

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	Lecturing	

	kurtosis		
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)	Weighttgage
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. Preparation of powerpoint presentation on various topics by the students
4. Personal discussion interacting with each student about the topic

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	23/6/18	Introductory Session	Lecturing using ppt	
2	24/6/18	Introduction to Computer	Lecturing using ppt	
3	25/6/18	History and generation	Lecturing using ppt	
4	26/6/18	functional units	Lecturing using ppt	
5	29/6/18	Hardware: CPU, Primary and Secondary storage	Lecturing using ppt	
6		I/O devices	Lecturing using ppt	
7	30/6/18	Software: System and Application	Lecturing using ppt	
8	1/7/18	Programming Languages: Machine Language, Assembly Language, High Level Language	Lecturing using ppt	
9	2/7/18	A Brief Introduction to the Internet: The World Wide Web, Web Browsers, Web Servers, Uniform Resource Locators	Lecturing using ppt	
10	6/7/18	protocols: Multipurpose Internet Mail Extensions, The Hypertext Transfer Protocol	Lecturing using ppt	
11	7/7/18	Introduction to Operating System: definition, functions, CUI and GUI	Lecturing using ppt	
12	8/7/18	different types of OS	Lecturing using ppt	
13	9/7/18	Number Systems: Base of a number system, Positional number system, Popular number systems	Lecturing	
14	9/7/18	Conversion-Decimal to Binary, Binary to Decimal	Lecturing	
15	10/7/18	Decimal to Octal, Octal to decimal and	Lecturing	

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

35	17/8/18	Triggering of flip flops	Lecturing	
36	18/8/18	Counters - Synchronous and asynchronous	Lecturing	
37	19/8/18	BCD, Ripple counters	Lecturing	
38	1/9/18	Half adder	Lecturing	
39	2/9/18	Full adder(circuit diagram)	Lecturing	
40	3/9/18	Subtractors	Lecturing	
41	4/9/18	Encoders	Lecturing	
42	7/9/18	Decoders	Lecturing	
43	8/9/18	Multiplexers	Lecturing	
44	9/9/18	De-multiplexers	Lecturing	
45	10/9/18	Analog to digital and digital to analog converters	Lecturing	
	14/9/18	CIA II	2 HOURS	
	17/9/18	Discussion on the CIA		
46	18/9/18	Concept of Registers	Lecturing	
47	22/9/18	Shift Registers	Lecturing	
48	23/9/18	Flip-flops as building blocks of memory	Lecturing	
49	25/9/18	RAM, ROM and Cache Memory	Lecturing	
50	28/9/18	REVISION	Seminars	
51	29/9/18	REVISION	Seminars	
52	30/9/18	REVISION	Seminars	
53	1/10/18	REVISION	Seminars	
54	5/10/18	REVISION	Seminars	
55	6/10/18	REVISION	Seminars	
56	7/10/18	REVISION	Seminars	
57	8/10/18	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	9/7/18	Introduction to computer system	5 marks
2	11/8/18	Explain about K map with example	5 marks
3	30/9/18	Previous question papers	5 marks
4			

PROGRAMMING IN C

Semester : I
Course Code : 15U1CRCAP02
Course Teacher : Achamma Cherian

Hours/Week: 04
Hours/Semester: 72

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	Topic	Method	Remarks/Reference
1.	Problem Solving Problem Definition, Problem Solving	Lecturing	
2.	Logic developments tools - Algorithm	Lecturing	
3.	Flowcharts	Lecturing	
4.	pseudo code	Lecturing	
5.	Modular programming	Lecturing	
6.	Structured and object oriented	Lecturing	

7.	top down and bottom up approaches	Lecturing	
8.	features of a good computer program	Lecturing	
9.	C language basics: C character set,	Lecturing	
10.	Identifiers and keywords	Lecturing	
11.	Enumeration type, constants	Lecturing	
12.	variables, declarations	Lecturing	
13.	qualifiers – long, short and unsigned declarations, expressions, symbolic constants	Library	
14.	input/output functions	Lecturing	
15.	compound statements	Lecturing	
16.	arithmetic operators, unary operators, relational and logical operators,	Lecturing	
17.	assignment operators, increment and decrement operators	Lecturing	
18.	Precedence and order of evaluation, conditional operators	Lecturing	
19.	bit operators, type casting	Lecturing	
20.	using library functions in math.h		
21.	Control flow: If statements	Lecturing	
22.	REVISION	Discussion	
23.	CIA – I	2 Hrs	
24.	Discussion on the CIA		
25.	switch statements	Lecturing	
26.	looping – for loop statement	Lecturing	
27.	while loop statement	Lecturing	
28.	do ... while statements	Lecturing	
29.	nested loop structure	Lecturing	
30.	Break statement	Lecturing	
31.	continue statement	Discussion	

32.	go to statement		
33.	Arrays & Strings: Single dimensional arrays	Lecturing	
34.	multidimensional arrays	Lecturing	
35.	initializing array using static declaration	Lecturing	
36.	Searching & Sorting of Arrays	Lecturing	
37.	Array of Characters, Character arrays and strings	Lecturing	
38.	String manipulation programs	Lecturing	
39.	String handling Functions.	Lecturing	
40.	User Defined Functions: Function declaration, definition & scope	Lecturing	
41.	Recursion	Lecturing	
42.	Arrays and functions	Lecturing	
43.	call by value, call by reference	Lecturing	
44.	REVISION	Discussion	
45.	CIA II	2 Hrs	
46.	Discussion on the CIA		
47.	Storage Classes: automatic, external (global), static & registers	Lecturing	
48.	Storage Classes: Examples	Lecturing	
49.	Structures: Definition of Structures, declaration	Lecturing	
50.	structure passing to functions, array of structures	Lecturing	
51.	arrays with in structures	Lecturing	
52.	Unions	Lecturing	
53.	typedef statements.	Lecturing	
54.	Pointers: Pointer Definition, pointer arithmetic	Lecturing	

55.	array & pointer relationship	Lecturing	
56.	pointer to array, pointer to structure	Lecturing	
57.	Files: Types of C preprocessor directives	Lecturing	
58.	Introduction to files, fopen(), fscanf(), fprintf(),getc(), putc(), fclose(),	Lecturing	
59.	Simple file handling programs	Lecturing	
60.	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	6/7/18	Program Techniques & Looping Concepts	5 marks
2	10/8/18	Functions & its Categories	5 marks
3	25/9/18	Structures & Unions	5 marks
4	1/10/18	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	

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SESSION PLAN					
ACADEMIC YEAR 2018-2019					
PROGRAMME	:	Science	DATE	:	12/11/2018
SEMESTER	:	2	BRANCH	:	BSc CA
SUBJECT CODE AND TITLE	:	15U2CRCAP04: - – Data Structures using C	CREDIT	:	4
FACULTY NAME	:	ACHAMMA CHERIAN			
COURSE OUTCOMES (COs)	:	CO1 - The concept of Data Structures CO2 – To explore the operations on Data Structures CO3 – Ability to learn arrays and its operations. CO4 - Ability to understand different sorting and searching algorithms. CO5 – Ability to use linear and non-linear data structures like stacks, queues, linked list etc. CO6 - Ability to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures. CO7 – Ability to apply data structures in real life. CO8 - Ability to have knowledge of tree concepts. CO9 – Ability to choose various file accessing methods. CO10 : Ability to implement Memory Management .			

