

BSc-(CS)
Course Outcome

FYBSc (Computer Science)

Semester I

Computer Organization and Design	To learn about how computer systems work, underlying principles and the basics of digital electronics needed for computers. Also to understand the basics of instruction set architecture for reduced and complex instruction sets, the basics of processor structure and operation and how data is transferred between the processor and I/O devices.
Programming with Python- I	Students will be able to develop logic for Problem Solving. Students will become familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc. Students will be able to apply the problem

Free and Open-source Software	Upon completion of this course, students will have a good working knowledge of Open Source ecosystem, its use, impact and importance.2) This course shall help student to learn Open Source methodologies, case studies with real life examples.
Database Systems	Students will be able to evaluate business information problem and find the requirements of a problem in terms of data. Also Students will be able to design the database schema with the use of appropriate data types for storage of data in database. Students will also be able to create, manipulate, query and back up the databases..
Discrete Mathematics	To provide overview of theory of discrete objects, starting with relations and partially ordered sets. To study about recurrence relations, generating function and operations on them. To understand graphs and trees, which are widely used in software. Also to provide basic knowledge about models of automata theory and the corresponding formal languages.
Descriptive Statistics and Introduction to Probability	To enable learners to know descriptive statistical concepts and also to study probability concept required for Computer learners
Soft Skills Development	To know about various aspects of soft skills and learn ways to develop personality and also to understand the importance and type of communication in personal and professional environment. To provide insight into much needed technical and non-technical qualities in career planning and to learn about Leadership, team building, decision making and stress management

Semester II

Programming with C	Students will be able to write, compile and debug programs in C language and to use different data types in a computer program. Students will be able to design programs involving decision structures, loops and functions and to explain the difference between call by value and call by reference. Students will be able to understand the dynamics of memory by the use of pointers and will be able to use different data structures and create/update basic data files.
Programming with Python – II	Students will be able to understand how to read/write to files using python and to catch their own errors that happen during execution of programs. Students will get an introduction to the concept of pattern matching and the concepts of GUI controls and designing GUI applications. Students will be able to connect to the database to move the data to/from the application and know how to connect to computers read from URL and send email.
Linux	Upon completion of this course, students will have a good working knowledge of Linux, from both graphical and command line perspective, allowing them to easily use any Linux distribution. This course shall help student to learn advanced subjects in computer science practically and will be able to progress as a Developer or Linux System Administrator using the acquired skill set.
Data Structures	To learn about Data structures, its types and significance in computing, to explore about Abstract Data types and its implementation and to program various applications using different data structure in Python
Calculus	Understanding of Mathematical concepts like limit, continuity, derivative, integration of functions and to appreciate real world applications which uses these concepts. Also to formulate a problem through Mathematical modeling and simulation.

Statistical Methods and Testing of Hypothesis	Enable learners to know descriptive statistical concepts and to study probability concept required for Computer learners
Green Technologies	To learn about green IT can be achieved in and by hardware, software, network communication and datacenter operations and also to understand the strategies, frameworks, processes and management of green IT

SYBSC

Semester III

Theory of Computation	Understand Grammar and Languages, Learn about Automata theory and its application in Language Design, Learn about Turing Machines and Pushdown Automata, Understand Linear Bound Automata and its applications
Core Java	Object oriented programming concepts using Java. Knowledge of input, its processing and getting suitable output. Understand, design, implement and evaluate classes and applets. Knowledge and implementation of AWT package.
Operating System	: To provide a understanding of operating system, its structures and functioning, Develop and master understanding of algorithms used by operating systems for various purposes.
Outcome Database Management Systems	Master concepts of stored procedure and triggers and its use, Learn about using PL/SQL for data management, Understand concepts and implementations of transaction management and crash recovery
Combinatorics and Graph Theory	Appreciate beauty of combinatorics and how combinatorial problems naturally

	<p>arise in many settings. Understand the combinatorial features in real world situations and Computer Science applications. Apply combinatorial and graph theoretical concepts to understand Computer Science concepts and apply them to solve problems</p>
Physical Computing and IoT Programming	<p>Enable learners to understand System On Chip Architectures, Introduction and preparing Raspberry Pi with hardware and installation, Learn physical interfaces and electronics of Raspberry Pi and program them using practical's , Learn how to make consumer grade IoT safe and secure with proper use of protocols</p>
Web Programming	<p>To design valid, well-formed, scalable, and meaningful pages using emerging technologies, Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites To develop and implement client-side and server-side scripting language programs. To develop and implement Database Driven Websites. Design and apply XML to create a markup language for data and document centric applications.</p>

Semester IV

Fundamentals of Algorithms	<p>Understand the concepts of algorithms for designing good program, Implement algorithms using Python</p>
Advanced Java	<p>Understand the concepts related to Java Technology Explore and understand use of Java Server Programming</p>
Computer Networks	<p>Learner will be able to understand the concepts of networking, which are important for them to be known as a '<i>networking professionals</i>', Useful to proceed with industrial requirements and International vendor certifications</p>

Software Engineering	Learner will be able to understand the concepts of software engineering, which are important for them to be known as a ‘software engineers’, Useful to proceed with industrial requirements and International vendor certifications
Linear Algebra using Python	: Appreciate the relevance of linear algebra in the field of computer science. Understand the concepts through program implementation , Instill a computational thinking while learning linear algebra.
Net Technologies	: Understand the .NET framework ,Develop a proficiency in the C# programming language , Proficiently develop ASP.NET web applications using C#, Use ADO.NET for data persistence in a web application
Android Developer Fundamentals	<ol style="list-style-type: none"> 1) Understand the requirements of Mobile programming environment. 2) Learn about basic methods, tools and techniques for developing Apps 3) Explore and practice App development on Android Platform 4) Develop working prototypes of working systems for various uses in daily lives.

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Semester V

Artificial Intelligence	Student will understand concept of AI and different search algorithms used for solving problems
Software Testing and Quality Assurance	Student will Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. Design SQA activities, SQA strategy, formal technical review report for software quality control and assurance.
Information and Network Security	In this course student will able to Understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application. Understand various protocols for network security to protect against the threats in a network

Web Services	Student will understand the details of web services technologies like SOAP, WSDL, and UDDI. To learn how to design, implement and deploy web service client and server.
Game Programming	Student will study Graphics and gaming concepts with present working style of developers where everything remains on internet and they need to review it, understand it, be a part of community.

Semester VI

Cloud Computing	Student will study the comprehensive and in-depth knowledge of Cloud Computing concepts, technologies, architecture, implantations and applications.
Cyber Forensics	Student will Understand the procedures for identification, preservation, and extraction of electronic evidence, auditing and investigation of network and host system intrusions, analysis and documentation of information gathered
Information Retrieval	In this course student will be able to Understand the field of information retrieval and its relationship to search engines. It will give the learner an understanding to apply information retrieval models.
Data Science	The students should be able to understand & comprehend the problem and should be able to define suitable statistical method to be adopted.
Ethical Hacking	Student will be able to identify security vulnerabilities and weaknesses in the target applications. They will also know to test and exploit systems using various tools and understand the impact of hacking in real time machines.