# B. Sc. IT Learning Objectives & Learning Outcomes

**F.Y.B.Sc. (IT) (Sem I)**

| SN | LEARNING OBJECTIVES | LEARNING OUTCOMES |
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| **Imperative Programming** | | |
| 1. | To introduce different programming paradigms and develop logic for writing high level language programs. | Students would be able to understand the basic concept of programming constructs and Procedure Oriented Programming. |
| 2. | To familiarize the students with the basic understanding of flowcharts and algorithms | Students would develop basic understanding of flowcharts, the concept of algorithm and algorithmic thinking. |
| **Digital Electronics** | | |
| 1. | To make students learn different types of number systems. | Students would understand and examine the structure of various number systems and its application in digital design. |
| 2. | To make students acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits. | Students would develop the basic knowledge of digital logic and application of knowledge to understand digital electronics circuits. |
| 3. | To prepare students to perform the analysis and design of various digital electronic circuits. | Students would develop an ability to analyze and design various digital electronic circuits. |
| **Operating Systems** | | |
| 1. | To make students learn the fundamentals of Operating Systems. | Students would develop an ability to analyze the structure of OS and basic architectural components involved in OS design. |
| 2. | To make students learn the mechanisms of OS to handle processes and threads and their communication. | Students would develop an ability to compare the various algorithms used for management of memory, CPU scheduling, file handling and I/O operations. |
| 3. | To make students gain knowledge on distributed operating system concepts that includes architecture, mutual exclusion algorithms, deadlock detection algorithms and agreement protocols. | Students would understand the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system |
| **Discrete Mathematics** | | |
| 1. | To make students learn the basic principles of set, basic set equalities, the basic concepts of relations and functions and the basic concepts of graphs and trees. | Students would understand the basic principles of set, basic set equalities, the basic concepts of relations and functions. |
| 2. | To make students learn writing an argument using logical notation and determine if the argument is valid or invalid. | Students would be able to write an argument using logical notation and determine if the argument is valid or invalid. |
| 3. | To make students learn the basic concepts of | Students would be able to understand basic |

| | data structures in mathematics. | concepts of graphs and trees. |
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| **Communication Skills** | | |
| 1. | Acquaint students with the theoretical landscape of communication as it applies to individual employees in business | Students would understand process, nature and various domains of communication application. |
| 2. | To familiarize students with application of this theory for effective written, oral and interpersonal communication. | Students would familiarize with basic conventions and principles of effective written, oral and interpersonal communication. |
| **Imperative Programming Practical** | | |
| 1. | To make students develop algorithms and write C programs for the same | Students would develop the use of the C programming language to implement various algorithms, and develop the basic concepts and terminology of programming in general. |
| **Digital Electronics Practical** | | |
| 1. | To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits. | Students would analyze different types of digital electronic circuits using various logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods. |
| 2. | To prepare students to perform the analysis and design of various digital electronic circuits. | Students would understand, analyze and design various combinational and sequential circuits. |
| **Operating Systems Practical** | | |
| 1. | To make students learn different DOS and Linux commands using command line interface and shell. | Students would be able to execute different DOS and Linux commands using command line interface and shell. |
| 2. | To make students understand different utilities provided by Windows and Linux operating system. | Students would be able to understand different utilities provided by Windows and Linux operating system. |
| **Discrete Mathematics Practical** | | |
| 1. | To make students learn the main features of SCILAB program development environment. | Students would be able to understand the main features of SCILAB program development environment. |
| 2. | To make students learn to implement simple mathematical functions in SCILAB. | Students would be able to implement simple mathematical functions in SCILAB. |
| **Communication Skills Practical** | | |
| 1. | To make students learn contemporary communication practices. | Students would understand standard practices of formal written communication. |
| 2. | To enable students to gain confidence in communication | Students would be able to understand interpersonal and group communication through experiential activities. |

