DNYANDEEP SHIKSHAN PRASARAK MANDAL, KHED (RATNAGIRI'S)

# DNYANDEEP COLLEGE OF SCIENCE AND COMMERCE

# PROGRAM SPECIFIC OUTCOME (PSO)

# &

# COURSE OUTCOME (CO)

## (B.SC.C.S. / B.SC.I.T. / B.COM)

# DEPARTMENT OF COMPUTER SCIENCE

## Program Specific Outcome of Computer Science

PSO1 Students learn application fundamentals, including information management and intelligent applications.

PSO2 Students learn Mathematics fundamentals, including discrete structures, statistics and calculus.

PSO3 Students learn to complete successfully be able to program small-to-mid-size programs on their own.

PSO4 Students learn to successfully apply the knowledge they have gained through project experience.

PSO5 Students learn to use appropriate techniques, skills, and tools necessary for computing practice.

# SEMESTER I

## Course (Paper) Name and No.: Computer Organization and Design (USCS101)

CO1 To learn about how computer systems work and underlying principles.
CO2 To understand the basics of digital electronics needed for computers.
CO3 To understand the basics of instruction set architecture for reduced and complex instruction sets.
CO4 To understand the basics of processor structure and operation.
CO5 To understand how data is transferred between the processor and I/O devices.

## Course (Paper) Name and No.: Programming with Python- I (USCS102)

CO1 Students should be able to understand the concepts of programming before actually starting to write programs.
CO2 Students should be able to develop logic for problem solving.
CO3 Students should be made familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc.
CO4 Students should be able to apply the problem solving skills using syntactically simple language i.e.

## Course (Paper) Name and No.: Free and Open Source Software (USCS103)

CO1 Upon completion of this course, students should have a good working knowledge of Open Source ecosystem, its use, impact and importance.
CO2 This course shall help student to learn Open Source methodologies.
CO3 Case studies with real life examples.
CO4 Learning all open source software's in government.

## Course (Paper) Name and No.: Database Systems (USCS104)

CO1 Students learn to evaluate business information problem and find the requirements of a problem in terms of data.
CO2 Students learn to design the database schema with the use of appropriate data types for storage of data in database.
CO3 Students learn to create, manipulate, query and back up the Databases.
C04 Students learn to use different Functions in DBMS

**Course (Paper) Name and No.: Discrete Mathematics (USCS105)**

CO1 To provide overview of theory of discrete objects, starting with relations and partially ordered sets and study about recurrence relations, generating function and operations on them.
CO2 Students be able to understand permutations, combinations and counting principles.
CO3 Give an understanding of graphs and trees which are widely used in software

**Course (Paper) Name and No.: Descriptive Statistics and Introduction to Probability (USCS106)**

CO1 Enable learners to know descriptive statistical concepts
CO2 Enable to study Measures of skewness and Kurtosis and correlation and regression.
CO3 Enable study of probability concept required for Computer learners

**Course (Paper) Name and No.: Soft Skills Development (USCS107)**

CO1 To know about various aspects of soft skills and learn ways to develop personality.
CO2 Understand the importance and type of communication in personal and professional environment.
CO3 To provide insight into much needed technical and non-technical in career planning.
CO4 Learn about Leadership, team building, decision making and stress management.

## SEMESTER II

**Course (Paper) Name and No.: Programming with C (USCS201)**

CO1 Students should be able to write, compile and debug programs in C language.
CO2 Students should be able to use different data types in a computer program.
CO3 Students should be able to design programs involving decision structures, loops and functions.
CO4 Students should be able to explain the difference between call by value and call by reference

CO5 Students should be able to understand the dynamics of memory by the use of pointers.
CO6 Students should be able to use different data structures and create/update basic data files.

**Course (Paper) Name and No.: Programming with Python– II (USCS202)**

CO1 Students should be able to understand the concepts of programming before actually starting to write programs.
CO2 Students should be able to develop program for File operation.
CO3 Students should be able to do the programs for Exception Handling.
CO4 Students should learned about GUI Programming.
CO5 Students should be able to develop the program for database connectivity and Network Connectivity .

**Course (Paper) Name and No.: Linux (USCS203)**

CO1 Upon completion of this course, students should have a good working knowledge of Linux, from both a graphical and command line perspective, allowing them to easily use any Linux distribution.
CO2 This course shall help student to learn advanced subjects in computer science practically.
CO3 Student shall be able to progress as a Developer or Linux System Administrator using the acquired skill set.

**Course (Paper) Name and No.: Data Structures (USCS204)**

CO1 Learn about Data structures, its types and significance in computing.
CO2 Explore about Abstract Data types and its implementation.
CO3 Ability to program various applications using different data structure in Python.

**Course (Paper) Name and No.: Calculus (USCS205)**

CO1 Understanding of Mathematical concepts like limit, continuity, derivative, integration of functions.
CO2 Ability to appreciate real world applications which uses these concepts.
CO3 Skill to formulate a problem through Mathematical modeling and simulation.

**Course (Paper) Name and No.: Statistical Methods and Testing of Hypothesis (USCS206)**

CO1 Enable learners to know descriptive statistical concepts.
CO2 Enable study of probability concept required for Computer learners.
CO3 Enable to study the concept of hypothesis testing.

**Course (Paper) Name and No.: Green Technologies (USCS207)**

CO1 Learn about green IT can be achieved in and by hardware, software, network communication and data center operations.
CO2 Understand the strategies, frameworks, processes and management of green IT.
CO3 To understand the lifecycle of Device or hardware.
CO4 To understand the Sustainable IT Services: Creating a Framework for Service Innovation.
CO5 Understand the Green Enterprises and the Role of IT.

