DEPARTMENT OF INFORMATION TECHNOLOGY

1. **Name of Department:** COURSE OUTCOMES FOR B.COM PROGRAM**Title of Programme:** B.Sc.
2. **Programme outcome:** Employable and impart industry oriented training.
3. **Programme specific outcome:**
   - Expertise to developing robust, extensible and highly maintainable technological solutions to simple and complex problems. This programme will enable them to think analytically, creatively and critically to develop such solutions.
   - Learners acquire knowledge and skills to be employed and excel in IT professional careers and/or to continue their education in IT and/or related post graduate programmes.
   - The programme will enable learners to be capable of managing complex IT projects with consideration of the human, financial and environmental factors.
   - Trained to work effectively as a part of a team to achieve a common stated goal.
4. **Course outcome (separate for each course):**

SEMESTER - I				
Course Type	**Course code**	**Title of the course**	**Course credit**	**Course outcome**
Core Subject Core Subject Practical	USIT101, USIT1P2	Programming Principles with C, Programming Principles with C Practical	02 02	Learners will be able to, ● Learn the basic principles of programming. ● Develop of logic using algorithm and flowchart. ● Acquire the information about data types. ● Understanding of input and output functions. ● Enhance advanced concepts using program ● Develop applications. ● Work with textual information, characters and strings. ● Understand of a functional hierarchical code organization ● Debug the program ● Understand the differences between syntax errors, runtime errors, and logic errors

Core Subject Core Subject Practical	USIT102, USIT1P2	Digital Logic and Applications, Digital Logic and Applications Practical	02 02	Learners will be able to, ● . Apply number conversion techniques in real digital systems . ● Solve boolean algebra expressions . ● Derive and design logic circuits by applying minimization in SOP and POS forms ● Design and develop Combinational and Sequential circuits ● Understand and develop digital applications ● Construct basic and universal logic circuits. ● Verify the functionalities of various IC's. ● Design circuits using K-maps minimization technique ● Design and test Encoders, Decoders, Multiplexers and Demultiplexers ● Design and develop logic for Registers, Counters and its applications.
Core Subject Core Subject Practical	USIT103, USIT1P3	Fundamentals of Database Management Systems, Fundamentals of Database Management Systems Practical	02 02	Learners will be able to ● Define and describe the fundamental elements of relational database management system. ● To relate the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL. ● Design ER-models to represent simple database application scenarios. ● Transform the ER-model to relational tables, populate relational database and formulate SQL queries on data.

				● Improve the database design by normalization. ● Understand basic database storage structures and access techniques: file and page organizations, indexing methods and hashing. ● Design database schema for a given application and apply normalization. ● Acquire skills in using SQL Commands for data Definition and data manipulation.
Core Subject Core Subject Practical	USIT104, USIT1P4	Computational Logic and Discrete Structures, Computational Logic and Discrete Structures	02 02	Learners will be able to: ● Use logical notation ● Perform logical proofs. ● Apply recursive functions and solve recurrence relations. ● Use graphs and trees. ● Apply basic and advanced principles counting. ● Define sets and Relations. ● Calculate discrete probabilities ● To find computational solution to var discrete mathematical structures.
Ability Enhancement Skill Course Ability Enhancement Skill Course Practical	USIT105, USIT1P5	Technical Communication Skills, Technical Communication Skills Practical	02 02	Learners will able to, ● Analyze, synthesize and utilize the process and strategies from delivery to solving communication problems. ● Learn the communication methodologies at the workplace and learn about the importance of team collaboration. ● Learn about different technical communication such as presentations and interviews. ● Understand and apply the art of written communication in writing reports, proposals. ● Ground rules of ethical communication and MIS. ● Understand the functions of graphs,

				maps, charts. ● Use different forms of digital mediums for effective communication. ● Create technical documents and format existing documents for effective communication. ● Learn to use graphical tools for better visualization. ● Create business presentation effectively. ● Visualize the data from pictorial representations.

