✔	✔	✔