Fundamentals of Digital System

Course Description:

This subject deals with the basic concepts of functioning of a computer. The subject starts with an introduction to number systems and its applications in computers. The subject exposes the students to basic concepts of flip-flops, logic gates and design of different types of flip flops and counters. The discussion about working of devices like encoders and decoders, multiplexers and de multiplexers are dealt here. The design of half adders and full adders are also included as part of this subject. Classification of memory, registers and flags are also dealt with.

Course Objectives

- Familiarize the working of functional units of computer
- Learn the Concepts of Boolean logic and digital logic circuit
- Analyze and design combinational and sequential digital systems.

Basic Reference

- M.M.Mano-Digital Logic and Computer design
- P K Sinha- Computer Fundamentals
- Thomas C Bartee- Digital computer Fundamentals
- Floyd- Digital Electronics -
- Malvino & Leach- Digital Principles and Applications

Course **Outcomes:**

At the end of the course, the student

At the end of this subject, students should be able to:

- knowledge about different number systems
- apply knowledge of the basic digital registers
- Explain the basic Structure and operation of a digital computer
- apply knowledge of Combinational and Sequential circuit

Sessions	Date	Topic	Method	Remarks/Reference
1	23/6/15	Introductory Session	Lecturing using ppt	
2	24/6/15	Introduction to Computer	Lecturing using ppt	
3	25/6/15	History and generation	Lecturing using ppt	
4	26/6/15	functional units	Lecturing using ppt	
5	29/6/15	Hardware: CPU, Primary and Secondary storage	Lecturing using ppt	
6		I/O devices	Lecturing using ppt	
7	30/6/15	Software: System and Application	Lecturing using ppt	
8	1/7/15	Programming Languages: Machine Language, Assembly Language, High Level Language	Lecturing using ppt	
9	2/7/15	**A Brief Introduction to the Internet**: The World Wide Web, Web Browsers, Web Servers, Uniform Resource Locators	Lecturing using ppt	
10	6/7/15	protocols: Multipurpose Internet Mail Extensions, The Hypertext Transfer Protocol	Lecturing using ppt	
11	7/7/15	Introduction to Operating System: definition, functions, CUI and GUI	Lecturing using ppt	
12	8/7/15	different types of OS	Lecturing using ppt	
13	9/7/15	**Number Systems:** Base of a number system, Positional number system, Popular number systems	Lecturing	
14	9/7/15	Conversion-Decimal to Binary, Binary to Decimal	Lecturing	
15	10/7/15	Decimal to Octal, Octal to decimal and	Lecturing	

		binary		
16	13/7/15	Decimal to hexadecimal, Hexadecimal to decimal, Binary and octal,	Lecturing	
17	14/7/15	Concept of binary addition and subtraction	Lecturing	
18	15/7/15	Complements in binary number systems,1^s Complement, 2^s Complement and their applications,	Lecturing	
19	16/7/15	BCD numbers- concept and addition	Lecturing	
20	20/7/15	Concept of parity bit	Lecturing	
21				
22	21/7/15	Logic gates- AND, OR, NOT, NAND and NOR – Truth tables and graphical representation	Lecturing	
23	22/7/15	Basic laws of Boolean Algebra,	Lecturing	
24	23/7/15	Simplification of Expressions,	Lecturing	
25	24/7/15	De Morgan's theorems, Dual expressions	Lecturing	
	27/7/15	CIA – I	2 hr	
	28/7/15	CIA – I	2 hr	
26	30/7/15	Canonical expressions, Min terms and Max terms, SOP and POS expressions	Lecturing	
27	31/7/15	Simplification of expression using K-MAP	Lecturing	
28	3/8/15	Representation of simplified expressions using NAND/NOR Gates	Lecturing	
29	4/8/15	XOR and its applications	Lecturing	
30	5/8/15	Don't care conditions	Lecturing	
31	6/8/15	parity generator and checker	Lecturing	
32	7/8/15	Flip flops- Latch, Clocked	Lecturing	
	10/8/15	Seminar	Lecturing	
33	11/8/15	RS, JK flip flop	Lecturing	
34	12//8/15	T, D and Master slave	Lecturing	

35	17/8/15	Triggering of flip flops	Lecturing	
36	18/8/15	Counters - Synchronous and asynchronous	Lecturing	
37	19/8/15	BCD, Ripple counters	Lecturing	
38	1/9/15	Half adder	Lecturing	
39	2/9/15	Full adder(circuit diagram)	Lecturing	
40	3/9/15	Subtractors	Lecturing	
41	4/9/15	Encoders	Lecturing	
42	7/9/15	Decoders	Lecturing	
43	8/9/15	Multiplexers	Lecturing	
44	9/9/15	De-multiplexers	Lecturing	
45	10/9/15	Analog to digital and digital to analog converters	Lecturing	
	14/9/15	CIA II	2 HOURS	
	17/9/15	Discussion on the CIA		
46	18/9/15	Concept of Registers	Lecturing	
47	22/9/15	Shift Registers	Lecturing	
48	23/9/15	Flip-flops as building blocks of memory	Lecturing	
49	25/9/15	RAM, ROM and Cache Memory	Lecturing	
50	28/9/15	REVISION	Seminars	
51	29/9/15	REVISION	Seminars	
52	30/9/15	REVISION	Seminars	
53	1/10/15	REVISION	Seminars	
54	5/10/15	REVISION	Seminars	
55	6/10/15	REVISION	Seminars	
56	7/10/15	REVISION	Seminars	
57	8/10/15	Evaluation of the Course		

ASSIGNMENTS

	Date of submission/completion	**Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)**	**Weighttage**
1	9/7/15	Introduction to computer system	5 marks
2	11/8/15	Explain about K map with example	5 marks
3	30/9/15	Previous question papers	5 marks
4			

PROGRAMMING IN C

Course Description:

C is a widely used language in systems programming. It's a language with lot of capabilities. This subject gives an introduction to programming and basic elements of programming like algorithm, flow chart and Pseudo code. The subject starts with the features of C language and basic elements of the language. Programming constructs like if, for, while and do while are dealt with its syntax and applications. Advanced features like functions, arrays, pointers, structures and unions are also dealt here. Pointer being an important concept is dealt with respect to arrays, structures and functions. The concept of files and preprocessors are also introduced. In general, the subject concentrates in all the areas of C programming which is very much helpful for a beginner in Computer Programming.

COURSE OBJECTIVES

1. Knowledge and understanding
   - Understand the fundamental programming constructs.
   - Understand and write searching and sorting techniques.
   - Understand a typical C-like program environment.
2. Cognitive skills (thinking and analysis).
   - Be able to understand and analysis any problem and derive its solution.
   - Be able to develop algorithms.
3. Communication skills (personal and academic).
   - Be able to work as a team
4. Practical and subject specific skills (Transferable Skills).
   - Be able to write C-like programs including searching and sorting techniques.

Basic Reference

- Programming in ANSI C 4E , E. BalaGuruswamy, TMH
- Programming in C, Byron S Gottfried, Shaum's Outline series. TMH
- Computer Fundamentals By P K Sinha&PritiSinha Fourth Edition.
- B. Kernighan and D. Ritchie, "The ANSI C Programming Language", PHI

COURSE OUTCOMES

At the end of the course, the student will be able to

- Understand the basic terminology used in computer programming
- Write, compile and debug programs in C language.
- Use different data types in a computer program.
- Design programs involving decision structures, loops and functions.
- Explain the difference between call by value and call by reference
- Understand the dynamics of memory by the use of point
- Use different data structures and create/update basic data files.

Sessions	Date	Topic	Method	Remarks/Reference
1.	23/6/15	**Problem Solving** Problem Definition, Problem Solving	Lecturing	
2.	24/6/15	Logic developments tools - Algorithm	Lecturing	
3.	25/6/15	Flowcharts	Lecturing	
4.	26/6/15	pseudo code	Lecturing	
5.	29/6/15	Modular programming	Lecturing	
6.	30/6/15	Structured and object oriented	Lecturing	
7.	1/7/15	top down and bottom up approaches	Lecturing	
8.	2/7/15	features of a good computer program	Lecturing	
9.	6/7/15	**C language basics:** C character set,	Lecturing	
10.	7/7/15	Identifiers and keywords	Lecturing	
11.	8/7/15	Enumeration type, constants	Lecturing	
12.	9/7/15	variables, declarations	Lecturing	
13.	10/7/15	qualifiers – long, short and unsigned declarations, expressions, symbolic	Library	

		constants		
14.	13/7/15	input/output functions	Lecturing	
15.	14/7/15	compound statements	Lecturing	
16.	15/7/15	arithmetic operators, unary operators, relational and logical operators,	Lecturing	
17.	16/7/15	assignment operators, increment and decrement operators	Lecturing	
18.	20/7/15	Precedence and order of evaluation, conditional operators	Lecturing	
19.	21/7/15	bit operators, type casting	Lecturing	
20.	22/7/15	using library functions in math.h		
21.	23/7/15	**Control flow:** If statements	Lecturing	
22.	24/7/15	REVISION	Discussion	
23.	27/7/15	CIA – I	2 Hrs	
24.	30/7/15	Discussion on the CIA		
25.	31/7/15	switch statements	Lecturing	
26.	3/8/15	looping – for loop statement	Lecturing	
27.	4/8/15	while loop statement	Lecturing	
28.	5/8/15	do … while statements	Lecturing	
29.	6/8/15	nested loop structure	Lecturing	
30.	7/8/15	Break statement	Lecturing	
31.	10/8/15	continue statement	Discussion	
32.	11/8/15	go to statement		
33.	12//8/15	**Arrays & Strings:** Single dimensional arrays	Lecturing	
34.	17/8/15	multidimensional arrays	Lecturing	
35.	18/8/15	initializing array using static declaration	Lecturing	
36.	19/8/15	Searching & Sorting of Arrays	Lecturing	
37.	1/9/15	Array of Characters, Character arrays and strings	Lecturing	

38.	2/9/15	String manipulation programs	Lecturing	
39.	3/9/15	String handling Functions.	Lecturing	
40.	4/9/15	**User Defined Functions:** Function declaration, definition & scope	Lecturing	
41.	7/9/15	Recursion	Lecturing	
42.	8/9/15	Arrays and functions	Lecturing	
43.	9/9/15	call by value, call by reference	Lecturing	
44.	10/9/15	REVISION	Discussion	
45.	14/9/15	CIA II	2 Hrs	
46.	17/9/15	Discussion on the CIA		
47.	18/9/15	Storage Classes: automatic, external (global), static & registers	Lecturing	
48.	21/9/15	Storage Classes: Examples	Lecturing	
49.	22/9/15	**Structures:** Definition of Structures, declaration	Lecturing	
50.	23/9/15	structure passing to functions, array of structures	Lecturing	
51.	24/9/15	arrays with in structures	Lecturing	
52.	25/9/15	Unions	Lecturing	
53.	28/9/15	typedef statements.	Lecturing	
54.	29/9/15	**Pointers:** Pointer Definition, pointer arithmetic	Lecturing	
55.	30/9/15	array & pointer relationship	Lecturing	
56.	1/10/15	pointer to array, pointer to structure	Lecturing	
57.	5/10/15	**Files:**Types of C preprocessor directives	Lecturing	
58.	6/10/15	Introduction to files, fopen(), fscanf(), fprintf(),getc(), putc(), fclose(),	Lecturing	
59.	7/10/15	Simple file handling programs	Lecturing	
60.	8/10/15	REVISION & Evaluation of the Course		

ASSIGNMENTS

	Date of submission/completion	**Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)**	**Weighttage**
1	6/7/15	Program Techniques & Looping Concepts	5 marks
2	10/8/15	Functions & its Categories	5 marks
3	25/9/15	Structures & Unions	5 marks
4	1/10/15	Previous question papers	5 marks

ASSIGNMENTS/EXERCISES – Details & Guidelines

Additional Reading List

SEMESTER I- FOUNDATION OF MATHEMATICS

Text Books:

1. K.H. Rosen: Discrete Mathematics and its Applications (Sixth edition), Tata McGraw Hill Publishing Company, New Delhi.
2. S. Bernard and J.M Child: Higher Algebra, AITBS Publishers, India,2009.

Sessions	Topic	Method	Remarks/Reference
1	Introductory Session	Lecture Method	
2	Sets	Lecture Method	
3	Problems	Interaction	
4	Set operations	Lecture Method	
5	Problems	Interaction	
6	Problems	Interaction	
7	Functions	Lecture Method	
8	Problems	Interaction	
9	Problems	Interaction	
10	Sequences and Summations	Lecture Method	
11	Problems	Interaction	
12	Problems	Interaction	
13	Relations and their properties	Lecture Method	
14	Problems	Interaction	
15	Problems	Interaction	
16	n-ary relations and their applications	Lecture Method	
17	Problems	Interaction	
18	Representing relations	Lecture Method	
19	Problems	Interaction	
20	Problems	Interaction	

21	CIA – I	1 hr; descriptive answers only	
22	Equivalence relations	Lecture Method	
23	Problems	Interaction	
24	Problems	Interaction	
25	Problems	Interaction	
26	Partial orderings	Lecture Method	
27	Problems	Interaction	
28	Problems	Interaction	
29	Problems	Interaction	
30	Propositional logic	Lecture Method	
31	Problems	Interaction	
32	Propositional equivalences	Lecture Method	
33	Problems	Interaction	
34	Predicates and quantifiers nested quantifiers	Lecture Method	
35	Problems	Interaction	
36	Problems	Interaction	
37	Rules of inference	Lecture Method	
38	Problems	Interaction	
39	Problems	Interaction	
40	Introduction to proofs	Lecture Method	
41	Problems	Interaction	
42	Problems	Interaction	
43	Proof methods and strategy	Lecture Method	
44	Problems	Interaction	
45	Problems	Interaction	
46	Divisibility theory in the integers, the greatest common divisor	Lecture Method	
47	The Euclidean algorithm (division algorithm), Primes	Lecture Method	

48	The theory of congruence. Basic properties of congruence	Interaction	
49	Fermat's little theorem	Lecture Method	
50	CIA II	2 HOURS	
51	Wilson's theorem	Lecture Method	
52	Problems	Interaction	
53	Euler's phi-function	Lecture Method	
54	Problems	Interaction	
55	Euler's generalization of Fermat's theorem	Lecture Method	
56	Problems	Interaction	
57	Problems	Interaction	
58	Problems	Interaction	
59	Discussion on the CIA & REVISION	Interaction	
60	REVISION & Evaluation of the Course	Interaction	

COURSE PLAN

COURSE : **DESCRIPTIVE STATISTICS**

Semester : I
Course Code : 15 U1CPSTA1
Course Teachers : Lakshmipriya R

Hours/Week: 05 **Hours/Semester: 72**

.