SEMESTER - II				
Core Subject Core Subject Practical	USIT201 USIT2P1	Object Oriented Programming with C++, Object Oriented Programming with C++ Practical	02 02	Learners will able to, ● The student should be able to explain the important characteristics of the C++ programming language. ● The learner must be able to combine components of the C++ programming language to develop structured program. ● The student must demonstrate the skills essential to compile, debug, and test C++ programs correctly. ● Utilize C++ characteristics in software design and development. ● Explain object-oriented techniques and explain how C++ supports them. ● Employ C++ to demonstrate practical skill developing object-oriented solutions. Examine a problem statements and design and develop object-oriented software using good coding practices and procedures. ● In object-oriented design, use common software patterns and recognize their relevance in other software development contexts.

Core Subject Core Subject Practical	USIT202, USIT2P2	Fundamentals of Micro Processor and Microcontrollers , Fundamentals of Micro Processor and Microcontrollers Practical	02 02	Learners will able to, ● Understand the basic concepts of Micro Computer Systems. ● Understand the architecture and hardware aspects of 8085. ● Write assembly language programs in 8085. ● Design elementary aspects of Micro Controller based systems. ● Interfacing peripherals using Micro Controller. ● Apply concepts of 8085 to single & Multiple Memory Locations. ● Apply concepts of micro-processor register operations. ● Can implement assembly language programs 4. Use of Shift registers 8 & 16 bits. ● Apply the knowledge of Flash Magic in embedded Controllers. ● Learns to simulate and configure different timer controls
Core Subject Core Subject Practical	USIT203, USIT2P3	Web Applications Development , Web Applications Development Practical	02 02	Learners will be able to, ● Analyze working of Internet. ● Gain an insight into designing web pages. ● Use different ways of styling web pages using CSS. ● Implement basic and complex functionalities of JavaScript in a web page. ● Employ PHP Scripts to execute dynamic tasks in a web page. ● Perform various database tasks using PHP. ● 1. Design static web pages using Hyper Text Markup Language (HTML). ● Enhance the look of web pages by implementing CSS. ● Collect information from the user with HTML Forms. ● Design interactive webpages using client-side script (JavaScript). ● Implement Document Object

				Model and events in web pages using JavaScript. ● Write and deploy basic PHP code to simplify web development. ● Store and retrieve data from a server using PHP.
Core Subject Core Subject Practical	USIT204, USIT2P4	Numerical Methods, Numerical Methods Practical	02 02	Learners will be able to, ● Understand numerical techniques to find the roots of non-linear equations and solution of system of linear equations. ● Understand the difference operators and the use of interpolation. ● Understand numerical differentiation and integration and numerical solutions of ordinary and partial differential equations. ● Find fast and accurate solution to simple and complex numerical problems using these programs.
Ability Enhancement Skill Course Ability Enhancement Skill Course Practical	USIT205, USIT2P5	Green IT Green IT Practical	02 02	Learners will be able to, ● Understand the concept of Green IT and problems related to it. ● Know different standards for Green IT. ● Understand the how power usage can be minimized in Technology. ● Learn about how the way of work is changing. Understand the concept of recycling. ● Know how information system can stay Green Information system. ● Understand the basics of PL/SQL. ● Use of the control and conditional statement in PL/SQL. ● Apply sequences and cursor in PL/SQL. ● Know the concept of stored procedure and functions

				Create the triggers and packages in PL/SQL. ● Implement the concept of Exception handling.
SEMESTER - III				
Skill Enhancement Course Skill Enhancement Course Practical	USIT301, USIT3P1	Python Programming, Python Programming Practical	02 02	● Students will learn Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python. ● Students should be able use different Decision Making statements and Functions available in python. ● Students will learn Object oriented programming concepts in python. ● Should be able to Understand and summarize different File handling operations. ● Students will learn how to design GUI Applications in Python and different database operations. ● Students should be able design and develop Client Server network applications using Python.
Core Subject Core Subject Practical	USIT302, USIT3P2	Data Structures, Data Structures Practical	02 02	● Students will be able to design and analyze simple algorithms. ● Students will be able to describe different types of data structures. ● Students will able to explain and implement the data structures like Linked ● List, Stack, Queue, Trees and Graphs efficiently using the algorithms. ● Students will also come to know about the applications of data structures.

