# AQAR – QUALITATIVE METRIC

## 2023 - 2024

## Criterion 1 - Curricular Aspects

**1.1.1 Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in Programme outcomes (POs), Programme specific outcomes (PSOs) and Course Outcomes (COs), of the Programmes offered by the Institution.**

**Name of the Programme: B.Sc. INFORMATION TECHNOLOGY** **Programme Code: USIT**

**Programme Outcomes:**

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| **PO 1** | Apply acquired scientific knowledge to solve complex issues. |
| **PO 2** | Attain Analytical skills to solve complex cultural, societal and environmental issues. |
| **PO 3** | Employ latest and updated tools and technologies to analyse complex issues. |
| **PO 4** | Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives. |

## Programme Specific Outcomes:

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| **PSO 1** | Apply computational techniques and software principles for designing of software systems. |
| **PSO 2** | Develop efficient and effective software systems using modern computer techniques. |
| **PSO 3** | Acquire fundamental concepts, methods and practices of Information Technology to develop theoretical and practical skill sets. |
| **PSO 4** | Justify the optimum technique to allocate memory resources, processors, I/O peripherals to provide optimal programmatic solution to a real world problem. |
| **PSO 5** | Support to gain skills on basic as well as trendy software languages and packages to design web sites, web apps, mobile apps and real time software projects. |
| **PSO 6** | Promote the students to generalize and distinguish the characters of different systems for different environment. |
| **PSO 7** | Trigger the students to enroll in to the research areas of IT industry like cloud computing and data analytics. |
| **PSO 8** | Able to become entrepreneur and to pursue career in IT industries. |

## Course Outcomes:

| Course Code | Course Title | Nature Of The Course (Local/ National/ Regional/ Global) | Course Description | Course Outcomes |
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| 23I1CC1 | Programming In C | Global | This course content plays a vital role in building the fundamental knowledge in programming. | CO1: Outline the fundamental concepts of C programming languages, and its features<br>CO2: Demonstrate the programming methodology.<br>CO3: Identify suitable programming constructs for problem solving.<br>CO4: Select the appropriate data representation, control |

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| | | | | structures, functions and concepts based on the problem requirement.<br>CO5: Evaluate the program performance by fixing the errors. |
| 23I1CC2 | C Programming Practical | Global | This course content plays a vital role in building the basic programming skill in C language. | CO1: Demonstrate the understanding of syntax and semantics of C programs.<br>CO2: Identify the problem and solve using C programming techniques.<br>CO3: Identify suitable programming constructs for problem solving.<br>CO4: Analyze various concepts of C language to solve the problem in an efficient way. |

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| | | | | CO5: Develop a C program for a given problem and test for its correctness. |
| 23I1FC | Fundamentals Of Computer | Global | This course focuses on computer literacy that prepares students for life-long learning of computer concepts and skills. | CO1: Outline the Computer fundamentals and various problem solving concepts in Computers<br>CO2: Describe the basic computer organization, software, computer languages, software development life cycle and the need of structured programming in solving a computer problem<br>CO3: Identify the types of computer languages, software, computer problems and examine how to set up |

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| | | | | expressions and equations to solve the problem.<br>CO4: Choose most appropriate programming languages, constructs and features to solve the problems in diversified domains.<br>CO5: Analyze the design of modules and functions in structuring the solution and various Organizing tools in problem solving. |
| 23I1SE1 | Office Automation | Global | This course trains students how to use MS Office applications use in office work such as creating professional-quality | CO 1: Use Word to prepare organizational documents.<br>CO 2: Design financial & other business applications requiring mathematical calculations using spread sheet |

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| | | | documents, store, organize and analyze information, arithmetic operations, functions and create dynamic slide presentations with animation, narration, images, and much more, digitally and effectively. | software.<br>CO 3: Develop various charts--pie, bar, line, column, & area using spread sheet software.<br>CO 4: Create Dynamic presentations with animation.<br>CO 5: Demonstrate presentations with narration and images. |
| 23I2CC3 | Java Programming | Global | This course enable the students to build object oriented java programs using the concept of abstraction, encapsulation, | CO1:Outline the basic terminologies of OOP, programming language techniques, JDBC and Internet programming concepts<br>CO2:Solve problems using basic constructs, mechanisms, |

