

## **Program Outcome (POs)**

(s): Students / graduates will be able to

PO1: Apply knowledge of mathematics and science to solve complex problems.

PO2: Generate solutions by conducting experiments and applying techniques to analyze and interpret data

PO3: Design solutions for problems and system components /processes that address public health, safety, cultural, societal and environmental needs.

PO4: Identify, formulate, and analyze the problems providing scientific solutions using first principles of applied sciences, mathematics, and research.

PO5: Apply professional ethics and norms of professional practice.

PO6: Ability to communicate effectively with both professionals and society.

PO7: Engage in independent and lifelong learning in the broadest context of the technological change.

PO8: Create, select and apply appropriate techniques, resources and modern tools for design, modeling, simulation and analysis.

PO9: Understand the impact of solutions on society, environment and work for sustainable development.

PO10: Apply contextual knowledge to assess societal, health, safety, legal and cultural issues relevant to the professional practice.

PO11: Function effectively as an individual and as a member or leader in diverse multidisciplinary teams.

PO12: Apply research based knowledge and methods for analysis and interpretation of data and synthesis of information.

### **PSO: (Dept. of Computer Sci. & IT, Nanded)**

Pass out professionals of B.Sc. (CS)/BCA/ M.Sc. (SE) program should be able to:

- Apply and demonstrate skills in emerging area including Computer system security, Cloud Computing, Image Processing, Machine learning
- Apply the Knowledge of modern technologies through learning IoT, Arduino programming.
- Demonstrate competence in programming technologies using open source platforms.

### **PSOs (Department of Biotechnology and Bioinformatics)**

Pass out professionals of B.Sc. (BT) / M.Sc. (BT) program should be able to:

- **PSO 1:** To impart an ability to apply biotechnology skills (including molecular & micro biology, immunology & genetic engineering, bioprocess & fermentation, enzyme & food technology and bioinformatics) and its applications in core and allied fields.
- **PSO 2:** To provide students with the concepts and research approaches for their higher career in the field of biotechnology and develop their scientific interest.
- **PSO 3:** To impart in-depth practical oriented knowledge to students in various thrust areas of biotechnology, so as to meet the demands of industry and academia.

### **PSOs (Department of Biotechnology and Bioinformatics)**

Pass out professionals of B.Sc. (BI) / M.Sc. (BI) program should be able to:

- **PSO 1:** Students will proficiently utilize bioinformatics tools and software to analyze biological data, interpret sequences, and predict protein structures, demonstrating competency in handling bioinformatics databases and computational algorithms.
- **PSO 2:** Students will apply computational techniques such as sequence alignment, phylogenetic analysis, and genome assembly to solve real-world biological problems, showcasing their ability to integrate biological knowledge with computational methods.
- **PSO 3:** Students will demonstrate an understanding of ethical considerations in bioinformatics research and practice, adhering to principles of data privacy, confidentiality, and responsible data sharing in biological research and clinical applications.

## Course Outcomes statements

<b>FY BCA</b>	
Fundamentals of Computer Science and Information Technologyming	Understand fundamental concepts and functions
	compare various fundamentals of software
	Classify different types of operating system
	Distinguish concepts of network
	DEMONSTRATE various networking concepts by using basic networking technology
Programming in C	Understand structure of programming languages, structure of c program.
	Analyze different keyword for making program.
	Make use of operators and control statement.
	Examine an array, structure, union, string and functions.
	DEMONSTRATE to develop application software.
OFFICE AUTOMATION	Understand the Computer Hardware and software
	Apply the knowledge for simplification and automation in a variety of office operations
	Acquire the knowledge to perform the data processing , Data manipulating and Data presentation with various application those are present in Microsoft Office tool
	Make use to reduce the paper work means the software improves the working methods by replacing the existing manual system with the computer based system
E-Commerce	Learn and Understand Concepts of E-Commerce
	Able to Understand various type of E-Commerce
	Understand different types of network topologies
	Define concepts of Electronic Payment System
	Able to Understand Electronic Data Interchange(EDI)
JavaScript	Practice on HTML and learn the need and basics of CSS and the concepts of Client Side JavaScript.
	Acquaire the knowledge of Front-End website development.
	Use JavaScript knowledge to have a responsive website.
	Process the development by offering resources such as templates and themes, which can be customized according to the project needs.
Graphic Design & Content Management Tools	Able to utilize several Flash tools and publish flash movies in numerous formats in web friendly manner
	Understand types of databases and able to design them with advance queries and concepts in MySQL
	Able to plan website using different colour schemes,fonts and layouts
	Able to select,install and activate different themes in wordpress
	Able to design e-commerce site using woo commerce plugins
<b>SY BCA</b>	
Programming in C++	Learn and Understand the Concept of Object Oriented Programming .
	Able to implement the build logic for programming .
	Learn how to Develop Application Software using C++.
	Able to develop the Object Oriented Programming Concept .
	Able to understand and Apply Conditional & Looping Statements.
Operating System	To make aware of different type of operating system and their services
	Describe the role of paging,segmentation and virtual memory in operating system
	Use of various CPU scheduling algorithms for process management