				● Students will be able to perform sorting and searching using different algorithms.
Core Subject Core Subject Practical	USIT303, USIT3P3	Computer Networks, Computer Networks Practical	02 02	● The students will be able to understand the concepts of networking and working of communication . The students will be aware about the TCP/IP protocol suite, the OSI model. ● The students understand about transmission media , data link layer and it's services. ● The students will gain the knowledge of Virtual LANs,Wired and wireless LANs and MAC system. ● The students will understand Internet Protocol and mobile IP. ● The student will be aware of transport layer protocol, transmission control protocol and standard client server protocol.
Core Subject Core Subject Practical	USIT304, USIT3P4	Database Management Systems, Database Management Systems Practical	02 02	● Students will appreciate the importance of database design. ● Students will analyze database requirements and determine the entities involved in the system and their relationship to one another. ● Students will write simple queries to MySQL related to String, Math and Date Functions. ● Students will create tables and insert/update/delete data, and query data in a relational DBMS using MySQL commands. ● Students will understand the normalization and its role in the database design process. ● Students will handle data permissions. ● Students will be create indexes and understands the role of

				Indexes in optimization search
Core Subject Core Subject Practical	USIT305, USIT3P5	Applied Mathematics, Mobile Programming Practical	02 02	● The student will be able to Solve pro domain related to Linear Algebra u Matrices. ● Students will be able to solve qualita problems based on vector analysis matrix analysis such as linear indep and dependence of Vectors, rank et ● Students will be understand the conc the how to solve mathematical prob Laplace Transform and error functi their applications. ● Students will able to solve problems Complex Numbers. ● Students will be apply the applicatio double and triple integration in finc area and volume, ● Ordinary differential equations. Clari numerical solutions of ordinary and Differential equations. ● Students will apply multiple Integrals work with applications of integratic ● Students will apply the Beta, Gamma Function differential function value the sign and compute error functior
	SEMESTER - IV			
Skill Enhancement Course Skill Enhancement Course Practical	USIT401, USIT4P1	Core Java, Core Java Practical	02 02	● The students will learn about the history and features of Java programming language, basic syntax of Java programming, about its installation and execution. ● The students will be able to develop basic programs using control flow statements, iterations and classes. ● The students will learn different types of inheritance supported by Java and then will be able to reuse the properties of existing classes in programs,

				they will also learn to implement interfaces and will be able to create user defined packages. ● The students will learn how to use enumerations, arrays, byte stream classes and exception handling mechanism and will be able to understand one of the important features of Java i.e. multithreading. ● The students will be able to develop GUI based applications using AWT.
Core Subject Core Subject Practical	USIT402, USIT4P2	Introduction to Embedded Systems, Introduction to Embedded Systems Practical	02 02	● The students will gain knowledge about embedded systems . ● The students will understand the application of embedded systems, embedded hardware and peripherals. ● The students will be aware of microcontroller and 8051 programming in C. ● The students will gain the knowledge of designing embedded systems with 8051 microcontrollers . ● The students will understand the real time operating system , design and development.
Core Subject Core Subject Practical	USIT403, USIT4P3	Computer Oriented Statistical Techniques, Computer Oriented Statistical Techniques Practical	02 02	● Students will learn how to calculate Mean, Median, Mode, Standard Deviation, Other Measures of Dispersion and Other Measures of Central Tendency ● Students should be able find Moments, Skewness, Kurtosis, Elementary Probability Theory and Elementary Sampling Theory ● Students will learn about Statistical Estimation Theory, Statistical Decision Theory and Statistics in R ● Students will learn how to apply The Chi-Square Test and Small Sampling Theory ● Students will learn about