COURSE OBJECTIVES

Statistics plays a pivotal role in decision making. Collection, classification, analysis and presentation of data are some of the important functions of Statistics. This course is designed to enable the students to understand the basic functions of statistics

Basic Reference

1 S.C. Gupta and V. K.Kapur. Fundamentals of Mathematical Statistics, Sultan Chand and sons New Delhi

2 S.P. Gupta. Statistical Methods ,Sultan Chand & Sons Delhi

3 B.L. Agarwal. Basic Statistics, New Age International (p) Ltd.

4 S.C.Gupta and V.K.Kapoor. Fundamentals of Applied Statistics,Sultan Chand & Sons Delhi

COURSE OUTCOMES

At the end of the course, the student will be able to

(i) to tabulate statistical information given in descriptive form.
(ii) to use graphical techniques and interpret.
(iii) to compute various measures of central tendency, dispersion.
(iv) to summarize and analyze the data using computer
(v) to compute skewness and kurtosis

Sessions	Topic	Method	Remarks/Reference
1.	Bridge course	PPT	
2.	Bridge course	PPT	
3.	Measures of central tendency	Lecturing	
4.	Mean	Lecturing	
5.	median	Lecturing	
6.	Mode	Lecturing	
7.	Geometric mean and Harmonic mean, problems	Lecturing	
8.	Absolute and relative measures of dispersion	Lecturing	
9.	Range, Quartile Deviation	Lecturing	
10.	Mean Deviation	Lecturing	
11.	Standard Deviation	Lecturing	
12.	Standard Deviation	Lecturing	
13.	Properties, Problems	Lecturing	
14.	deciles, percentiles	Lecturing	
15.	deciles, percentiles	Lecturing	
16.	Coefficient of Variation	Lecturing	
17.	Problems graphical method	Lecturing	
18.	Box plots	Lecturing	
19.	Box plots	Lecturing	
20.	Quantiles –quintiles	Lecturing	
21.	Lorenz Curve	Lecturing	
22.	Revision		
23.	CIA – I	2 Hrs	
24.	Index numbers	Lecturing	
25.	Simple and Weighted index numbers	Lecturing	

26.	Laspeyre's	Lecturing	
27.	Paasche's	Lecturing	
28.	Bowley's	Lecturing	
29.	Fisher's index numbers	Lecturing	
30.	Test for index numbers	Lecturing	
31.	Test for index numbers	Lecturing	
32.	Cost of living index numbers	Lecturing	
33.	Constructions of Cost of living index numbers	Lecturing	
34.	Time series- Components of a time series data	Lecturing	
35.	Determination of trend- Moving average	Lecturing	
36.	curve fitting methods	Lecturing	
37.	Computation of and seasonal indices	Lecturing	
38.	Method of simple averages	Lecturing	
39.	Moments – Raw moments	Lecturing	
40.	Central moments	Lecturing	
41.	Absolute moments- Inter Relations	Lecturing	
42.	Skewness	Lecturing	
43.	Pearson, Bowley and Moment measure	Lecturing	
44.	Revision		
45.	CIA II	2 Hrs	
46.	Kurtosis – Moment measure of kurtosis	Lecturing	
47.	Kurtosis – Moment measure of kurtosis	Lecturing	
48.	Scatter diagram	Lecturing	
49.	Curve fitting	Lecturing	

50.	Method of least squares	Lecturing	
51.	fitting of a straight line	Lecturing	
52.	second degree curve	Lecturing	
53.	exponential curve	Lecturing	
54.	power curve	Lecturing	
55.	exponential curve	Lecturing	
56.	power curve	Lecturing	
57.	Revision		
58.	Question paper detecting		

ASSIGNMENTS

	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	**Weighttage**
1	Introduction, Application of statistics in different fields – In Economics, Medical Field, Industries, In Business …	5 Marks
2	Practical Sheet -1- Measures of Central tendency and Measures of Dispersion	5 Marks
3	Practical Sheet -2- Skewness and Kurtosis	5 Marks
4	Practical Sheet -3 – Using Excel Sheet	5 Marks

ASSIGNMENTS/EXERCISES – Details & Guidelines

1. Collection of data from medias such as Newspaper.
2. Perusal of various books available in library etc.
3. Prepration of powerpoint presentation on various topics by the students
4. Personal discussion interacting with each student about the topic

Microprocessors & Computer Organization

Objectives:

The course aims:

- to explain the concept of 8086 microprocessor.
- to introduce addressing methods and instruction sequencing and execution.
- to compare different processors.
- to explain the CPU general register and stack organization
- to explain the instruction formats and classification
- to introduce about different types of memory

Learning Outcomes

By completing this course the student should be able to:

- Understand the organization of a computer system in terms of its main components
- Understand the detailed operation of a simple microprocessor
- Understand different processor architectures.
- Understand the central processing unit.
- Understand the various memory and memory mapping techniques

Books of study :

1. B RAM -Fundaments of microprocessors and micro computers
2. M M Mano – Computer Archtecture
3. Advanced Microprocessors and Peripherals – Architecture, Programming and Interfacing by A.K. Ray and K.M. Bhurchand, Tata McGraw Hill,2002 Edition.

References:-

1. R S. Gaonkar- Micro processor Architecture, Programming and applications with 8085.

Venugopal and Ravikanth- Introduction to assembly language programming in 8086

2. The Intel Microprocessors 8086/8088, 80816/80188, 80286, 80486 Pentium and Pentium Pro Processor – Architecture, Programming and interfacing by Barry B Brey, 4th Edition, PHI

Sessions	Date	Topic	Method	Remarks/Reference
1	24/11/15	Introduction	Lecturing	
2	25/11/15	Basic operational concepts	Lecturing	
3	26/11/15	Basic operational concepts	Lecturing	
4	27/11/15	Bus structure	Lecturing	
5	01/12/15	Addressing methods	Lecturing	
6	02/12/15	Memory locations and addresses	Lecturing	
7	03/02/15	Memory locations and addresses	Lecturing	
8	04/12/15	Instructions and instruction sequencing	Lecturing	
9	08/12/15	Instruction execution	Lecturing	
10	09/12/15	Central Processing Unit	Lecturing	
11	10/12/15	General Register Organization	Lecturing	
12	11/12/15	General Register Organization	Lecturing	
13	15/12/15	Stack Organization	Lecturing	
14	16/12/15	Stack Organization	Lecturing	
15	17/12/015	Instruction Formats	Lecturing	

16	18/12/15	Instruction Formats	Lecturing	
17	29/12/15	Instruction Classification	Lecturing	
18	30/12/15	Instruction Classification	Lecturing	
19	31/12/15	Main Memory	Lecturing	
20	05/01/16	Main Memory	Lecturing	
21	06/01/16	Organization of RAM, SRAM, DRAM	Lecturing	
22	07/01/16	Read Only Memory	Lecturing	
23	08/01/16	Auxiliary memory	Lecturing	
24	12/01/16	Cache memory	Lecturing	
25	13/01/16	Virtual Memory	Lecturing	
26	14/01/16	Virtual Memory	Lecturing	
27	15/01/16	Memory mapping Techniques	Lecturing	
28	19/01/16	Memory mapping Techniques	Lecturing	
29	20/01/16	Introduction to 8086	Lecturing	Using ppt
30	21/01/16	Pin-out Diagram	Lecturing	Using ppt
31	22/01/16	Operating modes	Lecturing	Using ppt
32	27/01/16	Operation of 8086	Lecturing	Using ppt
33	28/01/16	Registers	Lecturing	Using ppt
34	29/01/16	Interrupts	Lecturing	Using ppt
35	02/02/16	Bus Cycle	Lecturing	
36	03/02/16	Addressing modes	Lecturing	
37	04/02/16	16 bit processors	Lecturing	
38	05/02/16	32 bit processors	Lecturing	
39	09/02/16	64 bit processors	Lecturing	

40	10/02/16	Intel 80286	Lecturing	
41	11/02/16	80386	Lecturing	
42	12/02/16	80486	Lecturing	
43	16/02/16	Pentium	Lecturing	
44	19/02/16	Pentium Pro	Lecturing	
45	23/02/16	Pentium II	Lecturing	
46	24/02/16	Pentium III	Lecturing	
47	25/02/16	Pentium 4.	Lecturing	

ASSIGNMENTS

	Date of submission/completion	**Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)**	**Weight age**
1	30/11/2015	Functional units of computer	5
2	11/1/2016	ROM & RAM	5
3	22/02/2016	Previous question papers	5

Semester : II
Course Code : 15U2CRCAP04
Course Tittle : DATA STRUCTURESUSING 'C'

Name of Teacher : Achamma Cherian

Hours/Week: 04
Hours/Semester: 60

Course Description:
The subject deals with the representation of data inside a computer. The subject concentrates on different data structures and their applications. The concepts of arrays linked lists, stacks, queues and trees gives an exposure about how operating systems and compilers are handling their data and symbol table. The subject also deals with different sorting techniques and their time and space complexities. The subject deals with some interesting problems like towers of Hanoi, which can be solved using recursion with the help of a stack. To conclude, the subject gives an overall view of the concepts of systems programming.

Objectives:

- To design and implementation of various basic and advanced data structures.
- To improve the logical ability
- To understand the abstract data types stack, queue, de-que and list.
- To understand prefix, infix, and postfix expression formats.
- To use stacks to evaluate postfix expressions.
- To use stacks to convert expressions from infix to postfix.
- To be able to recognize problem properties where stacks, queues, and de-queues are appropriate data structures.

Learning Outcomes:
On completion of the module the student should be able to:

- Understand a variety of techniques for designing algorithms.
- Understand a wide variety of data structures and should be able to use them appropriately to solve problems
- Understand some fundamental algorithms.

Sessions	Date	Topic	Method	Remarks/Reference
1.	16/11/15	Syllabus Discussion		
2.	17/11/15	Concept of Structured data: Data structure definition, Different types and	Lecturing	

		classification of data structures		
3.	18/11/15	Simple programs	Practicals	
4.	20/11/15	Operations on Data structures	Lecturing	
5.	23/11/15	Arrays – representation of array in the memory	Lecturing	
6.	24/11/15	operations on one dimensional and two dimensional arrays	Lecturing	
7.	25/11/15	Programs using arrays	Practicals	
8.	26/11/15	Bubble sort, Selection sort	Lecturing	
9.	27/11/15	linear search, binary search	Lecturing	
10.	30/11/15	sparse matrix	Lecturing	
11.	01/12/15	Revision	Test	
12.	02/12/15	Sorting & searching Programs	Practicals	
13.	03/12/15	Stacks and Queues: organization and operation on stacks	Lecturing	
14.	04/12/15	Conversion between infix to postfix & prefix representations	Lecturing	
15.	07/12/15	Expression Evaluation		
16.	08/12/15	Organization and operations on queues	Lecturing	
17.	09/12/15	Programs (Stack & queue operations)	Practicals	
18.	10/12/15	circular queue-multiple stacks and queue	Lecturing	
19.	11/12/15	Applications of stacks	Lecturing	
20.	14/12/15	Applications of queues	Lecturing	

21.	15/12/15	Linked list: Memory allocation (dynamic vs. static)	Lecturing	
22.	16/12/15	Conversion Programs	Practicals	
23.	17/12/15	concept of dynamic data structures		
24.	18/12/15	Seminar	Using PPT	
25.	28/12/15	Seminar	Using PPT	
26.	29/12/15			
27.	30/12/15			
28.	31/12/15	Revision	QP Discussion	
29.	01/01/16	Revision	QP Discussion	
30.	04/01/16	Internal 1		
31.	11/01/16	linked list, need, basic operations and types of linked list	Lecturing	
32.	12/01/16	linked list using pointers	Lecturing	
33.	14/01/16	insertion and deletion – examples	Lecturing	
34.	15/01/16	circular list – doubly linked lists	Lecturing	
35.	18/01/16	garbage collection	Lecturing	
36.	19/01/16			
37.	20/01/16		Practicals	
38.	21/01/16	Trees: Concept of recursion, definition of - trees,	Lecturing	
39.	22/01/16	binary trees, strictly binary trees	Lecturing	
40.	25/01/16	complete binary tree and Binary search tree	Lecturing	

41.	27/01/16		Practicals	
42.	28/01/16	Creation of binary search tree	Lecturing	
43.	01/02/16	traversing methods	Lecturing	
44.	02/02/16	Traversal using recursion	Lecturing	
45.	04/02/16	Non-recursive traversal - inorder	Lecturing	
46.	05/02/16	Non-recursive traversal – pre-order	Lecturing	
47.	08/02/16	Non-recursive traversal – post order	Lecturing	
48.	09/02/16			
49.	10/02/16		Practicals	
50.	11/02/16			
51.	12/02/16	File organization		
52.	15/02/16	sequential, random files,		
53.	16/02/16	linked organization		
54.	17/02/16		Practicals	
55.	18/02/16	inverted files		
56.	19/02/16	cellular partitioning, hashing function		
57.	22/02/16	Revision	Seminar	
58.	23/02/16	Revision	seminar	
59.	24/02/16		Practicals	
60.	25/02/16	Revision	QP discussion	
61.	26/02/16	Revision	QP Discussion	
62.	28/02/16	Internal II		

ASSIGNMENTS

	Date of submission/completion	**Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)**	**Weighttag**
1	16/12/15	Stacks and queues	5 marks
2	12/01/16	Trees	5 marks
3	26/02/16	File organization	5 marks
4	03/03/16	Previous question papers	5 marks

Books of study:

- Data Structures through C (A Practical Approach), G.S BalujaDanapatRai& Co.
- Fundamentals of Data Structures, Ellis Horowitz and SartajSajniGalgotia Publications

References:

- Introduction to data structures in C , Ashok N. Kamthane, Person Education
- Theory and Problems of Data Structures, Schaum's Outline Series, Seymour Lipschutz
- Data structures using c and C++ ,Tanenbaum

SEMESTER II- ANALYTIC GEOMETRY, TRIGONOMETRY AND MATRICES

Text Books:

1. Manicavachagom Pillay , Natarajan – Analytic Geometry (Part I, Two Dimensions).
2. S.L. Loney – Plane Trigonometry Part – II, S. Chand and Company Ltd.
3. Frank Ayres Jr - Matrices , Schaum's Outline Series, TMH Edition.

Sessions	Topic	Method	Remarks/Reference
1	Introductory Session	Lecture Method	
2	Circular and hyperbolic functions of a complex variable	Lecture Method	
3	Separation into real and imaginary parts	Lecture Method	
4	Problems	Interaction	
5	Factorisation of x^n-1, x^n+1, $x^{2n} - 2x^n a^n \cos n\theta + a^{2n}$	Lecture Method	
6	Problems	Interaction	
7	Problems	Interaction	
8	Problems	Interaction	
9	Summation of infinite series by C + i S method	Lecture Method	
10	Problems	Interaction	
11	Problems	Interaction	
12	Problems	Interaction	
13	Problems	Interaction	
14	Problems	Interaction	
15	Rank of a Matrix, Non-Singular and Singular matrices	Lecture Method	
16	Elementary Transformations, Inverse of an elementary Transformations	Lecture Method	
17	Equivalent matrices, Row Canonical form	Lecture Method	

18	Problems	Interaction	
19	Normal form, Elementary matrices only	Lecture Method	
20	Problems	Interaction	
21	CIA – I	1 hr; descriptive answers only	
22	Systems of Linear equations: System of non homogeneous solution using matrices	Lecture Method	
23	Problems	Interaction	
24	Cramer's rule	Interaction	
25	System of homogeneous equations	Lecture Method	
26	Problems	Interaction	
27	Characteristic equation of a matrix	Lecture Method	
28	Characteristic roots and characteristic vectors	Lecture Method	
29	Problems	Interaction	
30	Cayley-Hamilton theorem (statement only) and simple applications	Lecture Method	
31	Problems	Interaction	
32	Tangents and Normals (parametric form only) of a conic	Lecture Method	
33	Problems	Interaction	
34	Problems	Interaction	
35	Problems	Interaction	
36	Problems	Interaction	
37	Problems	Interaction	
38	Problems	Interaction	
39	Orthoptic locus	Lecture Method	
40	Pole and Polar	Lecture Method	
41	Problems	Interaction	
42	Chord in terms of given points	Lecture Method	
43	Problems	Interaction	
44	Problems	Interaction	
45	Conjugate diameters of ellipse and hyperbola	Lecture Method	
46	Problems	Interaction	
47	Asymptotes of a hyperbola	Lecture Method	

48	Problems	Interaction	
49	Conjugate hyperbola	Lecture Method	
50	CIA II	2 HOURS	
51	Problems	Interaction	
52	Rectangular hyperbola	Lecture Method	
53	Problems	Interaction	
54	Polar co-ordinates, polar equation of a line	Lecture Method	
55	Polar equation of a circle	Lecture Method	
56	Polar equation of a conic	Lecture Method	
57	Polar equations of tangent and normal to these curves	Interaction	
58	Problems	Interaction	
59	Discussion on the CIA & REVISION	Interaction	
60	REVISION & Evaluation of the Course	Interaction	

COURSE PLAN

COURSE : PROBABILITY AND STATISTICS

Semester : II
Course Code : 15 U2CPSTA2
Course Teachers :. Lakshmipriya R

Hours/Week: 05 **Hours/Semester: 72**

COURSE OBJECTIVES

Theory of probability plays a very important role in statistics for data analysis. Similarly, the concept of correlation and regression are some important tools to study the relationships between different characteristics of a data. This course is purported to enable the students in elementary methods of data analysis

Basic Reference

1 S.C. Gupta and V. K.Kapur. Fundamentals of Mathematical Statistics, Sultan Chand and sons New Delhi

2 S.P. Gupta. Statistical Methods ,Sultan Chand & Sons Delhi

3 B.L. Agarwal. Basic Statistics, New Age International (p) Ltd.

4 S.C.Gupta and V.K.Kapoor. Fundamentals of Applied Statistics,Sultan Chand & Sons Delhi

5 Murray R Spiegel, John Schiller, R. AluSrinivassan: Theory and problems of PROBABILITY AND STATISTICS, Schaum's outlines, Tata McGraw-Hill Publishing Company Ltd

COURSE OUTCOMES

At the end of the course, the student will be able to

- **basic concepts of probability, axiomatic theory of probability**
- **the concept of random varidables,**
- **probability distributions(univariate and bivariate)**
- **discrete and continues random variable**
- **joint, marginal, conditional probability function**
- **to compute the correlation coefficient for bivariate data and interpret**

Sessions	Topic	Method	Remarks/Reference
1.	Random Experiments,sample space	Lecturing	
2.	Events, Algebra of events	Lecturing	
3.	Borel field of events.Approaches to probability	Lecturing	
4.	Statistical definition of probability	Lecturing	
5.	Classical definition of probability	Lecturing	
6.	Axiomatic definition of probability	Lecturing	
7.	Addition theorem on probability, conditional probability	Lecturing	
8.	Multiplication theorem	Lecturing	
9.	Independence of events	Lecturing	
10.	problems	Lecturing	
11.	problems	Lecturing	
12.	Theorem of total probability	Lecturing	
13.	Properties, Problems	Lecturing	
14.	Bayes theorem	Lecturing	
15.	problems	Lecturing	

16.	**Revision, problems**	**Lecturing**	
17.	**Random variables**	**Lecturing**	
18.	**Probability distribution of discrete random variables, properties**	**Lecturing**	
19.	**Probability distribution of continuous random variables,properties**	**Lecturing**	
20.	**Distribution functon**	**Lecturing**	
21.	**problems**	**Lecturing**	
22.	**Joint distribution of a pair of random variables,**		
23.	**marginal and conditional distributions**	**2 Hrs**	
24.	**problems**	**Lecturing**	
25.	**Independence of random variables**	**Lecturing**	
26.	**problems**	**Lecturing**	
27.	**Mathematical Expectation**	**Lecturing**	
28.	**Moments**	**Lecturing**	
29.	**Moment generating functions**	**Lecturing**	
30.	**Properties of m.g.f**	**Lecturing**	
31.	**Characteristic function and its properties**	**Lecturing**	
32.	**Problems based on m.g.f and c.f**	**Lecturing**	
33.	**Cauchy-Schwartz inequality**	**Lecturing**	
34.	**Bivariate moments**	**Lecturing**	
35.	**Correlation between two random variables.**	**Lecturing**	
36.	**Problems**	**Lecturing**	

ASSIGNMENTS

	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Weighttage
1	Problems based on probability theorems	5 Marks
2	CIA I	5 Marks
3	VIVA	5 Marks
4	CIA II	5 Marks

ASSIGNMENTS/EXERCISES – Details & Guidelines

1. **Practical sheet-1 problems based on probability theorems**
2. **Practical sheet -2 problems based on random variable,p.d.f and d.f.**
3. **Personal discussion interacting with each student about the topic**

Programme: BSc Computer Application

Course: Data Communication and Computer Networks (15U3CRCAP5)

Hours/Week: 04 ***Hours/Semester: 72***

Course Teacher: Regitha M R

Course Description:

This course is to provide students with an overview of the concepts and fundamentals of data communication and computer networks. Topics to be covered include: data communication concepts and techniques in a layered network architecture, communications switching and routing, types of communication, network congestion, network topologies, network configuration and management, network model components, layered network models (OSI reference model, TCP/IP networking architecture) and their protocols, various types of networks (LAN, MAN, WAN and Wireless networks) and their protocols. The course is supplemented by a practical component covered in CS335 concurrently.

Course Objectives:

At the end of the course, the students will be able to:

- Build an understanding of the fundamental concepts of computer networking.
- Familiarize the student with the basic taxonomy and terminology of the computer networking area.
- Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
- Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

Learning Outcomes:

After completing this course the student must demonstrate the knowledge and ability to:

- Independently understand basic computer network technology.
- Understand and explain Data Communications System and its components.
- Identify the different types of network topologies and protocols.
- Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.
- Identify the different types of network devices and their functions within a network
- Understand and building the skills of subnetting and routing mechanisms.
- Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.

Term – I			
Sl. No	**Date**	**Topics**	**Method**
1	02-06-2015	Introduction to Data Communication, Network	Using PPT presentation
2	03-06-2015 04-06-2015	Protocols & Standards and Standards Organizations	Using PPT presentation
3	05-06-2015 08-06-2015 11-06-2015	Topology	Using PPT presentation
4	05-06-2015 16-06-2015	Transmission mode, Network models	Using PPT presentation
5	18-06-2015 22-06-2015	OSI model – layers and their functions in OSI model	Using PPT presentation

6	23-06-2015	TCP/IP	Using PPT presentation
7	30-06-2015	Data and Signals-Analog and Digital Signals-Wave Length, Bit Rate, Bit Length	Using PPT presentation
8	01-07-2015	Transmission Impairment-Attenuation, Distortion and Noise	Using PPT presentation
9	02-07-2015 06-07-2015	Bandwidth Utilization: Multiplexing – FDM,TDM,WDM and Spreading	Using PPT presentation
10	07-07-2015	Transmission Media –Guided Media	Using PPT presentation
11	08-07-2015	Switching- Circuit Switching, Datagram Network, Virtual Circuit - Dial up Modem	Using PPT presentation
12	09-07-2015	Data Link layer	Using PPT presentation
13	13-07-2015 14-07-2015	Error detection and Correction Codes	Using PPT presentation
14	15-07-2015 16-07-2015	Framing, Flow Control and Error Control	Using PPT presentation
15	20-07-2015 21-07-2015	Protocol for Noisy and Noiseless Channel	Using PPT presentation
16	22-07-2015 23-07-2015	Multiple Access: Random Access- ALOHA, CSMA, CSMA/CD	Using PPT presentation
Before the 1st Internal Exam – 40% of the syllabus will be completed			
17	27-07-2015 28-07-2015 29-07-2015	**First Internal Examination**	
Term II			

18	03-08-2015 04-08-2015	Channelisation Methods	Using PPT presentation
19	05-08-2015 10-08-2015	Wired and Wireless LAN	Using PPT presentation
20	11-08-2015 12-08-2015	Wireless WAN-Cellular Telephony and Satellite Networks	Using PPT presentation
21	13-08-2015 18-08-2015	Connecting Devices: Hubs, Switches, Repeaters, Bridges, Routers – Gateway	Using PPT presentation
22	19-08-2015 20-08-2015	Network Layer: Host to Host delivery - Logical Addressing	Using PPT presentation
23	21-08-2015 30-08-2015	**Onam Holidays**	
24	31-08-2015	Internet protocol: IPV4 and IPV6	Using PPT presentation
25	01-09-2015	Address Mapping – ICMP – IGMP	Using PPT presentation
26	02-09-2015	Uni Casting, Multicasting and Broadcasting	Using PPT presentation
27	03-09-2015	Transport Layer: UDP – TCP	Using PPT presentation
28	07-09-2015 08-09-2015 09-09-2015	Congestion Control: Open and Closed loop, Quality of service	Using PPT presentation
Before the 2nd Internal Exam – 80% of the syllabus will be completed			

29	14-09-2015 15-09-2015 16-09-2015	**Second Internal Examination**	
Term III			
30	17-09-2015	Application Layer: Name Space – Domain Name System, Voice over IP	Using PPT presentation
31	17-09-2015	Remote logging, FTP, SMTP, Multimedia Communication	Using PPT presentation
32	21-09-2015 22-09-2015	Cryptography-Symmetric Key Cryptography and Asymmetric key Cryptography	Using PPT presentation
Before the Semester Exam – 100% of the syllabus will be completed			
33	23-09-2015 24-09-2015 25-09-2015	Revision Days Attendance will be closed.	

ASSIGNMENTS

Sl. No	Date of submission/completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Marks
1	29-06-2015	Data Communication, its characteristics, components, data representation, data flow. (Individual – Written)	5

2	29-06-2015	Network criteria, Types of Connection and different topologies. (Individual – Written)	5
3	29-06-2015	Physical layer and Data link layer of OSI model. (Individual – Written)	5
4	29-06-2015	Network layer and Transport layer of OSI model. (Individual – Written)	5
5	29-06-2015	Session layer, Presentation layer and Application layer of OSI model. (Individual – Written)	5
6	29-06-2015	TCP/IP protocol and four levels of Addressing of TCP/IP. (Individual – Written)	5
7	29-06-2015	Analog signals, digital signals, Periodic and Non-periodic Signals, Sine Wave, Peak Amplitude, Period and Frequency. (Individual – Written)	5
8	29-06-2015	Analog signals, Phase, Wavelength, Bandwidth, Bit rate, and Bit length. (Individual – Written)	5
9	29-06-2015	Transmission impairment, Attenuation and Distortion and Noise. (Individual – Written)	5
10	29-06-2015	Multiplexing, Frequency Division Multiplexing and other applications of FDM. (Individual – Written)	5
11	29-06-2015	Wavelength Division Multiplexing, Time Division Multiplexing and Spread Spectrum. (Individual – Written)	5
12	29-06-2015	Transmission Media and Guided Media.	5

		(Individual – Written)	
13	29-06-2015	Transmission Media and Unguided Media. (Individual – Written)	5
14	29-06-2015	Switching: Circuit Switching, Packet Switching, Datagram Networks and Virtual Circuit Networks. (Individual – Written)	5
15	29-06-2015	Error detection: Types of errors, Redundancy, Modular Arithmetic and Block Coding. (Individual – Written)	5
16	29-06-2015	Error correction: Hamming distance, minimum hamming distance, Simple Parity-Check Code, Hamming Code. (Individual – Written)	5
17	29-06-2015	Cyclic Codes: Cyclic Redundancy Check and Checksum. (Individual – Written)	5
18	29-06-2015	Framing: Fixed-size framing, Variable-size framing, Character-oriented protocol and Bit-oriented protocol. (Individual – Written)	5
19	29-06-2015	Flow control, Error control, Simplest protocol, Stop-and-Wait protocol.	5
20	29-06-2015	Noisy Channels: Stop-and-Wait Automatic Repeat Request, Go-back-N Automatic Repeat Request and Selective Repeat Automatic Repeat Request. (Individual – Written)	5
21	29-06-2015	Multiple Access: Random Access, ALOHA, Slotted ALOHA, CSMA and CSMA/CD. (Individual – Written)	5

22	29-06-2015	Channelisation Methods: FDMA, TDMA and CDMA. (Individual – Written)	5
23	29-06-2015	Wired LAN, Wireless WAN, Cellular Telephony and Satellite Networks. (Individual – Written)	5
24	29-06-2015	Connecting Devices: Hubs, Switches, Repeaters, Bridges, Routers and Gateway. (Individual – Written)	5
25	29-06-2015	IPV4 and its packet format. (Individual – Written)	5
26	29-06-2015	Advantages of IPV6 than IPV4. (Individual – Written)	5
27	29-06-2015	ICMP, IGMP, Multicast Routing Protocols. (Individual – Written)	5
28	29-06-2015	Process delivery, Client/Server Paradigm, Connection vs Connectionless, Reliable vs Unreliable and UDP. (Individual – Written)	5
29	29-06-2015	Congestion Control: Open and Closed loops. (Individual – Written)	5
30	29-06-2015	Quality of service: Flow characteristics and Techniques to improve QoS. (Individual – Written)	5
31	29-06-2015	Name Space, Domain Name System and Remote logging, SMTP and FTP. (Individual – Written)	5
32	29-06-2015	Cryptography: Symmetric-key, Asymmetric-key and types of keys and comparison. (Individual – Written)	5
33	29-06-2015	Symmetric-key cryptography: Traditional	5

		Ciphers and Simple Modern Ciphers. (Individual – Written)	
34	29-06-2015	Modern Round Ciphers: DES, Triple DES and AES. (Individual – Written)	5

Hand Written Assignments – Details & Guidelines:

1	Assignments must be handwritten. Computer printouts or photocopies will not be accepted.
2	Assignments cover page must be attached to each assignment.
3	Course Code, Course Title, Class No and Student Name must be given on top of the assignment.
4	Only A4 size paper of good quality whether ruled or otherwise, is to be used for writing assignments.
5	Student is advised to submit his/ her assignments well within the due date
6	Assignments must be handwritten. Computer printouts or photocopies will not be accepted.
7	Assignments cover page must be attached to each assignment.
8	Course Code, Course Title, Class No and Student Name must be given on top of the

	assignment.

Seminars Using PPT – Details & Guidelines:

Seminar topics are in reverse order of Assignment topics. Maximum mark is 5.

1	In slides, list out key point only. You may include figures, charts equations tables etc. but not running paragraphs.
2	In slides, everything should be readable – Font size used should be at least 20.
3	Show figures tables etc. only if you have to explain something about it. Just flashing a slide and skipping the explanation is not desirable.
4	Figures should be very clear. Develop the habit of drawing your own figures using suitable software tools for better clarity.
5	For the presentation, adopt simple themes; avoid unnecessary animation and sound effects.
6	Give a title for each slide. Also add slide numbers.
7	There should be a slide for “conclusion”.
8	Before presentation the slides should be shown to the guide for corrections if any.
9	A synopsis of the seminar should be distributed among the concerned teachers latest by the previous day of seminar. The synopsis should contain the following.
10	After preparation, talk through the presentation aloud, to correct the timing – 20 minutes is the time limit.

Object Oriented Programming and C++

Course Description:

C++ is the first object oriented programming language taught in the course. The concept of classes and objects make it easy to represent real world entities. The subject starts with the comparison between procedural languages and object oriented languages. The concepts of operator overloading and function overloading are discussed to expose the students to the advantages of object oriented programming. Advanced topics like inheritance and its various types and virtual functions are taught in depth with its application areas. It is is an important language to learn because of its compact syntax and ability to interact with hardware directly. C++ is used frequently in areas such as game development, hardware manufacturing, embedded systems, and for military applications

Course **Ojectives**

- Explain how an existing C++ program works
- Discover errors in a C++ program and describe how to fix them
- Critique a C++ program and describe ways to improve it
- Analyze a problem and construct a C++ program that solves it
- Be able to understand and analysis any problem and derive its solution

Basic Reference

- Object Oriented Modeling and Design with UML, Second Edition by James Rumbaugh, Michael Blaha
- Object oriented Programming with C++, Fourth edition By E. Balaguruswamy
- Let Us C++ by YashwantKanetkar - BPB Publications
- Programming with C++ by John R Hubbard - Shaum's Outline series.
- Objected-Oriented Programming in C++ by Rajesh K Shukla, Wiley India.2008
- Edition
- Mastering C++ by Venugopal, Rajkumar, Ravishankar - McGraw Hill

Course **Outcomes:**

At the end of the course, the student will be able to

- Know the principles of object-oriented problem solving and programming.
- Outline the essential features and elements of the C++ programming language.
- Explain programming fundamentals, including statement and control flow and recursion.
- Apply the concepts of class, method, constructor, data abstraction, function abstraction, inheritance, overloading, and polymorphism

Sessions	**Date**	**Topic**	**Method**	**Remarks/Reference**
1	2/6/15	Introductory Session	Lecturing	
2	3/6/15	Basic concept of object oriented programming	Lecturing	
3	4/6/15	benefits of oops	Lecturing	
4	5/6/15	Structure of C++ Program	Lecturing	
5	8/6/15	Basic, derived and user defined data types	Lecturing	
6	9/6/15	Symbolic constants	Lecturing	
7	10/6/15	operators in C++	Lecturing	
8	11/6/15	Control Structures	Lecturing	
9	12/6/15	Functions in C+	Lecturing	
10	15/6/15	The main function, function prototyping	Lecturing	
11	16/6/15	call by reference-return by reference	Lecturing	
12	17/6/15	inline function	Lecturing	
13	18/6/15	function overloading	Lecturing	
14	19/6/15	friend functions	Lecturing	
15	22/6/15	virtual functions	Lecturing	
16	23/6/15	specifying a class	Lecturing	

17	24/6/15	Defining member functions	Lecturing	
18	25/6/15	Nesting of member functions	Lecturing	
19	26/6/15	Private member functions - arrays within a class	Lecturing	
20	29/6/15	static data members	Lecturing	
23	30/6/15	static member functions	Lecturing	
24	1/7/15	Arrays of objects	Lecturing	
25	2/7/15	objects as function arguments	Lecturing	
26	6/7/15	Constructors	Lecturing	
27	7/7/15	Parameterized Constructors	Lecturing	
28	8/7/15	Multiple constructors - Copy constructor	Lecturing	
29	9/7/15	Dynamic constructor	Lecturing	
30		Destructors	Lecturing	
31	10/7/15	Operator overloading	Lecturing	
32	13/7/15	Type conversions.	Lecturing	
	14/7/15		Lecturing	
33	15/7/15	**Inheritance** private, public, protected inheritance	Lecturing	
34	16/7/15	Single inheritance	Lecturing	
35	20/7/15	Multiple inheritance	Lecturing	
36	21/7/15	Multilevel inheritance	Lecturing	
37	22/7/15	Hierarchical inheritance	Lecturing	
38	23/7/15	Hybrid inheritance	Lecturing	
39	24/7/15	virtual base classes	Lecturing	
	27/7/15	CIA – I	2 hrs descriptive answers only	
	28/7/15	CIA – I	2 hrs descriptive answers only	
40	29/7/15	Discussion on the CIA		
41	30/7/15	Abstract classes	Lecturing	

42	31/7/15	Constructors in derived classes	Lecturing	
43	3/8/15	nesting of classes.	Lecturing	
44	4/8/15	Pointers	Lecturing	
45	5/8/15	this pointer	Lecturing	
46	6/8/15	polymorphism	Lecturing	
47	7/8/15	Pointers to objects	Lecturing	
48	10/8/15	pointer to derived classes	Lecturing	
49	11/8/15	virtual functions	Lecturing	
50	12//8/15	Pure virtual functions	Lecturing	
51	17/8/15	C++ streams	Lecturing	
52	18/8/15	Stream classes-Unformatted and	Lecturing	
53	19/8/15	console I/O operations	Lecturing	
54	1/9/15	Managing output with manipulators	Lecturing	
55	2/9/15	Manipulating strings	Lecturing	
56	3/9/15	Object Orientation- object oriented development	Lecturing	
57	4/9/15	Object oriented Methodology	Lecturing	
58	7/9/15	Object oriented Models-Object oriented themes	Lecturing	
59	8/9/15	Objects and classes concepts	Lecturing	
60	9/9/15	Links and association concepts	Lecturing	
61	10/9/15	Generalization and Inheritance-state modeling-interaction modeling	Lecturing	
62	14/9/15	CIA II	2 HOURS	
63	15/915	CIA II		
64	16/9/15	CIA II		
65	17/9/15	Discussion on the CIA		
66	18/9/15	REVISION	Seminar	
67	22/9/15	REVISION	Seminar	

68	23/9/15	REVISION	Seminar	
69	25/9/15	REVISION	Seminar	
70	28/9/15	REVISION	Seminar	
71	29/9/15	Evaluation of the Course		

ASSIGNMENTS

	Date of submission/completion	**Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)**	**Weighttage**
1	29/6/15	Basics of C++	5 marks
2	3/8/15	Notes of 2 and 3 unit	5 marks
3	23/9/15	Previous question papers	5 marks

SYSTEM ANALYSIS AND DESIGN

Course Description:

The students of Computer Science always dream to become software professionals. Having learnt a programming language, the students are given an opportunity to know what happens in software development. The students get to know about what is a system and what are its different types. The students are also exposed to software development life cycle, which basically deals with requirement collection and analysis, Feasibility study and human ware involved in the process. System design, implementation, testing and maintenance are also covered here. The students are asked to analyze the case studies to under stand the concepts better. Overall, study of this subject gives a sound knowledge about the software development process.

COURSE OBJECTIVES

- Defining a system
- The role of computer in information systems
- What are the characteristic and element of information system
- What are the various types of information system and models
- What are the different types of specialised information system
- How to build the computer based information system
- What are the different steps in system development life cycle
- What prompts users to change their request
- What are the various components of feasibility study

- What are the factors to consider in a candidate system
- How to plan and control for the system success

Basic Reference

Elements Of System Analysis – Marvin Gore & John Stubbe, Galgotia Book Source.

System Analysis And Design – Elias M Awad , Galgotia Book Source.

Software Engineering Concepts – Richard Fairley , Tata Mc Graw Publication.

COURSE OUTCOMES

At the end of this subject, students should be able to:

- Understand the principles of systems analysis and design
- Be able to carry out a structured analysis of business systems requirements
- Be able to design business systems solutions.

Sessions	Date	Topic	Method	Remarks/Reference
1.	2/6/15	System and its concepts	Lecturing	
2.	3/6/15	Elements of system	Lecturing	
3.	4/6/15	Characteristics of system	Lecturing	
4.	5/6/15	Information systems concepts	Lecturing	
5.	9/6/15	Business information systems	Lecturing	
6.	10/6/15	Describing the business organization	Lecturing	

7.	11/6/15	organization chart , organization function list	Lecturing	
8.	12/6/15	information system levels - operational, lower, middle, top management	Lecturing	
9.	16/6/15	the system development life cycle concepts	Lecturing	
10.	17/6/15	hardware and software end products.	Lecturing	
11.	18/6/15	Life cycle activities- life cycle flow chart, task	Lecturing	
12.	19/6/15	management review, baseline specifications	Lecturing	
13.	23/6/15	role of system analyst	Lecturing	
14.	24/6/15	REVISION	Discussion	
15.	25/6/15	REVISION	Test paper	
16.	26/6/15	Basic tool of system analysis identification codes – definition, need for codes	Lecturing	
17.	30/6/15	code plan, code dictionary	Lecturing	
18.	1/7/15	common type of codes	Lecturing	
19.	2/7/15	Notes Preparation	Libraray	
20.	6/7/15	forms design	Lecturing	
21.	7/7/15	basic parts of form	Lecturing	
22.	9/7/15	style and types of form, principles of form design	Lecturing	
23.	10/7/15	REVISION	Discussion	
24.	13/7/15	Tools for structure analysis and design: Types of basic charts	Using Powerpoint	

25.	14/7/15	decision tables	Using Powerpoint	
26.	16/7/15	decision trees	Using Powerpoint	
27.	20/7/15	structured English	Using Powerpoint	
28.	21/7/15	data flow diagram	Using Powerpoint	
29.	23/7/15	data flow diagram example	Using Powerpoint	
30.	24/7/15	data dictionary	Using Powerpoint	
31.	27/7/15	CIA I	2 Hrs	
32.	31/7/15	Discussion on CIA	Lecturing	
33.	3/8/15	system flow charts	Lecturing	
34.	4/8/15	flow charting symbols	Lecturing	
35.	5/8/15	information oriented flow charts	Lecturing	
36.	7/8/15	process oriented flow charts,	Lecturing	
37.	10/8/15	HIPO charts.	Lecturing	
38.	11/8/15	REVISION	Test Paper	
39.	12//8/15	Study phase: Study phase activities	Lecturing	
40.	17/8/15	information service request	Lecturing	
41.	18/8/15	initial investigation	Lecturing	
42.	1/9/15	fact finding techniques	Lecturing	
43.	2/9/15	fact analysis techniques	Lecturing	
44.	4/9/15	steps in feasibility analysis	Lecturing	
45.	7/9/15	study phase report	Lecturing	
46.	8/9/15	Design phase: Design phase activities	Lecturing	
47.	9/9/10	structure design, input design- input data	Lecturing	
48.		input media and devices	Lecturing	
49.	14/9/15	CIA II	2 Hrs	
50.	15/915	output design, design phase report	Lecturing	
51.	16/9/15	Development phase: Development phase activities	Lecturing	

52.	17/9/15	bottom up and top down computer program development	Lecturing	
53.	18/9/15	training- programmer, operator, user trainings	Lecturing	
54.	22/9/15	convertion; change over plan, PERT	Lecturing	
55.	23/9/15	steps in computer program development;	Lecturing	
56.	25/9/15	structured programming	Lecturing	
57.	28/9/15	development phase report	Lecturing	
58.	29/9/15	REVISION	Previous Question paper Discussion	

ASSIGNMENTS

	Date of submission/completion	**Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)**	**Weighttage**
1	27/6/15	Information Levels	5 marks
2	5/8/15	SDLC Life Cycle	5 marks
3	20/9/15	Previous question papers	5 marks

ASSIGNMENTS/EXERCISES – Details & Guidelines

Additional Reading List

SEMESTER III- CALCULUS

Text Books:

1. George B. Thomas Jr. (Eleventh Edition) – Thomas' Calculus, Pearson, 2008.
2. Shanti Narayan and P. K. Mittal– Differential Calculus (S. Chand & Co.) 2008.

Sessions	Topic	Method	Remarks/Reference
1	Introductory Session	Lecture Method	
2	Successive Differentiation	Lecture Method	
3	Problems	Interaction	
4	Problems	Interaction	
5	Expansion of functions using Maclaurin's theorem and Taylor's theorem	Lecture Method	
6	Problems	Interaction	
7	Concavity and points of inflexion	Lecture Method	
8	Problems	Interaction	
9	Problems	Interaction	
10	Curvature and Evolutes	Lecture Method	
11	Problems	Interaction	
12	Problems	Interaction	
13	Length of arc as a function derivatives of arc	Lecture Method	
14	Problems	Interaction	
15	Problems	Interaction	
16	Radius of curvature – Cartesian equations. Centre of curvature	Lecture Method	
17	Problems	Interaction	

18	Problems	Interaction	
19	Evolutes and Involutes, properties of evolutes	Lecture Method	
20	Problems	Interaction	
21	CIA – I	1 hr; descriptive answers only	
22	Asymptotes	Lecture Method	
23	Problems	Interaction	
24	Envelopes	Lecture Method	
25	Problems	Interaction	
26	Problems	Interaction	
27	Problems	Interaction	
28	Partial derivatives	Lecture Method	
29	Problems	Interaction	
30	Problems	Interaction	
31	The chain rule	Lecture Method	
32	Problems	Interaction	
33	Problems	Interaction	
34	Extreme values and saddle points	Lecture Method	
35	Problems	Interaction	
36	Problems	Interaction	
37	Problems	Interaction	
38	Lagrange multipliers	Lecture Method	
39	Problems	Interaction	
40	Problems	Interaction	
41	Problems	Interaction	
42	Partial derivatives with constrained variables.	Lecture Method	
43	Problems	Interaction	
44	Substitution and area between curves	Lecture Method	
45	Problems	Interaction	

46	Problems	Interaction	
47	Volumes by Slicing and rotation about an axis	Lecture Method	
48	Problems	Interaction	
49	Problems	Interaction	
50	Problems	Interaction	
51	Volumes by cylindrical shells	Lecture Method	
52	Problems	Interaction	
53	Lengths of Plane Curves	Lecture Method	
54	Problems	Interaction	
55	Problems	Interaction	
56	Areas of surfaces of Revolution and the theorems of Pappus	Lecture Method	
57	Problems	Interaction	
58	Problems	Interaction	
59	Double integrals	Lecture Method	
60	Areas	Lecture Method	
61	CIA II	2 HOURS	
62	Double integrals in polar form	Lecture Method	
63	Problems	Interaction	
64	Problems	Interaction	
65	Triple integrals in rectangular coordinates	Lecture Method	
66	Problems	Interaction	
67	Problems	Interaction	
68	Triple integrals in cylindrical and spherical coordinates	Lecture Method	
69	Problems	Interaction	
70	Problems	Interaction	
71	Substitutions in multiple integrals	Lecture Method	

72	Problems	Interaction	
73	Problems	Interaction	
74	Discussion on the CIA & REVISION	Interaction	
75	REVISION & Evaluation of the Course	Interaction	

COURSE PLAN

COURSE : **PROBABILITY DISTRIBUTIONS**

Semester : III
Course Code : 15 U3CPSTA3
Course Teachers : Lakshmipriya R

Hours/Week: 05 **Hours/Semester: 90**

COURSE OBJECTIVES

This course is designed to enable the students to understand the types of distributions and hence to determine the correct tools to be used for data analysis. This course introduces probability functions for random variables that are defined for different probabilistic situations.

Basic Reference

1. S.C. Gupta and V.K. Kapoor: Fundamentals of Mathematical Statistics, Sultan Chand and Sons
2. Hogg, R.V. and Craig A.T. (1970). Introduction to Mathematical Statistics, Amerind Publishing Co, Pvt. Ltd.
3. V.K. Rohatgi: An Introduction to Probability Theory and Mathematical Statistics, Wiley Eastern.
4. Mood A.M., Graybill F.A. and Boes D.C. Introduction to Theory of Statistics, McGraw Hill.
5. Johnson, N.L, Kotz, S. and Balakrishnan N. (1994). Continuous Univariate Distribution, John Wiley, New York.
6. Johnson, N.L, Kotz, S. and Kemp, A.W. :Univariate Discrete Distributions, John Wiley, New York.
7 Daroga Singh, F.S.Chaudhary :Theoryand Analysis of Sample survey DesignsNew Age International (p) Ltd.
8 Murthy M.N.: Sampling theory and Methods, Statistical Publishing Society, Calcutta.

COURSE OUTCOMES

On successful completion of the course the students should have understood

(1) the applications and nature of the probability distributions such as binomial ,poisson ….normal, (2)Sampling Distribution: Definitions of random sample, parameter and statistic, sampling distributions Sampling distribution of sample mean , standard errors of ample mean and sample proportion.

Sampling distributions of chi-square, t and F statistics.

.

Sessions	Topic	Method
1.	Mathematical Expectation	Lecturing
2.	Mathematical Expectation- Examples	Lecturing
3.	Moments	
4.	Relation between raw moments and central moments	Lecturing
5.	Moment Generating function (m.g.f.)	Lecturing
6.	Properties - (m.g.f.)	Lecturing
7.	Examples- (m.g.f.)	Lecturing
8.	Characteristic function	Lecturing
9.	**Properties and examples**	Lecturing
10.	**Conditional expectation**	Lecturing
11.	**Cauchy Schwartz inequality**	Lecturing
12.	**Bivariate moments**	Lecturing
13.	**Correlation between two random variables**	Lecturing
14.	**Examples- Correlation between two random variables**	
15.	**Introduction- Probability Distribution**	
16.	**Bernoulli distribution-mean.variance, m.g.f.**	Lecturing
17.	**Binomial distrinution – Mean , Variance, M.g.f.**	Lecturing
18.	**Binomial distrinution – Mean , Variance, M.g.f.**	Lecturing
19.	**Binomial distrinution – Examples**	
20.	**Recurrence Relation**	Lecturing

21.	**Poisson distribution- Mean, Variance, M.G.F.**	Lecturing
22.	**Poisson distribution - Examples**	Lecturing
23.	**Recurrence Relation**	Lecturing
24.	**Modes of binomial and Poisson distribution**	Lecturing
25.	**Relation between binomial and Poisson distribution**	Lecturing
26.	**Geometric distribution - Mean , Variance, M.g.f.**	Lecturing
27.	**Geometric distribution – Lack of memory property**	Lecturing
28.	**Uniform distribution- Discrete type**	Lecturing
29.	**Rectangular distribution Mean, Variance, M.G.F.**	Lecturing
30.	**Rectangular distribution Examples**	Lecturing
31.	**CIA –I**	2 Hrs
32.	**Exponential distribution- Mean, Variance, M.G.F.**	Lecturing
33.	**Lack of memory property**	Lecturing
34.	**Gamma distribution - Mean, Variance, M.G.F.**	Lecturing
35.	**Beta distribution –1st kind - Mean, Variance, M.G.F.**	Lecturing
36.	**Beta distribution –2nd kind - Mean, Variance, M.G.F.**	Lecturing
37.	**Normal distribution- Mean, Variance, M.G.F.**	Lecturing
38.	**Normal distribution – mean deviation, points of inflection**	Lecturing
39.	**Properties of normal distribution**	Lecturing
40.	**Properties of normal distribution**	Lecturing
41.	Lognormal distribution	Lecturing
42.	Fitting of Binomial, Poisson and Normal Distributions	Lecturing
43.	Fitting of Binomial, Poisson and Normal Distributions	Lecturing
44.	Tchebycheff's inequality	Lecturing
45.	Tchebycheff's inequality	Lecturing
46.	Bernoulli's law of large numbers	Lecturing
47.	Weak law of large numbers	Lecturing
48.	CIA II	2 Hrs
49.	Central Limit Theorem-	Lecturing
50.	Examples	Lecturing

51.	Methods of sampling	Lecturing
52.	Types of sampling- Simple Random Sampling, Stratififed sampling, Systematic Sampling, Cluster ssampling	Lecturing
53.	Sampling distributions	Lecturing
54.	Statistic and Parameter	Lecturing
55.	Chi-square distribution - **Mean, Variance, M.G.F**	Lecturing
56.	Students t Distribution – **properties**	Lecturing
57.	F distribution – Properties	Lecturing
58.	interrelation	Lecturing

ASSIGNMENTS

	Date of submission/completion	**Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)**	**Weighttage**
1	Exercise- Expectation		5 marks
2	Exercise – Probability distributions		5 marks
3	Exercise – Sampling distributions		5 marks

VISUAL BASIC PROGRAMMING TECHNIQUE

Hours/Week: 04 *Hours/Semester: 72*

Course Teacher: Regitha M R

Description: This course provides the skills and knowledge required to use essential features and capabilities of Visual BASIC, a programming system used to produce Graphical User Interfaces and applications in a Windows environment. It includes basic programming concepts, problem solving, programming logic, and the design of event-driven programming.

Course Outcomes:

- Demonstrate knowledge of programming terminology and how applied using Visual Basic (e.g., variables, selection statements, repetition statements, etc.)
- Develop a Graphical User Interface (GUI) based on problem description
- Develop an Event Planning Chart based on problem description so as to define the processing that is to occur based on specific events
- Develop an Algorithm to verify processing is accurate
- Develop programs that retrieve input from a file as opposed to input only provided by user

Term – I			
Sl. No	Date	Topics	Method
1	02-11-2015 03-11-2015	Getting Started with Visual Basic 6	Lecture class
2	04-11-2015 05-11-2015	Understanding Visual Basic Projects	Lecture class
3	06-11-2015 09-11-2015 16-11-2015	Designing the user interface	Lecture class
4	18-11-2015 19-11-2015	Putting your Forms to Work with controls.	Lecture class

	20-11-2015		
5	23-11-2015	Mastering Menus	Lecture class
7	30-11-2015 26-11-2015 27-11-2015	Tool Bars	Lecture class
8	01-12-2015 02-12-2015 03-12-2015	Visual Basic Code Basics	Lecture class
12	04-12-2015 07-12-2015 08-12-2015	Using Visual Basic Variables	Lecture class
14	09-12-2015 10-12-2015	Using the Visual Basic Debugging Tools	Lecture class
15	11-12-2015 14-12-2015	Handling Runtime Errors	Lecture class
16	15-12-2015 16-12-2015	Creating Objects and Classes	Lecture class
		40% syllabus is completed	Lecture class
17	17-12-2015 18-12-2015 21-12-2015	First Internal Examination	
Term II			
18	04-01-2016 05-01-2016	Advanced Class Concepts.	Lecture class

	06-01-2016		
19	07-01-2016 08-12-2016 12-12-2016	Working with objects and collections	Lecture class
20	13-12-2016 18-12-2016 19-12-2016 20-12-2016	Mastering the Visual Basic Data Control	Lecture class
21	21-12-2016 22-12-2016 25-12-2016	Creating Queries in Visual Basi	Lecture class
22	27-12-2016 28-12-2016 29-12-2016	Mastering Jet DAO	Lecture class
23	01-02-2016 02-02-2016 03-02-2016	ADO, OLEDB	Lecture class
28	05-02-2016 08-02-2016 09-02-2016	Second Internal Exam	
Before the 2nd Internal Exam – 80% of the syllabus will be completed			
Term III			
29	10-02-2016	Using Crystal Reports	Lecture class

	15-02-2016		
30	16-02-2016 17-02-2016 18-02-2016	Using the Package and Deployment Wizard	Lecture class
33	23-02-2016 24-02-2016 25-02-2016	Revision Days Seminar	Interaction Using PPT
34	26-02-2016	Attendance will be closed.	

Assignments:

Sl.No	Topics	Submission Date
1	Define VB and its features.	06-12-2015
2	Different phases of VB project development.	06-12-2015
3	Define IDE and its components.	06-12-2015
4	Define types of VB project, different components of a project, define project explorer, Conditional branching statements and various Loops.	06-12-2015
5	Define procedure, subroutines and functions. Define call-by-value and call-by-reference,	04-12-2015
6	Different data types in detail. Define String, fixed-length and fixed-width strings, object and variant data types.	04-12-2015
7	Define implicit & explicit declaration and scope & lifetime of a variable.	04-12-2015
8	Define appearance and control properties of form.	04-12-2015
9	Define size, positioning and drawing methods of a form.	04-12-2015
10	Define maintenance, operation, mouse and keyboard events of a form.	04-12-2015
11	Define Text Box, Command Button, Check Box, Option Button and Frame controls.	04-12-2015
12	Define Timer, common dialogue controls, array, control array and its advantages.	04-12-2015

13	Define MDI form: parent and child forms.	04-12-2015
14	Define the controls Label, Text Box, Command Button, List Box, Combo Box,	04-12-2015
15	Define the controls Check Box, Option Button, Frame, Shape, Drive List Box, Dir List Box, File List Box.	04-12-2015
16	Define creation of Menu and pop-up menu.	04-12-2015
17	Define the controls Picture Box, Image, Image List, Timer, OLE and Tabbed controls.	04-12-2015
18	Define Toolbar. Explain the addition and customization of a toolbar.	04-12-2015
19	Define traditional debugging techniques, debugging techniques using debugging windows.	04-12-2015
20	Define runtime error handling methods.	04-12-2015
21	Define the steps for the creation of a class: adding properties and methods of a class.	04-12-2015
22	Define events and special types of properties of a class.	04-12-2015
23	Define collection: Explain the forms collection and controls collection in detail.	04-12-2015
24	Define the creation of collection: adding, counting, retrieving & removing objects and destroying collection.	04-12-2015
25	Define the methods Add, Remove, Item of a Collection.	04-12-2015
26	Define Crystal Report in detail.	04-12-2015
27	Define DAO data control: explain its methods and events.	04-12-2015
28	Define SQL queries in VB.	04-12-2015
29	Define Jet DAO: Tables, Storage, Indexes and Relations & Queries. Explain RDBMS, DDL, DML and normalization.	04-12-2015
30	Define Jet DAO collections, classes and objects. Define its adding and saving methods.	04-12-2015
31	Define Common Dialog, Data Bound and Data Grid controls.	04-12-2015
32	Define ADO object model and its hierarchy. Define its methods and	04-12-2015

	properties.	
33	Define Package and Deployment wizard.	04-12-2015
34	Define VB and its features.	04-12-2015

Text Books:

Peter Norton's Guide to Visual Basic 6 by Peter Norton and Michael Groh, Techmedia Publications -Chapters:

References:

1. Visual Basic 6 from the Ground Up by Gary Cornell, Tata McGraw-Hill
2. Using Visual Basic 6 by Bob Roselman, Richard Peasley and Wayne Prunchiah, PHI

DataBase Management System

Course Description:

All the computer-based applications require data to operate. These data are efficiently handled by a database management system. The subject deals with what is a database and how a database should be designed. It also deals the popular relational data model and SQL queries in depth. It also concentrates on various techniques for database protection and query optimization. The subject also deals with different normalization in brief.

Course Objectives

- To give a good formal foundation on the relational model of data
- To present SQL and procedural interfaces to SQL comprehensively
- To give an introduction to systematic database design approaches covering conceptual design, logical design and an overview of physical design
- To present the concepts and techniques relating to query processing by SQL engines
- To introduce the concepts of transactions and transaction processing
- To present the issues and techniques relating to concurrency and recovery inmulti-user database environments

Book of study :

RamezElmasri and Shamkant B. Navathe, "Fundamentals of Database Systems" Pearson Education, 5th edition

References:

1. C.J Date, An Introduction to Database systems
2. ReghuRamakrishnan, Data base Management Systems, McGraw Hill international Edition.
3. Bipin Desai, " An Intriduction to Database Systems" Galgoria Publications, 1991

- **Websites:**

1. http://www.w3schools.com/sql/default.asp

2. www.cs.iit.edu/~cs561/cs425/algebra/home.html
3. http://en.wikipedia.org/wiki/Database_normalization
4. http://www.sql-tutorial.net/
5. info.cba.ksu.edu/skovar/greatplains/normalization.doc
6. en.wikipedia.org/wiki/Entity-relationship_model
7. http://nptel.iitm.ac.in/video.php?courseId=1071

Course **Outcomes:**
At the end of the course, the student

Objectives:

- By the end of the lesson, students should be able to:
- understand what is a database,
- find out for themselves where databases can be used,
- find out how to use sql server,
- Identify and define the information that is needed to design a database management system
- Build a database management system that satisfies relational theory with queries, forms, and reports.
- Design entity-relationship diagrams to represent simple database application scenarios

Assessment Details:
Class test : 2.5 Marks
IAT : 2.5 Marks
IAT : 5 Marks
Viva & seminars : 5 marks
Assignments : 5 marks
Attendance : 5 Marks

Sessions	Date	Topic	Method	Remarks/Reference
1	26/10/15	Introduction about DBMS	Lecturing	using ppt
2	28/10/15	lecture/discussion of certain database software concepts and features	Lecturing using ppt	using ppt
3	29/10/15	Characteristics of database approach	Review of main points of PowerPoint lecture on Chapter 1	using ppt
4	30/10/15	Data base users-DBA, Data base designers and end users	Lecturing	using ppt
5	2/11/15	Advantages of using DBMS	Detailed review of assignment	
6	4/11/15	Data Models	Lecturing	
7	5/11/15	Schemas and instances	Lecturing	
8	6/11/15	DBMS architecture	Lecturing	using ppt
9	9/11/15	data independence and DBMS language-DDL, DML,DCL	Lecturing	using ppt
10	11/11/15	Data Base system environment, DBMS Component and modules	Lecturing	
	12/11/15	**ER Modeling**- Introduction	Lecturing	
11	13/11/15	Entity types, Entity sets, Attributes and Keys,	Lecturing	using ppt
12	16/11/15	Assignment Questions	Detailed review of assignment	
13	18/11/15	Relationship Types, Relationship Sets relationship instances	Lecturing	
14	19/11/15	Constraints on relationship types, Weak entity types	Lecturing	

15	20/11/15	ER diagrams.	Lecturing	
16	23/11/15	Relational model concepts domains, attributes, tuples and relations,.	Lecturing	
17	25/11/15	characteristics of relations	Lecturing	
18	26/11/15	Relational Model constraints schemas, entity integrity, referential integrity and foreign keys with examples.	Lecturing	
19	27/11/15	Relational algebra	Lecturing	
20	30/11/15	Examples of queries in Relations Algebra	Lecturing	
21	02/12/15	Tuple relations calculus, Domain relational calculus.	Lecturing	
22	3/12/15	Relational Data base design using ER-to-Relational mapping	Lecturing	
23	4/12/15	SQL introduction	Lecturing	
24	7/12/15	DDL and DML commands	Lecturing	
25	9/12/15	Adding constraints	Lecturing	
	10/12/15	Ordering of rows UNION,EXCEPT,INTERSET	Lecturing	
26	11/12/15	Substring comparisons using LIKE operator, BETWEEN operator	Lecturing	
27	14/12/15	CIA I	Lecturing	
30	30/12/15	Complex Queries-Nested queries,	Lecturing	
31	31/12/15	EXISTS and UNIQUE functions, joining of tables,	Lecturing	
	1/1/16	Aggregate functions and grouping	Lecturing	
	4/1/16	Managing views	Lecturing	
32	11/1/16	SQL LAB	LAB	

33	13/1/16	SQL LAB	LAB	
	14/1/16	SQL LAB	LAB	
34	18/1/16	Data Normalization:- Informal Design Guide lines for relation schemas, and	Lecturing	
35	20/1/16	functional dependencies, Normal forms	Lecturing	
36	21/1/16	First normal form	Lecturing	
37	22/1/16	second normal form	Lecturing	
38	25/1/16	third normal form,	Lecturing	
39	27/1/16	Boyce- Codd normal form.	Lecturing	
40	28/1/16	**Indexing structures for files**- types of single level ordered indexes	Lecturing	
41	1/2/16	types of single level ordered indexes	Lecturing	
42	3/2/16	Discussions about assignments	Lecturing	
43	4/2/16	Introduction to transaction processing, ,	Lecturing	
44	5/2/16	control measures, database security and the DBA,	Lecturing	
45	/2/16	Transaction and system concepts	Lecturing	
	8/2/16	Desirable properties of transactions. Concurrency Control:-	Lecturing	
	9/2/16	Locking techniques for concurrency control.		
46	10/2/16	**Database Security and Authorization**:- Types of security	Lecturing	
47	11/2/16	Access protection	Lecturing	
48	12/2/16	User accounts	Lecturing	
49	15/2/16	database audits	Lecturing	
50	17/2/16	Access Control based on granting and Revoking privileges	Lecturing	
51	18/2/16	Discussion about previous question papers	Lecturing	
52	19/2/16	Revision	Seminars	
53	22/2/16	CIA II		
54				

ASSIGNMENTS

	Date of submission/completion	**Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)**	**Weighttage**	**Remarks**
1	2/11/15	Advantages and application of DBMS	5 marks	
2	25/11/15	ER diagram	5 marks	Powerpoint slides
	10/12/15	SQl notes	5 marks	
3	25/1/16	Normalisation	5 marks	Powerpoint slides
4	15/2/16	Previous question papers	5 marks	

INTERNALS

S.No.	DATE	TEST	TOPICS	DURATION
1	02/12/15	CLASS TEST	1 module	2 hrs
2	14/12/15	IAT 1	2 and 3 module	2 hrs
3	22/2/16	IAT 2	4 and 5 module	2 hrs

IV Semester

Sample Survey Designs

COURSE OBJECTIVES

This course introduces the concept, methods and analysis of sampling techniques

Basic Reference

1 S.C. Gupta and V. K.Kapur. Fundamentals of Mathematical Statistics, Sultan Chand and sons New Delhi

2 S.P. Gupta. Statistical Methods ,Sultan Chand & Sons Delhi

3 B.L. Agarwal. Basic Statistics, New Age International (p) Ltd.

4 S.C.Gupta and V.K.Kapoor. Fundamentals of Applied Statistics,Sultan Chand & Sons Delhi

5 Murray R Spiegel, John Schiller, R. AluSrinivassan: Theory and problems of PROBABILITY AND STATISTICS, Schaum's outlines, Tata McGraw-Hill Publishing Company Ltd

COURSE OUTCOMES

On successful completion of the course the students should have understood sample and census surveys, errors that occur in surveys and various sampling methods and the different types of populations to which these sampling methods are applicable.