	Study of allocating devices to process,general file structure,basic file system
Multimedia	Learn and Understand the Concept of Multimedia .
	Learn Image & Graphics Concepts.
	Understand Multimedia Applications & Elements .
	Able to implement the build Basic Compression Techniques.
	Able to understand and Apply Compression Techniques.
DBMS	Learn and Understand the Concept of Database Application
	Able to implement the Data Models in DBMS System.
	Learn how to transform ER Model to Relational Model.
	Able to construct queries using relational Algebra
	Able to understand and Apply Normalization method on Relational Databases.
computer Graphics	Ability to define working of display systems
	Ability to understand and analyze various Scan Conversion algorithms
	Familiarization with 2D graphics.
	Skill to execute various 2D transformations on graphics.
	Use of various graphics packages/functions on graphic
Relational Database Management System	Learn and Understand the basic and Advanced features of Relational Database Application
	Able to implement the SQL Queries in RDBMS System.
	Learn how to Join different tables in Relational Databases
	Able to learn and implement SQL queries for Create Update Read and Delete relational Data in Relational Database
	Able to understand and Apply Normalization method on Relational Databases.

### TY BCA

Computer Network	Learn and compare various Technologies
	Recognize the technological trends of Computer Networking.
	Discuss the key technological components of the Network.
	Understand and utilize modern tools for actual development
	Evaluate the challenges in building networks.
Web Development Uisng PHP	Define various programming concepts
	Recognize the technological trends of Web Design& Development Programming
	Decide the key technological components of the programming
	Understand and utilize modern tools for actual development
	Evaluate the challenges in building applications
Software Engineering	How to apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment.
	An ability to work in one or more significant application domains. Work as an individual and as part of a multidisciplinary team to develop and deliver quality software.
	Apply current theories, models, and techniques that provide a basis for the software lifecycle.
	Demonstrate an ability to use the techniques and tools necessary for engineering practice
Web Development Uisng PHP	Define various programming concepts
	Recognize the technological trends of Web Design& Development Programming
	Discuss the key technological components of the programming
	Understand and utilize modern tools for actual development
	Evaluate the challenges in building applications
System Analysis and Design	Learn and compare various Technologies
	Recognize the technological trends of Computer Networking.
	Discuss the key technological components of the Network.
	Understand and utilize modern tools for actual development