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| | | | exception handling, packages, interfaces, threads and AWT controls. It also imparts the ability to develop projects in java with JDBC connectivity. | techniques and technologies of Java<br>CO3: Analyse and explain the behaviour of simple programs involving different techniques such as Inheritance, Packages, Interfaces, Exception Handling and Thread and technologies such as JDBC and Servlets<br>CO4:Assess various problem-solving strategies involved in Java to develop a high-level application.<br>CO5: Design GUI based JDBC applications and able to develop Servlets using suitable OOP concepts and techniques |

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| 23I2CC4 | Java Programming & Data Structures Practical | Global | This course gives hands on experience, practices the concepts of java programming language, and develops solutions for real world problems. | CO1: Identify and explain the way of solving the simple problems<br>CO2: Use appropriate software development environment to write, compile and execute object-oriented Java programs<br>CO3: Analyze and identify necessary mechanisms of Java needed to solve real-world problem<br>CO4: Test for defects and validate a Java program with different inputs<br>CO5: Design, develop and compile Core Java , GUI , JDBC and servlet applications that |

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| | | | | utilize OOP and data structure concepts |
| 23I2SE2 | Multimedia Lab | Global | This course content is enables other disciplined students to strengthen and increase the understanding of basis Multimedia application software like Photoshop. | CO 1: Utilize the various options in Photoshop working area.<br>CO 2: Apply basic tools to format the images and its background.<br>CO3: Make use of selection andpainting tools for editing images.<br>CO 4: Develop effective graphics for both web and print media.<br>CO 5: Apply layer features and layer management techniques for creating Web pages and Invitations. |

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| 23I2SE3 | Automation Skills | Global | This course trains students how to use MS Office applications use in office work such as creating professional-quality documents, store, organize and analyze information, arithmetic operations, functions and create dynamic slide presentations with animation, narration, images, and much more, digitally and effectively. | CO 1: Use Word to prepare organizational documents.<br>CO 2: Design financial & other business applications requiring mathematical calculations using spread sheet software.<br>CO 3: Develop various charts--pie, bar, line, column, & area using spread sheet software.<br>CO 4: Create Dynamic presentations with animation.<br>CO 5: Demonstrate presentations with narration and images. |

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| 19I3CC5 | Database Management Systems | Global | This course introduces database design and creation using DBMS software. It also imparts various concepts in database management system. | CO1: Explain the structure and model of the relational database system.<br>CO2: Design multiple tables and use group functions, sub queries.<br>CO3: Design a database based on a data model considering the normalization to a specified level.<br>CO4: Develop E- R model-based tables.<br>CO5: Evaluate different PL/SQL blocks. |
| 19I3CC6 | Lab Iii Rdbms | Global | This course gives hands on experience in relational database management system. | CO1: Explain Various SQL Commands.<br>CO2: Write SQL queries to user specifications |

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| | | | | CO3: Design database schema considering normalization and relationships within database.<br>CO4: Develop PL/SQL Programs.<br>CO5: Develop triggers, procedures and Cursors. |
| 21P3ACI3 | Digital Principles And Computer Architecture | Global | The course content plays a vital role in making the students to understand the basic digital components | CO1: Explain about digital logic circuits<br>CO2: Compute simple arithmetic operations for fixed-point and floating-point addition and subtraction.<br>CO3: Understand various digital components.<br>CO4: Construct an instruction set capable of performing a specified set of operations. |

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| 22I3SB1 | Skill Based– Excel Using VBA | Global | This course is designed to learn the best practices followed in industries to develop simple projects. | CO 1: Understand fundamentals of VBA<br>CO 2: Apply different conditional logics and loops<br>CO 3: Build forms with interactivity<br>CO 4: Apply Events and Setting in Excel sheets.<br>CO 5: Develop Procedures and Array concepts. |
| 22I4CC7 | Programming In Java | Global | This course enables the students to build object-oriented java programs using the concept of | CO1: Understand the concepts of Object-Oriented Programming & Java Programming Constructs.<br>CO2: Understand basic |

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| | | | abstraction, encapsulation, exception handling, packages, interfaces, threads and AWT controls. It also imparts the ability to develop projects in java with JDBC connectivity. | concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords.<br>CO3: Understand the concept of exception handling and Input/output operations.<br>CO4: Design Java & Java applet-based applications.<br>CO5: Analyse & Design the concept of Event Handling and Abstract Window Toolkit. |
| 22I4CC8 | Lab Iv – Programming In Java | Global | This course gives hands on experience, practices the concepts of java programming language, and | CO1: Implement Object Oriented programming concept using operators and control Structures. |