S. No	Topic	No of Session(s) Required	Value additions	COs
MODULE 1 Concept of Structured data				
1.	Data structure definition, Different types and classification of data structures	1		CO1

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2.	Operations on Data structures	1		CO2 CO6
3.	Arrays – representation of array in the memory, Address Calculation	2		CO3
4.	Operations on one dimensional arrays.	1		CO3
5.	operations on two dimensional arrays	1		CO3
6.	Sorting : Bubble sort	1	Demonstrate a program for bubble sort	CO4
7.	Selection Sort	1	Demonstrate a program for bubble sort	CO4
8.	Searching- Linear Search	1	Demonstrate a program for Linear search	CO4
9.	Binary Search	1	Demonstrate a program for Binary	CO4
10.	Sparse Matrix	2	Assignment – representation of sparse matrix in 3 –tuple method	CO3
11.	Revision - Module I	1	Solving Previous Question Papers	
MODULE 2 Stacks and Queues				
12.	Introduction to Stack	1		CO5
13.	Implementation of stack using Array	2		CO5
14.	Application of Stack	1		CO7
15.	Infix to Postfix conversion & evaluation	2	Assignment : Conversion of expression	CO7
16.	Infix to Postfix conversion	2	Assignment : Conversion of expression	CO7
17.	CIA -I	1		

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18.	Evaluation of Postfix expression	2	Assignment : Evaluation of expression	CO7
19.	Program for Infix to Postfix	1		CO7
20.	Postfix Evaluation	1		CO7
21.	Queue definition and Application	2		CO5, CO7
22.	Implementation of Queue using Array	2		CO5
23.	Types of queue-Linear, circular, Dqueue	4		CO5
24.	Revision - Module II	1	Solving Previous Question Papers	
MODULE 3 Linked List				
25.	Introduction to linked list (need and basic operations)	2		CO5
26.	Memory allocation- Static & Dynamic	2		CO5, CO10
27.	Types of Linked list- singly, doubly and circular	1		CO5, CO6
28.	Stack using Linked list	1		CO5, CO6
29.	Queue using Linked list	1		CO5, CO6
30.	Program for Singly Linked list	1		CO5, CO6
31.	Program for Doubly Linked list	1		CO5, CO6
32.	Program for Singly- circular Linked list	1		CO5, CO6
33.	Program for Doubly- circular Linked list	1		CO5, CO6
34.	Garbage collection	1		CO10

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35.	Revision - Module III	1	Solving Previous Question Papers	
MODULE 4 Trees				
36.	Introduction to Trees	1		CO8
37.	Concept of Recursion	1		CO8
38.	Types of Trees	2		CO8
39.	Concept of Binary Search Tree	1		CO8
40.	Program for creating Binary search tree	2		CO8
41.	Tree Traversals	1		CO8
42.	Program for Tree Traversal	2		CO8
43.	Construction of Binary Tree	2		CO8
44.	Revision - Module IV	1	Solving Previous Question Papers	
45.	CIA II	2		
MODULE 5 File Organizations				
46.	Introduction to files and its organization	1		CO9
47.	File accessing Methods- Sequential and Random	1		CO9
48.	File Organization Methods	1		CO9
49.	Inverted files	1		CO9
50.	Cellular Partitions	1		CO9
51.	Hashing Functions	1		CO9
52.	Revision - Module V	1	Solving Previous Question Papers	

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TEXTBOOKS/REFERENCES

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

Details on OTHER ACTIVITIES: Paralleling the objectives of the course, these include:

Readings are listed on the syllabus for the date due. They are listed as required and recommended to assist students in prioritizing their workload. Some weeks have *hefty* reading assignments, and students will want to plan ahead to manage their workloads. Required means just that. All required readings are from the two texts. Handouts will be provided by the instructor.

Study questions will be provided for each class to assist students in reflecting of readings and preparing adequately for class discussions. ***Study groups are highly recommended to improve class participation and learning.***

Attendance and participation. As a skills-development course, attendance and participation are essential to learning. Attendance, preparation, and participation are expected for each class. Class participation will be graded, based on the criteria listed below.

GRADING: Grades will be determined as follows: (1) change agent credo and presentation: 25% of CIA 1 ; (2) change agent interview and reflection: 25% of CIA 2 (3) group consulting reCOrt and reflection 50 % of final marks (4) class participation will be given marks –case discussions, quiz and managerial games (25% for every entry in CIA)

Papers and assignments are due by class time on the dates listed on the syllabus (with the exception of the final paper which is due by noon). **Late papers will be lowered one full letter grade for the first day of lateness. Papers more than one week late will**

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constitute an automatic failure. Exceptions are possible only for serious reasons and only with prior instructor approval. **NO EXCEPTIONS.** Organization, time management, and responsible follow-through are important professional skills.

Criteria for determining class participation grades are the following:

- (1) *quality*: responses that reflect deep and accurate understanding of materials and contribute to class learning
- (2) *quantity*: active involvement in discussions and activities in each class throughout the term
- (3) *integrativeness*: responses that: (a) enable others to see the relevance of issues to course goals; and (b) demonstrate abilities to integrate learnings from past discussions, activities, readings, or course

Criteria for grading written papers include:

- (1) depth of demonstrated learning
- (2) number, strength, and accurate use of references to relevant literature
- (3) abilities to integrate accurately and deeply theories and ideas from course discussions and readings
- (4) clarity, quality, and organization of writing and analysis.
- (5) quality and quantity of learning about your own approach(es) to change management

Faculty Signature

CEO Signature

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 , $x^{2n} - 2x^na^n\cos n\theta + a^{2n}$	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 variables,**
- **probability distributions(univariate and bivariate)**
- **discrete and continuous 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 function	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

SACRED HEART COLLEGE.THEVARA

SESSION PLAN					
ACADEMIC YEAR 2018-2019					
PROGRAMME	:	BSc	DATE	:	12.11.2018
SEMESTER	:	2	BRANCH	:	BSc.Computer Applications
SUBJECT CODE AND TITLE	:	U2CRCAP3 MICROPROCESSORS & COMPUTER ORGANIZATION	CREDIT	:	4
FACULTY NAME	:	RENSI K RANJITH			
COURSE OUTCOMES(COs)	<p>CO1: Understand the organization of a computer system in terms of its main components</p> <p>CO2:To understand addressing methods , instruction sequencing and execution</p> <p>CO3: Understand the detailed operation of a microprocessor</p> <p>CO4: Understand different processor architectures</p> <p>CO5: Understand the central processing unit.</p> <p>CO6: Understand the various memory</p> <p>CO7: Understand the memory mapping techniques</p>				

MODULE 1				
Basic concepts				
S. No	Topic	No of Session(s) Required	Value additions	POs
1	Functional units of a computer	1		CO1
2	Basic operational concepts	2		CO1 CO2
3	Bus structure	1		CO1
4	Addressing methods	2		CO2
5	Memory locations and addresses,	1		CO2
6	Instructions and instruction sequencing	2		CO2
7	Instruction execution.	2		CO2

MODULE 2				
Introduction to the concept of 8086 microprocessor				
8	Introduction to 8086	1		CO3
9	Pin-out Diagram	2		CO3
10	Operating modes	2		CO3
11	Operation of 8086	2		CO3
12	Registers	2		CO3
13	Interrupts	2		CO3
14	Bus Cycle	1		CO3
15	Addressing modes	2		CO3
Module 3				
Comparison of various Processors				
16	16 bit processors	1		CO4
17	32 bit processors	1		CO4
18	64 bit processors	1		CO4
19	Intel 80286	2		CO4
20	80386	2		CO4
21	80486	1		CO4
22	Pentium	2		CO4
23	Pentium Pro	1		CO4

24	Pentium II	1		CO4
25	Pentium III	1		CO4
26	Pentium 4.	1		CO4
Module 4				
Central Processing Unit				
27	General Register Organization	1		CO5
28	Register stack	2		CO5
29	Memory stack	2		CO5
30	Reverse Polish Notation	1		CO5
31	Evaluation of arithmetic expression	1		CO5
32	Instruction Formats	2		CO5
33	Instruction Classification & Program control instructions	1		CO5
34	Data transfer instructions	1		
35	Data manipulation instructions	1		

Module 5				
Main Memory				
36	Organization of RAM	1		CO6
37	SRAM, DRAM	1		CO6

38	ROM,PROM,EROM,EEPROM	1		CO6
39	Auxiliary memory	3		CO6
40	Virtual Memory	2		CO6
41	Memory mapping Techniques.	2		CO7

REFERENCES

- | |
|--|
| <ul style="list-style-type: none"> • B RAM -Fundaments of microprocessors and micro computers • M M Mano – Computer Architecture • Advanced microprocessors & peripherals – Architecture Programming & interfacing by A K Ray & K M Bhurchand • R S. Gaonkar- Micro processor Architecture, Programming and applications with 8085. • Venugopal and Ravikanth- Introduction to assembly language programming in 8086 • Barry B. Brey- Intel Microprocessors 8086 |
|--|

SESSION PLAN					
ACADEMIC YEAR 2018-2019					
PROGRAMME	:	Science	DATE	:	12/11/2018
SEMESTER	:	3	BRANCH	:	BSc CA
SUBJECT CODE AND TITLE	:	15U3CRCAP07: - System Analysis And System	CREDIT	:	4
FACULTY NAME	:	ACHAMMA CHERIAN			
COURSE OUTCOMES (COs)	:	CO1 – Understand the principles of systems analysis and design CO2- Be able to carry out a structured analysis of business systems requirements CO3 -Be able to design business systems solutions.			