	Evaluate the challenges in building networks.
Mobile Application Development	Build an application using application template in Android development environment
	Experiment with the method of storing, sharing and retrieving the data in Android Applications.
	Examine responsive user interface across wide range of devices.
	Justify all applications constructs, layouts and controls can be reused using object oriented concept
	Create a mobile Application by using various components like activity, views, services, content providers and receivers.
Python	Upon successful completion of this course, student will be able to
	Explain basic principles of Python programming language
	Implement object oriented concepts
	Implement database and GUI applications
Digital Image Processing	Analyze images in the frequency domain using various transforms.
	Evaluate the techniques for image enhancement and image restoration.
	Categorize various compression techniques.
	Interpret Image compression standards.
	Interpret image segmentation and representation techniques.
<b>FY B.Sc. CS</b>	
Introduction to Programming Language Using C (Part 1)	Understand structure of programming languages, structure of c program.
	Analyze different keywords, identifiers, tokens, variables and datatypes for making C language programs.
	Make use of different types of operators and control statements to control the flow of the program using different types of conditional and looping statements.
	Examine an array, declaration, initialization and types of array in C language.
	Students are able to develop application software.
Fundamentals of Digital Electronics	To explore the fundamental concepts and techniques used in digital electronics.
	To examine the structure of various number systems and its applications in digital design.
	To analyze and design various combinational and sequential circuits.
	To apply the skills to build and troubleshoot digital circuits.
Web Technology	To Understand the basic concepts of web and HTML tags.
	To analyze different formatting and unformatting tags.
	To apply the use of hyper link, frame and form tag in web page.
	To Design your own Dynamic web page using HTML, CSS and JAVASCRIPT concepts
Introduction to Programming Language Using C (Part 2)	Apply the concept of function and pointer in 'C' language.
	Analyze different storage classes making 'C' language .
	Associate the program with structure and union using 'C' language.
	Discuss to read and write data from/to files in 'C' language.
Database management System	Understand the importance of Database management system in real time
	Identify and define the data models needed to design a database.
	Learn to understand database Architecture.
	Identify methodology of conceptual modeling through Entity relationship model
	Apply the SQL commands for tables.
<b>SY B.Sc. CS</b>	
Computer Network	Understand various Technologies and protocols in Network
	Recognize the technological trends of Computer Networking.
	Designing Computer network using different Network devices (NIC, hub, Switch, Bridge, Gateways, Repeaters, Routers) Discuss the key technological components of the Network.

	Understand computer Network Hardware And Software Set up and utilize modern tools for actual development.
Data Structure	Ability to analyze algorithms and algorithm correctness.
	Ability to summarize searching and sorting techniques
	Ability to describe stack, queue and linked list operation.
	Ability to have knowledge of tree and graphs concepts.
Software Engineering	Acquire knowledge of various software development process models
	Learner will explore various Generic View of Process , TSP & PSP
	The learner will be able to classify various agile software development process models.
	Learner will able to figureout various Software Engineering Practice and principals
Logical Reasoning	Identify logical relations among statements.
	Analyse logically complex statements into their truth functional or quantificational components
	Improve the ability to reason using elements of formal reasoning
	Apply logical thinking to solve problems and puzzles in qualifying exams for companies and in other competitive exams
Relational Database Management System	Understand features of Relational Database software
	Understand structure of the SQL Queries.
	Apply Join's in Relational Databases
	Implement SQL queries for Create Alter Update Read and Delete insert relational Data in Relational Database
	Apply Normalization method on Relational Databases
Object oriented concept	Ability to explain the difference between object oriented programming and procedural programming concepts.
	Ability to program using object oriented features such as inheritance and polymorphism.
	Apply operator overloading, dynamic memory allocation, file I/O, exception handling, etc
	Ability to apply object oriented techniques to solve computing problems.
Java Programming	The knowledge of the structure and model of the Java programming language.
	Apply Knowledge of Object oriented concepts in Java.
	To use the Java programming language for various programming technologies
	To develop software in the Java programming language.
Compiler Designs	understand overall design of compiler with their types and phases.
	understand the basic concept of essential syntactic elements and identifying those elements
	Construct the recognizer system for language constructs as a input.
	Apply context free grammar.
	Analyze parsing techniques and intermediate code.
<b>TY B.Sc. CS</b>	
Windows Programming	To Understand .Net architecture and Framework
	To Understand basic terminology of C# language
	To design ,compile and debug programs in C#
	To design and implement various windows based controls.
Basics of LINUX	Understand the basics of operating system and its functions
	Able to install and understand Linux installation
	Discuss the key technology components of handling OS environment
	Understand and utilize modern tools for actual development
	Evaluate the challenges in building programmms
	Make use of fundamental programming counstructs in python programs

