# SIDDAGANGA INSTITUTE OF TECHNOLOGY, TUMAKURU
## LECTURE PLAN FOR THE ACADEMIC YEAR 2023 – 2024

| | | | |
|---|---|---|---|
| **Faculty** | Mrs. Vidhya Shree N S | **Dept.** | Information Science and Engineering |
| **Class** | 1st SEM (E SEC) | **Course** | Principles of Programming Using C (ESCF6) |

**Course Objectives**

**The objectives of this course are:**

**Course objectives:**

This course will enable students to:

1. Elucidate the basic architecture and functionalities of a computer
2. Apply programming constructs of C language to solve the real-worldproblems.
3. Explore user-defined data structures like arrays, structures and pointers inimplementing solutions to problems
4. Design and Develop Solutions to problems using structured programmingconstructs such as functions and procedures

| Sl. No | Date | Topics | Remarks |
|---|---|---|---|
| | | **UNIT 1**<br>**Introduction to C** | |
| 1. | 3/10/2023 | **Introduction to C:** Introduction to computers, input and output devices, designing efficient programs. | |
| 2. | 4/10/2023 | Introduction to C, Structure of C program, Files used in a C program | |
| 3. | 10/10/2023 | Compilers, Compiling and executing C programs | |
| 4. | 11/10/2023 | Variables, Constants | |
| 5. | 17/10/2023 | Input/output statements in C | |
| 6. | 17/10/2023 | Example programs | |
| | | **UNIT 2**<br>**Decision control and Looping statements:** | |
| 7. | 18/10/2023 | Operators in C, Type conversion and typecasting. | |
| 8. | 25/10/2023 | Decision control and looping statements: Introduction to decision control, | |
| 9. | 25/10/2023 | Conditional branching, Sample Programs | |
| 10. | 31/10/2023 | break and continue statements | |
| 11. | 7/11/2023 | goto statement. | |
| 12. | 8/11/2023 | iterative statements, nested loops | |
| | | **UNIT 3**<br>**Functions** | |
| 13. | 15/11/2023 | Functions: Introduction using functions, Function definition, function declaration, function call, returnstatement, passing parameters to functions, | |

| | | | |
|---|---|---|---|
| 14. | 15/11/2023 | Scope of variables, storage classes, recursive functions. | |
| 15. | 21/11/2023 | Arrays: Declaration of arrays, accessing the elements of an array, storing values in arrays, | |
| 16. | 21/11/2023 | Operations on arrays, Passing arrays to functions, | |
| 17. | 22/11/2023 | Two dimensional arrays, operations on two-dimensional arrays, two- dimensional arrays to functions, | |
| 18. | 28/11/2023 | Multidimensional arrays, | |
| 19. | 29/11/2023 | Applications of arrays. | |
| | | **UNIT 4** **Strings and Pointers** | |
| 20. | 5/12/2023 | Introduction, string taxonomy, operations on strings, Miscellaneous string and character functions, | |
| 21. | 6/12/2023 | Arrays of strings. | |
| 22. | 12/12/2023 | Pointers: Introduction to pointers, | |
| 23. | 12/12/2023 | Declaring pointer variables, | |
| 24. | 13/12/2023 | Types of pointers | |
| 25. | 19/12/2023 | Passing arguments to functions using pointers | |
| | | **UNIT 5** **Structure, Union, and Enumerated Data Type** | |
| 26. | 20/12/2023 | Structure, Union, and Enumerated Data Type: Introduction | |
| 27. | 26/12/2023 | structures and functions, | |
| 28. | 27/12/2023 | Unions, unions inside structures, | |
| 29. | 27/12/2023 | Enumerated data type. | |
| 30. | 9/1/2024 | Files: Introduction to files, using files in C, | |
| 31. | 10/1/2024 | Reading and writing data files. Detecting end of file | |