Sessions	Topic	Method	Remarks/Reference
1.	Discussing Syllabus		
2.	System and its concepts	Lecturing	
3.	Elements of system	Lecturing	
4.	Characteristics of system	Lecturing	
5.	Information systems concepts	Lecturing	
6.	Business information systems	Lecturing	
7.	Describing the business organization	Lecturing	
8.	organization chart , organization function list	Lecturing	
9.	information system levels - operational, lower, middle, top management	Lecturing	
10.	the system development life cycle concepts	Lecturing	
11.	hardware and software end products.	Lecturing	

12.	Life cycle activities- life cycle flow chart, task	Lecturing	
13.	management review, baseline specifications	Lecturing	
14.	role of system analyst	Lecturing	
15.	REVISION	Discussion	
16.	REVISION	Test paper	
17.	Basic tool of system analysis identification codes – definition, need for codes	Lecturing	
18.	code plan, code dictionary	Lecturing	
19.	common type of codes	Lecturing	
20.	Notes Preparation	Libraray	
21.	forms design	Lecturing	
22.	basic parts of form	Lecturing	
23.	style and types of form, principles of form design	Lecturing	
24.	REVISION	Discussion	
25.	Tools for structure analysis and design: Types of basic charts	Using Powerpoint	
26.	decision tables	Using Powerpoint	
27.	decision trees	Using Powerpoint	
28.	structured English	Using Powerpoint	
29.	data flow diagram	Using Powerpoint	
30.	data flow diagram example	Using Powerpoint	
31.	data dictionary	Using Powerpoint	
32.	CIA I	2 Hrs	

33.	Discussion on CIA	Lecturing	
34.	system flow charts	Lecturing	
35.	flow charting symbols	Lecturing	
36.	information oriented flow charts	Lecturing	
37.	process oriented flow charts,	Lecturing	
38.	HIPO charts.	Lecturing	
39.	REVISION	Test Paper	
40.	Study phase: Study phase activities	Lecturing	
41.	information service request	Lecturing	
42.	initial investigation	Lecturing	
43.	fact finding techniques	Lecturing	
44.	fact analysis techniques	Lecturing	
45.	steps in feasibility analysis	Lecturing	
46.	study phase report	Lecturing	
47.	Design phase: Design phase activities	Lecturing	
48.	structure design, input design- input data	Lecturing	
49.	input media and devices	Lecturing	
50.	CIA II	2 Hrs	
51.	output design, design phase report	Lecturing	
52.	Development phase: Development phase activities	Lecturing	
53.	bottom up and top down computer program development	Lecturing	
54.	training- programmer, operator, user trainings	Lecturing	
55.	conversion; change over plan, PERT	Lecturing	
56.	steps in computer program development;	Lecturing	
57.	structured programming	Lecturing	
58.	development phase report	Lecturing	
59.	REVISION	Previous Question	

		paper Discussion	
60.	SoftwareEngineering: Introduction		
61.	Role and Nature of Software, Software Terminologies		
62.	, Role of Management in Software Development. Software Life Cycle Models – Build and Fix Model, Water Fall Model,		
63.	Prototyping Model, RAD Model, Spiral Model, Iterative Enhancement Model,		
64.	The Unified Process, Selection of a Life Cycle Model.		

ASSIGNMENTS

	Date of submission/completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Weighttage
1	27/6/17	Information Levels	5 marks
2	5/8/17	SDLC Life Cycle	5 marks
3	20/9/17	Previous question papers	5 marks

ASSIGNMENTS/EXERCISES – Details & Guidelines

Books of study:

- *Elements of System Analysis* by Marvin Gore & John Stubbe, Galgotia Book Source
- Text book of software engineering by Kumudini Manwar & Manisha Kumbhar

References:

- System Analysis and Design by Elias M Awad, Galgotia Book Source
- Software Engineering Concepts by Richard Fairley, Tata McGraw Publication

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 Involutives, properties of evolutives	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 :Theory and Analysis of Sample survey Designs New 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 distribution – 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, Stratified sampling, Systematic Sampling, Cluster sampling	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)	Weightage
1	Exercise- Expectation		5 marks
2	Exercise – Probability distributions		5 marks
3	Exercise – Sampling distributions		5 marks

Program: 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. This course covers layered network models (OSI reference model, TCP/IP networking architecture) and their protocols, wired and wireless networks, mobile computing, error detection and correction and cloud computing and its advantages.

Learning Outcomes:

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

- independently understand basic computer network technology and its components
- identify the different types of network topologies and protocols
- enumerate the layers of the OSI model and TCP/IP
- understand the characteristics and advantages of mobile computing and cloud computing

Term – I			
Sl. No	Date	Topics	Method
1	04-06-2018	Introduction to Data Communication, Network	Using PPT presentation
2	05-06-2018 06-06-2018	Protocols & Standards and Standards Organizations	Using PPT presentation

3	07-06-2018 08-06-2018 11-06-2018	Topology	Using PPT presentation
4	12-06-2018 13-06-2018	Transmission mode, Network models	Using PPT presentation
5	14-06-2018 18-06-2018	OSI model – layers and their functions in OSI model	Using PPT presentation
6	19-06-2018	TCP/IP	Using PPT presentation
7	20-06-2018	Data and Signals-Analog and Digital Signals- Wave Length, Bit Rate, Bit Length	Using PPT presentation
8	21-06-2018	Transmission Impairment-Attenuation, Distortion and Noise	Using PPT presentation
9	22-06-2018 25-06-2018	Bandwidth Utilization: Multiplexing – FDM,TDM,WDM and Spreading	Using PPT presentation
10	26-06-2018	Transmission Media –Guided Media	Using PPT presentation
11	27-06-2018	Switching- Circuit Switching, Datagram Network, Virtual Circuit - Dial up Modem	Using PPT presentation
12	28-06-2018	Data Link layer	Using PPT presentation
13	29-06-2018 02-07-2018	Error detection and Correction Codes	Using PPT presentation
14	03-07-2018 04-07-2018	Framing, Flow Control and Error Control	Using PPT presentation
15	05-07-2018 06-07-2018	Protocol for Noisy and Noiseless Channel	Using PPT presentation
16	09-07-2018 10-07-2018	Multiple Access: Random Access- ALOHA, CSMA, CSMA/CD	Using PPT presentation
Before the 1st Internal Exam – 40% of the syllabus will be completed			

17	11-07-2018 12-07-2018 13-07-2018	First Internal Examination	
Term II			
18	16-07-2018 17-07-2018	Channelisation Methods	Using PPT presentation
19	18-07-2018 19-07-2018	Wired and Wireless LAN	Using PPT presentation
20	20-07-2018 23-07-2018	Wireless WAN-Cellular Telephony and Satellite Networks	Using PPT presentation
21	24-07-2018 25-07-2018	Mobile Computing: Wireless networks: Wireless communication concepts; classification of wireless networks.	
22	26-07-2018 01-08-2018 02-08-2018 07-08-2018	Cellular networks (1G, 2G, 3G, 4G), WLAN, WPAN, WMAN, Satellite Networks, Mobile and Wireless Devices –Need for Mobile Computing, Mobility management: Handoff and location management concepts.	
23	08-08-2018 09-08-2018 10-08-2018	Connecting Devices: Hubs, Switches, Repeaters, Bridges, Routers – Gateway	Using PPT presentation
24	13-08-2018 14-08-2018	Network Layer: Host to Host delivery - Logical Addressing	Using PPT presentation
25	17-08-2018 29-08-2018	Internet protocol: IPV4 and IPV6	Using PPT presentation

	30-08-2018 31-08-2018		
26	03-10-2018 04-10-2018 05-10-2018	Address Mapping – ICMP – IGMP, Uni Casting, Multicasting and Broadcasting	Using PPT presentation
27	06-10-2018	Transport Layer: UDP – TCP	Using PPT presentation
28	07-10-2018	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	10-10-2018 11-10-2018 12-10-2018	Second Internal Examination	
Term III			
30	13-10-2018	Application Layer: Name Space – Domain Name System, Voice over IP	Using PPT presentation
31	14-10-2018	Telnet, FTP, SMTP, and Voice over IP	Using PPT presentation
32	17-09-2018 18-09-2018	Cryptography-Symmetric Key Cryptography and Asymmetric key Cryptography	Using PPT presentation
33	19-09-2018	Telnet, FTP, SMTP, and Voice over IP	
34	24-09-2018	Cloud Computing: cloud computing overview, definition and characteristics, grid computing	
35	25-09-2018	Difference between grid computing and cloud	

		computing, advantages of cloud computing	
36	26-09-2018	Cloud service models/types (IaaS, PaaS, SaaS, BPaaS), cloud deployment models (public, private, hybrid, and community clouds).	
		IoT: Introduction, scope & advantages, sensors and devices of IoT.	
Before the Semester Exam – 100% of the syllabus will be completed			
Lkk;DEVC 37	27-09-2018 28-09-2018	Revision Days Attendance will be closed.	

