Computer Science

Code No. 330

Introduction

Computer has become indispensable in today's life. Computer Science is an exciting, challenging field that has impact in most aspects of today's life. Most important aspect of computer science is problem solving skills and analytical skills which learner will develop by studying computer science subject. These skills are mandatory for anyone who is searching a job. Moreover, Computing jobs are the highest paid jobs. Keeping in view of the above Computer Science course has been designed.

The syllabus of Computer Science for Senior Secondary course developed by NIOS to provide knowledge and understanding of basic components of computer and their working, uses of Internet, C++ programming and problem solving skills.

Rationale

In recent years there has been a spur in the use of computers in India, from simple word processing to sophisticated scientific applications. Along with this there is a tremendous demand for computer education. In order to cater to this need and to provide quality education at reasonable price this course has been designed.

Objectives

After completing this course, the learner will be able to:

- identify the basic components of computer and their working;
- use of operating system;
- list the types of computer network;
- use of various services provided by internet;
- practice basics of Java programming language;
- use of C++ programming;
- state basic concepts of OOP;
- use of control statements in C++ programming;
- define library and user defined functions in C++ programming;
- use of one dimensional and two dimensional array;
- select members of the class;
- explain the concept of inheritance;
- use pointers in arrays; and
- use of files in C++ programming.

Scope and job opportunity

Information technology professionals plan, coordinate and implement computer and information systems within an organization. Typically, they work with other managers within the company to determine the computer-related needs of an organization in relation to computer systems, software, servers, computer networking or network security. Information technology (IT) professionals go on to a variety of careers as IT managers, IT project managers, IT directors and, at the highest levels of business, chief technology officers or chief information officers. Job opportunities for computer information systems managers are keep on increasing. IT professionals, particularly those with specialized technical skills and business management backgrounds, will have the best opportunities for advancement in the field.

Nowadays every organisation is computerised. Government is also promoting digital literacy. So each person should have the basic knowledge of the computer whether he/ she is working in office / banking or teaching in a school or doing e-commerce business or designing a website or developing mobile app. Comptuer Science course will help the learners to face the present and future world.

Eligibility conditions

Age:15 Years

Qualification: 10th pass

Medium of instruction: English

Duration of the course: 1 Year

Weightage

Theory: 60 Marks

Practical: 40 Marks

Tutor Marked Assignment (TMA): 20% Marks of theory

Scheme of studies: Theory (144 hours), practical (96 hours), TMA (self paced)

Scheme of evaluation: Theory paper 60 marks (3 hours), practical 40 marks (3 hours), internal assessment (TMA) (20% of theory marks)

Pass criteria: 33% in each component

Course content

S. No.	Modules	Duration (in hours)	Module Approach/ Description	Description of practicals	Weightage (marks)
1.	**Module-I** **Computer Fundamentals** 1. Anatomy of a Digital Computer 2. Data Processing Concept 3. Computer Software 4. Operating System 5. Data Communication and Networking 6. Fundamentals of Internet and Java Programming	54 (32 + 22)	This module explains about digital computer, data processing concept, computer software, data communication & networking and fundamentals of Internet and Java.		15
2.	**Module-II** **C++** 7. Introduction to C++ 8. General Concept of OOP 9. Control Statements 10. Functions 11. Array 12. Structure, Typedef & enumerated	186 (112+74)	This module explains about C++ programming concepts.	1. Write a program to input the values of Principle, Rate, and Time and calculate Simple Interest. 2. Write a program to input the unit price of an item and the quantity of item to be bought. Then calculate the total price. 3. Write a program to covert temperature from Fahrenheit to	85

data type 13. Classes & objects with constructors / destructors 14. Inheritance extending classes 15. Pointer 16. Files				Celsius. 4. Write a program to input two numbers and swap them using third variable or swap them without using third variable. 5. Write a program to input a character and check whether it is an alphabet, or digit, or some other character. 6. Write a program to input an year (e.g., 1994) and check whether it is a leap year. 7. Write a program to input a character. If the character is a lowercase alphabet then display the corresponding upper case alphabet and vice-versa. If the character is not an alphabet then display the character as it is. 8. Write a program to input 10 numbers and find their sum and average. 9. Write a program to input a number. If the number is negative, then again input the number.

| | | | | | Keep on doing so until the user enters a non-negative number.

10. An Armstrong number is a number the sum of the cubes of whose digits is equal to the number itself. An example of an Armstrong number is 153 ($1^3+5^3+3^3$ = 153). Write a program to input a number and find whether it is an Armstrong number.

11. Write a program to input a number n and display factorials of all the numbers from 1 to n using loop.

12. Write a program to input a string and then display this string in reverse order.

13. Write a program that reads a list of numbers from the user and places them in an array of type float. Once the numbers are stored in the array, the program should find their average and print it along with the list of numbers. Use pointer notation | |

				wherever possible.	
				14. Write a menu driven program in C++ to perform the following functions on a binary file "BOOK.DAT" containing objects of the following class:	

class Book
{int BookNo;
char Book_name[20];
public:
// function to enter book details
void enterdetails();
//function to display Book details
void showdetails();
//function to return Book_no int Rbook_no() {return Book_no;}
//function to return Book_name
int Rbook_name() {return Book_name;}
};
i.   Append Records
ii. Modify a record for a given book no.
iii. Delete a record with a given book no.
iv. Search for a record with a given Book name
v. Display a sorted list of records (sort on Book No.)