

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 \mathbb{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	

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 controls
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	02-06-2017	Object oriented programming, Encapsulation-Inheritance-Polymorphism	Using PPT presentation
2	02-06-2017 05-06-2017	Genesis of Java-characteristics of java Program structure-identifiers-operators-variables-literals	Using PPT presentation
3	06-06-2017 07-06-2017 08-06-2017	Data types-Arrays Control Statements-selection statements-iterative statements-jump statements	Using PPT presentation
4	12-06-2017 13-06-2017	Loops- while loop-do while loop- for loop Classes-declaration –object references-instantiation	Using PPT presentation
5	14-06-2017 15-06-2017	Method declaration-method calling – this operator	Using PPT presentation
6	16-06-2017	Constructor-constructor overloading Method overloading-method overriding	Using PPT presentation
7	19-06-2017	Inheritance-super class Dynamic method dispatch-final-static-abstract classes	Using PPT presentation
8	20-06-2017	String Handling Packages - creating packages-using packages	Using PPT presentation
9	21-06-2017 22-06-2017	Interfaces-Exception - Handling Techniques-try-catch	Using PPT presentation
10	27-06-2017	Handling Techniques-throw-throws-finally	Using PPT presentation
11	28-06-2017	Multithreading- creation of multithreaded program	Using PPT presentation
12	29-06-2017	Thread class-Runnable interface	Using PPT presentation

13	28-06-2017 30-06-2017	Thread priorities Thread Synchronization	Using PPT presentation
14	03-07-2017 04-07-2017	Event Handling-Delegation Event Model-Event Classes-Sources of Events-Event Listeners	Using PPT presentation
15	05-07-2017 06-07-2017	AWT: Frame Class	Using PPT presentation
16	10-07-2017 11-07-2017	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	12-07-2017 13-07-2017 17-07-2017	First Internal Examination	
Term II			
18	18-07-2017 19-07-2017	Lay out Managers	Using PPT presentation
19	24-07-2017 25-07-2017	Applet Fundamentals -applet tag-applet life cycle- passing parameters to applets	Using PPT presentation
20	26-07-2017 27-07-2017	Datagram Socket and TCP/IP based server socket, Event handling	Using PPT presentation
21	31-07-2017 01-08-2017	JDBC: Introduction, Drivers, Establishing Connection, Connection Pooling	Using PPT presentation
22	02-08-2017 03-08-2017	Java Servlets: Introduction, HTTP Servlet Basics, Servlet Lifecycle	Using PPT presentation
23	08-08-2017 09-08-2017	Retrieving Information, Sending HTML Information	Using PPT presentation
24	10-08-2017 11-08-2017	Session Tracking, Database Connectivity	Using PPT presentation
25	21-08-2017	Java Server Pages: Introducing Java Server Pages	Using PPT presentation

26	22-08-2017	JSP Overview	Using PPT presentation
27	23-08-2017 24-08-2017 28-08-2017	Setting Up the JSP Environment	Using PPT presentation
Before the 2nd Internal Exam – 80% of the syllabus will be completed			
28	29-08-2017 30-08-2017 31-08-2017	Second Internal Examination	
Term III			
29	05-09-2017	Generating Dynamic Content	Using PPT presentation
30	06-09-2017	Using Custom Tag Libraries and the JSP Standard Tag Library	Using PPT presentation
31	07-09-2017 08-09-2017	Processing Input and Output	Using PPT presentation
Before the Semester Exam – 100% of the syllabus will be completed			
32	18-09-2017 19-09-2017 20-09-2017	Seminars	Using PPT
33	22-09-2017 25-09-2017 26-09-2017 27-09-2017	Revision days Attendance will be closed.	Interaction

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.	27-06-2017
2	Program structure: identifiers, operators, variables, literals.	27-06-2017
3	Byte code and JVM, data types and arrays.	27-06-2017
4	Control Statements, selection statements, iterative statements and jump statements with examples.	27-06-2017
5	Loops: while loop, do while loop and for loop with examples.	27-06-2017
6	Class declaration, object references and object instantiation, method declaration, method calling.	27-06-2017
7	Command-line arguments, constructors, method overloading, constructor overloading and method overriding.	27-06-2017
8	Inheritance and its different types.	27-06-2017
9	Final Variable, Final Method, Final class, static class and abstract class	27-06-2017
10	String class and its main functions.	27-06-2017
11	Packages: creating packages, using packages.	27-06-2017
12	Packages: User defined packages.	27-06-2017
13	Interfaces: creating interface and implements interface.	27-06-2017
14	Exception Handling: try, catch and finally with examples.	27-06-2017
15	Exception Handling: throw and throws with examples.	27-06-2017
16	Multithreading: life cycle and its states.	27-06-2017
17	Thread priorities with example.	27-06-2017
18	Event classes, sources of events and event listeners with examples.	27-06-2017
19	AWT controls: Label, Button, ComboBox, and List with examples.	27-06-2017