ASSIGNMENTS

Sl. No	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Date of submission
1	Data Communication, its characteristics, components, data representation, data flow, network criteria, Types of Connection and different topologies.	29-06-2018
2	Physical layer and Data link layer of OSI model	29-06-2018
3	Network layer and Transport layer of OSI model.	29-06-2018
4	Session layer, Presentation layer and Application layer of OSI model.	29-06-2018
5	TCP/IP protocol and four levels of Addressing of TCP/IP.	29-06-2018
6	Analog signals, digital signals, Periodic and Non-periodic Signals,	29-06-2018

	Sine Wave, Peak Amplitude, Period and Frequency.	
7	Analog signals, Phase, Wavelength, Bandwidth, Bit rate, and Bit length.	29-06-2018
8	Transmission impairment, Attenuation and Distortion and Noise.	29-06-2018
9	Multiplexing, Frequency Division Multiplexing and other applications of FDM.	29-06-2018
10	Wavelength Division Multiplexing, Time Division Multiplexing and Spread Spectrum.	29-06-2018
11	Transmission Media and Guided Media.	29-06-2018
12	Transmission Media and Unguided Media.	29-06-2018
13	Switching: Circuit Switching, Packet Switching, Datagram Networks and Virtual Circuit Networks	29-06-2018
14	Types of Errors – Redundancy – Detection versus Correction – Forward Error Correction versus Retransmission – Coding – Modular Arithmetic.	29-06-2018
15	Block Coding: Error Detection – Error Correction – Hamming Distance – Minimum Hamming Distance.	29-06-2018
16	Linear Block Codes: Some Linear Block Code. Cyclic Codes: Cyclic Redundancy Check – Checksum.	29-06-2018
17	Framing: Fixed-size framing, Variable-size framing, Character-oriented protocol and Bit-oriented protocol	29-06-2018
18	Flow control, Error control, Simplest protocol, Stop-and-Wait protocol.	29-06-2018
19	Noisy Channels: Stop-and-Wait Automatic Repeat Request, Go-back-N Automatic Repeat Request and Selective Repeat Automatic Repeat Request	29-06-2018
20	Multiple Access: Random Access, ALOHA, Slotted ALOHA, CSMA and CSMA/CD.	29-06-2018
21	Wired LAN, Wireless WAN, Cellular Telephony and Satellite Networks.	29-06-2018

22	Connecting Devices: Hubs, Switches, Repeaters, Bridges, Routers and Gateway.	29-06-2018
23	IPV4 and its packet format.	29-06-2018
24	Advantages of IPV6 than IPV4.	29-06-2018
25	ICMP, IGMP, Multicast Routing Protocols.	29-06-2018
26	Wireless WAN-Cellular Telephony and Satellite Networks	29-06-2018
27	Wireless networks: Wireless communication concepts; classification of wireless networks.	29-06-2018
28	Cellular networks (1G, 2G, 3G, 4G), WLAN, WPAN, WMAN, Satellite Networks	29-06-2018
29	Mobile and Wireless Devices –Need for Mobile Computing, Mobility management: Handoff and location management concepts.	29-06-2018
30	Transport Layer: UDP – TCP, Congestion Control: Open and Closed loop.	29-06-2018
31	Application Layer: Name Space – Domain Name Space – Label, Domain Name- fully and partially qualified domain names.	29-06-2018
32	Remote logging - Telnet, FTP, SMTP, and Voice over IP. Cryptography: Symmetric and Asymmetric.	29-06-2018
33	Cloud Computing: cloud computing overview, definition and characteristics,	29-06-2018
34	grid computing, difference between grid computing and cloud computing, advantages of cloud computing,	29-06-2018
35	Cloud service models/types (public, private, hybrid, and community clouds), cloud deployment models (IaaS, PaaS, SaaS, BaaS)	29-06-2018

Hand Written Assignments – Details & Guidelines:

1	Assignments must be handwritten. Computer printouts or photocopies will not be accepted.
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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.
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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 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 Objectives

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

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

42	31/7/18	Constructors in derived classes	Lecturing	
43	3/8/18	nesting of classes.	Lecturing	
44	4/8/18	Pointers	Lecturing	
45	5/8/18	this pointer	Lecturing	
46	6/8/18	polymorphism	Lecturing	
47	7/8/18	Pointers to objects	Lecturing	
48	10/8/18	pointer to derived classes	Lecturing	
49	11/8/18	virtual functions	Lecturing	
50	12/8/18	Pure virtual functions	Lecturing	
51	17/8/18	C++ streams	Lecturing	
52	18/8/18	Stream classes-Unformatted and	Lecturing	
53	19/8/18	console I/O operations	Lecturing	
54	1/9/18	Managing output with manipulators	Lecturing	
55	2/9/18	Manipulating strings	Lecturing	
56	3/9/18	Exception Handling	Lecturing	
57	4/9/18	principle of Exception handling	Lecturing	
58	7/9/18	Exception handling mechanism	Lecturing	
59	8/9/18	multiple catch	Lecturing	
60	9/9/18	Nested try	Lecturing	
61	10/9/18	Rethrowing the exception	Lecturing	
62	14/9/18	CIA II	2 HOURS	
63	16/9/18	CIA II		
64	16/9/18	CIA II		
65	17/9/18	Discussion on the CIA		
66	18/9/18	REVISION	Seminar	
67	22/9/18	REVISION	Seminar	
68	23/9/18	REVISION	Seminar	
69	25/9/18	REVISION	Seminar	
70	28/9/18	REVISION	Seminar	

71	29/9/18	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	29/6/18	Basics of C++	5 marks
2	3/8/18	Notes of 2 and 3 unit	5 marks
3	23/9/18	Previous question papers	5 marks

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.

Session s	Topic	hours	Method	Remarks/R eference
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 variance,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.**

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	Topic	Method	Remarks/Reference
1.	Basic concepts: Census and Sampling, Types of Sampling	Lecturing	
2.	Stratified random sampling	Lecturing	
3.	Stratified random sampling	Lecturing	
4.	Estimation of the population	Lecturing	

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

ASSIGNMENTS

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

ADVANCED WEB TECHNOLOGY (15U4CRCAP8)

Hours/Week: 04

15U4CRCAP08

Hours/Semester: 72

Course Teacher: Regitha M R

Course Description:

This course provides a web development platform on Windows. It allows to create dynamic web applications with HTML5, CSS3, Apache, PHP and MySQL. This course is designed for the absolute beginner, meaning no experience with WAMP (Windows, Apache, MySQL, PHP).

Objectives:

- To understand the various steps in designing a creative and dynamic website
- To introduce HTML5 and CSS3 using Dreamweaver
- To create good, effective and customized websites
- To practice the hands-on experience in PHP
- To know the data administration using MySQL

Learning Outcomes:

Upon successful completion of the course, students will be able to

- Know regarding internet related technologies. Systematic way of developing a website
- Design dynamic and interactive web pages PHP
- Know the advantages and uses of different types of CSS
- Create powerful database-driven websites
- Demonstrate the ability to author valid externally linked cascading style sheets (CSS)

Term – I			
Sl. No	Date	Topics	Method
1	01-11-2018	Definition of Internet, WWW, URL, webpage, website, hypertext, HTML, HTML5, CSS, PHP and MYSQL.	Using PPT presentation
2	02-11-2018 05-11-2018	Features of HTML. HTML Tags: Head, Body, Basic, Heading, Comments, Formatting tags, Image, Link, List, Marquee, Table, Frame, Form.	Using PPT presentation
3	07-11-2018	HTML Form elements: Input, Select, TextArea and	Using PPT presentation