Sessions	Date	Topic	Method	Remarks/Reference
1.	03/11/15	Basic concepts: Census and Sampling, Types of Sampling	Lecturing	
2.	24/11/15	Stratified random sampling	Lecturing	
3.	01/12/15	Stratified random sampling	Lecturing	
4.	08/12/15	Estimation of the population	Lecturing	

		mean		
5.	29/12/15	Estimation of the population total	Lecturing	
6.	05/01/16	Estimation of variances	Lecturing	
7.	12/01/16	Estimation of variances	Lecturing	
8.	02/02/16	Proportional allocation and Neyman cllocation	Lecturing	
9.	08/02/16	cost function optimum allocation	Lecturing	
10.	09/02/16	comparison with simple random sampling	Lecturing	
11.	10/02/16	Systematic Sampling: Linear and Circular Systematic Sampling	Lecturing	
12.	11/02/16	Estimates of the population mean and population total	Lecturing	
13.	12/02/16	Comparison of Systematic Sampling with simple random sampling,	Lecturing	
14.	15/02/16	Cluster sampling	Lecturing	
15.	16/02/16	Clusters with equal sizes estimation of population mean and total	Lecturing	
16.	17/02/16	Estimation of variances	Lecturing	
17.	18/02/16	Comparison of Cluster sampling with simple and stratified random sampling	Lecturing	
18.	19/02/16	problems	Lecturing	
19.	22/02/16	problems	Lecturing	

ASSIGNMENTS

	Date of submission/completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Weighttage
1	10/12/15	Stratified sampling	5 Marks
2	15/12/15	CIA I	5 Marks
3	20/01/16-20/02/16	VIVA	5 Marks
4	10/02/16	CIA II	5 Marks

SEMESTER IV-VECTOR CALCULUS, THEORY OF EQUATIONS AND NUMERICAL METHODS

Text Books:

1. George B. Thomas Jr. (Eleventh Edition) – Thomas' Calculus, Pearson, 2008.
2. Bernard and Child - Higher Algebra, AITBS Publishers, India.
3. S.S. Sastry - Introductory Methods of Numerical Analysis, Fourth Edition, PHI.

Sessions	Topic	Method	Remarks/Reference
1	Introductory Session	Interaction	
2	Lines and planes in space	Lecture Method	
3	Problems	Interaction	
4	Cylinders and Quadric surfaces	Lecture Method	
5	Vector functions	Lecture Method	
6	Problems	Interaction	
7	Arc length and Unit tangent vector	Lecture Method	
8	Problems	Interaction	
9	Curvature and Unit normal vector	Lecture Method	
10	Problems	Interaction	
11	Torsion and Unit Binormal vector	Lecture Method	
12	Problems	Interaction	
13	Directional derivatives and gradient vectors	Lecture Method	
14	Problems	Interaction	

15	Tangent planes and Differentials	Lecture Method	
16	Problems	Interaction	
17	Line integrals	Lecture Method	
18	Problems	Interaction	
19	Vector fields	Lecture Method	
20	Problems	Interaction	
21	CIA – I	1 hr; descriptive answers only	
22	Problems	Interaction	
23	Work Circulation and Flux	Lecture Method	
24	Problems	Interaction	
25	Problems	Interaction	
26	Path independence, Potential functions and conservative fields	Lecture Method	
27	Problems	Interaction	
28	Problems	Interaction	
29	Green's theorem in the plane	Lecture Method	
30	Problems	Interaction	
31	Problems	Interaction	
32	Surface area and Surface integrals	Lecture Method	
33	Problems	Interaction	
34	Problems	Interaction	
35	Parameterized surfaces	Lecture Method	
36	Problems	Interaction	
37	Problems	Interaction	
38	Stokes' theorem (statement only)	Lecture Method	
39	Problems	Interaction	
40	Problems	Interaction	
41	Divergence theorem and unified theory (no proof)	Lecture Method	
42	Problems	Interaction	

43	Statement of fundamental Theorem of algebra	Lecture Method	
44	Problems	Interaction	
45	Deduction that every polynomial of degree n has n and only n roots	Lecture Method	
46	Problems	Interaction	
47	Relation between roots and coefficients	Lecture Method	
48	Problems	Interaction	
49	Transformation of equations	Lecture Method	
50	Problems	Interaction	
51	Problems	Interaction	
52	Reciprocal equations	Lecture Method	
53	Problems	Interaction	
54	Problems	Interaction	
55	Cardan's method	Lecture Method	
56	Problems	Interaction	
57	Problems	Interaction	
58	Ferrari's method	Lecture Method	
59	Problems	Interaction	
60	Problems	Interaction	
61	CIA II	2 HOURS	
62	Symmetric functions of roots	Lecture Method	
63	Problems	Interaction	
64	Bisection Method	Lecture Method	
65	Problems	Interaction	
66	Method of False position	Lecture Method	
67	Problems	Interaction	
68	Iteration Method	Lecture Method	
69	Problems	Interaction	

70	Problems	Interaction	
71	Newton - Raphson Method		
72	Problems	Interaction	
73	Problems	Interaction	
74	Discussion on the CIA & REVISION	Interaction	
75	REVISION & Evaluation of the Course	Interaction	

COURSE PLAN

COURSE : STATISTICAL INFERENCE

Semester : IV
Course Code : 15 U4CPSTA4
Course Teachers : Lakshmipriya R
Hours/Week: 05 **Hours/Semester: 90**

Course Description: This course mainly focus on statistical inference consisting of estimation techniques and testing of hypothesis.

Objectives: Making inference based on statistical data is the key of any research activity. This course mainly focus on statistical inference consisting of estimation techniques and testing of hypothesis.

The mini project using statistical software like SPSS, R etc. will certainly enable the students to handle huge data set in a professional manner.

Learning Outcomes:

On successful completion of the course the students should have understood.Tests of significance: Null and alternative hypotheses, level of significance and probabilities of Type I and Type II errors, critical region and p-value.Large sample tests,use of CLT for testing single proportion, difference of two proportions,single mean,difference of means,standard deviation and difference of standard deviations. Tests of significance based on t, F and Chi-square distributions. ANOVA.

.

Sessions	Topic	hours	Method	Remarks/Reference
1.	Syllabus Discussion	1	Lecturing	
2.	Concepts of Estimation	1	Lecturing	Module I
3.	Introduction	1	Lecturing	
4.	Types of estimation	1	Lecturing	
5.	Point estimation	1	Lecturing, discussion	
6.	Properties of estimation	2	Lecturing	
7.	Unbiasedness, properties problems	2	Lecturing Discussion	
8.	Consistency, properties, problems	2	Lecturing	

9.	**Efficiency, problems**	**2**	**Lecturing, discussions**	
10.	**Sufficiency problems**	**2**	**Lecturing, discussions**	
11.	**Unit revision**	**1**	**Class test -1**	
12.	**Methods of estimation**	**1**	**Lecturing**	**Module II**
13.	**m.l.e**	**2**	**Lecturing,**	
14.	**problems**	**2**	**Discussion**	
15.	**Methods of Moments,problems**	**2**	**Class Test 2**	
16.	**Method of Minimum Variance, problems**	**2**	**Lecturing**	
17.	**Cramer Rao Inequality**	**1**	**Lecturing,**	
18.	**Interval estimation**	**2**	**Lecturing,**	
19.	**Comparison of interval estimation with point estimation**	**2**	**Lecturing, discussions**	
20.	**Interval estimation for mean**	**2**	**Lecturing**	
21.	**problems**	**1**	**Lecturing**	
22.	**Interval estimation for varianvce,problems**	**2**	**Lecturing**	
23.	**Interval estimation for proportions**	**2**	**Lecturing**	
24.	**Unit Revision**	**1**	**Discussion**	
25.	**Revision**	**1**	**Class Test 2**	
26.	**CIA- 1**	**2**		
27.	**Testing of hypothesis**	**2**	**Lecturing**	**Module III**
28.	**Statistical hypothesis, Simple and composite hypothesis**	**2**	**Lecturing**	
29.	**Null and Alternate hypotheses, Type I and Type II errors, Critical Region, Size of the test**	**2**	**Lecturing**	
30.	**Power, Neyman Pearson approach(without proof)**	**2**		
31.	**Small sample tests – Z-test**	**2**	**Lecturing,**	

32.	**t- test, problems**	**2**	**Lecturing,**	
33.	**Paired t –test**	**2**	**Lecturing,**	
34.	**Chi-square test for testing variance and F test for testing equality of variances**	**3**	**Lecturing,**	
35.	**Large Sample test- Z test for testing population means**	**2**	**Lecturing,**	**Module IV**
36.	**equality of population means; Testing population proportion, equality of two population proportions**	**2**	**Lecturing,**	
37.	**Problems**	**2**	**Lecturing, Dscussion**	
38.	**Chi-Square test-goodness of fit**	**2**	**Lecturing,**	
39.	**Chi-Square test -test of independence,problems**	**2**	**Lecturing,**	
40.	**Analysis of Variance (one way classification), problems**	**2**	**Lecturing,**	
41.	**Non parametric tests**	**2**	**Lecturing,**	
42.	**Revision**	**1**	**discussion**	
43.	**CIA 2**	**2**		

ASSIGNMENTS

	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	**Weighttag**
1	**MINI PROJECT**	**10 marks**

Core Reference

1. **S.C. Gupta and V.K. Kapoor: Fundamentals of Mathematical Statistics, Sultan Chand and Sons**
2. **Richard Johnson (2006): Probability and Statistics for Engineers (Miller and Freund). Prentice Hall.**

Additional References

1. **S.C Gupta : Fundamentals of Mathematical Statistics, Sultan Chand and Sons.**
2. **V.K. Rohatgi: An Introduction to Probability Theory and Mathematical Statistics, Wiley Eastern.**
3. **Mood A.M., Graybill F.A. and Boes D.C. Introduction to Theory of Statistics, McGraw Hill.**

Programme: BSc Computer Application

Course: JAVA Programming (15U5CRCAP10)

Hours/Week: 04 ***Hours/Semester: 72***

Course Teacher: Regitha M R

The course will introduce students to object oriented programming using Java. It assumes that students know the basics of scalar types (integers, strings, booleans) and fundamental control structures in procedural programming (loops, assignment statements, conditional expressions). It will focus on more sophisticated features such as design of classes, interfaces, packages and APIs. It will also cover the basic principles of software design, testing, and collaborative programming. It will finally include a short introduction to the Java Collection Framework and the Java API.

Objectives:

The objective of this course is to

- Cover issues related to the definition, creation and usage of classes, objects and methods.
- Discuss the principles of inheritance and polymorphism and demonstrate though problem analysis assignments how they relate to the design of methods, abstract classes and interfaces.
- Provide the foundation of good programming skills by discussing keys issues to the design of object-oriented software, including programming design patterns, automatic documentation techniques and programming testing.

- Cover the basics of creating APIs as well as allow students to explore the Java Abstract Programming Interface (API) and Java Collection Framework through programming assignments.

Learning Outcomes:

Upon completion of this class, students should be able to

- Understand the concept of OOP as well as the purpose and usage principles of inheritance, polymorphism, encapsulation and method overloading.
- Identify classes, objects, members of a class and the relationships among them needed for a specific problem.
- Create Java application programs using sound OOP practices (e.g., interfaces and APIs) and proper program structuring (e.g. by using access control identifies, automatic documentation through comments, error exception handling)
- Use testing and debugging tools to automatically discover errors of Java programs as well.

Term – I			
Sl. No	**Date**	**Topics**	**Method**
1	02-06-2015	Object oriented programming	Using PPT presentation
2	03-06-2015 04-06-2015	Encapsulation-Inheritance-Polymorphism	Using PPT presentation
3	05-06-2015 08-06-2015 11-06-2015	Genesis of Java-characteristics of java	Using PPT presentation
4	05-06-2015 16-06-2015	Program structure-identifiers-operators-variables-literals	Using PPT presentation

5	18-06-2015 22-06-2015	Data types-Arrays	Using PPT presentation
6	23-06-2015	Control Statements-selection statements-iterative statements-jump statements	Using PPT presentation
7	30-06-2015	Loops- while loop-do while loop- for loop	Using PPT presentation
8	01-07-2015	Classes-declaration –object references-instantiation	Using PPT presentation
9	02-07-2015 06-07-2015	Method declaration-method calling – this operator	Using PPT presentation
10	07-07-2015	Constructor-constructor overloading	Using PPT presentation
11	08-07-2015	Method overloading-method overriding	Using PPT presentation
12	09-07-2015	Inheritance-super class	Using PPT presentation
13	13-07-2015 14-07-2015	Dynamic method dispatch-final-static-abstract classes	Using PPT presentation
14	15-07-2015 16-07-2015	String Handling	Using PPT presentation
15	20-07-2015 21-07-2015	Packages - creating packages-using packages	Using PPT presentation
16	22-07-2015 23-07-2015	Interfaces-Exception - Handling Techniques-try-catch	Using PPT presentation
Before the 1st Internal Exam – 40% of the syllabus will be completed			
17	27-07-2015 28-07-2015 29-07-2015	**First Internal Examination**	
Term II			

18	03-08-2015 04-08-2015	Handling Techniques-throw-throws-finally	Using PPT presentation
19	05-08-2015 10-08-2015	Multithreading- creation of multithreaded program	Using PPT presentation
20	11-08-2015 12-08-2015	Thread class-Runnable interface	Using PPT presentation
21	13-08-2015 18-08-2015	Thread priorities	Using PPT presentation
22	19-08-2015 20-08-2015	Thread Synchronization	Using PPT presentation
23	31-08-2015	Event Handling-Delegation Event Model-Event Classes-Sources of Events-Event Listeners	Using PPT presentation
24	01-09-2015	AWT: Frame Class	Using PPT presentation
25	02-09-2015	AWT Controls: Label-Button-Checkbox-List-Choice control-Text Field-Text Area	Using PPT presentation
26	03-09-2015	Lay out Managers	Using PPT presentation
27	07-09-2015 08-09-2015 09-09-2015	Applet Fundamentals -applet tag-applet life cycle-passing parameters to applets	Using PPT presentation
Before the 2nd Internal Exam – 80% of the syllabus will be completed			
28	14-09-2015 15-09-2015 16-09-2015	**Second Internal Examination**	
Term III			
29	17-09-2015	Working with graphics –Line-Rectangle-Oval – Arc-color setting	Using PPT presentation

30	17-09-2015	I/O Streams: DataInputStream-DataOutputStream	Using PPT presentation
31	21-09-2015 22-09-2015	BufferedReader-BufferedWriter classes	Using PPT presentation
Before the Semester Exam – 100% of the syllabus will be completed			
32	23-09-2015 24-09-2015 25-09-2015	Revision Days Attendance will be closed.	