## SEMESTER III

**Course (Paper) Name and No.: Theory of Computation (USCS301)**

CO1 Understand grammar and languages.
CO2 Learn about Automata theory and its application in language design 3. Learn about Turning Machines and Pushdown Automata.
CO3 Understand Linear Bound Automata and its applications.

**Course (Paper) Name and No.: Core JAVA (USCS302)**

CO1 Object oriented programming concepts using Java.
CO2 Knowledge of input, its processing and getting suitable output.
CO3 Understand, design, implement and evaluate classes and applets.
CO4 Knowledge and implementation of AWT package

**Course (Paper) Name and No.: Operating System (USCS303)**

CO1 To provide a understanding of operating system, its structures and functioning.
CO2 Develop and master understanding of algorithms used by operating systems for various purposes.

**Course (Paper) Name and No.: Database Management Systems (USCS304)**

CO1 To develop understanding of concepts and techniques for data management.
CO2 They learn about widely used systems for implementation and usage.
CO3 Understanding Master concepts of stored procedure and triggers and its use.
CO4 Learn about using PL/SQL for data management.
CO5 Understand concepts and implementations of transaction management and crash recovery.

**Course (Paper) Name and No.: Combinatorics and Graph Theory (USCS305)**

CO1 Appreciate beauty of combinatorics and how combinatorial problems

naturally arise in many settings.
CO2 Understanding the combinatorial features in real world situations and Computer Science applications.
CO3 Apply combinatorial and graph theoretical concepts to understand computer science concepts and apply them to solve problems

**Course (Paper) Name and No.: Physical Computing and IoT Programming (USCS306)**

CO1 Enable learners to understand System On Chip Architectures.
CO2 Introduction and preparing Raspberry Pi with hardware and installation.
CO3 Learn physical interfaces and electronics of Raspberry Pi and program them using practical's.
CO4 Learn how to make consumer grade IoT safe and secure with proper use of protocols.

**Course (Paper) Name and No.: Skill Enhancement: Web Programming (USCS307)**

CO1 To design valid, well-formed, scalable, and meaningful pages using emerging technologies.
CO2 Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites.
CO3 To develop and implement client-side and server-side scripting language programs.
CO4 To develop and implement Database Driven Websites.
CO5 Design and apply XML to create a markup language for data and document centric applications.

## SEMESTER IV

**Course (Paper) Name and No.: Fundamentals of Algorithms (USCS401)**
CO1 Understand the concepts of algorithms for designing good program.
CO2 Implement algorithms using python.
CO3 Understand the concept of trees and graph for designing an algorithm.
CO4 To Implement the Huffman's code table.

**Course (Paper) Name and No.: Advanced JAVA (USCS402)**
CO1 Understand the concepts related to Java Technology.

CO2 Understand the concept of JDBC.
CO3 Explore and understand the use of Java Server Programming.

**Course (Paper) Name and No.: Computer Networks (USCS403)**

CO1 Learner will be able to understand the concepts of networking, which are important for them to be known as a 'networking professionals'.
CO2 Useful to proceed with industrial requirements and International vendor Certifications.
CO3 Learners will be able to understand the services provided by each layer of network models.
CO4 How to connect devices in network using cisco packet network

**Course (Paper) Name and No.: Software Engineering (USCS404)**

CO1 To understand the concepts of models for designing project.
CO2 To Implement UML diagram.
CO3 To understand the concept of different charts which will show project scheduling.
CO4 To implement validation & verification.
CO5 To understand the level of testing.

**Course (Paper) Name and No.: Linear Algebra using Python (USCS405)**

CO1 Appreciate the relevance of linear algebra in the field of computer science.
CO2 Understand the concepts through program implementation.
CO3 Install a computational thinking while learning linear algebra

**Course (Paper) Name and No.: .NET Technologies (USCS406)**

CO1 Understand code solutions and compile C# projects within the .net framework.
CO2 Design & develop professional console & window based .net application.
CO3 Construct Classes, methods and instantiate objects.
CO4 Design and implement database connectivity using ADO.net in window based application.
CO5 Understand and implement string manipulation, events and exception handling within .net application environment.

**Course (Paper) Name and No.: Skill Enhancement: Android Developer Fundamentals (USCS407)**

CO1 At the end of the course student will able to understand the requirements of Mobile programming environment.

CO2 At the end of the course student Learn about basic methods, tools and techniques for developing Apps.
CO3 Explore and practice App development on Android Platform
CO4 Develop working prototypes of working systems for various uses in daily lives.

## SEMESTER V

**Course (Paper) Name and No.: Linux Server Administration (USCS502)**

CO1 Learner will be able to develop Linux based systems and maintain.
CO2 Learner will be able to install appropriate service on Linux server as per requirement.
CO3 Learner will have proficiency in Linux server administration.

**Course (Paper) Name and No.: Software Testing and Quality Assurance (USCS503)**

CO1 Learner Understand various software testing methods and strategies.
CO2 Learner Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software.
CO3 Learner able to Design SQA activities, SQA strategy, formal technical review report for software quality control and assurance.

**Course (Paper) Name and No.: Information and Network Security (USCS504)**

CO1 Understand the principals & practices of cryptographic techniques
CO2 Understand a variety of generic security threats & vulnerabilities & Identify & analyze particular security problems for a given application.
CO3 Understand various protocols for network security to protect against the threats in a network.

**Course (Paper) Name and No.: Web Services (USCS506)**

CO1 Emphasis on SOAP based web services and associated standards such as WSDL.
CO2 Design SOAP based / RESTful services Deal with Security and QoS issues of Web Services.
CO3 WCF services Deal with Security and QoS issues of Web Services.
CO4 Learning Web Services Development Life Cycle.
CO5 Learning JSON message format and tools and frameworks around JSON

**Course (Paper) Name and No.: Game Programming (USCS507)**

CO1 Learner should get the understanding computer Graphics programming using

Directx or Opengl.