				Correlation Theory, Curve Fitting and the Method of Least Squares
Core Subject Core Subject Practical	USIT404, USIT4P4	Software Engineering, Software Engineering Practical	02 02	● Students will be able to learn about the software engineering process and various software development models used in software engineering. Students will get information about Agile methods. ● Students will get information about socio technical Systems ,various types of critical systems, Requirement Engineering Process and System model. ● Students will learn about Architectural Design,User Interface Design, Project Management & Quality Management ● Students will learn about Verification and Validation, Software Cost Estimation and Software Measurement ● Students will learn about Process Improvement, Service Oriented Software Engineering , Software reuse and Distributed software engineering
Core Subject Core Subject Practical	USIT405, USIT4P5	Computer Graphics and Animation, Computer Graphics and Animation Practical	02 02	● Students will learn the basic concepts used in computer graphics. ● Students will be able to implement various algorithms to scan, convert the basic geometrical primitives, 2D & 3D transformations, Area filling, clipping. ● Students will learn the viewing, light, colors and projections. ● Students will learn the Visible-Surface Determination, Plane Curves and Surfaces ● Students will learn about Computer Animation, Image

				and it's storage
SEMESTER - V				
Skill Enhancement Course Skill Enhancement Course Practical	USIT501, USIT5P1	Software Project Management, Project Dissertation	02 02	● Students will learn about software project Management, project evaluation and project planning ● Students should be able to learn about Selection of an Appropriate Project Approach and Software Effort Estimation ● Students should be able to learn about **Activity** Planning, Risk Management and Resource Allocation ● Students will learn how to Manage People in Software Environments ● Students should be able to learn about Working in Teams, Software Quality and Project Closeout
Skill Enhancement Course Skill Enhancement Course Practical	USIT502 USIT5P2	Internet of Things , Internet of Things Practical	02 02	● The students will gain knowledge in th working of connected devices . ● The students will be able to analyze th open and close sources and details ab sensor networks. ● The students will be able to prototype embedded devices in Rasberry Pi env as well as ardino environment. ● The students will understand 3D print
Skill Enhancement Course Skill Enhanceme	USIT503 USIT5P3	Advanced Web Programming , Advanced Web Programmin	02 02	● Students will be understand the .NET framework ● Students will be develop a proficiency in the C# programming language ● Students will be proficiently develop ASP.NET web

nt Course Practical		g Practical		applications using C# ● Students will be using ADO.NET for data persistence in a web application. ● Students will understand AJAX,XML and LINQ.
Discipline Specific Elective Discipline Specific Elective Practical	USIT504 USIT5P4	Artificial Intelligence, Artificial Intelligence Practical	02 02	● The student will understand the history of artificial intelligence (AI) and its foundations. ● The students will apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning. ● The students will demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models. ● The student will implement several of the major approaches to classical planning, including planning graphs, POP, and propositionalization.
Discipline Specific Elective Discipline Specific Elective Practical	USIT505 USIT5P5	Linux System Administration, Linux System Administration Practical	02 02	● The students will be able to understand Red Hat Enterprise Linux. ● The students will be able to configure and manage storage ,connecting to the network ,working with groups ,Users. ● The students will be able to demonstrate the setting up of the firewall ,setting up cryptographic services . ● The students will be able to discuss concepts like Bash shell scripting and setting up installation server.
Discipline Specific Elective	USIT506	Enterprise Java ,	02	● Students will be able to develop enterprise applications along with databases. ● By understanding

Discipline Specific Elective Practical	USIT5P6	Enterprise Java practical	02	RequestDispatcher, Cookies and Sessions students will be able to develop web applications through servlets and Java EE technologies for tracking sessions/users. ● Students will be able to develop business applications using Tag Libraries. ● Students will be able to develop web applications through enterprise beans. ● By learning Hibernate framework students will be able to simplify the development of Java applications to interact with the databases.
Discipline Specific Elective Discipline Specific Elective Practical	USIT507 USIT5P7	Next Generation Technologies, Next Generation Technologies Practical	02 02	● The students will be able to learn Big Data , MongoDB ● The students will be able to learn about The MongoDB Data Model. shell and architecture ● The students will be able to learn MongoDB Storage Engine, it's use cases and limitations ● The students will be able to learn about SSD and In-Memory Databases , jQuery ● The Students will learn JSON
SEMESTER - VI				
Skill Enhancement Course	USIT601	Software Quality Assurance	02	● The student will be able to identify benefits and the needs to enforce software quality ● The students will be able to learn Fundamentals of testing. ● The students will be able to learn Unit Testing, Decision Table–Based Testing, Path Testing and Data Flow Testing ● The student will be able to

