SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of Information Technology		LP: GE16151
		Rev. No: 01
B.E/B.Tech : Common to All Branches Sub. Code / Sub. Name : GE16151 / Computer Programming Unit : I	Regulation: 2013	Date: 08.8.2017

Unit Syllabus:

INTRODUCTION:

Generations and Classification of Computers – Basic Organization of a Computer – Number Systems – Binary – Decimal – Conversion - Problems. Need for logical analysis and thinking – Algorithm – Pseudo code – Flow chart.

Objective: In this unit, Generation of computers, Classification, Organization of computer, Number systems conversions, Algorithm, Flowchart, and Pseudo Code are discussed in detail.

Session No *	Topics to be covered	Ref	Teaching Aids
1	**Introduction of Computers, Number Systems** – Decimal Numbers, Binary Numbers, Hexadecimal Numbers, Decimal-to-Binary, Decimal-to-Octal, Decimal-to-Hexadecimal.	1(1.6-1.7) 1(2.2-2.13)	LCD/BB
2	**Number Systems** – Binary-to-Decimal, Octal-to-Decimal, Hexadecimal-to-Decimal, Binary-to-Hexadecimal, Binary-to-Octal, Octal-to-Hexadecimal, Hexadecimal-to-Binary.	1(2.2-2.13)	LCD/BB
3	**Sign Representation** – One's Complement, Two's Complement. **Computer Arithmetic** - Binary addition, Binary subtraction, Binary multiplication, Binary division.	Refer Internet	LCD/BB
4	**Need for logical analysis and thinking** – Introduction, Developing a Program, Overview of Problem Solving Techniques, **Algorithm** – Key features of an Algorithm, Different ways of stating Algorithms	1(2.25-2.26) 1(2.27-2.28) 2(80-91)	LCD/BB
5	**Flowcharts** – Standards for flowcharts, Guidelines for drawing flowcharts. Advantages and Limitations of using flowcharts	1(2.28-2.30) 2(91-99)	LCD/BB
6	**Pseudocode**- Sample exercises for Pseudocode	1(2.30-2.32) 2(91)	LCD/BB
7	**Evolution of Computers, Computer Generations** – First Generation (Vacuum tubes), Second Generation (Transistors), Third Generation (Integrated Circuits), Fourth Generation (Microprocessors), Fifth Generation (Artificial Intelligence), **Classification of Computers** – Micro computers, Mini computers, Mainframe computers, Super computers.	1(1.6-1.9) 2(28-32) 1(1.9-1.12)	LCD/BB
8	**Basic Computer organization** – Hardware (Input Devices, Central Processing Unit, Output Devices, Memory)	1(1.3-1.21)	LCD/BB

Content beyond syllabus covered (if any): Sign Representation, Computer Arithmetic.

* Session duration: 50 minutes

Sub. Code / Sub. Name: GE16151 / Computer Programming
Unit : II

Unit Syllabus :

PROGRAMMING BASICS:

Problem Formulation-Problem Solving-Introduction to 'C' Programming- fundamentals Structure of a 'C' program – Compilation and linking processes - Constants, Variables and Data Types – Expressions using operators in C - Managing Input and Output operations – Decision Making and Branching – Looping statements – solving simple and statistical problems.

Objective: This unit enables the students to understand the basic concepts of C language.

Session No *	Topics to be covered	Ref	Teaching Aids
9	**Introduction of Operating System-** Objectives of an operating system, functions of operating system. **Problem Formulation-Problem Solving-Introduction to 'C' Programming** - Taxonomy of the C language.	1(3.4-3.16)	LCD/BB
10	**Structure of a 'C' program – Compilation and linking processes-** Overview of compiler & Interpreter, Comments. **Types of errors in programming.**	1(3.12-3.18)	LCD/BB
11	**Constants-** Integer C onstants, R eal C onstants, F loating point Constants Character Constant, String Constant **Variables-**Variable Declaration and Definition, Variable Initialization.	1(3.6-3.12) 3(5-50)	LCD/BB
12	**Data Types-**Void, Integer, Floating Point, Character, Logical data (Primary data types in C).	1(3.12-3.16) 3(209-215)	LCD/BB
13	**Expression using Operators in C.**	1(4.12-4.18) 3(60-93)	LCD/BB
14	**Managing Input and Output operations-**Introduction, Reading a character, Writing a character, Formatted/Unformatted input and output, sample programs.	1(4.20-4.32) 2(168-179)	LCD/BB
15	**Decision Making-**Introduction, Decision making with IF statements, SWITCH statements, Break statements, Continue statements and GOTO statements.	1(5.9-5.22) 3(46-74)	LCD/BB
16	**Branching and Looping-**Introduction, WHILE statements, DO WHILE statements,	1(5.22-5.32) 2(195-215) 3(134-147)	LCD/BB
17	**Branching and Looping-** FOR statements, jumps in loops	1(5.22-5.32) 2(195-215) 3(134-147)	LCD/BB
18	**Solving Simple & statistical problems**	Internet	LCD/BB
Content beyond syllabus covered (if any): Introduction of Operating System, Types of Error in programming.			

- Session duration: 50 mins

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Unit : III

Unit Syllabus :

Arrays and Strings:
Arrays-Initialization-Declaration – One dimensional and two dimensional arrays. String – String operations – String Arrays – Simple programs – sorting – searching – matrix operations.

