

## Scheme of Examination B.E. First year ( All Branches of Engineering)

### Second Semester

| Sub<br>Code                   | Subjects                         | Workload in hrs |          |           | Credits     | Marks       |            |            |            |            | Minimum Passing<br>Marks |           |
|-------------------------------|----------------------------------|-----------------|----------|-----------|-------------|-------------|------------|------------|------------|------------|--------------------------|-----------|
|                               |                                  | L               | T/A      | P         |             | Theory      |            | Practical  |            | Total      |                          |           |
|                               |                                  |                 |          |           |             | Internal    | Uni        | Internal   | Uni        |            | Theory                   | Practical |
| BSE2-1T                       | Mathematics-II                   | 3               | 1        | -         | 4           | 30          | 70         | -          | -          | 100        | 45                       | -         |
| BSE2-2T                       | Advanced Engineering Materials   | 2               | 2        | -         | 3           | 30          | 70         | -          | -          | 100        | 45                       | -         |
| BSE2-3T                       | Applied Chemistry                | 3               | 2        | -         | 4           | 30          | 70         | -          | -          | 100        | 45                       | -         |
| BSE2-4T                       | Computational Skills             | 2               | -        | -         | 2           | 15          | 35         | -          | -          | 50         | 23                       | -         |
| BSE2-6T                       | Basics of Electrical Engineering | 2               | -        | -         | 2           | 15          | 35         | -          | -          | 50         | 23                       | -         |
| BSE2-7T                       | Engineering Mechanics            | 2               | -        | -         | 2           | 15          | 35         | -          | -          | 50         | 23                       | -         |
| BSE2-8T                       | Indian Culture & Constitution    | 2               | -        | -         | Audit       | 50          | -          | -          | -          | Audit      | -                        | -         |
| BSE1-5P                       | Workshop Practices               | -               | -        | 4         | 2           | -           | -          | 50         | 50         | 100        | -                        | 50        |
| BSE2-2P                       | Advanced Engineering Materials   | -               | -        | 2         | 1           | -           | -          | 25         | 25         | 50         | -                        | 25        |
| BSE2-3P                       | Applied Chemistry                |                 |          | 3         | 1.5         | -           | -          | 25         | 25         | 50         | -                        | 25        |
| BSE2-4P                       | Computational Skills             |                 |          | 2         | 1           | -           | -          | 25         | 25         | 50         | -                        | 25        |
| Three weeks Induction Program |                                  |                 |          |           |             |             |            |            |            |            |                          |           |
|                               | <b>Total</b>                     | <b>16</b>       | <b>5</b> | <b>11</b> | <b>22.5</b> | <b>135*</b> | <b>315</b> | <b>125</b> | <b>125</b> | <b>700</b> |                          |           |

- L- Lecture , P-Practical, T- Tutorial, A- Activity (Half Credit per Hour)

\* Audit course marks are not counted in total marks

#### Guidelines

- Energy and Environment shall be taught by faculty of Chemistry and will come under board of Applied Science and Humanities (only by Chemistry Dept)
- Advance Engineering Materials shall be taught by faculty of Physics and will come under board of Applied Science and Humanities (only by Physics Dept)

**Computational Skills**  
**(Total Credits: 02)**  
**SUBJECT CODE: BSE2 - 4T**

**Teaching Scheme****Practical:** 2 Hours/Week**Examination Scheme****Theory****T (U):** 35 Marks **T (I):** 15 Marks**Duration of University Exam:** 02 Hrs**Unit 1:** Introduction to Programming**(6 Hrs)**

Introduction to components of a computer system (disks, memory, processor, where a program is

stored and executed, operating system, compilers etc.)

Idea of Algorithm: steps to solve logical and numerical problems. Representation of Algorithm:

Flowchart/Pseudocode with examples.

From algorithms to programs; source code, variables (with data types) variables and memory locations, Syntax and Logical Errors in compilation, object and executable code.