**TEXTBOOKS:**

| | |
|---|---|
| 1 | Computer fundamentals and programming in c, **Reema Thareja**, Oxford University, Second edition, 2017. |

**REFERENCES:**

| | |
|---|---|
| 1 | E. Balaguruswamy, Programming in ANSI C, 7th Edition, Tata McGraw-Hill. |
| 2 | Brian W. Kernighan and Dennis M. Ritchie, The 'C' Programming Language, Prentice Hall of India. |

**Course Outcomes:**

**Upon completion of this course the student will be able to:**

| | |
|---|---|
| **CO1** | Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts. |
| **CO2** | Apply programming constructs of C language to solve the real-world problem. |
| **CO3** | Explore user-defined data structures like arrays in implementing solutions to |

| | |
|---|---|
| | problems like searching and sorting. |
| CO4 | Explore user-defined data structures like structures, unions and pointers in implementing solutions. |
| CO5 | Design and Develop Solutions to problems using modular programming constructs Using functions. |

**Mapping of Course Outcomes (COs) to Program Outcomes (POs) & Program Specific Outcomes (PSOs)**

| | | POs | | | | | | | | | | | | PSOs | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 |
| COs | CO1 | 3 | | 3 | | | | | | | | | | 3 | | |
| | CO2 | | 3 | 3 | | 2 | | | | 2 | 2 | | | 3 | | |
| | CO3 | | | 3 | | | | | | | | | | 3 | | |
| | CO4 | | | 3 | | | | | | | | | | 3 | | |
| | CO5 | | | 3 | | | | | | | | | | 3 | | |

| Assessment Tools | COs | | | | |
|---|---|---|---|---|---|
| | CO1 | CO2 | CO3 | CO4 | CO5 |
| **Direct AT** | | | | | |
| CIE (Individual) | ✓ | ✓ | ✓ | ✓ | ✓ |
| SEE (Individual) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Assignments (Individual/Group) | -- | ✓ | ✓ | ✓ | ✓ |
| Micro Projects (Group) | -- | -- | -- | -- | -- |
| Topic seminar (Individual) | -- | -- | -- | -- | -- |
| Case studies (Individual/Group) | -- | ✓ | -- | -- | -- |
| Online courses (Individual) | -- | -- | -- | -- | -- |
| **Indirect AT** | | | | | |
| Course end survey (Students) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Student profile (Faculty) | -- | -- | -- | -- | -- |

**Course delivery methods, assessment tools and sample questions:**

| | |
|---|---|
| CO1 | Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts. |
| Delivery Methods | Black board Teaching, PowerPoint Presentation, |
| Assessment Tools | CIE- Test 1, SEE |
| Sample Questions | 1. Given the values of 3 numbers a,b,c. Write a program to compute and display value of x, x=a/(b-c).<br>2. Discuss briefly the characteristics of a computer. |

| | |
|---|---|
| | 3. Explain the basic organization of a computer along with the interactions between different units of a computer.<br>4. Write a program to take two numbers as input and perform arithmetic operations on them. |

| | |
|---|---|
| **CO2** | Apply programming constructs of C language to solve the real-world problem. |
| **Delivery Methods** | Black Board Teaching, Group Activity, Power point Presentation. |
| **Assessment Tools** | CIE-Test 1, SEE, Assignment. |
| **Sample Questions** | 1. Ramesh's basic salary is input through the input keyboard. His dearness allowance is 40% of basic salary and house allowance is 20% of basic salary. Calculate his gross salary.<br>2. Write a program to take temperature in Celsius and Fahrenheit as inputs and convert Celsius to Fahrenheit and Fahrenheit to Celsius.<br>3. Write a program that prints the even numbers between 1 and 100.<br>4. Calculate the simple interest for a given principle, time and rate of interest. Also calculate the total amount obtained after the maturing period. |