20	Layout Managers: Flow Layout, Border Layout with examples.	27-06-2017
21	Layout Managers: Flow Layout and Grid Layout with examples.	27-06-2017
22	Applet Fundamentals: Applet vs Application in detail.	27-06-2017
23	Applet life cycle.	27-06-2017
24	Network Basics, understanding IP address, knowing protocols, perception of port numbers, well known port numbers	27-06-2017
25	Socket and ServerSocket classes. Write client and server side programs using these classes.	27-06-2017
26	Four applications of TCP/IP protocol, client program, server program, Datagram	27-06-2017
27	Advantages of JDBC and its architecture	27-06-2017
28	Drivers and JDBC driver types, Establishing Connection, Connection Pooling.	27-06-2017
29	Introduction: Servlet vs CGI, servlet vs Generic servlet vs HTTP Servlet, Servlet Lifecycle	27-06-2017
30	Servlets: Retrieving Information, Sending HTML Information, Session Tracking	27-06-2017
31	Servlets: Database Connectivity: program to connect database and select the data	27-06-2017
32	Introducing Java Server Pages, JSP Overview: JSP architecture	27-06-2017
33	Setting up the JSP Environment, Generating Dynamic Content.	27-06-2017
34	Custom Tag Libraries: Create "Hello" Tag, Accessing the Tag Body, Custom Tag Attributes	27-06-2017

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	4/6/17	Introductory Session	Lecturing	
2	8/6/17	Basic Communication	Lecturing	
3	9/6/17	Local Area Network	Lecturing	

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

33	2/9/17	Penalty for damage to Computer		
34	3/9/17	Computer system		
35	4/9/17	tampering with Computer Source Documents		
36	7/9/17	Hacking		
37	8/9/17	Computer Related Offences		
38	9/9/17	Theft		
39	10/9/17	The Language of Cyberspace.		
40	14/9/17	Evaluation of the Course		

ASSIGNMENTS

	Date of submission/completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Weightage
1	29/6/17	Introduction to internet	5
2	3/8/17	Web designing using html	5
3	23/9/17	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		

CYBER SECURITY

Objectives:

- To develop an appreciation for the developments in the field of computers
- Be able to accurately understand the situation of cyber crimes and intellectual property rights
- Be able to understand cybercrime investigation and evaluate various laws related to cyber crimes

Books of study :

- 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.

Sessions	Date	Topic	Method	Remarks/Reference
1	24/11/17	Syllabus discussion and Defining E-commerce	Lecturing	Using ppt
2	25/11/17	E-Commerce business models and concepts	Lecturing	Using ppt
3	26/11/17	E-Commerce Infrastructure	Lecturing	Using ppt
4	27/11/17	E-Commerce Development	Lecturing	Using ppt
5	01/12/17	Marketing and Security Issues	Lecturing	Using ppt
6	02/12/17	Cyber Crime: Definition	Lecturing	Using ppt
7	03/02/17	Types and forms of Cyber Crimes	Lecturing	Using ppt