CO2 Analyze Learner should study Graphics and gamming concepts with present working style of developers .

CO3 Understanding various Introduction to Rendering Engines

## SEMESTER VI

**Course (Paper) Name and No.: Wireless Sensor Networks and Mobile Communication (USCS601)**

CO1 Learner should be able to list various applications of wireless sensor networks .

CO2 Learner should be able to describe the concepts, protocols, design, implementation and use of wireless sensor networks .

CO3 Learner should be implement and evaluate new ideas for solving wireless sensor network design issues.

**Course (Paper) Name and No.: Cloud Computing (USCS602)**

CO1 To learn articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing using open source technology.

CO2 Learner should be able to identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.

CO3 Learner should explain the core issues of cloud computing such as security, privacy, and interoperability.

CO4 Familiar with open source cloud computing software, and free/commercial cloud services.

CO5 Learn the architecture, deployment models, and infrastructure models of Cloud Computing.

**Course (Paper) Name and No.: Information Retrieval (USCS604)**

CO1 To understand the field of Information retrieval.

CO2 Understand to design information retrieval model.

CO3 Understand the concepts of Evaluation system.

**Course (Paper) Name and No.: Digital Image Processing (USCS605)**

CO1 Learners should review the fundamental concepts of a digital image processing System.

CO2 Analyze the image in frequency domain using various transforms

CO3 Evaluate the technique for image enhancement and image segmentation.
CO4 Various compression techniques
CO5 They will be familiar with basic image processing techniques for solving real Problems.

**Course (Paper) Name and No.: Ethical Hacking (USCS607)**

CO1 Learner will know to identify security vulnerabilities and weaknesses in the target applications.
CO2 They will also know to test and exploit systems using various tools and understand the impact of hacking in real time machines.

# Department of Information Technology

## Program Specific Outcome of Information Technology

PSO1 Learners are able to create application projects using different technologies such as enterprise java and .Net.

PSO2 Learners are able to build and enhance business intelligence capabilities by adapting the appropriate technology and software solutions**.**

PSO3 Learner are able to understand building blocks of Internet of Things and characteristics.

PSO4 Learners are able to build and enhance business intelligence capabilities.

PSO5 Learners are able to take appropriate decisions during the configuration process to create a properly functioning in Linux environment.

## Semester I

### Course (Paper) Name and No.: Imperative Programming (USIT101)

CO1 Imperative programming focuses on describing how a program operates.
CO2 The course introduces the idea of loop invariants for understanding and reasoning about loops.
CO3 Through lab exercises, students learn to create, debug and maintain programs.
CO4 Basic imperative programming constructs: assignments, conditionals, procedures and loops.

### Course (Paper) Name and No.: Digital Electronics (USIT102)

CO1 To understand number representation and conversion between different representation in digital electronic circuits.
CO2 To analyze logic processes and implement logical operations using combinational logic circuits.
CO3 To understand concepts of sequential circuits and to analyze sequential systems in terms of state machines.
CO4 To design and analyze of electronic circuits using multiplexers, de-multiplexers, encoders, decoders and flip- flops.
CO5 To understand the functioning of counters and shift registers with respect to its application in electronic display and sequence generator.

### Course (Paper) Name and No.: Operating Systems (USIT103)

CO1 Student Should learn about the OS.
CO2 Student would come to know about the Android version.
CO3 Student will Learn about the Process scheduling.

### Course (Paper) Name and No.: Discrete Mathematics (USIT104)

CO1 To understand Variables, The Language of Sets, The Language of Relations and Function.
CO2 To analyze Logic of Compound Statements.

CO3 To understand concepts of Sequences, Mathematical Induction, and Recursion.

CO4 To design and analyze of Functions Defined on General Sets, One-to-One and Onto, Inverse Functions, Composition of Functions, Cardinality with Applications to Computability

**Course (Paper) Name and No.: Communication Skills (USIT105)**

CO1 To understand the basics of Business communication.

CO2 To learn to write business messages appropriately.

CO3 To learn how to talk in meetings or group discussion i.e. orally.

CO4 To learn how to communicate in different fields or departments.

CO5 To learn to make presentations and how to present one.

## Semester II

**Course (Paper) Name and No.: Object oriented Programming (USIT201)**

CO1 Understand the difference between the top-down and bottom-up approach.
CO2 To learn the syntax and semantics of the C++ programming language.
CO3 To learn how to design C++ classes for code reuse.
CO4 To learn how to implement copy constructors and class member functions.
CO5 To understand the concept of data abstraction and encapsulation.
CO6 To learn how to overload functions and operators in C++.
CO7 To learn how to use exception handling in C++ programs.

**Course (Paper) Name and No.: Microprocessor Architecture (USIT202)**

CO1 At the end of the course student will able to understand to understand basics about Microprocessor.

CO2 At the end of the course student will able to differentiate the types of processors, concepts of microprocessor architecture, interface devices and Assembly Language.

CO3 To learn additional programming techniques using Assembly language
CO4 To understand concepts of Stacks and subroutines and BCD arithmetic
CO5 To learn about Software development system

**Course (Paper) Name and No.: Web Programming (USIT203)**

CO1 To develop simple web pages and apply formatting to it.
CO2 To design forms and incorporate audio and video on web pages.
CO3 To handle user events through client side scripting.
CO4 To develop dynamic web pages using server side scripting.
CO5 To provide interaction between web pages and databases using server side scripting.

**Course (Paper) Name and No.: Numerical and Statistical Methods (USIT204)**

CO1 At the end of the course student will able to understand to understand basics about Numerical and Statistical Methods
CO2 At the end of the course student will able to understand Mathematical Modeling and Engineering Problem Solving
CO3 To learn Solutions of Algebraic and Transcendental Equation.
CO4 To understand concepts of interpolation
CO5 To learn various forms of Regression:

**Course (Paper) Name and No.: Green Computing (USIT205)**

CO1 Understand the concept of green IT and relate it to sustainable development.
CO2 Apply the green computing practices to save energy.
CO3 Discuss how the choice of hardware and software can facilitate a more sustainable operation.
CO4 Use methods and tools to measure energy consumption.

## Semester III

**Course (Paper) Name and No.: Python Programming (USIT301)**

CO1 Students should be able to understand the concepts of programming before Actually starting to write programs.
CO2 Student understands that what are the variables and Expressions used Python.
CO3 Students will be able to understand Conditional, Looping and Control Statements.
CO4 Students will be able to understand the Lists, Tuples, Dictionaries, Different File Handling& Error Handling operations
CO5 Students will be able to design GUI Application in Python & learn Database operations.

## Course (Paper) Name and No.: Data Structures (USIT302)

CO1 Learners will be able to understand the basics of algorithm analysis.
CO2 Learners will able to describe operations on linked list.
CO3 Learners will be able to understand analysis of stack and queue operations.
CO4 Learners will be able to understand different searching and sorting techniques tree and AVL tree structures.
CO5 Learners will be able to analyze graphs and hashing techniques

## Course (Paper) Name and No.: Computer Networks (USIT303)

CO1 To illustrate the reference models with layers, protocols and interfaces and to compare it with different versions.
CO2 To its emphasis on the design, deployment, management, maintenance and security of wired and wireless networks.
CO3 To follow the industry-recognized CISCO Certified Network Professional (CCNP) Routing and Switching, Routing algorithms: Routing and Addressing and Provide the mathematical background of routing protocols
CO4 To understand optimum design consideration for layer 3 and advanced WAN services.
CO5 To analyses the design consideration of IPsec, SSL VPN, enterprise data center and SAN.

## Course (Paper) Name and No.: Database Management Systems (USIT304)

CO1 Learners should review the fundamental concepts of Database Management System.
CO2 Database Design, ER Diagram and Unified Modeling Language
CO3 Learners will be able to understand Constraints and Views
CO4 what is Transaction management and Concurrency
CO5 They will be familiar with PL-SQL

## Course (Paper) Name and No.: Applied Mathematics (USIT305)

CO1 Students will be able to gain expertise in solving matrices using different

methods and polar, exponential form of complex as well as hyperbolic functions.

CO2 Students will be able to solve the differential equation using various methods and differential equations with constant coefficients.

CO3 Understand the properties and theorems of laplace and integrate the laplace transform and find the inverse laplace using differential equations.

CO4 Able to find double and triple integrals in polar coordinates and area, volume using double and triple integrals.

CO5 Able to understand the properties of beta, gamma functions and solve the error functions.

## Semester IV

### Course (Paper) Name and No.: Core Java (USIT401)

CO1 At the end of the course student will able to understand the requirements of Core Java.

CO2 At the end of the course student Learn about basic methods, tools and techniques for developing Application n Java.

CO3 Explore and practice Application development on Java Platform

CO4 Develop working prototypes of working systems for various uses in daily lives.

### Course (Paper) Name and No.: Introduction to Embedded Systems (USIT402)

CO1 Understand the core of embedded system.

CO2 Designing an Embedded system with 8051 microcontroller.

CO3 Designing & Developing Embedded system with IDE.

CO4 To understand the concept of memory testing.

CO5 Understanding the concepts of Embedded system with application & domain specific Example.

### Course (Paper) Name and No.: Computer Oriented Statistical Techniques (USIT403)

CO1 Students will be able to calculate and apply measures of dispersion.

CO2 Students will be able to apply discrete and continuous probability distribution to various problems.

CO3 Students will be able to test the hypothesis as well as calculate confidence Interval and the p-concept.
CO4 Students will be able to learn non-parametric test such as the Chi-square test for independence as well as goodness of fit.
CO5 Students will be able to compute and interpret the results of bivariate and multivariate regression and correlation analysis and to perform ANOVA.

**Course (Paper) Name and No.: Software Engineering (USIT404)**

C01 Students will be able to learn and apply the software engineering lifecycle.
C02 Students will be able to understand Socio-technical System and Critical System.
C03 Students will learn Project Management as well as Quality Management.
C04 Students will be able to estimate the cost of Project or Software.

**Course (Paper) Name and No.: Computer Graphics and Animation (USIT405)**

CO1 Learners will be able to understand computer graphics.
CO2 Learners will be able to do 2D & 3D transformations.
CO3 Learners will be able to create 3D objects using lines and color.
CO4 Learners will be able to create different objects with different planes, curves.
CO5 Learners will be able to do animation through programming.

## Semester V

**Course (Paper) Name and No.: Software Project Management (USIT501)**

CO1 Learners are clear the idea about project Management life Cycle.
CO2 Learners are determine Success criteria for a project.
CO3 Learners are clear the idea about Risk Management.
CO4 Learners are calculate estimate the overall duration of project and cost of the project.
CO5 Learners are Identify the resource requirements.

## Course (Paper) Name and No.: Internet of Things (USIT502)

CO1 Learners are Able to Interpret the vision of IoT from a global context
CO2 Learners are Become familiar with IoT hardware components
CO3 Learners are acquire skills to design 3D modules
CO4 Learners are determine the Market perspective of IoT
CO5 Learners are acquire skills on developing their enterprise level technical strategies.

## Course (Paper) Name and No.: Advanced Web Programming (USIT503)

CO1 Use object-oriented techniques in Web programming.
CO2 Create sites that utilize data validation techniques and secure code.
CO3 Apply three-tier architecture concepts and advanced database techniques in web applications.
CO4 Build sites that use session management
CO5 Data validation techniques
CO6 Authentication and security in Web pages.

