



## **Sub Committee for Curriculum Development**

### **Computer Studies**

**Institute:** Symbiosis School for Liberal Arts

**Course Name:** Computer Studies (Major/Minor)

**Introduction:**

Symbiosis School for Liberal Arts offers Computer Studies both as a major and a minor subject that can be taken up by students during their time here. The Computer Studies major course comprises of a total of ten papers while the Computer studies minor course consists of the first six of the ten major papers.

These are:

1. Introduction to Computers
2. Computer Systems and Networks
3. Databases
4. Computer Languages – I
5. The Internet and Web Technology
6. Multimedia Applications
7. Software Engineering
8. Business Intelligence and Analytics
9. Computer Languages – II
10. Technology for Management

**Name of Institute:** Symbiosis School for Liberal Arts

**Course Name:** Computer Science Major/ Minor Paper 1 - Introduction to computers

**(UG/PG):** UG, Semester 3

**Number of Credits:** 4 (60 Hours)

**Level:** 2

### **Introduction**

In a world where in nearly every field of work involves the use of computers, learning about computer technology is no longer an option, but a necessity. Basic awareness is no longer an advantage, and thus, a thorough know-how of subjects is favoured.

This paper covers the fundamentals of computers and the types of computers which have evolved over the decades, covering all categories, including new inventions. It covers the manner in which a computer works, the peripherals, and the basic numbering system which computers are based on. This course gives students an introductory insight into the programming techniques to be used such as Windows and other Operating Systems. The units also cover word processing, spreadsheet working and the concept of databases.

The aim of this paper is to give the students the basic knowledge needed to begin with programming. They should be able to be comfortable with typing, processing and calculating using spreadsheets and databases.

**Name of Institute:** Symbiosis School for Liberal Arts

**Course Name:** Computer Science Major/ Minor Paper 2 - Computer Systems and Networks

**(UG/PG):** UG, Semester 4

**Number of Credits:** 4 (60 Hours)

**Level:** 2

### **Introduction**

The paper covers the elements, evolution and history of networking. These concepts give an insight to the detailed working of networks and telecommunication, its design and its architecture along with the evolution of the same. The paper also covers the different types of software which are being used, along with their applications.

The later sections of this paper deal with networks, layers along with network switching and routing. This helps the students get an insight into how the data transfer takes place on the network, whether on a small scale or on a global scale. The paper also explains the concept of database management and simple queries through Structured Query Language which can be used to retrieve information in many methods.

**Name of Institute:** Symbiosis School for Liberal Arts

**Course Name:** Computer Science Major/ Minor Paper 3 - Databases

**(UG/PG):** UG, Semester 5

**Number of Credits:** 4 (60 Hours)

**Level:** 3

**Introduction:**

This paper covers the creation, formation and format of files that will be used as databases. It covers the organization of files, the manner in which data can be accessed from the database.

The course not only introduces but also expands upon the concepts of databases, the data models and the relationship between tables. This will enable the students to have clarity in their understanding of the terms, history and structure of the same.

The later section of this paper explains the queries and normalization methods for databases used during system and program designing.

**Name of Institute:** Symbiosis School for Liberal Arts

**Course Name:** Computer Science Major/ Minor Paper 4 - Computer Languages 1

**(UG/PG):** UG, Semester 6

**Number of Credits:** 4 (60 Hours)

**Level:** 3

**Introduction:**

‘C’ language has facilities for structured programming and is considered the mother of all computer languages. Students will learn the basics of programming while learning the ‘C’ language, the data that can be used and the control statements which will polish their logical thinking. Thus, this paper will cover all the intricacies of ‘C’ language and programming including arrays, pointers and file handling.

The aim of this paper is to prepare the students to equip themselves for OOPS programming in the future.

**Name of Institute:** Symbiosis School for Liberal Arts

**Course Name:** Computer Science Major/ Minor Paper 5 - Internet and Web Technology

**(UG/PG):** UG, Semester 7

**Number of Credits:** 4 (60 Hours)

**Level:** 3

**Introduction:**

Internet and web page designing is a major section of the IT industry today. This paper is intended to give an insight into the concepts of web sites, domain names and internet terms.

This paper also provides an introduction not only to HTML, CSS, JavaScript but also VB Script and XML along with ASP.

This paper is designed to make students adept at creating their own web pages.

**Name of the Institute:** Symbiosis School for Liberal Arts

**Course Name:** Computer Science Major/ Minor Paper 6 - Multimedia Applications

**(UG/PG):** UG, Semester 8

**Number of Credits:** 4 (60 Hours)

**Level:** 4

**Introduction:**

The use of multimedia is predominant in most applications today. This paper on multimedia includes a combination of text, audio, still images, animation, video, and interactivity content forms. This paper further expands upon concepts of synchronization, storage models and access techniques.

Architecture of image representation, content management, graphic storage and multimedia application, which is needed by students to get a greater understanding of graphics and multimedia, is also provided in this course.

**Name of the Institute:** Symbiosis School for Liberal Arts

**Course Name:** Computer Science Major Paper 7 - Software Engineering

**(UG/PG):** UG Semester 5

**Number of Credits:** 4 (60 Hours)

**Level:** 3

**Introduction:**

The computer programming world revolves around the manner in which the entire system is designed. This paper expands upon this idea to teach the approach towards the designing of systems and its supplementary programs. The paper is designed to provide students familiarity with open source tools and software that play an integral part in the software development life cycle. It involves requirement analysis and designing of software, along with the coding and testing at programming and system levels. The aim of this paper is to impart the knowledge of the entire life cycle of the system.



**Name of the Institute:** Symbiosis School for Liberal Arts

**Course Name:** Computer Science Major Paper 8 – Computer Languages 1 Business Intelligence and Analytics

**(UG/PG):** UG, Semester 6

**Number of Credits:** 4 (60 Hours)

**Level:** 4

**Introduction:**

This paper is designed to provide a conceptual understanding of Data Preprocessing, Data Warehousing, Clustering and Data Mining. Students will learn about the computational process of discovering patterns in large data sets. Students are taught with the help of algorithms that are explained with detailed case studies, which will help provide a real life experience in implementing Business Intelligence Projects.

**Name of the Institute:** Symbiosis School for Liberal Arts

**Course Name:** Computer Science Major Paper 9 - Computer Languages II

**(UG/PG):** UG, Semester 7

**Number of Credits:** 4 (60 Hours)

**Level:** 4

**Introduction:**

C++ is the base language required for further learning Object Oriented Language. In order to do any coding whether in networking or websites, C++ is required. Students prepare themselves for complex programming where data is structured into classes. Students have to learn about various features of C++, such as friend functions, overloading, polymorphism, and inheritance. This paper also provides conceptual and practical knowledge of terms such as Classes and Object, Constructor and Destructor, etc.

**Name of the Institute:** Symbiosis School for Liberal Arts

**Course Name:** Computer Science Major Paper 10 - Technology for Management

**(UG/PG):** UG, Semester 8

**Number of Credits:** 4 (60 Hours)

**Level:** 4

**Introduction:**

This course is integrative and interdisciplinary in nature and brings together elements of strategy, marketing and operations management. The course will focus not on the technology itself but on the use of technology in the field of management. This paper also covers key concepts, such as IT enabled process innovation and enterprise integration, IT enabled business intelligence and analytics, along with the ethical, privacy and security-related issues.