Python Programming	Analyze that how programming constructs used to automate Excel and text file working
	EXAMINE how different packages, data structures functions and methods are used in program
	Justify all programming constructs, Data structure can be reused using object oriented concept
	DEMONSTRATE Database application by using basic constructs, OOPs, Data structures, exception Handling
Data Science	Review the fundamental concept of data science
	Evaluate the techniques for better data science understanding.
	Evaluate the techniques for perfect data analysis
	To develop application & algorithms in the field of data science
	To evaluate different data science techniques and tools
Software Process Management (Elective)	Analyze software process maturity, its framework and the reference models
	Demonstrate an understanding of current theories, models, and techniques that provide a basis for the software lifecycle
	Understand how to manage software projects and project planning.
	Analyze project tracking and control.
	Apply metrics for software quality management.
Software Testing (Elective)	Ability to learn various methods of software development.
	Ability to apply various software testing techniques.
	Ability to evaluate cost of software testing.
	Ability to implement different software testing according to types of software.
Fundamentals of Image Processing	Review the fundamental concepts of digital image processing system.
	Evaluate the techniques for image enhancement.
	Evaluate the techniques for Image restoration.
	To develop color based image processing applications.
	To evaluate different filtering method.
<b>FY M.Sc. Software Engineering</b>	
Advance web technology	Make use of fundamental programming constructs in PHP programs
	Analyze that how programming constructs used to develop dynamic web page.
	EXAMINE how different scripts, functions and methods are used in program
	Justify all programming constructs, Data structure can be reused using object oriented concept.
	DEMONSTRATE Database connection and develop web application using php and javascript.
Linux Administration	Explain the advantages & disadvantages of OS and functions of operating systems & its internal structure along with their components, types and working.
	Make use of appropriate Linux commands for memory management, file management and directory management.
	Explain the various system admin commands for managing user and network configuration.
	Explore network management and connectivity
Software Engineering	Demonstrate competence in communication, planning, analysis, design, construction, and deployment by applying the software engineering lifecycle
	Work as an individual and as part of a multidisciplinary team to develop and deliver quality software
	Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle
	Demonstrate an ability to use the techniques and tools necessary for engineering practice
	Students will be able to choose appropriate process model depending on the user requirements.
	Acquire the knowledge on basic concepts of database administration

Database Administration	Use SQL for creating various database objects
	Develop programs to create tablesapce and change status of tablesapce
	Apply the knowledge of SQL for creating users and granting privillages
Advance Java Programming	Acquire the knowledge on basic concepts of multithreading programming
	Apply the various AWT classes and Swings components.
	Develop programs to handle events in Java Programming
Programmin in C++	Apply the knowledge Applet in java programming
	Describe the procedural and object oriented paradigm.
	Apply basic concepts of streams, classes,functions, data and objects.
Windows Programming with C#.NET	Demonstrate the concept of function overloading, operator overloading, static members, friend Functions etc
	Undrestand basic concepts of Programming Using C Sharp language
	Students will able to develop simple as well as complex applications using .Net framework
	Students will learn to use web applications for creating GUI based programs.
<b>SY M.Sc.Software Engineering</b>	
agement information sys	Make use how information system are changing organizational structure.
	Analyze that how it will be helpful in achiveing business competitive adavntage.
	EXAMINE the organization structure ,leadership role in information maganement system in acheving business goals.
	Analyze and synthsize business information and system to facilitate evaluation of strageic alternative.
	Make use how management information is leading role and advantage through informed decision making.
Software Testing Tools	Ability to describe modern software testing processes in relation to software development and project management.
	Ability to design test cases, prioritize and execute them.Ability to design test, create test strategies and plans.
	Ability to use a range of programming languages and tools to develop computer programs and systems that are effective solutions to problems.
	Utilize the techniques, skills and modern tools, for actual development process
Research Methodology	To understand the relevance, basic concepts of research
	Ability to understand and develop critical thinking abilities
	Ability to learn various research methods
	Ability to acquire the tools required for design and execute research projects
Client Server Technology	Gain Exposure on most common used servers.
	Understand the concept of client-server development
	Learn problem solving skillsthrough design scenarios for network environment.
Data Science	Accelerate business value with a scalable data science platform.
	Learn how to deploy models faster.
	Gain Knowledge of Data Driven Solutions.