	08-11-2018 09-11-2018	Button.	
4	12-11-2018 13-11-2018	Input Types: Text, Password, Submit, Reset, Radio, Checkbox, Button.	Using PPT presentation
5	14-11-2018 15-11-2018	Introduction to CSS: Steps for website design and development process.	Using PPT presentation
6	16-11-2018	Three ways to insert CSS: Internal style sheet, external sheet and inline style.	Using PPT presentation
7	19-11-2018	Definition of DHTML, Javascript, DOM	Using PPT presentation
8	21-11-2018 22-11-2018	HTML DOM events: mouse events, keyboard events and form events.	Using PPT presentation
9	23-11-2018 26-11-2018	Javascript programs.	Using PPT presentation
10	27-11-2018	Introduction to HTML5: Introducing Dream Weaver, Difference between HTML and HTML5	Using PPT presentation
11	28-11-2018	New Elements: <article> and <figcaption>.	Using PPT presentation
12	03-12-2018	New Input elements: number, date and email.	Using PPT presentation
13	04-12-2018 05-12-2018	Canvas: Line and Text. SVG: Circle and Rectangle.	Using PPT presentation
14	06-12-2018 07-12-2018	Difference between SVG and Canvas, Video, Audio, Drag/Drop, Geolocation.	Using PPT presentation
15	10-12-2018 11-12-2018 12-12-2018	Form Elements: <datalist>, <keygen> and <output>. Form Attributes: formaction, formenctype, formmethod, and formtarget.	Using PPT presentation
16	14-12-2018 17-12-2018 18-12-2018	CSS3 Introduction: Syntax, ID & Class, CSS Styling- Styling Backgrounds: background-color and background-image.	Using PPT presentation
Before the 1 st Internal Exam – 40% of the syllabus will be completed			

17	19-12-2018 20-12-2018 21-12-2018	First Internal Examination	
Term II			
18	03-01-2019 04-01-2019	Styling Text: color and text-align. Styling Fonts: font-family, font-style and font-size. Styling Links: text-decoration and background-color. Styling Lists: list-style-type and list-style-image. Styling Tables: border-style, border-width and border-color.	Using PPT presentation
19	07-01-2019 08-01-2019	Box Model: Border, Outline, Margin, Padding, Positioning, Floating and Align. Navigation Bar, Image Gallery.	Using PPT presentation
20	09-01-2019 10-01-2019	Introduction to PHP: PHP Basics Syntax, PHP Variables, Expression, PHP Operators, PHP Conditional Events and Switch case	Using PPT presentation
21	11-01-2019 14-01-2019 15-01-2019	PHP Flow Control and Loops, Types of Errors, Array, For each Loop, String Manipulation and Regular Expression	Using PPT presentation
22	15-01-2019 16-01-2019 17-01-2019	Global Array: \$_SERVER, \$_GET, \$_POST, \$_COOKIE, \$_FILES and \$_SESSION.	Using PPT presentation
23	18-01-2019 21-01-2019 23-01-2019	String inbuilt functions: strlen(), str_word_count(), strtolower(), strtoupper() and str_replace(). Math functions: abs(), ceil(), floor(), max(), min(), pow() and sqrt(). Array Inbuilt functions: sort(), rsort(), asort(), ksort(), arsort() and krsort().	
24	24-01-2019 25-01-2019 28-01-2019	Second Internal Exam	
25	29-01-2019	Using HTML Forms: PHP form handling, get data sent from form fields through GET and POST method, form validation.	Using PPT presentation
26	01-02-2019	Sessions: create, retrieve, modify and delete. Cookies: create, retrieve, modify and delete.	Using PPT presentation
27	04-02-2019	Introduction to PHP MySQL. Data Types: Numeric,	Using PPT presentation

		Text, Date and Time data types.	
28	05-02-2019	Database structure, tables	Using PPT presentation
Before the 2 nd Internal Exam – 80% of the syllabus will be completed			
Term III			
29	06-02-2019	MySQL naming rules and columns data types	Using PPT presentation
30	07-02-2019	PHP MySQL - INSERT INTO, SELECT, ORDER BY, WHERE and LIKE, UPDATE, DELETE	Using PPT presentation
31	08-02-2019 11-02-2019	Connection with MySQL and display of data.	
32	12-02-2018 13-02-2019	Connection with MySQL and insertion of data.	Using PPT presentation
32	14-02-2019 15-02-2019	Connection with MySQL and update of data.	Using PPT presentation
33	18-02-2019 19-02-2019	Connection with MySQL and deletion of data.	
Before the Semester Exam – 100% of the syllabus will be completed			
33	20-02-2018 21-02-2018 22-02-2018	Revision Days Attendance will be closed.	Interaction

Assignments

Sl.No	Topics	Submission Date
1	Define in detail about WWW, URL, webpage, website, hypertext, HTML, HTML5, CSS and PHP.	26-11-2018
2	Define in detail about the following with examples: Features of HTML, basic HTML Tags using example: Head, Body, Comments.	26-11-2018
3	Define in detail all formatting tags with examples.	26-11-2018

4	Define in detail Table with its all attributes. Write a program to create your class time table.	26-11-2018
5	Define Image, Link, List and Marquee Tags in detail with examples.	26-11-2018
6	Define in detail about the following Form elements with examples: Input, Select, TextArea and Button.	26-11-2018
7	Define in detail about the following Input Types with examples: Text, Password, Submit and Reset.	26-11-2018
8	Define in detail about the following Input Types with examples: Radio, Checkbox and Button.	26-11-2018
9	Explain Steps for website design and development process. Design a homepage of a university.	26-11-2018
10	Define in detail about the following three ways to insert CSS with examples: Internal style sheet, external sheet and inline style.	26-11-2018
11	Define in detail about DHTML, Javascript, DOM and the following HTML DOM events using examples: mouse events, keyboard events and form events.	26-11-2018
12	Write a Javascript program to create registration form and validation the data.	26-11-2018
13	Define about Dream Weaver and the difference between HTML & HTML5.	26-11-2018
14	Define in detail about new elements in HTML5 with examples: Article and Figcaption. New Input elements: number, date and email.	26-11-2018
15	Define in detail about Canvas and SVG - Define Line and Text in Canvas with examples. Define SVG: Circle and Rectangle. Difference between SVG and Canvas.	26-11-2018
16	Define in detail about the following tags using examples: Video, Audio, Drag/Drop, Geolocation. Form Elements: <datalist>, <keygen> and <output>.	26-11-2018
17	Define in detail about the following form attributes using examples: formaction, formenctype, formmethod, and formtarget.	26-11-2018
18	Define in detail about the following with examples: CSS Syntax, ID & Class, CSS Styling- Styling Backgrounds: background-color and background-image.	26-11-2018
19	Define in detail about the following with examples: Styling Text: color and text-align. Styling Fonts: font-family, font-style and font-size. Styling Links: text-decoration and background-color. Styling Lists: list-style-type and list-style-image.	26-11-2018
20	Define in detail about the following with examples: Styling Tables: border-style, border-width and border-color.	26-11-2018

21	Define in detail about the following with examples: Box Model - Border, Outline, Margin, Padding, Positioning, Floating and Align. Navigation Bar, Image Gallery.	26-11-2018
22	Explain in detail about the following with examples: PHP Basics Syntax, PHP Variables, Expression and Operators.	26-11-2018
23	Explain in detail about the following with examples: PHP Flow Control and Loops.	26-11-2018
24	Explain in detail about the following with examples: Types of Errors, Array, For each Loop, String Manipulation and Regular Expression.	26-11-2018
25	Explain in detail about the following with examples: Global Array -\$_SERVER, \$_GET, \$_POST, \$_COOKIE, \$_FILES and \$_SESSION. String inbuilt functions - strlen(), str_word_count(), strtolower(), strpos() and str_replace().	26-11-2018
26	Explain in detail about the following with examples: Math functions - abs(), ceil(), floor(), max(), min(), pow() and sqrt(). Array Inbuilt functions - sort(), rsort(), asort(), ksort(), arsort() and krsort().	26-11-2018
27	Explain in detail about the following PHP form handling with examples: get data sent from form fields through GET and POST method, form validation.	26-11-2018
28	Explain in detail about the following with examples: Sessions - create, retrieve, modify and delete.	26-11-2018
29	Explain in detail about the following with examples: Cookies - create, retrieve, modify and delete.	26-11-2018
30	Explain in detail about the following with examples: Introduction to MySQL. Data Types: Numeric, Text, Date and Time data types. Database structure, tables, MySQL naming rules and columns data types.	26-11-2018
31	Explain in detail about the following with examples: INSERT INTO, SELECT, ORDERBY.	26-11-2018
32	Explain in detail about the following with examples: WHERE and LIKE, UPDATE, DELETE.	26-11-2018
33	Explain Connection with MySQL and write a PHP program to insert of data into the table.	26-11-2018
34	Explain Connection with MySQL and write a PHP program to update the existing data.	26-11-2018

Text Books:

- Powell, HTML & XHTML: The Complete Reference, 4th Edition, Tata McGraw-Hill Edition
- Steven Holzner, PHP: The Complete Reference, McGraw-Hill Higher Education, 2008

Reference Book:

- Robin Nixon, Learning PHP, My SQL and Java Script, Kindle Edition, OReilly Media 2009.

