

SCHOOL OF ENGINEERING

SWARNIM STARTUP & INNOVATION UNIVERSITY

Course	Bachelor of Engineering.
Duration	4 Years.
Aim	The aim of the computer Engineering Department is to prepare students for graduate training in some specialized area of computer science, to prepare students for jobs in industry, business or government, and to provide support courses for students in engineering, and learn new technologies which are growing in the market as well as knowledge of Software Development.
Objective	Information systems have largely met the initial objective of automating manual activities. The success in doing so led managers to ask what else computer systems could do to improve record keeping and decision making. Not surprisingly, newer objectives have emerged and now dominate system design. Those objectives result from the relationship between user needs and technological progress. Users identify new needs, and system designers meet those needs. New technology appears, and users find ways to capitalize on it.
Course Outcome	At the end of the program, the student will be able to, <ul style="list-style-type: none">• Be able to apply knowledge of computing and mathematics appropriate to the discipline.• Be able to analyze a problem, and identify and define the computing requirements appropriate to its solution.• Be able to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

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SCHOOL OF ENGINEERING

DEPARTMENT OF CE/EC/EE/EEE/IT/MECH/AUTO/CL/CHEM FUNDAMENTALS OF COMPUTER PROGRAMMING

CODE: _____

B.E. 1st Year

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	P	Total		Internal		External		Total
					Th	Pr	Th	Pr	
2	-	2	4	4	30	50	70	-	150

Objectives:- The course fully covers the basics of programming in the “C” programming language and demonstrates fundamental programming techniques, customs and vocabulary including the most common library functions and the usage of the preprocessor.

Prerequisites:- To familiarize the trainee with basic concepts of computer programming and developer tools. To present the syntax and semantics of the “C” language as well as data types offered by the language. To allow the trainee to write their own programs using standard language infrastructure regardless of the hardware or software platform

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction: Basic block diagram and functions of various components of a computer, concept of hardware and software, compiler and interpreter, concepts of machine level, assembly level and high level programming, developing logic of program through flowcharts, algorithms, and pseudocode	5

2	Fundamentals: Features of 'C' language, structure of 'C' program, Basic data types, constants and variables, basic operators and their hierarchy, evaluation of expressions, writing simple programs using 'C', concept of header files, basic I/O functions	5
3	Control Structure Of 'c': if – else statement and its use in programming, variations in usage of if – else statement, switch, break, continue and goto statements, applications and implementation of various looping structures (i.e. for, while, do - while)	6
4	Arrays and Strings: One dimensional and multidimensional arrays and implementation of these concepts in 'C', strings and related functions	6
5	Functions and Recursion: Concepts of functions with various types of parameters, various types of parameter passing mechanisms, recursive functions and implementation of these concepts in 'C', macros and pre-processors	6
6	Pointers and Structures: Concepts of pointers and simple programs using pointers in 'C', applications of pointers, pointer and array, dynamic memory allocation: malloc and calloc, concepts of structure and its implementations. structure as argument to functions, structures and pointers, union and its applications	7
7	File Management in C: Introduction, opening, closing, and input / output operations on files, error handling during I/O operations, random access of files, command line arguments	5

Learning Outcomes:-

- * Apply fundamental principles of problem solving in software engineering.
- * Apply basic programming principles using C language.
- * Apply basic C program structure in software development
- * Prepare graduates for professional careers in roles including, but not limited to, the following: computer programmer, software engineer, software systems designer, software applications developer, technical software project lead, computer systems analyst, computer systems programmer, software applications tester and maintainer.
- * To prepare graduates with the knowledge and skills to do advanced studies and research in computer science and related engineering and scientific disciplines
- * To equip graduates with the communication skills, both oral and written, to become an effective team-oriented problem solver as well as an effective communicator with nontechnical stakeholders in computer and software systems development, maintenance and administration.

Teaching & Learning Methodology:-

The challenge that teaching and learning computer programming presents, has encouraged the design and implementation of various new and innovative computer programming teaching methods. The presented methods aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in assignments provided within a course, but also in further exploration of the programming challenges outside the assignments' boundaries.