| | |
|---|---|
| **CO3** | Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting |
| **Delivery Methods** | Black Board Teaching, Power point Presentation |
| **Assessment Tools** | CIE: Test 2, SEE, Assignment |
| **Sample Questions** | 1.Write a program to check whether the given string is a Palindrome or not.<br>2. A class of n students take annual exam in m subjects. Write a program to read the marks obtained by each student in various subjects and to compute and print the total marks obtained by each of them.<br>3. Write a program to implement the binary search.<br>4. write a program to implement the bubble sort. |

| | |
|---|---|
| **CO4** | Explore user-defined data structures like structures, unions and pointers in implementing solutions |
| **Delivery Methods** | Black Board Teaching, Power point Presentation |
| **Assessment Tools** | CIE: Test 2, SEE, Assignment |
| **Sample Questions** | 1. What is a pointer? List any 3 benefits of pointers in programming. Also, mention any 3 rules to be followed when performing operations on pointer variables. |

| | |
|---|---|
| | 2. Write a program to read two strings S1 and S2 and compare whether they're equal or not. If they are not equal, join them together, then copy the contents of S1 to the variable S3. At the end the program should print the contents of all the three variables and their lengths.<br>3. What is a structure? Write the different ways of initializing structure members. Define a structure using following information: Student Name, Branch, USN, and Marks. Write a program to read and print the average marks of the students' using structures. Print students' marks scored along with other details of all N students. |

| | |
|---|---|
| **CO5** | Design and Develop Solutions to problems using modular programming constructs Using functions |
| **Delivery Methods** | Black Board Teaching, Power point Presentation |
| **Assessment Tools** | CIE: Test 3, SEE, Assignment |
| **Sample Questions** | 1. Define functions, explain function definition, function call and function declaration with syntax.<br>2. Define a string. How a string can be initialized during compile time?<br>3. Describe the following string handling functions along with the general syntax:<br>i) strcmp ()<br>ii) strcat ()<br>4. Write a program to copy the contents of one to another file. |

26/9/23
**Faculty**

30/9/2023
**HoD**

20/09/2023
**Principal**

PRINCIPAL
Siddaganga Institute of Technology
TUMKUR - 572 103.

# SIDDAGANGA INSTITUTE OF TECHNOLOGY, TUMAKURU
## LECTURE PLAN FOR THE ACADEMIC YEAR 2023 – 2024

| Faculty | Dr. Nagaratna B. Chittaragi | Dept. | Information Science and Engineering |
|---|---|---|---|
| Class | 1st | Course | Principles of Programming Using C (ESCF6) |

**Course Objectives**

**The objectives of this course are:**

**Course objectives:**

This course will enable students to:

1. Elucidate the basic architecture and functionalities of a Computer.
2. Apply programming constructs of C language to solve the real-worldproblems.
3. Explore user-defined data structures like arrays, structures and pointers inimplementing solutions to problems.
4. Design and Develop Solutions to problems using structured programming constructs such as functions and procedures

| Sl. No | Date | Topics | Remarks |
|---|---|---|---|
| | | **UNIT 1**<br>**Introduction to C** | |
| 1. | 29/09/2023 | **Introduction to C:** Introduction to computers, input and output devices, designing efficientp rograms. | |
| 2. | 05/10/2023 | Introduction to C, Structure of C program, Files used in a C program | |
| 3. | 09/10/2023 | Compilers, Compiling and executing C programs | Assignment-1 |
| 4. | 12/10/2023 | Variables, Constants | |
| 5. | 16/10/2023 | Input/output statements in C, Example programs | |
| | | **UNIT 2**<br>**Decision control and Looping statements:** | |
| 6. | 19-10-2023 | Operators in C, Type conversion and typecasting. | |
| 7. | 26-10-2023 | Decision control and looping statements: Introduction to decision control, Conditional branching, Sample Programs | |
| 8. | 30-10-2023 | Break and Continue statements | |
| 9. | 02-11-2023 | Statements, goto statement. | |
| 10. | 06-11-2023 | Iterative statements and nested loops | |
| | | **UNIT 3**<br>**Functions** | |
| 11. | 09-11-2023 | Functions: Introduction using functions, Function definition, function declaration, | |
| 12. | 13-11-2023 | Function call, returnstatement, passing parameters to functions,. | Assignment-2 |
| 13. | 16-11-2023 | Scope of variables, storage classes, recursive functions. | |
| 14. | 20-11-2023 | Arrays: Declaration of arrays, accessing the elements of an array, | |

| | | | |
|---|---|---|---|
| 15. | 23-11-2023 | Storing values in arrays, Example programs | |
| 16. | 27-11-2023 | Operations on arrays, Passing arrays to functions, | |
| 17. | 04-12-2023 | Two dimensional arrays, operations on two-dimensional arrays, two- dimensional arrays to functions, | |
| 18. | 07-12-2023 | Multidimensional arrays, applications of arrays | |
| | | **UNIT 4**<br>**Strings and Pointers** | |
| 19. | 11-12-2023 | Introduction, string taxonomy, operations on strings, | |
| 20. | 14-12-2023 | Miscellaneous string and character functions, | |
| 21. | 18-12-2023 | Arrays of strings. Pointers: Introduction to pointers | Assignment-3 |
| 22. | 21-12-2023 | declaring pointer variables, Types of pointers | |
| 23. | 28-12-2023 | Passing arguments to functions using pointers, Example programs using strings and pointers | |
| | | **UNIT 5**<br>**Structure, Union, and Enumerated Data Type** | |
| 24. | 04-01-2024 | Structure, Union, and Enumerated Data Type: Introduction | |
| 25. | 06-01-2024 | structures and functions, | |
| 26. | 07-01-2024 | Unions, unions inside structures, | |
| 27. | 08-01-2024 | Enumerated data type. | |
| 28. | 09-01-2024 | Files: Introduction to files, using files in C, | |
| 29. | 11-01-2024 | Reading and writing data files., Detecting end of file | |

**TEXTBOOKS:**

| | |
|---|---|
| 1 | Computer fundamentals and programming in c, **Reema Thareja**, Oxford University, Second edition, 2017. |

**REFERENCES:**

| | |
|---|---|
| 1 | E. Balaguruswamy, Programming in ANSI C, 7th Edition, Tata McGraw-Hill. |
| 2 | Brian W. Kernighan and Dennis M. Ritchie, The 'C' Programming Language, Prentice Hall of India. |

**Course Outcomes:**

**Upon completion of this course the student will be able to:**

| | |
|---|---|
| **CO1** | Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts. |
| **CO2** | Apply programming constructs of C language to solve the real-world problem. |
| **CO3** | Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting. |
| **CO4** | Explore user-defined data structures like structures, unions and pointers in implementing solutions. |
| **CO5** | Design and Develop Solutions to problems using modular programming constructs Using functions. |

**Mapping of Course Outcomes (COs) to Program Outcomes (POs) & Program Specific Outcomes (PSOs)**

| | | POs | | | | | | | | | | | | PSOs | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 |
| COs | CO1 | 3 | | 3 | | | | | | | | | | 3 | | |
| | CO2 | | 3 | 3 | | 2 | | | | 2 | 2 | | | 3 | | |
| | CO3 | | | 3 | | | | | | | | | | 3 | | |
| | CO4 | | | 3 | | | | | | | | | | 3 | | |
| | CO5 | | | 3 | | | | | | | | | | 3 | | |

| Assessment Tools | COs | | | | |
|---|---|---|---|---|---|
| **Direct AT** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
| CIE (Individual) | ✓ | ✓ | ✓ | ✓ | ✓ |
| SEE (Individual) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Assignments (Individual/Group) | -- | ✓ | ✓ | ✓ | ✓ |
| Micro Projects (Group) | -- | -- | -- | -- | -- |
| Topic seminar (Individual) | -- | -- | -- | -- | -- |
| Case studies (Individual/Group) | -- | ✓ | -- | -- | -- |
| Online courses (Individual) | -- | -- | -- | -- | -- |
| **Indirect AT** | | | | | |
| Course end survey (Students) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Student profile (Faculty) | -- | -- | -- | -- | -- |

**Course delivery methods, assessment tools and sample questions:**

| | |
|---|---|
| **CO1** | Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts. |
| **Delivery Methods** | Black board Teaching, PowerPoint Presentation, |
| **Assessment Tools** | CIE- Test 1, SEE |
| **Sample Questions** | 1. Given the values of 3 numbers a, b, c. Write a program to compute and display value of x, x= a / (b-c).<br>2. Discuss briefly the characteristics of a computer.<br>3. Explain the basic organization of a computer along with the interactions between different units of a computer.<br>4. Write a program to take two numbers as input and perform arithmetic operations on them. |

| | |
|---|---|
| **CO2** | Apply programming constructs of C language to solve the real world problem |
| **Delivery Methods** | Black Board Teaching, Group Activity, Power point Presentation, |
| **Assessment Tools** | CIE-Test 1, SEE, Assignment |
| **Sample Questions** | 1. Ramesh's basic salary is input through the input keyboard. His dearness allowance is 40% of basic salary and house allowance is 20% of basic salary. Calculate his gross salary.<br>2. Write a program to take temperature in Celsius and Fahrenheit as inputs and convert Celsius to Fahrenheit and Fahrenheit to Celsius.<br>3. Write a program that prints the even numbers between 1 and 100.<br>4. Calculate the simple interest for a given principle, time and rate of interest. Also calculate the total amount obtained after the maturing period. |

| | |
|---|---|
| **CO3** | Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting |
| **Delivery Methods** | Black Board Teaching, Power point Presentation |
| **Assessment Tools** | CIE: Test 2, SEE, Assignment |
| **Sample Questions** | 1. Write a program to check whether the given string is a Palindrome or not.<br>2. A class of n students take annual exam in m subjects. Write a program to read the marks obtained by each student in various subjects and to compute and print the total marks obtained by each of them.<br>3. Write a program to implement the binary search.<br>4. Write a program to implement the bubble sort. |

| | |
|---|---|
| **CO4** | Explore user-defined data structures like structures, unions and pointers in implementing solutions |
| **Delivery Methods** | Black Board Teaching, Power point Presentation |
| **Assessment Tools** | CIE: Test 2, SEE, Assignment |
| **Sample Questions** | 1. What is a pointer? List any 3 benefits of pointers in programming. Also, mention any 3 rules to be followed when performing operations on pointer variables.<br>2. Write a program to read two strings S1 and S2 and compare whether they're equal or not. If they are not equal, join them together, then copy the contents of S1 to the variable S3. At the end the program should print the contents of all the three variables and their lengths.<br>3. What is a structure? Write the different ways of initializing structure members. Define a structure using following information: Student Name, Branch, USN, and Marks. Write a program to read and print the average |

| | |
|---|---|
| | marks of the students' using structures. Print students' marks scored along with other details of all N students. |

| | |
|---|---|
| **CO5** | Design and Develop Solutions to problems using modular programming constructs Using functions |
| **Delivery Methods** | Black Board Teaching, Power point Presentation |
| **Assessment Tools** | CIE: Test 3, SEE, Assignment |
| **Sample Questions** | 1. Define functions, explain function definition, function call and function declaration with syntax.<br>2. Define a string. How a string can be initialized during compile time?<br>3. Describe the following string handling functions along with the general syntax:<br>i) strcmp ()<br>ii) strcat ()<br>4. Write a program to copy the contents of one to another file. |

BCeeeeg 30/09/2023
**Faculty**

03/10/2023
**HoD**

03/10/2023
**Principal**

PRINCIPAL
Siddaganga Institute of Technology
TUMKUR - 572 103.