SACRED HEART COLLEGE.THEVARA

SESSION PLAN					
ACADEMIC YEAR 2018-2019					
PROGRAMME	:	BSc CA	DATE	:	12.11.2018
SEMESTER	:	4	BRANCH	:	BSc.Computer Applications
SUBJECT CODE AND TITLE	:	U4CRCAP9 DATA BASE MANAGEMENT SYSTEM	CREDIT	:	3
FACULTY NAME	:	JISHA SOMAN			
COURSE OUTCOMES(COs)		<p>CO1-identify and define the information that is needed to design a database management system</p> <p>CO2-design entity-relationship diagrams to represent simple database application scenarios</p> <p>CO3-List and explain the fundamental concepts of a relational data model</p> <p>CO4-To describe Relational algebra and Relational calculus</p> <p>CO5-To use SQL- the standard language of relational databases and Manipulate a database using SQL.</p> <p>CO6-To understand the functional dependencies and design of the database and normalisation</p> <p>CO7-To understand different Indexes</p> <p>CO8-To understand the concept of Transaction and Query processing.</p> <p>CO9-To describe Data mining concepts</p> <p>CO10-To describe data warehousing and OLAP</p>			

MODULE 1				
Introduction				
S. No	Topic	No of Session(s) Required	Value additions	COs
1	Syllabus discussion	1		CO1
2	Characteristics of database approach	1	Assignment	CO1
3	Data base users	2		CO1
4	DBA	1		CO1
5	Advantages of using DBMS	2		CO1
6	Data Models	1		CO1
7	Schemas and instances	1		CO1
8	DBMS architecture	1		CO1
9	data independence	1		CO1
10	DBMS language	2		CO1
11	Data Base system environment	1		CO1
12	DBMS Component and modules	2		CO1
ER Modeling				

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13	Introduction	1		CO2
14	Entity types, Entity sets, Attributes and Keys	1		CO2
15	Relationship Types,	1		CO2
16	Relationship Sets relationship instances	1		CO2
17	Constraints on relationship types	2		CO2
18	Weak entity types, and sample ER diagrams.	2		CO2
19	Examples of ER diagram	1		CO2
20	Examples of ER diagram	1		CO2
21	Examples of ER diagram	1	Assignment (Draw an ER diagram with all attributes)	CO2
22	Relational model concepts domains, attributes, tuples and relations	1		CO3
23	characteristics of relations	1		CO3
24	Relational Model constraints	1		CO3
25	Relational Databases and relational data base schemas	1		CO3
26	entity integrity, referential integrity and foreign keys with examples	1		CO3
27	Relational algebra	1		CO4
28	Relational calculus	1		CO4
29	Aggregate functions.	1		CO4

30	Relational Data base design using ER-to-Relational mapping.	1		CO4
Module 3				
SQL				
31	Data definition Commands	1		CO5
32	Constraints in Sql	1		CO5
33	DML Commands	1		CO5
34	Ordering of rows UNION,EXCEPT,INTERSET	1		CO5
35	Substring comparisons using LIKE operator	1		CO5
36	BETWEEN operator	1		CO5
37	Complex Queries-Nested queries	1		CO5
38	EXISTS and UNIQUE functions	1		CO5
39	NULL values, Renaming of attributes and joining of tables,	1		CO5
40	Aggregate functions and grouping, Managing views.	1		CO5
UNIT IV:				
Data Normalization				
41	Informal Design Guide lines for relation schemas	1		CO6
42	functional dependencies	1		CO6
43	First Normal forms	1		CO6
44	Second Normal forms	1		CO6
45	Third Normal forms	1		CO6
46	Boyce- Codd normal form	1		CO6

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47	Fourth Normal forms	1		CO6
48	Fifth Normal forms	1		CO6
49	Indexing structures for files	2		CO7
50	types of single level ordered indexes.	2	Assignment (Normaliza tion)	CO7
UNIT V: Transaction processing				
51	Introduction to transaction processing,:	1		CO8
52	Transaction and system concepts, Desirable properties of transactions.	2		CO8
53	Database Security and Authorization	1		CO8
54	Types of security, control measures	1		CO8
55	database security and the DBA,	1		CO8
56	Access protection, User accounts and database audits.	1		CO8
57	Data Mining Concept:	2		CO9
58	overview of Data mining technology,	1		CO9
59	Association Rules, Classification,	1		CO9
60	Approaches to other data mining problems,	1		CO9
61	applications	1		CO9
62	Overview of data warehousing and OLAP	1		CO10
63	Introduction, definition,	1		CO10
64	characteristics	1		CO10
65	Building a data Ware House	1		CO10
66	problems and open issues in Data warehouses	1		CO10

REFERENCES/Text Book

- Fundamentals of Database Systems by RamezElmasri and Shamkant B. Navathe, Pearson Education, 5th edition
- An Introduction to Database systems , C.J Date
- Data base Management Systems by Reghu Ramakrishnan - McGraw Hill International Edition.
- An Intriduction to Database Systems by Bipin Desai -Galgoria Publications, 1991

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 QUALITY CONTROL AND OPERATIONS RESEARCH

Semester : V
Course Code : 15 U5CRSTA06
Course Teachers : Lakshmipriya R
Hours/Week: 05

Hours/Semester: 75

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

Objectives: Draw control chart for variables and Attributes and check whether a production process is under control or not. To understand the concept of 3 sigma limits, tolerance limits and operating characteristic curve in SQC. 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.

1. The concept of process control and product control
2. To draw various control charts for variables and attributes
3. To solve L.P.P problems using Graphic Method, Simplex Method, Duality
4. To solve Transportation Problem, Assignment Problems, Problems in Game Theory

Session s	Topic	hours	Method	
1.	Syllabus Discussion	1	Lecturing	
2.	Aims and Objectives of Statistical process control and product control	1	Lecturing	
3.	Importance of SQC in Industry	2	Lecturing	Module I
4.	Control limits 3 sigma limits	3	Lecturing	
5.	O.C curve	3	Lecturing	
6.	Tolerance limits	1	Lecturing	
7.	Unit Revision	1	Class test 1	
8.	Control chart for variables	2	Lecturing,	Modulue II

9.	Control chart for Mean	4	Lecturing	
10.	Control Chart for Range	2	Lecturing	
11.	Control Chart for Attributes	2	Lecturing	
12.	Control chart for fraction Defective	5	Lecturing,	
13.	Control Chart for number of defectives	5	Lecturing,	
14.	Control chart for number of defects	3	Lecturing, discussions	
15.	O.R			
16.	Introduction,applications,advantages And disadvantages	1	Lecturing	
17.	Linear Programming problems	1	Lecturing	
18.	Graphic method	3	Lecturing	Module III
19.	Graphic Method	2	Lecturing	
20.	Simplex Method	3	Lecturing	
21.	Simplex Method	3	Lecturing	
22.	Duality	3	Lecturing	
23.	Duality	3	Lecturing	
24.	Duality	2	Lecturing	
25.	Transportation problem	1	Lecturing	
26.	North west,Least Cost Method	2	Lecturing	
27.	Vogel's Method	3	Lecturing	
28.	UV Method	3	Lecturing	Module IV
29.	Assignment Problem	3	Lecturing	
30.	Game Theory Introduction	1	Lecturing	
31.	Two Person Zero sum game	2	Lecturing	

32.	Pure Strategies,Mixed Strategies	2	Lecturing	
33.	Saddle point Solution	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**

Program: BSc Computer Application

Course: JAVA PROGRAMMING AND DYNAMIC WEBPAGE DESIGNING (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 and 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. This subject deals with Java Programming concepts and dynamic webpage designing using Java Servlets and JSP

Learning Outcomes:

Upon successful completion of the course, students will be able to

- Understand the concept of OOP as well as the purpose and usage principles of inheritance, polymorphism, encapsulation and method overloading.
- 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)
- Create object-oriented, scalable, n-tier applications using Java Servlets and Java Server Pages.
- Learn how to integrate key components of the Java Enterprise Edition (Java EE).
- Create dynamic data-driven web applications using servlets and JSP technologies.