- A good understanding of ANSI-C and microcontroller architectures.

Books Recommended:-

1. Programming in ANSI C by Balaguruswamy
2. C Programming: Test Your Skills, 1/e by Ashok Kamthane
3. Programming in C Ansi standard, by Yashwant Kanetkar
4. Programming with C, Gottfried, McGraw-Hill
5. Programming With Ansi And Turbo C book : Ashok Kamthane ...

E-Resources:-

1. http://wikieducator.org/Computers_in_Education
2. https://books.google.co.in/books?id=X1rei66Qri8C&pg=PA196&lpg=PA196&dq=elearning+resources+of+cPU&source=bl&ots=ruoxPyzEQ1&sig=FNct5t_IPJRK46PdmaV8zqgXoK0&hl=en&sa=X&ved=0ahUKEwiqwvXrhrjUAhULKY8KHdTTCQQ6AEIOjAD#v=onepage&q=e-learning%20resources%20of%20cPU&f=false

Practical List:-

Sr. No.	Practical
1	<ol style="list-style-type: none">1. Write a Program to print "HELLO".2. Write a program to display multiplication table.3. Write a program to print $1+1/2+1/3+1/4+\dots+1/N$ series.4. Write a program to find sum of all integers greater than 100 & less than 200 and are divisible by 5.5. The distance between two cities (In KM) is input through key board. Write a program to convert and print this distance in meters, feet, inches & centimeters.6. Program to Convert the given Binary Number into Decimal7. Program to Convert a Decimal Number to Binary & Count the Number of 1s
2	<ol style="list-style-type: none">1. Write a program for use of putchar() and getchar() function.2. Write a program to print following patterns.

	<pre> * * * * * * * * * * </pre>	<pre> 1 2 3 4 5 2 3 4 5 3 4 5 4 5 5 </pre>	
	<pre> AAAAA BBBBB CCCCC DDDDD EEEEEE </pre>	<pre> 1 0 1 1 0 1 0 1 0 1 </pre>	
3	<ol style="list-style-type: none"> 1. Program to find Sum of Digits of a Number using Recursion 2. Program to find Reverse of a Number using Recursion 3. Program to find Sum of N Numbers using Recursion 4. Program to find whether a Number is Prime or Not using Recursion 5. Program to Print Binary Equivalent of an Integer using Recursion 		
4	<ol style="list-style-type: none"> 1. Write a program to count total words in text. 2. Write a program to understand the use of String functions. 3. Write a program convert character into TOggLe character. 4. Find given string is palingrom or not using string library function. 		
5	<ol style="list-style-type: none"> 1. Write a function program to add first N numbers. 2. Write a function find out maximum out of three numbers. 3. Write a function power that computes x raised to the power y for integer x and y and returns double type value. 4. Write a program to find factorial of a number using recursion. 5. Write a program that used user defined function Swap () and interchange the value of two variable. 		
6	<ol style="list-style-type: none"> 1. Program to Illustrate how User Authentication is Done 2. Program to Display the IP Address of the System 3. Program to Shutdown or Turn Off the Computer in Linux 4. Program to Find if a given Year is a Leap Year 		

7	<ol style="list-style-type: none">1. Define a structure type, personal, that would contain person name, date of joining and salary. Using this structure, write a program to read this information for one person from the key board and print the same on the screen.2. Define a structure called cricket that will describe the following information: a. Player name b. Team name c. Batting average3. Write a function to enter rollno, marks of the three subject for 3 student and find total obtained by each student
8	<ol style="list-style-type: none">1. Write a program using pointer and function to determine the length of string.2. Write a program using pointer to compare two strings.3. Write a program using pointer to concate two strings.
9	<ol style="list-style-type: none">1. Write a program that uses a table of integers whose size will be specified interactively at run time.2. Write a program to store a character string in block of memory space created by malloc and then modify the same to store a large string.3. Program to Illustrate the Concept of Unions
10	<ol style="list-style-type: none">1. A program to illustrate reading files contents.2. A program to illustrate the use of fgets().3. A program to illustrate the use of fputc () and fputs().