**F.Y.B.Sc. (IT) (Sem II)**

| SN | LEARNING OBJECTIVES | LEARNING OUTCOMES |
|---|---|---|
| Object oriented Programming | | |
| 1. | To enable students to understand object-oriented programming. | Students would be able to understand the basic concept of Object Oriented Programming. |
| 2. | To explain the difference between object-oriented programming and procedural programming. | Students would be able to understand the basics of computer programming. The problem solving approaches in different programming languages, variables, operators. |
| 3. | To teach the various types of statements and looping constructs. | Students would be able to understand the purpose of control statements: selection and looping statements. |
| Microprocessor Architecture | | |
| 1. | To enable the students to learn the concept of assembly languages and acquire knowledge about 8085 microprocessor. | Students will learn to apply the fundamentals of assembly language and acquire basic knowledge of microprocessors. |
| 2. | To educate the students about 8085 architecture and instruction set. | Students would be able to understand the history and architecture of microprocessors and 8085 instruction set. |
| Web Programming | | |
| 1. | To make the students learn web history, website organization, HTML, graphics use, page and site design, with a brief look at CSS, and JavaScript. | Students would be able to learn standard compliant CSS and JavaScript to present HTML5 pages. |
| 2. | To enable students learn the basic and advanced PHP programming with Database connectivity using MYSQL. | Students would be able to understand the basic and advanced PHP programming with Database connectivity using MYSQL. |
| Numerical and Statistical Methods | | |
| 1. | To make the students analyze the errors obtained in the numerical solution of problems. | Students will be able to analyze the errors obtained in the numerical solution of problems. |
| 2. | To help students to learn the use of appropriate numerical method to determine approximate solution of algebraic and transcendental equations, system of linear equations, ordinary differential equation and integration. | Students will be able to use appropriate numerical method to determine approximate solution of, algebraic and transcendental equations, system of linear equation, ordinary differential equation and integration. |
| 3. | To make students learn modelling and solving linear programming problems. | Students will be able to model and solve linear programming problems. |
| 4. | To make students learn an illustration and | Students will be able to illustrate and |

| | | formulation of probability distribution and density functions. | formulate probability distribution and density functions. |
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| | **Green Computing** | | |
| 1. | To make students understand and develop special skills such as energy efficiency, ethical IT assets disposal, carbon footprint estimation, reporting and development of green products, applications and services. | Students will be able to understand the concept of green IT and relate it to sustainable development and apply the green computing practices to save energy and develop special skills such as energy efficiency, ethical IT assets disposal, carbon footprint estimation, reporting and development of green products, applications and services. | |
| 2. | To educate students about appropriate hardware and software for feasible operations. | Students will learn how the choice of hardware and software can help a more feasible operation. | |
| | **Object Oriented Programming Practical** | | |
| 1. | To enable students to program using C++ features such as operator overloading, inheritance, polymorphism, file I/O, exception handling, etc. | Students will learn to develop an application using C++, design and implement object oriented (OO) programs to solve problems. | |
| 2. | To enable students to build C++ classes using appropriate encapsulation and design principles. | Students will be able to analyze polymorphic behavior of objects and virtual base class. | |
| 3. | Ultimate goal is to make students a good programmer. | Students will be able to specify the types of inheritance and use them in programs. | |
| | **Microprocessor Architecture Practical** | | |
| 1. | To develop assembly programs using 8085 microprocessors. | Students will learn to build a program on a microprocessor using instruction set of 8085. | |
| | **Web Programming Practical** | | |
| 1. | To teach how to design websites and webpages using HTML, CSS, JavaScript and PHP. | Students will be able to design dynamic websites that meet specified needs and interests HTML5, CSS, JavaScript and PHP. | |
| 2. | To be able to build dynamic webpages with back end connectivity using PHP and MYSQL. | Students will be able to build dynamic webpages or websites using PHP programming & Database connectivity (MYSQL). | |
| | **Numerical and Statistical Methods Practical** | | |
| 1. | Students will be taught to write programs for various numerical methods. | Students will be able to write programs for various numerical methods. | |
| | **Green Computing Practical** | | |
| 1. | To create awareness about how different countries in world dispose e-waste and implement Green Computing practices. | Students will be able to learn how different countries in world dispose e-waste and implement Green Computing practices. | |
| 2. | To make them aware about e-waste disposal in surroundings. | Students will have awareness about e-waste disposal in surroundings. | |