ASSIGNMENTS

Sl. No	Date of submission/completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc.)	Marks
1	29-06-2015	Genesis of Java and characteristics of Java.	5
2	29-06-2015	Program structure: identifiers, operators, variables, literals.	5
3	29-06-2015	Data types and arrays.	5
4	29-06-2015	Byte code and JVM.	5
5	29-06-2015	Wrapper classes and its uses.	5
6	29-06-2015	Control Statements, selection statements,	5

		iterative statements and jump statements.	
7	29-06-2015	Loops: while loop, do while loop and for loop.	5
8	29-06-2015	Class declaration, object references and object instantiation.	5
9	29-06-2015	Method declaration, method calling, this operator.	5
10	29-06-2015	Command-line arguments.	5
11	29-06-2015	Constructors: creation, uses and constructor overloading.	5
12	29-06-2015	Method overloading, constructor overloading and method overriding.	5
13	29-06-2015	Inheritance and super class.	5
14	29-06-2015	Dynamic method dispatch.	5
15	29-06-2015	Final Variable, Final Method, Final class, static class and abstract class	5
16	29-06-2015	String Handling.	5
17	29-06-2015	Packages: creating packages, using packages.	5
18	29-06-2015	Packages: User defined packages.	5
19	29-06-2015	Interfaces: creating interface and implements interface.	5
20	29-06-2015	Exception Handling Techniques: try,	5

		catch	
21	29-06-2015	Exception Handling Techniques: throw, throws and finally.	5
22	29-06-2015	Multithreading: creation of multithreaded program.	5
23	29-06-2015	Thread class, Runnable interface.	5
24	29-06-2015	Thread priorities.	5
25	29-06-2015	Event Classes, Sources of Events and Event Listeners.	5
26	29-06-2015	AWT Control: Frame Class.	5
27	29-06-2015	AWT Controls: Label, Button and Checkbox.	5
28	29-06-2015	AWT Controls: List, Choice control, Text Field and Text Area.	5
29	29-06-2015	Layout Managers: Flow Layout, Border Layout.	5
30	29-06-2015	Layout Managers: Grid Layout, Card Layout.	5
31	29-06-2015	Applet Fundamentals	5
32	29-06-2015	Applet life cycle.	5
33	29-06-2015	Passing parameters to applets.	5
34	29-06-2015	Working with graphics: Line, Rectangle,	5

		Oval and Arc color setting.	

Hand Written Assignments – Details & Guidelines:

1	Assignments must be handwritten. Computer printouts or photocopies will not be accepted.
2	Assignments cover page must be attached to each assignment.
3	Course Code, Course Title, Class No and Student Name must be given on top of the assignment.
4	Only A4 size paper of good quality whether ruled or otherwise, is to be used for writing assignments.
5	Student is advised to submit his/ her assignments well within the due date
6	Assignments must be handwritten. Computer printouts or photocopies will not be accepted.
7	Assignments cover page must be attached to each assignment.
8	Course Code, Course Title, Class No and Student Name must be given on top of the assignment.

INTERNET WEB DESIGNING AND CYBER LAWS

COURSE OBJECTIVES

The course aims:

- To explain the basic concepts of internet and internet services
- To explain the facilities for secure communication
- To explain HTML and cyber crimes

Basic Reference

- "Internet Complete Reference", Harley Hahn
- "The Internet", Douglas E. Comer, Prentice –Hall of India, Third Edition.
- HTML Black Book
- "Cyber Law Crimes", Barkha and U. Rama Mohan, Asia Law House, New Edition.

COURSE OUTCOMES:

At the end of the course, the student will be able to

- Understand the basic concepts related to internet and its standard protocols.
- Design web pages using HTML
- Understand the basic concepts of internet services.
- Understand about E commerce and business
- Understand key terms and concepts in cyber crimes.

Sessions	Date	Topic	Method	Remarks/Reference
1	4/6/15	Introductory Session	Lecturing	
2	8/6/15	Basic Communication	Lecturing	
3	9/6/15	Local Area Network	Lecturing	

4	10/6/15	Packet Switching	Lecturing	
5	15/6/15	Internet: A Network of Networks	Lecturing	
6	19/6/15	ISPs and Network Connections	Lecturing	
7	24/6/15	IP Address	Lecturing	
8	25/6/15	Transmission Control Protocol (TCP),	Lecturing	
9	6/7/15	Domain Names	Lecturing	
10	7/7/15	Electronic mail	Lecturing	
11	8/7/15	Bulletin Board Service (Network News)	Lecturing	
12	9/7/15		Lecturing	
13	14/7/15	browsing the World Wide Web	Lecturing	
14		Automated Web Search (Search Engines		
15	16/7/15	Audio and Video Communication	Lecturing	
16	20/7/15	Faxes	Lecturing	
17	21/7/15	FTP	Lecturing	
18	24/7/15	Remote Login	Lecturing	
19	27/7/15	Introduction to HTML	Lecturing	
20	28/7/15	Formatting Tags,fonts	Lecturing	
21	3/8/15	Lists,	practicals	
22	4/8/15	Frames,Forms	Practicals	
23	5/8/15	Table,Marquee	Practicals	
24	6/8/15	Creating simple websites	Practicals	
25	7/8/15	E-Commerce		
26	10/8/15	Facilities for Secure Communication		
27	11/8/15	Electronic Commerce and Business	Lab	
28	12//8/15	Types of Ecommerce		
29	17/8/15	E payment systems		
30	18/8/15	Cyber Crimes		
31	19/8/15	Computer Crime		
32	1/9/15	Nature of Crimes		

33	2/9/15	Penalty for damage to Computer		
34	3/9/15	Computer system		
35	4/9/15	tampering with Computer Source Documents		
36	7/9/15	Hacking		
37	8/9/15	Computer Related Offences		
38	9/9/15	Theft		
39	10/9/15	The Language of Cyberspace.		
40	14/9/15	Evaluation of the Course		

ASSIGNMENTS

	Date of submission/completion	**Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)**	**Weighttage**
1	29/6/15	Introduction to internet	5
2	3/8/15	Web designing using html	5
3	23/9/15	Previous question papers	5

DIFFERENTIAL EQUATIONS

Basic Reference

1. Shepley L. Ross - Differential Equations, 3rd ed., (Wiley India).
2. Ian Sneddon – Elements of Partial Differential Equation (Tata Mc Graw Hill

Sessions	Topic	Method	Remarks/Reference
1	Exact differential equations	Lecturing	
2	Exact differential equations	Lecturing	
3	integrating factors	Lecturing	
4	separable equations	Lecturing	
5	separable equations	Lecturing	
6	Homogenous equations	Lecturing	
7	Homogenous equations	Lecturing	
8	linear equations	Lecturing	
9	Bernoulli equations	Lecturing	
10	Bernoulli equations	Lecturing	
11	special integrating factors	Lecturing	
12	Orthogonal trajectories	Lecturing	
13	oblique trajectories	Lecturing	
14	Basic theory of linear differential equations	Lecturing	
15	Basic theory of linear differential equations	Lecturing	
16	The homogeneous linear equation with constant coefficients	Lecturing	
17	The homogeneous linear equation with constant coefficients	Lecturing	

18	The homogeneous linear equation with constant coefficients	Lecturing	
19	The method of undetermined coefficients	Lecturing	
20	The method of undetermined coefficients	Lecturing	
21	The method of undetermined coefficients	Lecturing	
22	Variation of parameters	Lecturing	
23	Variation of parameters	Lecturing	
24	CIA – I	2 hr	
25	The Cauchy – Euler equation	Lecturing	
26	Power series solution about an ordinary point	Lecturing	
27	Power series solution about an ordinary point	Lecturing	
28	solutions about singular points	Lecturing	
29	solutions about singular points	Lecturing	
30	the method of Frobenius	Lecturing	
31	the method of Frobenius	Lecturing	
32	the method of Frobenius	Lecturing	
33	the method of Frobenius	Lecturing	
34	Bessel's equation and Bessel Functions	Lecturing	
35	Bessel's equation and Bessel Functions	Lecturing	
36	Differential operators and an operator method	Lecturing	
37	Differential operators and an operator method	Lecturing	
38	Surfaces and Curves in three dimensions	Lecturing	
39	Surfaces and Curves in three dimensions	Lecturing	

40	solution of equation of the form $\frac{dx}{P}=\frac{dy}{Q}=\frac{dz}{R}$	Lecturing	
41	solution of equation of the form $\frac{dx}{P}=\frac{dy}{Q}=\frac{dz}{R}$	Lecturing	
42	Origin of first order and second order partial differential equations	Lecturing	
43	Origin of first order and second order partial differential equations	Lecturing	
44	CIA II	2 HOURS	
45	Discussion on the CIA	Lecturing	
46	Linear equations of the first order	Lecturing	
47	Linear equations of the first order	Lecturing	
48	Lagrange's method	Lecturing	
49	Lagrange's method	Lecturing	
50	REVISION		
51	REVISION		
52	Evaluation of the Course		

ASSIGNMENTS

	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	**Weighttage**
1	Example problems in 1st and 2nd unit	5
2	Example problems in 3rd and 4th unit	5
3	Problems in previous question papers	5
4		

SEMESTER V- MATHEMATICAL ANALYSIS

Text Books:

1. S.C.Malik, Savitha Arora - Mathematical Analysis. RevisedSecond edition.
2. J.W. Brown and Ruel.V.Churchill - Complex Variables and Applications, 8th edition. Mc.Graw Hill.

Sessions	Topic	Method	Remarks/Reference
1	Introductory Session	Lecture Method	
2	Intervals	Lecture Method	
3	Bounded and unbounded sets	Lecture Method	
4	Supremum, Intimum	Lecture Method	
5	Problems	Interaction	
6	Order completeness in R	Lecture Method	
7	Archimedian property of real numbers	Lecture Method	
8	Theorems	Lecture Method	
9	DEdekinds form of completeness property	Lecture Method	
10	Neighbourhood of a point	Lecture Method	
11	Interior point of a set	Lecture Method	
12	Problems	Interaction	
13	Open set	Lecture Method	
14	Theorems	Lecture Method	
15	Limit point of a set	Lecture Method	
16	Problems	Interaction	
17	Bolzano weierstrass theorem for sets	Lecture Method	
18	Closed sets	Lecture Method	

19	Theorems	Lecture Method	
20	Theorems	Lecture Method	
21	CIA – I	1 hr; descriptive answers only	
22	Closure of a set	Lecture Method	
23	Theorems	Lecture Method	
24	Dense sets	Lecture Method	
25	Theorems	Lecture Method	
26	Theorems	Lecture Method	
27	Countable and uncountable sets	Lecture Method	
28	Theorems	Lecture Method	
29	Theorems	Lecture Method	
30	Theorems	Lecture Method	
31	Real sequences	Lecture Method	
32	The range	Lecture Method	
33	Bounds of a sequence	Lecture Method	
34	Convergence of sequences	Lecture Method	
35	Some theorems	Lecture Method	
36	Theorems	Lecture Method	
37	Limit points of a sequence	Lecture Method	
38	Problems	Interaction	
39	Bolzano Weierstrass theorem for sequences	Lecture Method	
40	Limit interior and superior	Lecture Method	
41	Theorems	Lecture Method	
42	Theorems	Lecture Method	
43	Theorems	Lecture Method	
44	Convergent sequences	Lecture Method	
45	Theorems	Lecture Method	

46	Cauchy's general principle of convergence	Lecture Method	
47	Cauchy's sequences	Lecture Method	
48	Algebra of sequences	Lecture Method	
49	Theorems	Lecture Method	
50	Theorems	Lecture Method	
51	Theorems	Lecture Method	
52	Theorems	Lecture Method	
53	Monotonic sequences, subsequences	Lecture Method	
54	Problems	Interaction	
55	Problems	Interaction	
56	Theorems	Lecture Method	
57	Sums and products	Lecture Method	
58	Basic algebraic properties. Further properties	Lecture Method	
59	Vectors and moduli	Lecture Method	
60	Different representations	Lecture Method	
61	CIA II	2 HOURS	
62	Exponential forms	Lecture Method	
63	Problems	Interaction	
64	Arguments of products and quotients	Lecture Method	
65	Problems	Interaction	
66	Product and powers in exponential form	Lecture Method	
67	Problems	Interaction	
68	Problems	Interaction	
69	Roots of complex numbers	Lecture Method	
70	Problems	Interaction	
71	Problems	Interaction	
72	Regions in the complex plane	Lecture Method	

73	Problems	Interaction	
74	Discussion on the CIA & REVISION	Interaction	
75	REVISION & Evaluation of the Course	Interaction	

COURSE PLAN

COURSE : Design of Experiments

Semester : V

Course Teachers : Lakshmipriya R

Hours/Week: 05 **Hours/Semester: 75**

Learning Outcomes:

1.Understood the concept of Linear Estimation,Gauss Markov Theorem

2.Able to do the ANOVA of one way classified data,two way classified data

3.Able to do the Layout and analysis of CRD,RBD,LSD

4.Able to do the analysis of Factorial Experiment

Sessions	Topic	hours	Method	
1.	Syllabus Discussion	1	Lecturing	
2.	Principles of Experimentation	1	Lecturing	
3.	Linear Estimation	2	Lecturing	Module I
4.	Estimability of Parametric functions	2	Lecturing	
5.	BLUE	2	Lecturing	
6.	Guass_Markov Theorem	2	Lecturing	
7.	Review	1	Class test 1	
8.	Testing of Linear Hypothesis	1	Lecturing,	Module II
9.	ANOVA of one way classified data	4	Lecturing	
10.	ANOVA of two way classified data	4	Lecturing	
11.	ANOVA of two way classified data with Equal number of observations per cell	4	Lecturing	
		5		
12.	Layout and Analysis of the basic designs	1		Module III
13.	CRD	2	Lecturing	

14.	**RBD**	**2**	**Lecturing**	
15.	**LSD**	**2**	**Lecturing**	
16.	**Missing plot technique**	**2**	**Lecturing**	
17.	**Relative Efficiency of Designs**	**3**	**Lecturing**	
18.	**Introduction to Factorial Experiments**	**3**	**Lecturing**	**Module IV**
19.	**Main Effects**	**3**	**Lecturing**	
20.	**Interaction and Analysis in 2^n experiments**	**3**	**Lecturing**	

ASSIGNMENTS

	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	**Weighttag**
1	**Problems in CRD,RBD,LSD**	**10 marks**

Core Reference

1. **Design and Analysis of Experiments by M.N Das and N.C Giri**
2. **Linear Estimation and Design Of Experiments**

Semester : VI
Course Tittle : Linux

Name of Teacher : Achamma Cherian

Hours/Week: 05
Hours/Semester: 60

Course Description:

This course introduces students to the basic concepts and core functions of the Linux operating system in a stand-alone environment. Students learn basic command structures and capabilities of the Linux operating system, along with the skills required to perform common basic system configuration and management tasks. Typical tasks covered include, but are not limited to installing the operating system, working the command line shell, managing/mounting/creating file systems, file permissions overview, managing and troubleshooting the boot process, task automation, software management and customizing the operating system environment.