8	04/12/17	Computer Viruses	Lecturing	Using ppt
9	08/12/17	Computer Trojans, Computer Worms	Lecturing	Using ppt
10	09/12/17	Web Hacking.	Lecturing	Using ppt
11	10/12/17	Foot printing, Port Scanning	Lecturing	Using ppt
12	11/12/17	E-Shoplifting Web Defacement	Lecturing	Using ppt
13	15/12/17	Denial of Service Attacks	Lecturing	Using ppt
14	16/12/17	Manipulating Cookies	Lecturing	Using ppt
15	17/12/17	Email Hacking	Lecturing	Using ppt
16	18/12/17	Email Hacking using Packet Sniffers	Lecturing	Using ppt
17	29/12/17	Phishing	Lecturing	Using ppt
18	30/12/17	Email Frauds	Lecturing	Using ppt
19	31/12/17	Email Bombing Email Hijacking	Lecturing	Using ppt
20	05/01/18	Social Engineering	Lecturing	Using ppt
21	06/01/18	Best Practices for Cyber Crime Investigation	Lecturing	Using ppt
22	07/01/18	Initialising a Search and Seizure Operation Tracking	Lecturing	Using ppt
23	08/01/18	Tracing Emails	Lecturing	Using ppt
24	12/01/18	Recovery of Digital Evidence	Lecturing	Using ppt
25	13/01/18	Setting up a Cyber Crime Investigation Cell	Lecturing	Using ppt
26	14/01/18	Cyber Forensics	Lecturing	Using ppt
27	15/01/18	Forensic Principles	Lecturing	Using ppt
28	19/01/18	Forensic Imaging & Verification,	Lecturing	Using ppt
29	20/01/18	Data Recovery and Analysis.	Lecturing	Using ppt
30	21/01/18	Cyber Law: Case studies USA, UK and India	Lecturing	Using ppt

31	22/01/18	Cyber terrorism Prevention	Lecturing	Using ppt
32	27/01/18	detection of Cyber Crime	Lecturing	Using ppt
33	28/01/18	Cyber Policing Current statutes in India	Lecturing	Using ppt
34	29/01/18	Penalties & Offences under the Information Technology Act, 2000	Lecturing	Using ppt
35	02/02/18	Offences under the Indian Penal Code, 1860	Lecturing	Using ppt
36	03/02/18	Issues relating to investigation and adjudication of Cyber Crimes in India	Lecturing	Using ppt
37	04/02/18	Intellectual Property Issues and Cyberspace	Lecturing	Using ppt
38	05/02/18	The Indian Perspective: Overview of Intellectual Property related Legislation in India	Lecturing	Using ppt
39	09/02/18	Copyright law & Cyberspace	Lecturing	Using ppt
40	10/02/18	Trademark law & Cyberspace	Lecturing	Using ppt
41	11/02/18	Digital Delivery of Intellectual Property Services	Lecturing	Using ppt

COURSE PLAN

COURSE : OPERATING SYSTEM

Semester : VI
Course Code : 15U6CRCAP11
Course Teacher : Jisha Soman

Hours/Week: 05
Hours/Semester:90

Course Description:

Operating system is the manager of computer resources. The subject introduces the basic components of an operating system and various types of operating systems. Different CPU scheduling techniques gives a clear picture about how an operating system handles different types of tasks. Memory management policies are dealt to give information about how the main memory can be handled by an operating system. Since the secondary storage devices cannot handle more than one request at a time, it is necessary for an operating system to synchronize the jobs waiting for the devices. There are different types of algorithms, which can be used for the same. The subject deals with all these algorithms, which is of great help for an operating system designer. Case studies about DOS and Windows NT are also dealt as part of this subject.

Objectives:

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

Learning Outcomes:

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

Sessions	Topic	Method	Remarks/Reference
1.	Syllabus Discussion	Discussion	Module I
2.	Introduction about OS	Lecturing	
3.	Introduction and OS Definition	Lecturing	
4.	Functions	Lecturing	
5.	OS as a resource manager	Lecturing	
6.	types of OS-Batch processing	Lecturing	
7.	Multiprogramming	Using PPT	
8.	Multiprocessing	Using PPT	
9.	timesharing	Using PPT	
10.	Online and Realtime OS	Using PPT	
11.	Evolution of OS	Lecturing	
12.	Operating System Operations	Lecturing	
13.	Operating System Operations	Lecturing	
14.	Operating System Services	Lecturing	
15.	User Operating System Interface	Lecturing	
16.	System Calls	Lecturing	
17.	Types of System Calls.	Lecturing	
18.	Types of System Calls.	Lecturing	
19.	Process: Basic Concepts	Lecturing	
20.	PCB	Using PPT	
21.	Queueing diagram	Using PPT	
22.	Process Scheduling	Using PPT	
23.	Operations on Processes	Using PPT	
24.	Inter process communication-	Using PPT	

	Shared memory		Module II
25.	Inter process communication – Message Passing	Using PPT	
26.	Process Scheduling -Scheduling Criteria	Lecturing	
27.	Scheduling Criteria	Lecturing	
28.	Premptive and non preemptive scheduling	Lecturing	
29.	Scheduling Algorithm -FCFS	Lecturing	
30.	Scheduling Algorithm -SJF	Lecturing	
31.	Scheduling Algorithm -Priority	Lecturing	
32.	Scheduling Algorithm-RR	Lecturing	
33.	Scheduling Algorithm-Multilevel Queue	Lecturing	
34.	Scheduling Algorithm- Problems	Discussions	
35.	Scheduling Algorithm- Problems	Discussions	
36.	Multiple Processor Scheduling.	Lecturing	
37.	The Critical Section problem	Lecturing	Module III
38.	Synchronization Hardware,	Lecturing	
39.	Semaphores	Lecturing	
40.	Problems of Synchronization	Lecturing	
41.	Problems of Synchronization	Lecturing	
42.	Monitors	Lecturing	
43.	Revision	Seminars	
44.	Revision	Seminars	
45.	Revision	Seminars	
46.	CIA I		

47.	Dead Locks : System Model	Lecturing	
48.	Dead Lock Characterization	Lecturing	
49.	Resource Allocation Graph	Lecturing	
50.	Resource Allocation Graph	Lecturing	
51.	Methods of Handling Dead Locks, Dead Lock Prevention	Lecturing	
52.	Dead Lock Avoidance	Lecturing	
53.	Dead Lock Avoidance- Bankers Algorithm	Lecturing	
54.	Bankers Algorithm Problem	Lecturing	
55.	Dead Lock Detection	Lecturing	
56.	Dead Lock Detection methods	Lecturing	
57.	Recovery from Dead Lock	Lecturing	
58.	Problems related to dead lock	Lecturing	
59.	Problems related to dead lock	Lecturing	
60.	Memory Management Strategies	Lecturing	Module IV
61.	Swapping	Lecturing	
62.	Contiguous memory allocation	Lecturing	
63.	Paging	Lecturing	
64.	Paging	Lecturing	
65.	Segmentation	Lecturing	
66.	Segmentation	Lecturing	
67.	Virtual Memory Management	Lecturing	
68.	Demand paging	Lecturing	
69.	Demand paging	Lecturing	
70.	Page Replacement Algorithm	Lecturing	

71.	Page Replacement Algorithms	Lecturing	
72.	Page Replacement Algorithms	Lecturing	
73.	File System , File Concept	Lecturing	
74.	Access Methods	Lecturing	
75.	Directory Structure,	Lecturing	
76.	Directory Structure methods	Lecturing	
77.	Protection, Implementing File Systems	Lecturing	
78.	File System Structure	Lecturing	
79.	Directory Implementation	Lecturing	
80.	Directory Implementation	Lecturing	
81.	Allocation Methods	Lecturing	
82.	Free Space Management, Efficiency and Performance Recovery	Lecturing	
83.	CIA II	Lecturing	
84.	Linux - Introduction	Lecturing	Module V
85.	Basic Features, Advantages	Lecturing	
86.	Kernel, Shell	Lecturing	
87.	File System	Lecturing	
88.	File System	Lecturing	
89.	Revision	Seminars	
90.	Revision	Seminars	

ASSIGNMENTS

	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Weightage
1	OS introduction with examples	5 marks
2	Process and scheduling algorithms	5 marks
3	Deadlock	5 marks
4	Previous question papers	5 marks

Books for study:

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

References:

- Operating Systems- By Milan Kovic (TMH)

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	

COURSE PLAN
COURSE : DESCRIPTIVE STATISTICS

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

Hours/Week: 05

Hours/Semester: 72

COURSE OBJECTIVES

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

Basic Reference

- 1 S.C. Gupta and V. K.Kapur. Fundamentals of Mathematical Statistics, Sultan Chand and sons New Delhi
- 2 S.P. Gupta. Statistical Methods ,Sultan Chand & Sons Delhi
- 3 B.L. Agarwal. Basic Statistics, New Age International (p) Ltd.
- 4 S.C.Gupta and V.K.Kapoor. Fundamentals of Applied Statistics,Sultan Chand & Sons Delhi

COURSE OUTCOMES

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

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

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

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

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

ASSIGNMENTS

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

ASSIGNMENTS/EXERCISES – Details & Guidelines

1. Collection of data from medias such as Newspaper.
2. Perusal of various books available in library etc.
3. Prepration of powerpoint presentation on various topics by the students

4. Personal discussion interacting with each student about the topic

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

Course Description:

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

COURSE OBJECTIVES

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

Basic Reference

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

COURSE OUTCOMES

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

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

Sessions	Date	Topic	Method	Remarks/Reference
1.	26/6/17	Problem Solving Problem Definition, Problem Solving	Lecturing	
2.	27/6/17	Logic developments tools - Algorithm	Lecturing	
3.	28/6/17	Flowcharts	Lecturing	
4.	29/6/17	pseudo code	Lecturing	
5.	29/6/17	Modular programming	Lecturing	
6.	30/6/17	Structured and object oriented	Lecturing	
7.	30/7/17	top down and bottom up approaches	Lecturing	
8.	3/7/17	features of a good computer program	Lecturing	
9.	6/7/17	C language basics: C character set,	Lecturing	
10.	7/7/17	Identifiers and keywords	Lecturing	
11.	8/7/17	Enumeration type, constants	Lecturing	
12.	8/7/17	variables, declarations	Lecturing	
13.	10/7/17	qualifiers – long, short and unsigned declarations, expressions, symbolic	Library	

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

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

SEMESTER II- ANALYTIC GEOMETRY, TRIGONOMETRY AND MATRICES

Text Books:

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

Sessions	Topic	Method	Remarks/Reference
1	Introductory Session	Lecture Method	
2	Circular and hyperbolic functions of a complex variable	Lecture Method	
3	Separation into real and imaginary parts	Lecture Method	
4	Problems	Interaction	
5	Factorisation of $x^n - 1$, $x^n + 1$, $x^{2n} - 2x^n a^n \cos \theta + a^{2n}$	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

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

Microprocessors & Computer Organization

Objectives:

The course aims:

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

Learning Outcomes

By completing this course the student should be able to:

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

Books of study :

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

References:-

1. R S. Gaonkar- Micro processor Architecture, Programming and applications with 8085.
Venugopal and Ravikanth- Introduction to assembly language programming in 8086
2. The Intel Microprocessors 8086/8088, 80816/80188, 80286, 80486 Pentium and Pentium Pro Processor – Architecture, Programming and interfacing by Barry B Brey, 4th Edition, PHI

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

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

40	10/02/18	Intel 80286	Lecturing	
41	11/02/18	80386	Lecturing	
42	12/02/18	80486	Lecturing	
43	16/02/18	Pentium	Lecturing	
44	19/02/18	Pentium Pro	Lecturing	
45	23/02/18	Pentium II	Lecturing	
46	24/02/18	Pentium III	Lecturing	
47	25/02/18	Pentium 4.	Lecturing	

ASSIGNMENTS

	Date of submission/completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Weight age
1	30/11/2017	Functional units of computer	5
2	11/1/2018	ROM & RAM	5
3	22/02/2018	Previous question papers	5

Semester : II
Course Code : 15U2CRCAP04
Course Title : DATA STRUCTURES USING 'C'

Name of Teacher : Achamma Cherian

Hours/Week: 04
Hours/Semester: 60

Course Description:

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

Objectives:

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

Learning Outcomes:

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

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

Sessions	Date	Topic	Method	Remarks/Reference
1.	14/11/17	Syllabus Discussion		
2.	15/11/17	Concept of Structured data: Data structure definition, Different types and	Lecturing	

		classification of data structures		
3.	16/11/17	Simple programs	Practicals	
4.	17/11/17	Operations on Data structures	Lecturing	
5.	18/11/17	Arrays – representation of array in the memory	Lecturing	
6.	21/11/17	operations on one dimensional arrays two dimensional arrays	Lecturing	
7.	22/11/17	Operations on two dimensional arrays	Lecturing	
8.	23/11/17	Programs using arrays	ICT	
9.	24/11/17	Bubble sort, Selection sort	Practicals	
10.	25/11/17	linear search, binary search	Lecturing	
11.	28/11/17	sparse matrix	Lecturing	
12.	29/11/17	Revision	Test	
13.	30/11/17	Sorting & searching Programs		
14.	01/12/17	Stacks and Queues: organization and operation on stacks	Practicals	
15.	02/12/17	Conversion between infix to postfix & prefix representations	Lecturing	
16.	05/12/17	Expression Evaluation	ICT	
17.	06/12/17	Organization and operations on queues	Lecturing	
18.	07/12/17	Programs (Stack & queue operations)	ICT	
19.	08/12/17	circular queue-multiple stacks and queue	Practicals	