Arithmetic expressions and precedence

**Unit 2:****(10 Hrs)**

- a) Conditional Branching and Loops : Writing and evaluation of conditionals and consequent branching Iteration and loops
- b) Arrays : Arrays (1-D, 2-D), Character arrays and Strings
- c) Basic Algorithms : Searching, Basic Sorting Algorithms (Bubble, Insertion and Selection), Finding roots of equations, notion of order of complexity through example programs (no formal definition required)

**Unit 3:****(8 Hrs)**

- a) Function : Functions (including using built in libraries), Parameter passing in functions, call by value, Passing arrays to functions: idea of call by reference
- b) Recursion : Recursion, as a different way of solving problems. Example programs, such as Finding Factorial

**Unit 4:****(6 Hrs)**

- a) Structure : Structures, Defining structures and Array of Structures
- b) Pointers : Idea of pointers, Defining pointers, Use of Pointers in self-referential structures, notion of linked list (no implementation)

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*(Sajid Anwar)*  
*(A.V. Bhargava)*

*(B.R. Chide)*

*(Girish)*  
*(Dr. M. V. Girish)*

**Computational Skills (Total Credits: 01)****SUBJECT CODE: BSE2 – 4P****Teaching Scheme****Practical: 2 Hours/Week****Examination Scheme****Practical****P (U): 25 Marks P (I): 25 Marks****Duration of Internal Practical Exam: 02 Hrs****Students have to perform Practicals based on the theory :****Practical Slot – 1: Fundamentals of Computers and Operating System**

- 1) Demonstrate the internal structure of Computer, its assembly, use of each I/O device and ports.
- 2) Demonstrate the use of System Software like: Windows, Linux .
- 3) Explanation about “C” language Compiler options. Introduction to C++ language.

**Practical Slot – 2: Fundamentals of “C” language**

- 1) To demonstrate all types of operators (Arithmetic, Logical and Relational) of “C” language.
- 2) To demonstrate different data types in “C” language.
- 3) To demonstrate the use of “printf” and “scanf” with all possible options.

**Practical Slot – 3: Fundamentals of Decision Control Structures**

- 1) To demonstrate the use of if-else structure, nested if structure.
- 2) To demonstrate the use of Conditional operators (? Operator).
- 3) To demonstrate the use of Switch.Case construct.

**Practical Slot – 4: Fundamentals of Loop Control Structures**

- 1) To demonstrate the use of “while” control structure.
- 2) To demonstrate the use of “do..while” control structure.
- 3) To demonstrate the use of “for” control structure.
- 4) To demonstrate the use of “break” and “continue” construct

**Practical Slot – 5 and 6: Fundamentals of One Dimensional Arrays**

- 1) To demonstrate the creation of array, addition of an element, deletion of an element and displaying the elements from one dimensional array.
- 2) To demonstrate the implementation of bubble sort, selection sort and insertion sort.
- 3) To demonstrate the implementation of linear search and binary search.

**Practical Slot – 7: Fundamentals of Two Dimensional Arrays**

- 1) To demonstrate the matrix manipulation operations like addition, multiplication.
- 2) To demonstrate the operations on row and columns of two dimensional matrix.

**Practical Slot – 8: Fundamentals of Pointers**

- 1) To demonstrate the pointer declaration and its use.
- 2) To demonstrate the implementation of pointer on array.
- 3) To demonstrate the creation of dynamic arrays using pointer.

**Practical Slot – 9: Fundamentals of Strings**

- 1) To demonstrate the basic operations on string like “length”, “copy”, “reverse”, “truncate”.
- 2) To demonstrate the implementation of two dimensional array of characters.

**Practical Slot – 10: Fundamentals of Functions**

- 1) To demonstrate the implementation of functions.
- 2) To demonstrate the call by value parameter passing method.
- 3) To demonstrate the call by reference parameter passing method.

**Practical Slot – 11: Fundamentals of Functions**

- 1) To demonstrate the implementation of recursive function.
- 2) To demonstrate the use of library function (mathematical and string).

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**Method to conduct the practicals: Out of the two hours allotted:**

The faculty member will teach the basic concepts of practical to the students for 30 minutes.

The next 30 minutes will be on how to implement the problem definition of the practical, i.e., algorithm to implement the problem definition.

The next 1 hour, the students will implement the practical and execute it on computers.

For example: Fundamentals of Loop Control Structures

**Contents:**

To demonstrate the use of "while" control structure.

To demonstrate the use of "do..while" control structure. To

demonstrate the use of "for" control structure.

To demonstrate the use of "break" and "continue" construct.

**Cover the concepts of:**

While loop, do..while loop, for loop and break & continue statement.

Explain the implementation of control structure on practical and LCD projector to students. Give one problem definition containing all the concepts of practical and allow students to implement and execute on the computers.

**Books Recommended:**

1. Herbert Schildt - C Complete Reference (Tata-McGraw Hill)
2. Byron Gottfried, " Programming with C", Schaum;s Outline Series .
3. R Venugopal & S R Prasad. "Mastering C" Tata-McGraw Hill-2207

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