				understand and discuss the Software Verification and Validation process and models ● The students will be able to learn different Levels of Testing
Skill Enhancement Course Skill Enhancement Course Practical	USIT602 USIT6P2	Security in Computing, Security in Computing Practical	02 02	● Students will be familiar with how threats to an organization are discovered, analyzed, and dealt. ● Students will be with network security threats and countermeasures. ● Students will be using network security designs using available secure solutions (such as PGP, SSL, IPSec, etc. ● Students will be familiar with advanced security issues and technologies such as DDoS attack detection and containment, and anonymous communications
Skill Enhancement Course Skill Enhancement Course Practical	USIT603 USIT6P3	Business Intelligence , Business Intelligence Practical	02 02	● The students will be able to recognise the concept and issues related to business intelligence and decision support systems. ● The students will be able to understand the mathematical models, data mining and data preparation. ● The students will focus on the classification/clustering of data. ● The students will be able to analyze the applications of business intelligence by learning marketing models, logistic and production models and data envelopment analysis. ● The students will be able to use algorithms for knowledge discovery and artificial intelligence.

Discipline Specific Elective Discipline Specific Elective Practical	USIT604 USIT6P4	Principles of Geographic Information Systems, Principles of Geographic Information Systems Practical	02 02	• The students will be able to understand what is GIS and where to find more information. • The students will be able to explain the components and functionality of a GIS and the differences between GIS and other information systems. • The students will be able to understand the nature of geographic information and explain how it is stored in the computer. • The student will be aware of Spatial Data Analysis ,Classification of analytical GIS Capabilities. • The student will be able to understand how to map qualitative ,quantitative data, how to map time series and terrain elevation.
Discipline Specific Elective Discipline Specific Elective Practical	USIT605 USIT6P5	Enterprise Networking, Enterprise Networking Practical	02 02	• Students will be able to design a network infrastructure to support specific user and business requirements. • Students will be able to design, implement and maintain appropriate security services for network systems. • Students will be able to select the components to create a virtual infrastructure. • Students will be able to specify, design and configure a simple AWS cloud deployment.
Discipline Specific Elective	USIT606	IT Service Management,	02	• The students will be aware about the concept of IT Service Management, service strategy principles , service strategies principle. • The students will be aware

				about service design principles, service strategies and challenges. ● The student will get in- depth knowledge of continual service Improvement(CSI) Principles, CSIProcess, CSI methods and techniques,Organizational development for CSI, various technological considerations and implementation of CSI.
Discipline Specific Elective	USIT607	Cyber Laws,	02	● The students will be able to understand cyber crime and all general laws to deal with them.Students can differentiate between various crimes committed online. ● The students will be able to apply copyright to work.They will understand how to use terms and conditions efficiently to avoid further problems. ● The students will understand how to deal with Tax laws in E-Commerce and digital certificates. ● The student will know how to gather evidence of cyber crime.
Skill Enhancement Course Practical	USIT6P1	Project Implementation	02	● Application of knowledge to develop real time applications. ● Self-education and clearly understand the value of achieving Perfection in the respective Project work.
Skill Enhancement Course Practical	USIT6P6	Advanced Mobile Programming practical	02	● The students will know about Android, Introduction to Android Studio IDE, Application Fundamentals. ● The Students will understand Android Resources. ● The Students will understand

				programming activities and fragments,UI elements,different layouts like List view,grid view ,frame,Linear,Table etc. ● User Interface components for android application development. ● Create an Android application using a database. ● The students will understand how to give Security and permissions.