Objective: This unit focuses on advanced concepts of C such as Arrays and Strings in detail.

Session No *	Topics to be covered	Ref	Teaching Aids
19	**Arrays** -Initialization, D eclaration Characteristics, Need of an Array, Features of Arrays, Classification of Arrays.	1(6.4-6.6) 3(274-279)	LCD/BB
20	**One dimensional Array-** Array Declaration, Processing of an Array, Array initialization, Programs.	1(6.6-6.12) 2(7.21-7.26)	LCD/BB
21	**Two dimensional array-** Array Declaration, Processing of a two dimensional array, Array initialization and Programs.	1(6.23-6.28) 2(7.41-7.46)	LCD/BB
22	**Strings –** Introduction, Handling of Character Strings-Declaration & Initialization of Strings, Importance of terminating NULL character.	1(7.2-7.6)	LCD/BB
23	String Library Functions, Display of Strings with Different Formats.	1(7.6-7.24)	LCD/BB
24	**Array of Strings, Sorting:** Introduction, simple programs using sorting: Bubble sort.	1(7.24-7.27)	LCD/BB
25	**Searching:** Introduction, simple programs using searching: Linear/sequential search, Binary search.	1(6.38-6.57)	LCD/BB
26	**Matrix Operations – Arithmetic Operations programs**	1(6.91-6.97)	LCD/BB
27	**Command line arguments & variable length argument lists**	Refer Internet	LCD/BB
Content beyond syllabus covered (if any): Command line arguments & variable length argument lists.			

- Session duration: 50 mins

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Sub. Code / Sub. Name: GE16151 / Computer Programming

Unit : IV

Unit Syllabus :

FUNCTIONS AND POINTERS
Function – definition of function – Declaration of function – Pass by value – Pass by reference – Recursion – Pointers - Definition – Initialization – Pointers arithmetic – Pointers and arrays- Example Problems.

Objective: This unit focuses on advanced concepts of C such as functions and pointers in detail.

Session No *	Topics to be covered	Ref	Teaching Aids
28	**Functions**-Introduction, Elements of function	1(8.4-8.6) 3(154-174)	LCD/BB
29	**Types of function-** user defined and library function	1(8.6-8.19)	LCD/BB
30	**Function Prototype**	1(8.6-8.19)	LCD/BB
31	**Types of functions** - Pass by Value, Pass by reference	1(8.19-8.21) 3(163-164)	LCD/BB
32	**Recursion**- programs, Recursion to search an element in array.	1(8.28-8.38) 2(366-375) 3(186-191)	LCD/BB
33	**Pointers**-Introduction, Declaration, Initialization,	1(6.12-6.17) 2(421-436) 3(174-197)	LCD/BB
34	**Pointers Arithmetic** - Arithmetic operations with Pointers, pointers and arrays.	1(6.17-6.20)	LCD/BB
35	**Array of pointers**, pointer to pointer, pointers and strings, void pointers, pointers and function, pointers and strings.	1(6.22-6.23)	LCD/BB
36	**Pointers Sample Program**	Internet	LCD/BB
Content beyond syllabus covered (if any): Recursion to search an element in array, pointers & function, pointers & strings.			

- Session duration: 50 mins

Sub. Code / Sub. Name: GE16151 / Computer Programming
Unit : V

Unit Syllabus :

PROGRAMMING BASICS:

Introduction – need for structure data type – structure definition – Structure declaration – Structure within a structure - Union - Programs using structures and Unions – Storage classes, Pre-processor directives.

Objective: This unit focuses on advanced concepts of C such as structures and union in detail.

Session No *	Topics to be covered	Ref	Teaching Aids
37	**Structures**–Features, initialization, Declaration-need of structure data type	1(9.1-9.12) 3(370-375)	LCD/BB
38	**structure within structure, array of structures**	1(9.21-9.31 3(375-380))	LCD/BB
39	**pointer to structure, Structures and functions**	1(9.31-9.37) 3(380-390)	LCD/BB
40	**Sample Programs in structure**	Refer Internet	LCD/BB
41	**Union-Features, initialization, Declaration**	1(9.38-9.41)	LCD/BB
42	**Programs using structures and union**	1(9.98-9.95)	LCD/BB
43	**File Handling** – fopen, fclose, fprintf, fscanf, fread, fwrite.	Refer Internet	LCD/BB
44	**Storage Classes** – auto,extern,register,static,typedef, **Preprocessor Directives**-#define, #include, #ifndef, #error, #line directives	1(10.3-10.9) 1(10.10-10.10)	LCD/BB
45	**Applications of C Program with examples**	Refer Internet	LCD/BB
Content beyond syllabus covered (if any): File Handling operations.			

* Session duration: 50 mins

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TEXTBOOKS:

1. Anita Goel and Ajay Mittal, "Computer Fundamentals and Programming in C", Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.
2. Pradip Dey, Manas Ghosh, "Fundamentals of Computing and Programming in C", First Edition, Oxford University Press, 2009
3. Yashavant P. Kanetkar. "Let Us C", BPB Publications, 2011.

REFERENCES:

1. Byron S Gottfried, "Programming with C", Schaum's Outlines, Second Edition, Tata McGraw-Hill, 2006.
2. Dromey R.G., "How to Solve it by Computer", Pearson Education, Fourth Reprint, 2007.
3. Kernighan,B.W and Ritchie,D.M, "The C Programming language", Second Edition, Pearson Education, 2006.

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* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD