**C Programming**

**Weekly Load**

* Theory : 2 Hours / Week ( Credit Points : 2)
* Practicals : 2 Hours / Week / Batch (Credit Points : 1)

**Exam Scheme**

* *Internal Term Test (A) :* 2 Tests each of 15 marks (1 Hour)
* *End Sem Exam (B) :* 60 Marks (2 Hours)
* *Term Work (C):* 25 Marks
* *Oral / Practical (D):* 25 Marks
* *Total (A+B+C+D) :* 125 Marks

**Course Objectives:**

To provide exposure to problem-solving by developing an algorithm, flowchart and implement the logic using C programming language.

**Course Outcomes:**

1. Formulate simple algorithms for arithmetic, logical problems and translate them to

programs in C language

1. Implement, test and execute programs comprising of control structures.
2. Decompose a problem into functions and synthesize a complete program.
3. Demonstrate the use of arrays, strings and structures in C language.
4. Understand the concept of pointers

**Modules:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Module 1 | Title | Hours | CO’s | Remarks |
| 1 | Fundamentals of C Programming | 5 | CO1 |  |
| 2 | Control Structures, Branching and looping | 7 | CO2 |  |
| 3 | Functions | 4 | CO3 |  |
| 4 | Arrays and Strings | 4 | CO4 |  |
| 5 | Structure and Union | 4 | CO4 |  |
| 6 | Pointers | 4 | CO5 |  |

**CO-PO Mapping:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CP** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 1 |  |  |  |  |  | 2 | - | - | - | - |  |
| **CO2** |  |  |  |  |  |  | - | - | - | - | - |  |
| **CO3** |  |  |  |  |  |  | - | - | - | - | - |  |
| **CO4** |  |  |  |  |  |  | - | - | - | - | - |  |
| **CO5** |  |  |  |  |  |  | - | 1 | - | - | - |  |

Justification

1. CO5-PO8 : Students are made to understand the ethical way of using pointers and learn the proper usage.
2. CO1-PO7 : Students are made to formulate simple and complex programs to

**Rubrics:**

**For Lab Experiments:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Trait | Exceptional (3) | Acceptable (2) | Amateur (1) | Unsatisfactory (0) |
| Program Logic & Algorithm Analysis | The program compiles and has no I/O or Logical errors and exceeds specifications with unique approach. | The program compiles and has no I/O or Logical errors and meets all specifications. | The program compiles and has some I/O or Logical errors and meets most of the specifications. | The program is producing incorrect results and/or does not compile at all and fails to meet majority of specifications |
| Delivery | The program was delivered on time. | The program was delivered within a week of the due date. | The code was within 2 weeks of the due date. | The code was more than 2 weeks overdue. |
| Code Readability | All required documentation is present, the program is correctly indented, and appropriate identifiers are selected. | Some required documentation is missing, or identifiers are inappropriate, or statements are not indented correctly. | Program is minimally documented; some  identifiers are inappropriate  or inconsistent indentation. | Insufficient program documentation, Incorrect indentation, and or poor identifier selection. |
| User Interface | Good Prompts, Headings, Data validated, Formatted Output, proper use of white space and tabs. | User interface generally meets the specification and is acceptable to the user. Interface can be improved. | User interface minimally meets the specifications but does not increase the usability of the program. Prompts confusing and output difficult to read. No validation. | User interaction is incomplete and does not meet the specifications. No user interaction possible. |

**For Assignments:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Trait | Exceptional (3) | Acceptable (2) | Amateur (1) | Unsatisfactory (0) |
| Amount of Information | All the questions are answered with correct answers | All questions are answered but some answers needs correction. | Some questions are unanswered but answers are correct. | Some questions are unanswered and / or are incorrectly answered |
| Delivery | The assignment was assessed on time. | The assignment was assessed within a week of the due date. | The assignment was assessed within 2 weeks of the due date. | The assignment was assessed more than 2 weeks overdue. |
| Content | Original content with a different approach to the solution of the question. No plagiarism. | Answers to some of the questions have original content. Very little plagiarism. | Little originality and some amount of plagiarism is present. | No original thought is present. Maximum plagiarism. |
| Presentation | Very well presented with proper indentation, appropriate use of identifiers, Proper supporting diagrams, flow charts and algorithms where ever possible and clarity in the answers. | Sufficient presentation, good readability, but lacks proper diagrams , flow charts and algorithms. | No proper presentation, lacks proper diagrams, flow charts and algorithms. | No presentation, Incorrect diagrams and flow charts etc. Un-acceptable. Rewrite required. |

**Calculations of Term work:**

1. **Attendance** (Average of Theory and Practical Attendance) = **T(A)** **= 5 Marks**

|  |  |
| --- | --- |
| **Attendance** | **Marks out of 5** |
| Greater than 90% | 5 |
| Greater than 80% | 4 |
| Greater than 75% | 3 |
| Greater than 70% | 2 |
| Greater than 60% | 1 |
| Less than 60% | 0 |

1. **Experiments Performance = 10 Marks**
   1. No. of Experiments = E = 20
   2. No. of Rubrics = R = 4
   3. Highest Point for each Rubric = H = 3
   4. Maximum Points that can be Awarded = M = R \* H \* E = 240
   5. Termwork to be Granted for Experiments = T = 10
   6. Therefore Increments = I = M / T = 24

***Term-work = T(E) = Points Earned / I***

1. **Assignments Performance = 10 Marks**
   1. No. of Assignments = E = 5
   2. No. of Rubrics = R = 4
   3. Highest Point for each Rubric = H = 3
   4. Maximum Points that can be Awarded = M = R \* H \* E = 60
   5. Termwork to be Granted for Experiments = T = 10
   6. Therefore Increments = I = M / T = 6

***Term-work = T(Asg) = Points Earned / I***

1. **Total Term Work Granted = 25 Marks**

**List of Experiments:**

1. Test

**Text Books:**

1. **E. Balaguruswamy, Programming in ANSI C, McGraw-Hill**

2. Kernighan , Ritchie, ―The C programming Language‖, Prentice Hall of India

3. Sumitabha Das, Computer Fundamentals and C Programming, McGraw-Hill

4. Pradeep Day and ManasGosh ,―Programming in C‖, Oxford University Press.

**References:**

1. Byron Gottfried, ―Programing with C‖, McGraw Hill ( Schaum‟s outline series)

2. Venugopal K.R, Prasad Sudeep, ―Mastering C‖, McGraw-Hill

3. KanetkarYashwant,‖ ―Let Us C‖, BPB Publication.