Term – I			
Sl. No	Date	Topics	Method
1	04-06-2018	Object oriented programming, Encapsulation-Inheritance-Polymorphism	Using PPT presentation
2	05-06-2018 06-06-2018	Genesis of Java-characteristics of java Program structure-identifiers-operators-variables-literals	Using PPT presentation
3	07-06-2018 08-06-2018 11-06-2018	Data types-Arrays Control Statements-selection statements-iterative statements-jump statements	Using PPT presentation
4	12-06-2018 13-06-2018	Loops- while loop-do while loop- for loop Classes-declaration –object references-instantiation	Using PPT presentation
5	14-06-2018 18-06-2018	Method declaration-method calling – this operator	Using PPT presentation
6	19-06-2018	Constructor-constructor overloading Method overloading-method overriding	Using PPT presentation
7	20-06-2018	Inheritance-super class Dynamic method dispatch-final-static-abstract classes	Using PPT presentation
8	21-06-2018	String Handling Packages - creating packages-using packages	Using PPT presentation
9	22-06-2018 25-06-2018	Interfaces-Exception - Handling Techniques-try-catch	Using PPT presentation
10	26-06-2018	Handling Techniques-throw-throws-finally	Using PPT presentation
11	27-06-2018	Multithreading- creation of multithreaded program	Using PPT presentation
12	28-06-2018	Thread class-Runnable interface	Using PPT presentation

13	29-06-2018 02-07-2018	Thread priorities Thread Synchronization	Using PPT presentation
14	03-07-2018 04-07-2018	Event Handling-Delegation Event Model-Event Classes-Sources of Events-Event Listeners	Using PPT presentation
15	05-07-2018 06-07-2018	AWT: Frame Class	Using PPT presentation
16	09-07-2018 10-07-2018	AWT Controls: Label-Button-Checkbox-List-Choice control-Text Field-Text Area	Using PPT presentation
Before the 1st Internal Exam – 40% of the syllabus will be completed			
17	11-07-2018 12-07-2018 13-07-2018	First Internal Examination	
Term II			
18	16-07-2018 17-07-2018	Lay out Managers	Using PPT presentation
19	18-07-2018 19-07-2018	Applet Fundamentals -applet tag-applet life cycle- passing parameters to applets	Using PPT presentation
20	20-07-2018 23-07-2018	Datagram Socket and TCP/IP based server socket, Event handling	Using PPT presentation
21	24-07-2018 25-07-2018	JDBC: Introduction, Drivers, Establishing Connection, Connection Pooling	Using PPT presentation
22	26-07-2018 01-08-2018 02-08-2018 07-08-2018	Java Servlets: Introduction, HTTP Servlet Basics, Servlet Lifecycle	Using PPT presentation
23	08-08-2018 09-08-2018 10-08-2018	Retrieving Information, Sending HTML Information	Using PPT presentation

24	13-08-2018 14-08-2018	Session Tracking, Database Connectivity	Using PPT presentation
25	17-08-2018 29-08-2018 30-08-2018 31-08-2018	Java Server Pages: Introducing Java Server Pages	Using PPT presentation
26	03-10-2018 04-10-2018 05-10-2018	JSP Overview	Using PPT presentation
27	06-10-2018	Setting Up the JSP Environment	Using PPT presentation
Before the 2nd Internal Exam – 80% of the syllabus will be completed			
28	10-10-2018 11-10-2018 12-10-2018	Second Internal Examination	
Term III			
29	13-10-2018	Generating Dynamic Content	Using PPT presentation
30	14-10-2018	Using Custom Tag Libraries and the JSP Standard Tag Library	Using PPT presentation
31	17-09-2018 18-09-2018	Processing Input and Output	Using PPT presentation
Before the Semester Exam – 100% of the syllabus will be completed			
32	27-09-2018 28-09-2018	Seminars	Using PPT

ASSIGNMENTS

Sl. No	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc.)	Date of submission
1	Genesis of Java and its characteristics.	29-06-2018
2	Program structure: identifiers, operators, variables, literals.	29-06-2018
3	Byte code and JVM, data types and arrays.	29-06-2018
4	Control Statements, selection statements, iterative statements and jump statements with examples.	29-06-2018
5	Loops: while loop, do while loop and for loop with examples.	29-06-2018
6	Class declaration, object references and object instantiation, method declaration, method calling.	29-06-2018
7	Command-line arguments, constructors, method overloading, constructor overloading and method overriding.	29-06-2018
8	Inheritance and its different types.	29-06-2018
9	Final Variable, Final Method, Final class, static class and abstract class	29-06-2018
10	String class and its main functions.	29-06-2018
11	Packages: creating packages, using packages.	29-06-2018
12	Packages: User defined packages.	29-06-2018
13	Interfaces: creating interface and implements interface.	29-06-2018
14	Exception Handling: try, catch and finally with examples.	29-06-2018
15	Exception Handling: throw and throws with examples.	29-06-2018
16	Multithreading: life cycle and its states.	29-06-2018

17	Thread priorities with example.	29-06-2018
18	Event classes, sources of events and event listeners with examples.	29-06-2018
19	AWT controls: Label, Button, ComboBox, and List with examples.	29-06-2018
20	Layout Managers: Flow Layout, Border Layout with examples.	29-06-2018
21	Layout Managers: Flow Layout and Grid Layout with examples.	29-06-2018
22	Applet Fundamentals: Applet vs Application in detail.	29-06-2018
23	Applet life cycle.	29-06-2018
24	Network Basics, understanding IP address, knowing protocols, perception of port numbers, well known port numbers	29-06-2018
25	Socket and ServerSocket classes. Write client and server side programs using these classes.	29-06-2018
26	Four applications of TCP/IP protocol, client program, server program, Datagram	29-06-2018
27	Advantages of JDBC and its architecture	29-06-2018
28	Drivers and JDBC driver types, Establishing Connection, Connection Pooling.	29-06-2018
29	Introduction: Servlet vs CGI, servlet vs Generic servlet vs HTTP Servlet, Servlet Lifecycle	29-06-2018
30	Servlets: Retrieving Information, Sending HTML Information, Session Tracking	29-06-2018
31	Servlets: Database Connectivity: program to connect database and select the data	29-06-2018
32	Introducing Java Server Pages, JSP Overview: JSP architecture	29-06-2018
33	Setting up the JSP Environment, Generating Dynamic Content.	29-06-2018
34	Custom Tag Libraries: Create "Hello" Tag, Accessing the Tag Body, Custom Tag Attributes	29-06-2018

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	4/6/18	Introductory Session	Lecturing	
2	8/6/18	Basic Communication	Lecturing	
3	9/6/18	Local Area Network	Lecturing	

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

33	2/9/18	Penalty for damage to Computer		
34	3/9/18	Computer system		
35	4/9/18	tampering with Computer Source Documents		
36	7/9/18	Hacking		
37	8/9/18	Computer Related Offences		
38	9/9/18	Theft		
39	10/9/18	The Language of Cyberspace.		
40	14/9/18	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	29/6/18	Introduction to internet	5
2	3/8/18	Web designing using html	5
3	23/9/18	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 1 st and 2 nd unit	5
2	Example problems in 3 rd and 4 th unit	5
3	Problems in previous question papers	5
4		

SEMESTER V- MATHEMATICAL ANALYSIS

Text Books:

1. S.C.Malik, Savitha Arora - Mathematical Analysis. Revised Second 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	Dedekind's 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	Lecture Method	

	convergence		
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	

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SESSION PLAN					
ACADEMIC YEAR 2018-2019					
PROGRAMME	:	BSc CA	DATE	:	12.11.2018
SEMESTER	:	6	BRANCH	:	BSc.Computer Applications
SUBJECT CODE AND TITLE	:	15U6CRCAP11 Operating System	CREDIT	:	4
FACULTY NAME	:	JISHA SOMAN			
COURSE OUTCOMES(COs)		<p>CO1: To introduce the fundamental concepts and principles of operating systems.</p> <p>CO2: To get an overview of the capabilities , limitations and types of operating systems.</p> <p>CO3: To learn the mechanisms of OS to handle processes and their communication.</p> <p>CO4: To understand various scheduling algorithms.</p> <p>CO5: To focus on Process Coordination and synchronization</p> <p>CO6: To gain knowledge on different deadlock methods</p> <p>CO7: To learn Memory management, virtual memory.</p> <p>CO8: To understand various page replacement algorithms.</p> <p>CO9: To learn the concept of file system.</p> <p>CO10: To learn the significance of Lnix operating System</p>			

MODULE 1				
Introduction to Operating System				
S. No	Topic	No of Session(s) Required	Value additions	COs
1	Syllabus discussion and Introduction to OS	1		CO1
2	Functions of Operating System	2	Assignment Capabilities & limitations of an Os	CO1
3	Types of OS Batch Processing	1		CO2
4	Multiprogramming	1		CO2
5	Multiprocessing	1		CO2
6	Timesharing	1		CO2
7	Online and Real-time OS			CO2
8	Evolution of OS and Operating System Operations	1		CO2
9	Operating System Operations and services	2	Assignment Functions of OS	CO2