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| | | | develops solutions for real world problems. | CO2: Design java programs using inheritance, interfaces and packages.<br>CO3: Implement exception handling mechanism and multithreading concept.<br>CO4: Design Java applet-based applications.<br>CO5: Design applications to Handle Events using AWT components. |
| 19I4SB2 | Analytical Skills | Global | This course content plays a vital role for clearing any competitive exam and it covers all the Quantitative Aptitude topics and an in- | CO1: Understand the short cut methods.<br>CO2: Apply general mathematical techniques.<br>CO3: Develop their critical thinking.<br>CO4: Recall the formulas. |

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| | | | depth understanding of this subject. | CO5: Solve the sums by applying shortcut methods with time management. |
| 23I5CC9 | .Net Programming | Global | This course introduces .NET Framework and imparts various concepts in .NET framework | CO1: Explain the .NET framework.<br>CO2: Apply C# concepts in developing software solutions based on user requirements.<br>CO3: Design basic GUI applications using .NET.<br>CO4: Demonstrate advanced features of ASP.NET programming.<br>CO5: Develop windows application and web applications in .NET framework analyzing user requirements. |

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| 23I5CC10 | Lab V: .Net Programming | Global | This course gives hands on experience in C# Programming with dot net. | CO1: Understand various application types.<br>CO2: Create dynamic window application.<br>CO3: Use asp.net controls in web application.<br>CO4: Build interactive Web pages.<br>CO5: Use XML in web application. |
| 19I5CC11 | Software Engineering | Global | This course introduces the basic steps involved in Software Development Life Cycle (SDLC). | CO1: Understand how to plan a software project.<br>CO2: Analyse the cost estimate and problem complexity using various estimation techniques.<br>CO3: Prepare the SRS, Design document, Project plan of a given software system. |

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| 19I5CC12 | Operating Systems | Global | This course content plays a vital role in making the students to understand the basic operating system concept. | CO1: Describe the evolution, types, structure and functions of operating systems.<br>CO2: Explain techniques involved in concurrency and deadlock.<br>CO3: Describe memory management and processor scheduling used in operating systems. |

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| | | | | CO4: Implement disk scheduling algorithm for a given scenario.<br>CO5: Execute Linux basic commands and shell scripts. |
| 19I5ME1 | Data Mining | Global | This course introduces the basic concepts, principles, methods, implementation techniques, and applications of data mining. | CO1: Identify data mining tools and techniques in building intelligent machines.<br>CO2: Understand different pre-processing techniques.<br>CO3: Analyse various data mining algorithms while applying in real time applications.<br>CO4: Compare various supervised and unsupervised learning techniques in data |

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| | | | | mining.<br>CO5: Illustrate the mining techniques like association, classification and clustering. |
| 19I5ME2 | Network Security | Global | The course covers the basics of the science of encryption and network security technology. | CO1: Understand the basic concepts of security.<br>CO2: Analyze various cryptographic algorithms while applying practically.<br>CO3: Identify Asymmetric based cryptographic algorithms.<br>CO4: Compare different internet security protocols.<br>CO5: Summarize the concepts of firewall and IP security. |
| 23I5SB3 | Skill Based – Basics Of HTML5 | Global | This course provides the programming | CO 1: Identify how to create a webpage with basic designing concepts. |

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| | | | techniques to develop the static web pages. | CO 2: Apply basic tags for table creation and alignments in a static webpage.<br>CO 3: Design and edit images in the web pages.<br>CO 4: Apply various tags for the creation of dynamic webpage.<br>CO 5: Develop effective graphics for web. |
| 23I5SB4 | Skill Based – Web Programming Using PHP | Global | This is a Web scripting language PHP able to build dynamic Web applications.<br><br>Semantics and syntax of the PHP language, including discussion on the practical | CO 1: Describe fundamentals of web in PHP scripts to handle HTML forms.<br>CO 2: Describe the importance regular expressions including modifiers, operators, and meta characters<br>CO 3: Create PHP programs that use various PHP library |