## Course (Paper) Name and No.: Linux System Administration (USIT504)

C01 Students should learn the tasks of System Administration.
C02 Student will learn commands used for Software Management.
C03 Students will be able to handle user accounts and manage storage space on Systems.
C04 Students will acquire skills to configure different types of servers.

## Course (Paper) Name and No.: Enterprise Java (USIT505)

CO1 Students will study the fundamentals and core concepts of cookies, session, file uploading, file downloading and request dispatcher
CO2 Students will use the advance class features including inheritance, polymorphism and overloading, overriding, Students will gain knowledge and experience required to develop and deploy JSP application using JSTL.
CO3 Students will be able to develop and deploy EJB application with concepts of Interceptors, JNDI.
CO4 To make students familiar with the development of application using concept of Persistence, Object/Relational Mapping, JPA and Hibernate.

## Semester VI

### Course (Paper) Name and No.: Software Quality Assurance (USIT601)

CO1 Student will come to know about the quality importance
CO2 Student will understand the importance of testing
CO3 Student will understand about the Process in the Quality Assurance process

### Course (Paper) Name and No.: Security in Computing (USIT602)

C01 Students should learn how to analyzed Risk while applying security.
C02 Students should learn the process of Authentication and Authorization.
C03 Students will learn the concepts of Storage and Database Security.
C04 Students will be able to understand the core part of Firewall.
C05 Students will get information about multiple attacks, vulnerabilities and how to detect & prevent them.

### Course (Paper) Name and No.: Business Intelligence (USIT603)

CO1 Learners should review the fundamental concepts of Business Intelligence.
CO2 Representation of the decision-making process
CO3 How to done Data preparation in different ways (Data validation, Data transformation, Data reduction )
CO4 what is knowledge management, artificial intelligence and Expert systems
CO5 They will be familiar with Business Intelligence applications

### Course (Paper) Name and No.: Principles of Geographic Information Systems (USIT604)

CO1 Introduction about basic GIS data types and technologies and Geographic Information and Spatial Database.
CO2 Knowledge various GIS data management and processing techniques.
CO3 Learning Spatial data processing techniques and positioning.
CO4 Learning various functions in GIS.
CO5 Creating various maps in GIS

### Course (Paper) Name and No.: Cyber Laws (USIT605)

CO1 Make Learner Familiar With The Social And Intellectual Property Issues

Emerging From ‘Cyber world’

CO2 At the end of the course student will able to understand the concepts of Contracts in InfoTech world

CO3 Give Learners In Depth Knowledge Of Information Technology Act And Legal Frame Work Of Right To Privacy,Data Security And Data Protection

CO4The Learner will able to understand the issues related to E Commerce and Digital Certification and E governance

CO5Study of Various Cases On Real Time Crimes.

# Program Specific Outcome of Bachelor Of Commerce (B.Com.)

**PSO1** Students will be ready for employment in functional areas like accounting, taxation, banking, insurance and corporate law. An attitude for working effectively and efficiently in a business environment.

**PSO2** Learners will gain knowledge of various disciplines of commerce, business, accounting, economics, and finance, auditing and marketing.

**PSO3** Students also acquire skills to work as tax consultant, audit assistant and other financial supporting services.

**PSO4** Students have choices to pursue professional courses such as CA, M.COM, MBA, CMA, ICWA, CS, etc.

**PSO5** Students are able to play roles of businessmen, entrepreneur, managers, consultant, which will help learners to possess knowledge and other soft skills and to react aptly when confronted with critical decision making.

**PSO6** Inculcate the element of research amongst the learners, to develop their overall personality.

**PSO7** Empowerment of learners through access to commerce education and enabling them to develop as intellectually active, socially responsible citizens always ready for continuous personal and professional growth to fit into the challenging business environment.

# Semester I

## Course (Paper) Name and No.: Commerce - Paper no. I

CO1 Understand the concept of Business.
CO2 Know the meaning of Business Environment.
CO3 Frame Project Plans.
CO4 Emphasize on acquiring skills to be an Entrepreneur.
CO5 Learn related terminology and enrich glossary for professional learning.

## Course (Paper) Name and No: Accountancy and Financial Management – I

CO1 Students will understand the Accounting Standards issued by ICAI
CO2 Students will learn various methods of inventory valuation, and also difference between revenue income and capital income, capital expenditure and Revenue expenditure.
CO3 Learners will learn to prepare manufacturing, trading and profit and loss account of manufacturer and also understand how to calculate cost of production
CO4 Students will learn the basis of allocation of expenses and incomes
CO5 Learners will understand calculation of interest, installments of hire purchase and journal entries and ledgers regarding hire purchase transactions.

## Course (Paper) Name and No: Business Economics- Paper no. I

CO1 Learners understand the basic tools to analyze the business economics.
CO2 Learners are able to understand the elasticity of demand forecasting.
CO3 Learners studied the theories related to production function.
CO4 Learners are now in a position to understand different concepts of costs.

## Course (Paper) Name and No: Environmental Studies- Paper no. I

CO1 To understand the concept Environment and Ecosystem thoroughly with man and environment relationship.
CO2 To understand the importance of scarce and need of non-renewable resources for sustainable development.
CO3 To understand the population pattern, growth, measures to control population and emerging issues of development.
CO4 To understand the urbanization and its impact on whole Environment.
CO5 To learn world thematic map reading, its implementation and world map

filling.

**Course (Paper) Name and No: Business Communication- Paper no. I**

CO1 To recognize importance of business communication in corporate world.
CO2 To differentiate between formal and informal communication.
CO3 To understand the use of technology in the process of communication.
CO4 To acquire the skills of drafting various business letters.
CO5 To understand the importance of presentation and interview skills.