10	User Operating System Interface	1		CO2
11	System Calls, Types of System Calls	2		CO2
12	Types of System Calls	2		CO2
MODULE 2				
Process Management				
13	Process: Basic Concepts	1		CO3
14	PCB	2		CO3
15	Queuing diagram	2		CO3
CIA I				
16	Process Scheduling	1		CO4
17	Operations on Processes	2		CO3
18	Inter process communication-Shared memory	2		CO3
19	Inter process communication – Message Passing	1		CO3
20	Process Scheduling -Scheduling Criteria	1		CO4
21	Scheduling Criteria	1		CO4
22	Preemptive and non preemptive scheduling	1	Assignment Preemptive and non preemptive scheduling Algorithms	CO4
23	Scheduling Algorithm -FCFS	1		CO4
24	Scheduling Algorithm -SJF	1		CO4
25	Scheduling Algorithm -Priority	1		CO4
26	Scheduling Algorithm-RR	1		CO4
27	Scheduling Algorithm-Multilevel Queue	1		CO4

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28	Scheduling Algorithm- Problems	1	Solve the Scheduling Algorithm-Problems	CO4
29	Scheduling Algorithm- Problems	1	Solve the Scheduling Algorithm-Problems	CO4
30	Multiple Processor Scheduling.	1		CO4
Module 3 Process Coordination				
31	The Critical Section problem	1		CO5
32	Synchronization Hardware,	1		CO5
33	Semaphores	1		CO5
34	Problems of Synchronization	2		CO5
35	Monitors	1		CO5
36	Dead Locks : System Model	1		CO6
37	Dead Lock Characterization	1		CO6
38	Resource Allocation Graph	2		CO6
39	Methods of Handling Dead Locks, Dead Lock Prevention	1		CO6
40	Dead Lock Avoidance	1		CO6
41	Dead Lock Avoidance- Bankers Algorithm	1		CO6
42	Bankers Algorithm Problem	1		CO6
43	Dead Lock Detection	1		CO6
44	Dead Lock Detection methods	1		CO6
45	Recovery from Dead Lock	1		CO6

46	Problems related to dead lock	1		CO6
Module 4 Memory Management and Storage Management				
47	Memory Management Strategies - Swapping	1		CO7
48	Contiguous memory allocation	1		CO7
49	Paging	2		CO7
50	Segmentation	2		CO7
51	Virtual Memory Management	1		CO7
52	Demand paging	2		CO7
53	Page Replacement Algorithm	4		CO8
CIA II				
54	File-System Interface: File concept,	1	Seminar File System, File Concept	CO9
55	Access Methods	1		CO9
56	File-System Implementation: File-System structure and Implementations	2		CO9
57	Directory structure and Directory Implementation	2		CO9
58	Allocation Methods	1		CO9
Module 5 Linux				

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59	Linux – Introduction	2		CO10
60	Basic Features, Advantages	2		CO10
61	Kernel, Shell	1		CO10
62	File System	1		CO10
63	Commands for files and directories	1		CO10

REFERENCES

- Milan Milonkovic, Operating System Concepts and design, II Edition, McGraw Hill 1992.
- Tanenbaum, Operation System Concepts, 2nd Edition, Pearson Education.
- Silberschatz / Galvin / Gagne, Operating System,6th Edition,WSE (WILEY Publication)
- William Stallings,Operating System, 4th Edition, Pearson Education.
- H.M.Deitel, Operating systems, 2nd Edition ,Pearson Education
- Abraham Silberschatz and peter Baer Galvin, Operating System Concepts, 8th Edition, Pearson Education 1989 (Chapter 1,3.1,3.2,3.3,3.4,3.6,4,5,6 (Except 6.8,6.9), 7, 8,9,10,11,13, (Except 13.6) 19 (Except 19.6),20(Except 20.8, 20.9), 22,23)
- Nutt: Operating Systems, 3/e Pearson Education 2004

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 $\sum \frac{1}{n^p}$ 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	

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SESSION PLAN					
ACADEMIC YEAR 2018-2019					
PROGRAMME	:	BSc	DATE	:	7.11.2018
SEMESTER	:	6	BRANCH	:	BSc.Computer Applications
SUBJECT CODE AND TITLE	:	U6CRCAP13 CYBER SECURITY	CREDIT	:	4
FACULTY NAME	:	Rensi K Ranjith & Fr.Nijo			
COURSE OUTCOMES(COs)		<p>CO 1: Able to understand the foundations and importance of E-commerce.</p> <p>CO 2: Able to analyze the impact of E-commerce on business models and strategy</p> <p>CO 3: Recognize and discuss E-commerce marketing and security issues.</p> <p>CO 4: Understand the main theoretical and cross-disciplinary approaches (criminological, legal and information security/management) in the study of cybercrime and the regulation of the Internet.</p> <p>CO 5: Understand the structure and evolution of the Internet and its basic operations in the context of the emerging crime threats and trends in cyberspace.</p> <p>CO 6: Analyze the impact of computer crime on government, businesses and individuals and discuss the impact of cybercrime on society.</p> <p>CO 7: Investigate assumptions about the behavior and role of offenders and victims in cyberspace, and use basic web-tools to explore behavior on-line.</p> <p>CO 8: Evaluate the effectiveness of cyber-security, cyber-laws (e.g. the Budapest Convention) and other countermeasures against cybercrime and cyber warfare.</p> <p>CO 9: evaluate various laws related to cybercrimes.</p> <p>CO 10: Apply intellectual property law principles (including copyright, patents, designs and trademarks) to real problems and analyse the social impact of intellectual property law and policy.</p>			

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MODULE 1				
E-Commerce				
S. No	Topic	No of Session(s) Required	Value additions	COs
1	Syllabus discussion and Defining E-commerce	1		CO 1
2	E-Commerce business models and concepts	3		CO 1 CO 2
3	E-Commerce Infrastructure	2		CO 1
4	E-Commerce Development	2		CO 1
5	Marketing and Security Issues	3		CO 1 CO 3
MODULE 2				
Cyber Crime				
6	Cyber Crime: Definition	1		CO 4
7	Types and forms of Cyber Crimes	1		CO 5

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8	Computer Viruses	1		CO 4
9	Computer Trojans, Computer Worms	1		CO 4
10	Web Hacking.	1		CO 4
11	Foot printing, Port Scanning	1		CO 4
12	E-Shoptlifting Web Defacement	1		CO 4
13	Denial of Service Attacks	1		CO 4 & CO5
14	Manipulating Cookies	1		CO 4
15	Email Hacking	1		CO 4
16	Email Hacking using Packet Sniffers	1		CO 4
17	Phishing	1		
18	Email Frauds	1		CO 4
19	Email Bombing Email Hijacking	1		CO 4
20	Social Engineering	1		CO 4
<p>Module 3</p> <p>Cyber Crime Investigation</p>				
21	Best Practices for Cyber Crime Investigation	1		CO 6
22	Initialising a Search and Seizure Operation Tracking	1		CO 6
23	Tracing Emails	2		CO 6
24	Recovery of Digital Evidence	2		CO 6
25	Setting up a Cyber Crime Investigation Cell	1		CO 7
26	Cyber Forensics	2		CO 7

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27	Forensic Principles	1		CO 7
28	Forensic Imaging & Verification,	2		CO 7
29	Data Recovery and Analysis.	2		CO 6
<p>Module 4</p> <p>Cyber Law</p>				
<p>Module 4</p> <p>Cyber Law</p>				
30	Cyber Law: Case studies USA, UK and India	2		PO8
31	Cyber terrorism Prevention	2		PO8
32	detection of Cyber Crime	2		PO8
33	Cyber Policing Current statutes in India	2		PO9
34	Penalties & Offences under the Information Technology Act, 2000	2		PO8
35	Offences under the Indian Penal Code, 1860	2		PO9
36	Issues relating to investigation and adjudication of Cyber Crimes in India	2		PO8
37	Digital evidence IT act 2000 & and other legal provisions	1		PO8 & PO9

Module 5				
Intellectual property rights				
39	Intellectual Property Issues and Cyberspace	3		PO10
40	The Indian Perspective: Overview of Intellectual Property related Legislation in India	2		PO10
41	Copyright law & Cyberspace	2		PO10
42	Trademark law & Cyberspace	2		PO10
43	Digital Delivery of Intellectual Property Services	2		PO10

REFERENCES	
<ul style="list-style-type: none"> • Computers, Internet and New Technology Laws (A comprehensive reference work with special focus on developments in India) by Karnika Seth • Cyber Law by Chris Reed • “The Internet”, Douglas E. Comer, Prentice –Hall of India, Third Edition. • “Cyber Law Crimes”, Barkha and U. Rama Mohan, Asia Law House, New Edition. 	