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| | | | problems that PHP solves. | functions, and that manipulate files and directories<br>CO 4: Analyze and solve various database tasks using the PHP language.<br>CO 5: Analyze and solve common Web application tasks by writing PHP programs. |
| 23I6CC13 | Python Programming | Global | This course is designed to introduce the python programming language. The focus of the course is to provide students with an introduction to programming, utilities, multitasking, | CO1: Identify the basic concepts of python program.<br>CO2: Apply the Input and output statements in python.<br>CO3: Analyze the usage of function control structure.<br>CO4: Describe String, List and Tuples.<br>CO5: Create Python Dictionary and Files. |

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| | | | GUI and network applications. | |
| 23I6CC14 | Lab Vi : Python Programming | Global | This course content plays a vital role in building the basic programming skill in Python. | CO1: Demonstrate the basic concepts of variables expressions.<br>CO2: Develop basic python programs with I/O operations.<br>CO3: Develop programs with function control structure.<br>CO4: Apply strings and lists in python.<br>CO5: Develop python programs with files. |
| 19I5CC12 | Data Communication And Networking | Global | This course is to provide information about various data communication | CO1: Describe the components of a data communications system<br>CO2: Identify key |

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| | | | techniques like switching and networking concepts which includes layers and their corresponding protocols. | considerations in selecting various switching techniques and various transmission media in networks<br>CO3: Describe the various types of Protocols in Network layer and their features<br>CO4: Illustrates the functionality of transport layer and their corresponding protocols.<br>CO5: Analyse different usage of application layer protocols. |
| 22I6ME3 | Cloud Technology | Global | This course facilitates the students to understand, analyze the various | CO1: Understand fundamental concepts of cloud service and deployment models.<br>CO2: Identify the importance of virtualization along with their |

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| | | | applications of cloud tool and also provide solutions for cloud security and storage. | technologies.<br>CO3: Analyse different cloud computing Services.<br>CO4: Analyse the components and the security in cloud.<br>CO5: Illustrate different design & develop backup strategies for cloud data based on features. |
| 21I6ME4 | Mobile Communication | Global | This course gives the ability to acquire the knowledge about the technologies in mobile computing and its security issues. | CO1: Understand the infrastructure to develop mobile communication systems.<br>CO2: Identify the characteristics of different multiple access techniques in mobile communication.<br>CO3: Analyse the measures GSM systems and the entire protocol architecture of GSM. |

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| | | | | CO4: Understand the GPRS technologies and architecture for communication using Mobile Devices.<br>CO5: Illustrate the Security issues in Mobile Computing. |
| 19I6ME5 | Information Storage And Management | Global | This course provides a comprehensive understanding of the various storage infrastructure components in classic and virtual environments. It enables the students to make informed decisions in an increasingly complex | CO1: Know the concepts of Storage and Data structure Environment based on growth and challenges in IT.<br>CO2: Understand data protection by using related and recent techniques.<br>CO3: Identify the parameters of managing and monitoring the storage infrastructure and manage the solutions.<br>CO4: Know backup and |

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| | | | IT environment. | archival data in both classic and virtualized environment.<br>CO5: Analyse, Monitoring and managing the storage infrastructure in cloud environments. |
| 19I6ME6 | Computer Graphics | Global | This course is designed to facilitate to understand, design and implementation of pictorial data and will make the students to be a successful Graphics programmer. | CO1: Understand the need and concepts of computer graphics.<br>CO2: Describe the procedure for points, lines and Circle.<br>CO3: Analyse various attributes of output primitives.<br>CO4: Illustrate two-dimensional geometric transformation.<br>CO5: Analyse windowing and clipping concepts. |
| 23I6SB5 | Advanced Html5 | Global | This paper is designed to understand the | CO 1: Understand advanced techniques in CSS3. |

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| | | | principles of creating an effective web page, including an in-depth consideration of information architecture. | CO 2: Identify to adding videos and graphics with html5.<br>CO 3: Identify building web page layouts with CSS& HTML5 APIs.<br>CO 4: Developing forms with advanced GUI interface.<br>CO 5: Validating Forms in the web. |
| 23I6SB6 | Fundamentals Of Android Programming | Global | This course introduces to learn basic Android programming concepts and build a variety of apps by using the concepts Android Architecture Components | CO1: Able to Install Java Development Toolkit.<br>CO2: Install and configure Android application development tools<br>CO3: Design and develop user Interfaces for the Android platform.<br>CO4: Identify the Application & |

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| | | | | Layouts Concepts.<br>CO5: Save state information across important operating system events. |