Objectives:

After successfully completing this course, students should be able to: *

- comfortably use basic UNIX/Linux commands from the command line (from a terminal window);
- organize and manage their files within the UNIX/Linux file system;
- organize and manage their processes within UNIX/Linux;
- usefully combine UNIX/Linux tools using features such as filters, pipes, redirection, and regular expressions;
- customize their UNIX/Linux working environment;
- be knowledgeable enough about basic UNIX/Linux shell scripting to be able to successfully read and writebash shell scripts;
- know how to use UNIX/Linux resources to find additional information about UNIX/Linux commands

Learning Outcomes:

- A good working knowledge of Linux
- How to navigate through major Linux distributions
- System configurations and graphical interface of Linux
- Basic command line operations
- Common applications of Linux

Sessions	Date	Topic	Method	Remarks/Reference

1.	24/11/15	**Linux introduction and file system**	Lecturing	
2.	25/11/15	Basic Features, Advantages	Lecturing	
3.	26/11/15	Installing requirement,	Using PPT	
4.	27/11/15	Basic Architecture of Unix/Linux system, Kernel, Shell	Using PPT	
5.	01/12/15	Linux File system - Boot block, Super block, Inode table, Data blocks	Using PPT	
6.	02/12/15	Linux standard directories	Lecturing	
7.	03/02/15	Commands for files and directories	Lecturing	
8.	04/12/15	cd, ls, cp, rm, mkdir, rmdir, pwd, file, more, less,	Practicals	
9.	08/12/15	Creating and viewing files using cat, file comparisons	Practicals	
10.	09/12/15	View files	Lecturing	
11.	10/12/15	disk related command	Lecturing	
12.	11/12/15	checking disk free spaces.	Lecturing	
13.	15/12/15	Revision		
14.	16/12/15	Test		
15.	17/12/015	Understanding shells	Using PPT	
16.	18/12/15	Processes in Linux	Lecturing	
17.	29/12/15	process fundamentals connecting processes with pipes	Lecturing	
18.	30/12/15	redirecting input/output,	Practicals	
19.	31/12/15	Background processing,	Lecturing	
20.	05/01/16	Mmanaging multiple processes	Lecturing	

21.	06/01/16	scheduling of processes, Batch commands, kill, ps, who	Lecturing	
22.	07/01/16	Printing commands, find, sort, touch, file	Lecturing	
23.	08/01/16	file processing commands - wc, cut, paste etc	Practicals	
24.	12/01/16	mathematical commands - expr, factor etc	Lecturing	
25.	13/01/16	Creating and editing files with vi editor	Using PPT	
26.	14/01/16	Revision		
27.	15/01/16	test		
28.	19/01/16	Common administrative tasks	Lecturing	
29.	20/01/16	identifying administrative files – configuration and log files	Lecturing	
30.	21/01/16	Role of system administrator	Lecturing	
31.	22/01/16	Managing user accounts-adding & deleting users, changing permissions and ownerships	Lecturing	
32.	27/01/16	Creating and managing groups, modifying group attributes	Practicals	
33.	28/01/16	Temporary disabling of user's accounts, creating and mounting file system	Lecturing	
34.	29/01/16	checking and monitoring system performance - file security & Permissions, becoming super user using su	Lecturing	

35.	02/02/16	Getting system information with uname, host name, disk partitions & sizes, users, kernel	Lecturing	
36.	03/02/16	installing and removing packages with rpm command	Using PPT	
37.	04/02/16	Revision		
38.	05/02/16	Test		
39.	09/02/16	Basics of shell programming	Lecturing	
40.	10/02/16	various types of shell available in Linux	Lecturing	
41.	11/02/16	comparisons between various shells	Lecturing	
42.	12/02/16	shell programming in bash	Lecturing	
43.	16/02/16	Revision		
44.	17/02/16	Seminar		
45.	18/02/16	Conditional and looping statements	Lecturing	
46.	19/02/16	case statement	Practical	
47.	23/02/16	parameter passing and arguments	Lecturing	
48.	24/02/16	Shell variables, system shell variables, shell keywords	Lecturing	
49.	25/02/16	Creating Shell programs for automating system tasks	Lecturing	
50.	26/02/16	Revision		
51.	02/03/16	Seminar		
52.	03/03/16	Seminar		
53.	04/03/16	**Simple filter commands** – pr, head, tail, cut, sort, uniq, tr	Practical	

54.	08/03/16	Filter using regular expression – grep, egrep, sed	Using PPT	
55.	09/03/16	Seminar		
56.	10/03/16	Seminar		
57.	11/03/16	DHCP, DNS, Squid, Apache, Telnet, FTP,Samba	Using PPT	
58.	15/03/16	Seminar		
59.	16/03/16	Qp Discussion		
60.	17/03/16	Qp Discussion		

ASSIGNMENTS

	Dateof submission/completion	**Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)**	**Weighttag**
1	16/12/15	History,Features And Advantages of Linux	5 marks
2	12/01/16	Linux Process	5 marks
3	23/02/16	Administrative tasks	5 marks
4	18/03/16	Servers	5 marks
5	23/03/16	Previous Question Papers	5 marks

Books of study:

1. "Red Hat Linux Bible" by Cristopher Negus, Wiley DreamtechIndia
2. "UNIX Shell Programming" by YeswantKanethkar, BPB

References:

1. "Official Red Hat Linux User's guide" by Redhat, Wiley DreamtechIndia
2. "UNIX for programmers and users" by Graham Glass & King Ables, Pearson Education
3. "Beginning Linux Programming" by Neil Mathew & Richard Stones, Wiley DreamtechIndia

OPERATING SYSTEM

Course Description:

Operating system is the manager of computer resources. The subject introduces the basic components of an operating system and various types of operating systems. Different CPU scheduling techniques gives a clear picture about how an operating system handles different types of tasks. Memory management policies are dealt to give information about how the main memory can be handled by an operating system. Since the secondary storage devices cannot handle more than one request at a time, it is necessary for an operating system to synchronize the jobs waiting for the devices.

Course Objectives

- To introduce the fundamental concepts and principles of operating systems
- To emphasize the functions of operating systems to the computer system, the system operator (user), and variations in the design and implementations of operating systems.
- To focus on Foundational concepts, Process management, Memory management, virtual memory, file systems and I/O management

Book of study :

- Operating System Principles, Seventh Edition, Abraham Silberschatz, Peter Galvin and Greg Gagne, John Wiley
- Operating Systems- By William Stallings

References:

Operating Systems- By MilanKovic (TMH)

Course **Outcomes:**

- The course will allow students to understand the fundamental principles for the analysis, design, and development of operating systems – measured by examinations
- Student will be able to identify the major components parts of an OS and able to develop a design schema or architecture
- Students will be able to evaluate or validate the OS principles via simulations and/or realistic
- Students will be able to integrate OS and programming language concepts to solve theoretical problems – such as interrupts or similar mechanisms for synchronization, process management and resource scheduling

Assessment Details:

Class test : 2.5 Marks
IAT : 2.5 Marks
IAT : 5 Marks
Viva & seminars : 5 marks
Assignments : 5 marks
Attendance : 5 Marks

Sessions	**Date**	**Topic**	**Method**	**Remarks/Reference**
1	24/11/15	OS Definition, ,	Lecturing	using ppt
2	25/11/15	Functions, OS as a resource manager	Lecturing	using ppt
3	26/11/15	types of OS	Lecturing	using ppt
4	27/11/15	types of OS	Lecturing	using ppt
5	01/12/15	types of OS, Evolution of OS	Detailed review of assignment	
6	02/12/15	Operating System Operations	Lecturing	
7	03/02/15	Operating System Services	Lecturing	

8	04/12/15	User Operating System Interface	Lecturing	using ppt
9	08/12/15	System Calls, Types of System Calls.	Lecturing	using ppt
10	09/12/15	**Process:** Basic Concepts,	Lecturing	
	10/12/15	Process Scheduling,	Lecturing	
11	11/12/15	Operations on 'Processes,	Lecturing	using ppt
12	15/12/15	Inter process communication,	Lecturing	
13	16/12/15	Process Scheduling	Lecturing	
14	17/12/015	Scheduling Criteria, Scheduling Algorithm	Lecturing	
15	18/12/15	Scheduling Algorithm	Lecturing	
16	29/12/15	Scheduling Algorithm	Lecturing	
17	30/12/15	Multiple Processor Scheduling.	Lecturing	
18	31/12/15	The Critical Section problem	Lecturing	
19	05/01/16	Synchronization Hardware,	Lecturing	
20	06/01/16	Semaphores	Lecturing	
21	07/01/16	Problems of Synchronization	Lecturing	
22	08/01/16	Problems of Synchronization	Lecturing	
23	12/01/16	Monitors	Lecturing	
24	13/01/16	Dead Locks : System Model, Dead Lock Characterization,	Lecturing	
25	14/01/16	Methods of Handling Dead Locks	Lecturing	
	15/01/16	Dead Lock Prevention,	Lecturing	
26	19/01/16	Dead Lock Avoidance	Lecturing	
27	20/01/16	Dead Lock Avoidance	Lecturing	
30	21/01/16	Dead Lock Detection	Lecturing	
31	22/01/16	Dead Lock Detection	Lecturing	
	27/01/16	Recovery from Dead Lock	Lecturing	
	28/01/16	Recovery from Dead Lock	Lecturing	
32	29/01/16	Memory Management Strategies	Lecturing	
33	02/02/16	Swapping	Lecturing	
	03/02/16	Contiguous memory allocation	Lecturing	
34	04/02/16	Paging,	Lecturing	

35	05/02/16	Paging,	Lecturing	
36	09/02/16	Segmentation	Lecturing	
37	10/02/16	Virtual Memory Management	Lecturing	
38	11/02/16	Demand paging	Lecturing	
39	12/02/16	Page Replacement	Lecturing	
40	16/02/16	Page Replacement	Lecturing	
41	17/02/16	File System	Lecturing	
42	18/02/16	File Concept	Lecturing	
43	19/02/16	Access Methods	Lecturing	
44	23/02/16	Directory Structure,	Lecturing	
45	24/02/16	Directory Structure,	Lecturing	
	25/02/16	protection	Lecturing	
	26/02/16	Implementing File Systems		
46	02/03/16	File System Structure,	Lecturing	
47	03/03/16	Directory Implementation,	Lecturing	
48	04/03/16	Allocation Methods	Lecturing	
49	08/03/16	Free Space Management	Lecturing	
50	09/03/16	Efficiency and Performance	Lecturing	
51	10/03/16	Recovery	Lecturing	
52	11/03/16	Revision	Seminars	
53	15/03/16	Revision		
54	16/03/16	Revision		

ASSIGNMENTS

	Date of submission/completion	**Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)**	**Weighttage**	**Remarks**
1	01/12/15	Os introduction with examples	5 marks	Powerpoint slides
	29/12/15	Proces and scheduling algorithms	5 marks	
3	25/1/16	Deadlock	5 marks	
4	15/2/16	Previous question papers	5 marks	

INTERNALS

S.No.	DATE	TEST	TOPICS	DURATION
1	02/12/15	CLASS TEST	1 module	2 hrs
2	14/12/15	IAT 1	2 and 3 module	2 hrs
3	22/2/16	IAT 2	4 and 5 module	2 hrs

SEMESTER VI- REAL ANALYSIS

Text book:

S.C.Malik and Savitha Arora - Mathematical Analysis, 2nd Edition.

Sessions	Topic	Method	Remarks/Reference
1	Introductory Session	Interaction	
2	A necessary condition for convergence	Lecture Method	
3	Cauchy`s general principle of convergence for a series	Lecture Method	
4	Positive term series	Lecture Method	
5	A necessary condition for convergence of positive term series	Lecture Method	
6	Geometric series	Lecture Method	
7	The comparison series $\sum\frac{1}{hP}$ comparison test for positive term series without proof	Lecture Method	
8	Problems	Interaction	
9	Cauchy`s root test	Lecture Method	
10	DALEMBERTÈS RATIO test	Lecture Method	
11	Raabe's test	Lecture Method	
12	Problems	Interaction	
13	Gauss`s test	Lecture Method	
14	Problems	Interaction	

15	Series with arbitrary terms, Alternating series	Lecture Method	
16	Absolute convergence	Lecture Method	
17	Continuous function	Interaction	
18	Continuity at a point	Lecture Method	
19	Continuity in an interval	Interaction	
20	Discontinuous functions	Lecture Method	
21	CIA – I	1 hr; descriptive answers only	
22	Theorems on continuity	Lecture Method	
23	Theorems	Interaction	
24	Theorems	Lecture Method	
25	Functions continuous on closed intervals	Lecture Method	
26	Theorems	Interaction	
27	Theorems	Lecture Method	
28	Theorems	Lecture Method	
29	Theorems	Interaction	
30	Theorems	Lecture Method	
31	Theorems	Lecture Method	
32	Theorems	Interaction	
33	Theorems	Lecture Method	
34	Uniform continuity	Lecture Method	
35	Theorems	Interaction	
36	Theorems	Lecture Method	
37	Theorems	Lecture Method	
38	Definitions and existence of the integral	Lecture Method	
39	Problems	Interaction	
40	Inequalities of integrals	Lecture Method	
41	Problems	Interaction	

42	Refinement of partitions of integrability	Lecture Method	
43	Theorems	Lecture Method	
44	Theorems	Interaction	
45	Theorems	Lecture Method	
46	Integrability of the sum of integrable functions	Lecture Method	
47	Theorems	Interaction	
48	Theorems	Lecture Method	
49	Theorems	Lecture Method	
50	Theorems	Interaction	
51	The integrals as the limit of a sum	Lecture Method	
52	Some applications	Lecture Method	
53	Some integrable functions	Lecture Method	
54	Theorems	Interaction	
55	Theorems	Lecture Method	
56	Integration and differentiation	Lecture Method	
57	Theorems	Lecture Method	
58	Problems	Interaction	
59	The fundamental theorem of calculus	Lecture Method	
60	Problems	Interaction	
61	CIA II	2 HOURS	
62	Problems	Interaction	
63	Point wise convergence	Interaction	
64	Uniform convergence on an interval	Lecture Method	
65	Cauchy`s criterion for uniform convergence	Lecture Method	
66	A test for uniform convergence of sequences	Lecture Method	
67	Problems	Interaction	

68	Test for uniform convergence of series	Lecture Method	
69	Weierstrass`s M-test	Interaction	
70	Abel`s test	Lecture Method	
71	Theorems	Lecture Method	
72	Problems	Interaction	
73	Statement of Dirichelet`s test without proof	Lecture Method	
74	Discussion on the CIA & REVISION	Interaction	
75	REVISION & Evaluation of the Course	Interaction	

COURSE PLAN

COURSE : Operation Research

Semester : VI

Course Teachers : Lakshmipriya R

Hours/Week: 05 **Hours/Semester: 75**

Course Description: This course mainly focus on solution of L.P.P in Operation Research

Objectives: To gain Knowledge about various optimization techniques in O.R relating to business and management

Learning Outcomes:

On successful completion of the course the students should have understood.

3.To solve L.P.P problems using Graphic Method,Simplex Method,Duality

4.To solve Transportation Problem,Assignment Problems

5. To do the Network Analysis

Sessions	Topic	hours	Method	
	O.R			
1.	Introduction.Origin and Development of O.R	1	Lecturing	ModuleI
2.	Objectives of O.R	3	Lecturing	
3.	Modelling and types of models in OR	2	Lecturing	
4.	Linear Programming problems	1	Lecturing	ModuleII
5.	Graphic method	3	Lecturing	
6.	Graphic Method	2	Lecturing	
7.	Simplex Method	3	Lecturing	
8.	Simplex Method	3	Lecturing	
9.	Duality	3	Lecturing	
10.	Duality	3	Lecturing	

11.	**Duality**	**2**	**Lecturing**	
12.	**Transportation problem**	**1**	**Lecturing**	**Module III**
13.	**North west,Least Cost Method**	**2**	**Lecturing**	
14.	**Vogel's Method**	**3**	**Lecturing**	
15.	**UV Method**	**3**	**Lecturing**	
16.	**Assignment Problem**	**3**	**Lecturing**	
17.	**Hungarian Algorithim**	**2**	**Lecturing**	
18.	**Network Analysis**	**2**	**Lecturing**	**Module IV**
19.	**Calculation of critical path**	**2**	**Lecturing**	
20.	**PERT**	**2**	**Lecturing**	
21.	**Expected Completion Time and its Variance**	**3**	**Lecturing**	

ASSIGNMENTS

	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	**Weighttag**
1	**Problems in SQC,O.R**	**10 marks**

Core Reference

1. **S.C. Gupta and V.K. Kapoor: Fundamentals of Applied Statistics, Sultan Chand and Sons**
2. **M.Mahajan Statistical Quality Control**

3.R.C Gupta: Statistical Quality Control