**Course (Paper) Name and No.: Foundation Course (Paper no. I)**

CO1 This course is designed to create social awareness at a preliminary level for students across the board.
CO2 To understand the philosophy and structure of the Constitution of India
CO3 and government bodies working at different levels of government administration.
CO4 To understand diversity as difference and disparity as inequality.
To sensitize about the gender disparity in society.
CO5 To understand diversity as difference and disparity as inequality.

**Course (Paper) Name and No.: Mathematical & Statistical Techniques-I**

CO1 Theoretical concept relating Mathematics and Statistics
CO2 S hares and Mutual Funds
CO3 Permutation Combinations
CO4 Measures of central tendencies, Dispersion, Correlation and Regression, sources of data, classification of data
CO5 Index Number, Probability, Probability Distribution etc. It will further help to apply the statistical tools and techniques for decision making and for research studies.

# Semester II

**Course (Paper) Name and No.: Commerce - Paper no. II**

CO1 Understand dimensions of Service Sector.
CO1 Know how retail trade takes place.
CO1 Creates awareness about recent trends like ITES Sector, Banking and CO1 Insurance Sector as well as Logistics.
CO1 Exposure to the concept of Electronic Commerce, its types, challenges and find ways to overcome them.
CO1 Learn related terminology and enrich glossary for professional learning.

**Course (Paper) Name and No: Accountancy and Financial Management – II**

CO1 Students will learn preparation of final accounts of proprietary firm from available incomplete records.

CO2 Students will understand accounting treatment for consignment transactions, commission and del-credere commission for consignment sale, valuation of stock with consignee etc.

CO3 Learners will learn classification of Branch and accounting for Dependent Branch not maintaining full books by: a) Debtors method and b) stock and debtors' method

CO4 Students will learn fire insurance policy, valuation of closing stock and meaning of salvaged stock

CO5 Learners will get the thorough knowledge of accounting of various types of firms.

**Course (Paper) Name and No: Business Economics- Paper no. II**

C01 Learners get the knowledge of perfect competition and monopoly markets

C02 Learners are now able to discriminate monopolistic competition and oligopoly markets.

CO3 Learners studied the different pricing practices adopted by the firm.

CO4 Students studied the theories capital budgeting.

**Course (Paper) Name and No: Environmental Studies - Paper no. II**

C01 To know the relation between Solid Waste Management and Sustainable Society.

C02 To Understanding the environmental problems associated with agriculture and sustainable agricultural practices.

CO3 To understand the tourism potential of India and consequences of tourism on environment.

CO4 To Understand the environmental movements and environmental management in India.

CO5 To fill the environmentally significant features in Mumbai and Konkan region map.

**Course (Paper) Name and No: Business Communication - Paper no. II**

CO1 To recognize importance of business communication in corporate world.

CO2 To differentiate between formal and informal communication.

CO3 To understand the use of technology in the process of communication.

CO4 To acquire the skills of drafting various business letters.

CO5 To understand the importance of presentation and interview skills.

**Course (Paper) Name and No.: Foundation Course (Paper no. II)**

CO1 To help the students to upgrade their knowledge on current challenges and issues of Indian society

CO2 To sensitize students about social problems plaguing Indian society and to emphasize the role of educated youth to address the same.

CO3 To introduce the concept of Human Rights and fundamental rights

CO4 To understand the importance of environment and sustainable development

CO5 To recognize factors that causes stress and conflict in present times

CO6

**Course (Paper) Name and No.: Mathematical & Statistical Techniques-II**

CO1 Concept of Functions, Derivatives and Their Applications.

CO2 Concept of Interest and Annuity.

CO3 Understood the tools and techniques like measures of Bivariate Linear Correlation and Regression

CO4 Critical decision making and in Time series, Index Numbers,

CO5 Solving the problems of elementary probability distributions.

# Semester III

**Course (Paper) Name and No.: Commerce - Paper no. III**

CO1 Study Management Concept and its relevance in Business and everyday life too.

CO2 Realize importance of Planning & Decision Making in Business and otherwise.

CO3 Organize the available resources to achieve their targets or business goals.

CO4 Direct and Control various aspects related to the Business through Motivation and Leadership.

CO5 Learn related terminology and enrich glossary for professional learning.

**Course (Paper) Name and No: Accountancy and Financial Management – III**

CO1 Students will learn preparation of final accounts of Partnership firm, admission of a new partner, retirement/ death of a partner, valuation of goodwill, computation of sacrifice ratio and gain ratio.

CO2 Students will understand piecemeal distribution of cash at the time of

dissolution of partnership firm, excess capital method and payment of partners' capital as per excess capital method.

CO3 Learners of learn the accounting treatment at the time of amalgamation of partnership firm, calculation of purchase consideration by net assets method and opening journal entries in the books of purchasing firm.

CO4 Students will learn about conversion of partnership firm into a limited company, preparation of companies Balance Sheet as per Scheduled III of Companies Act, 2013

CO5 Learners will get the thorough knowledge of Partnership firms accounting.

**Course (Paper) Name and No: Financial Accounting and Auditing – Management Accounting**

CO1 Student will able to understand analysis and interpretation of financial statement.

CO2 Student will able to understand Balance sheet ratio, revenue ratio and combined ratio.

CO3 Student will understand projection of working capital requirement in case of trading and manufacturing organization.

CO4 Students will understand capital budgeting techniques – payback period, Accounting rate of return, Net present value, profitability index.

**Course (Paper) Name and No: Business Economics- Paper no. III**

CO1 Learners learn the basic concepts of macroeconomics.

CO2 Learners are now able to understand basic concepts of Keynesian economics.

CO3 Learners studied the post Keynesian development in macroeconomics.

CO3 Learners studied the relationship between inflation and money and prices of the commodity

**Course (Paper) Name and No: Foundation Course - Contemporary Issues - Paper no. III**

CO1 To understand the Violation of Human Rights and various redressal policies.

CO2 To make students understand the concept of Disaster and how to deal with various types of disasters.

CO3 To understand the concept of Science and Technology and how it contrasts to superstitious thinking of people.

CO3 To understand the concept of soft skill & its role in overall development of

individual.

**Course (Paper) Name and No.: Business Law- Paper no. I**

CO1 To understand Contract act 1872 thoroughly with capacity to contract & consideration.
CO2 To be aware of the legal impact of contracts in business.
CO3 To understand the concept of special contracts and different types of it.
CO4 To make learners understand various types of Negotiable Instruments and their features, advantages.

**Course (Paper) Name and No.: Computer Programming - Paper no. I**

CO1 Knowledge of computer equipment, including both hardware and software.
CO2 Understand relevance and significance of C programming in Commerce.
CO3 Link various business needs (problems) and find solutions through C programming.
CO4 Use C language to develop short programs required in business.
CO5 Learn related terminology and enrich glossary for professional learning.

# Semester IV

**Course (Paper) Name and No.: Commerce - Paper no. IV**

CO1 Understanding about conceptual knowledge of production and Finance.
CO2 Awareness about the production management and Inventory management.
CO3 Better knowledge towards Quality management.
CO4 Better understanding about various aspect of Financial System.
CO5 Developing the skills of trading with Financial market.

**Course (Paper) Name and No: Accountancy and Financial Management – IV**

CO1 Students will learn types of companies, nature and formation of new company, issue of shares, issue of debentures forfeiture of shares and debentures due to non-receipts of calls, reissue of forfeited shares and companies balance sheet as per scheduled III of companies act, 2013
CO2 Learners of learn the procedure for redemption of preference shares by way of fresh issue and the capitalization of undistributed profits and combination of both, calculation of minimum fresh issue to provide the fund for redemption, Capital Redemption Reserve (C.R.R.)
CO3 Learners of learn the procedure for redemption of debentures, creation and

investment of DRR including The Companies (Share Capital and Debentures), Sinking Fund Investment and redemption of debentures by conversion method

CO4 Students will learn allocation of expenses in pre-acquisition and post acquisition period in times, sales and specific ratio, calculation and transferring of profit prior to incorporation.

**Course (Paper) Name and No.: Financial Accounting and Auditing – Auditing**

CO1 Student will able to understand principles of auditing.

CO2 Student will able to understand audit planning, audit program, audit working papers.

CO3 Student will understand audit sample, test check, internal control.

CO4 Students will understand audit income, audit of expenditure, audit of assets book debts and audit of liabilities.

**Course (Paper) Name and No: Business Economics- Paper no. IV**

CO1 Learners are now able to understand how public finance is helpful in determining the role of government.

CO2 Learners learn the different theories related to the sources of revenue to government.

CO3 Learners are now able to understand the theories of public expenditure and public debt.

CO4 Learners learn the policies of the government and fiscal federalism.

**Course (Paper) Name and No: Foundation Course - Contemporary Issues - Paper no. IV**

CO1 To make students learn the significant, contemporary rights of citizen.

CO2 To understand the various approaches to ecology and environmental principles.

CO3 To learn significant technologies its advantages and misuse of technologies.

CO4 To understand various types of Competitive exams and soft skills required for Competitive examinations.

**Course (Paper) Name and No.: Business Law- Paper no. II**

CO1 To understand of company rules and regulations under Indian Companies Amendment Act 2013.

CO2 To understand and learn the thorough concept about members, Directors, Meetings of Company under Indian Companies Amendment Act 2013

CO3 To understand the concept of special contracts and different types of it.
CO4 To make learners understand various types of Negotiable Instruments and their features, advantages.

**Course (Paper) Name and No.: Computer Programming - Paper no. II**

CO1 Come to know Internet concept and communication systems in detail.
CO2 Introduction to DBMS and its importance in modern business.
CO3 Gives basic knowledge to use Microsoft Access 2007 for RDBMS.
CO4 Highlights value of Table, Form, Query and Reports in Business Management.
CO5 Learn related terminology and enrich glossary for professional learning.

# Semester V

**Course (Paper) Name and No.: Commerce- Paper no. V (Marketing)**

CO1 To enable the student to comprehend the concepts of Marketing
CO2 To make students learn the concept of Marketing Mix and its importance.
CO3 To evaluate the key marketing dimensions for decision making.
CO4 To understand the various challenges faced by Marketing Managers in 21st Century.
CO5 To make them informed about the various career opportunities in Marketing.

**Course (Paper) Name and No: Financial Accounting and Auditing - Financial Accounting - VII**

CO1 Students will understand the format of Companies Balance Sheet and Income and Expenditure account as per Scheduled III of Companies Act, 2013
CO2 Learners of learn the accounting treatment for internal reconstruction and capital reduction, scheme of reconstruction, shares converting into share stock, shares stock converted into shares, subdivision and consolidation of shares
CO3 Students will understand procedure and accounting treatment of buy-back of equity shares, calculation of minimum no. of buyback of shares.
CO4 Students will learn to calculate interest, accrued interest on investment, purchase and sale of personal investment.

**Course (Paper) Name and No: Financial Accounting and Auditing (Cost Accounting)- VIII**

CO1 Students will understand meaning, objectives and scope of cost accounting,

cost centres, cost unit, cost coding, elements of costs, cost behavior pattern.

CO2 Students will know the procurement procedure, inventory control, Maximum and Reorder Level, Economic Order Quantity, ABC calculation, Preparation of stock ledger and valuation of stock by FIFO and Weighted average method, Material Turnover Ratio.

CO3 Students will understand attendance and payroll procedure, overtime and idle time and incentives, labour turnover, Efficiency Rating Procedure and Remuneration systems and incentive schemes based on Piece work plan, Halsey Premium plan, Rowan Plan and Gantt's Task.

CO4 Students will understand functional analysis, behavioral analysis, departmentalization and amortization of primary overheads, computation of overhead rates including Machine overhead rates, basic concept of treatment of over/ under absorption of overheads-Direct Labour method and Prime Cost Method.

CO5 Students will learn classification of cost and preparation of cost sheets, meaning of prime cost, works cost, cost of production, cost of goods sold and total cost.

CO6 Students will learn to reconciliation between financial and costing profit.

**Course (Paper) Name and No.: Business Economics- Paper no. V**

CO1 Learners learn the overall macroeconomic environment in India.

CO2 Learners learn the policy structure in agriculture sector in India.

CO3 Learners learn the industry and services sector the Indian economy.

CO4 Learners studied the banking and financial markets in India.

**Course (Paper) Name and No: Direct & Indirect Tax I**

CO1 Student will able to understand the basic concept of taxation

CO2 Student will able to understand the legal status of persons

CO3 Student will able to understand the concept of salaries, Income from properties, profit & gain from business, capital gain etc

CO4 Student will able to understand deduction from gross total income (S.80A,80C,80CCC,80D,80DD, 80E, 80U,80TT)

CO5 Student will able to understand total income for individual

**Course (Paper) Name and No.: Computer Systems & Applications I**

CO1 Create and design a word document for general office use.

CO2 Know SQL and its importance in database management.

CO3 Create, modify and maintain relational database management system using SQL.

CO4 Have practical knowledge of basic functions and formulae in Microsoft Excel.
CO5 Learn related terminology and enrich glossary for professional learning.

# Semester VI

**Course (Paper) Name and No.: COMMERCE VI (Human Resource Management)**

CO1 To know the meaning of Human Resource Management and the difference between Traditional and Strategic Human Resource Management.
CO2 To understand the Human Resource Development through Performance Appraisal, Career Planning.
CO3 To raise the importance of Human Relations, Leadership, Employees Morale in the mind of learners for successful Human Resource Management.
CO4 To let the learners know about new trends in Human Resource Management and challenges in Human Resource Management.

**Course (Paper) Name and No: Financial Accounting and Auditing - Financial Accounting - IX**

CO1 Students will understand meaning, types and accounting procedure of amalgamation, absorption and external reconstruction, calculation of purchase consideration by net assets method, net payment method and accounting treatment in the books of vendor (transferor company) and purchasing (Transferee company).
CO2 Learners of learn to calculate the difference between various rates of foreign currency transactions, preparation of foreign exchange fluctuation account and adjustment of balance of foreign exchange fluctuation account to profit and loss account, adjustment of balances due on closing date as per the rate on the closing date.
CO3 Students will understand meaning of liquidation or winding up of a company, preferential creditors, secured creditors, unsecured creditors and preparation of statement of affairs by board of directors and also preparation of liquidator's final statement.
CO4 Students will learn meaning of normal underwriting, partial underwriting, complete underwriting, firm underwriting, marked applications and unmarked application. Also, they will know how to calculate net liability of underwriters by various methods.
CO5 Students will learn meaning, advantages and disadvantages and agreement

of limited liability partnership, format of preparation of final accounts of limited liability partnership i.e. Balance sheet and income and expenditure Account.

**Course (Paper) Name and No: Financial Accounting and Auditing (Cost Accounting)- X**

CO1 Students will understand meaning, advantages and disadvantages of cost control accounts, subsidiary accounts to be maintained, and preparation of cost control accounts i.e. store ledger control a/c, w.i.p. ledger control a/c, finished goods control a/c, general ledger control account, cost of sales accounts and costing profit and loss account.

CO2 Students will learn to prepare contract account, meaning of retention money, treatment of profit on incomplete contract, contract profit and Balance sheet.

CO3 Students will understand preparation of process accounts, process stock accounts, normal loss, abnormal loss and abnormal gain account, calculation of process cost, meaning of joint and bi-products.

CO4 Students will understand introduction to marginal costing, its meaning, advantages, limitations, Breakeven analysis, margin of safety, contribution and profit volume ratio.

CO5 Learners will know the various types of standards, setting of standards and basic concepts of material and labour variance analysis.

CO6 Student will learn the concepts of Target costing, Life cycle costing, benchmarking and ABC Costing.

**Course (Paper) Name and No.: Business Economics- Paper no. VI**

CO1 Learners learn the theories international trade and terms of trade with gains form international trade.

CO2 Learners learn various aspects of commercial policy and Tariff and Non Tariff Barriers.

CO3 Learners studied the structure of balance of payments and World trade Organization.

CO3 Learners studied the foreign exchange market and Role of Central Bank in foreign exchange rate management.

**Course (Paper) Name and No: Direct & Indirect Tax II**

CO1 Student will able to understand the basic concept of GST

CO2 Student will able to understand the scope of supply, Mixed Supplies Composition Levy etc.
CO3 Student will able to understand the concept of Time, Place & Value of supply
CO4 Student will able to understand eligibility for taking Input Tax Credit
CO5 Student will able to understand Registration, Procedure& cancellation of under GST Law

**Course (Paper) Name and No.: Computer Systems & Applications II**

CO1 Guides to create and delivery Power Point presentation – an important need of the business world today.
CO2 Helps to study E-Commerce in detail & M-Commerce in brief.
CO3 Makes realize how powerful is Microsoft Excel to solve business problems.
CO4 Demonstrates how one can analyze huge numerical data, carry out mathematical and numerous other functions and present the same efficiently in very less time by using advanced functions in Microsoft Excel.
CO5 Introduces to the world of Object-Oriented Programming through Microsoft Visual Basic and its relevance in Commerce.
CO6 Learn related terminology and enrich glossary for professional learning.