20.	09/12/17	Applications of stacks	Lecturing	
21.	13/12/17	Applications of queues	Lecturing	
22.	14/12/17	Linked list: Memory allocation (dynamic vs. static)	Lecturing	
23.	15/12/17	Conversion Programs	Practicals	
24.	16/12/17	Seminar	Using PPT	
25.	19/12/17	Seminar	Using PPT	
26.	20/12/17	Revision		
27.	21/12/17		Practicals	
28.	22/12/17	Revision	QP DISCUSSION	
29.	03/01/18	Internal 1		
30.	04/01/18	Programs	Practicals	
31.	05/01/18	Difference of CALLOC, MALLOC, REALLOC fns.	Lecturing	
32.	06/01/18		Lecturing	
33.	09/01/18	concept of dynamic data structures	Lecturing	
34.	10/01/18	Seminar	Lecturing	
35.	11/01/18	linked list, need, basic operations.	Practicals	
36.	12/01/18	types of linked list	Lecturing	
37.	16/01/18	linked list using pointers	Lecturing	
38.	17/01/18	insertion and deletion – examples	Lecturing	
39.	18/01/18		Practicals	
40.	19/01/18	Seminar		
41.	20/01/18	circular list – doubly linked lists	Lecturing	

42.	23/01/18	garbage collection	Lecturing	
43.	24/01/18	Trees: Concept of recursion, definition of - trees,	Lecturing	
44.	25/01/18		Practicals	
45.	26/01/18	binary trees, strictly binary trees	Lecturing	
46.	27/01/18	complete binary tree and Binary search tree	Lecturing	
47.	30/01/18	Seminar	Ppt	
48.	31/01/18	Seminar	PPT	
49.	01/02/18		Practicals	
50.	02/02/18	Creation of binary search tree	ICT	
51.	03/02/18	traversing methods	ICT	
52.	06/02/18	Traversal using recursion	ICT	
53.	07/02/18	Non-recursive traversal - inorder	ICT	
54.	09/02/18	Non-recursive traversal – pre-order	ICT	
55.	10/02/18	Non-recursive traversal – post order	ICT	
56.	13/02/18	Seminar		
57.	14/02/18	Seminar		
58.	24/02/18	Seminar		
59.	15/02/18		Practicals	
60.	16/02/18	Revision	QP Discussion	
61.	17/02/18	Revision	QP Discussion	
62.	20/02/18	INTERNA II		

63.	23/02/18	File organization		
64.	24/02/18	sequential, random files,		
65.	27/02/18	linked organization		
66.	28/02/18	inverted files		
67.	01/03/18		Practicals	
68.	02/03/18	cellular partitioning, hashing function		
69.	03/03/18	Revision- Unit 4 & 5		
70.	06/03/18	Revision- Unit 32		
71.	07/03/18	Revision	Test	
72.	08/03/18	Revision- Unit1 1		
73.	09/03/18	Revision- Unit 2		
74.	10/03/18	Revision	Test	

ASSIGNMENTS

	Date of submission/completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Weighttag
1	08/12/17	Stacks and queues	5 marks
2	23/01/17	Linked List	5 marks
3	28/02/17	Trees & File organization	5 marks
4	03/03/18	Previous question papers	5 marks

Books of study:

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

References:

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

SEMESTER 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

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 sample mean and sample proportion.

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

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

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

50.	Examples	Lecturing
51.	Methods of sampling	Lecturing
52.	Types of sampling- Simple Random Sampling, 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. Topics to be covered include: data communication concepts and techniques in a layered network architecture, communications switching and routing, types of communication, network congestion, network topologies, network configuration and management, network model components, layered network models (OSI reference model, TCP/IP networking architecture) and their protocols, various types of networks (LAN, MAN, WAN and Wireless networks) and their protocols. The course is supplemented by a practical component covered in CS335 concurrently.

Course Objectives:

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

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

Learning Outcomes:

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

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

Term – I			
Sl. No	Date	Topics	Method
1	02-06-2017	Introduction to Data Communication, Network	Using PPT presentation
2	02-06-2017 05-06-2017	Protocols & Standards and Standards Organizations	Using PPT presentation
3	06-06-2017 07-06-2017 08-06-2017	Topology	Using PPT presentation
4	12-06-2017 13-06-2017	Transmission mode, Network models	Using PPT presentation
5	14-06-2017 15-06-2017	OSI model – layers and their functions in OSI model	Using PPT presentation

6	16-06-2017	TCP/IP	Using PPT presentation
7	19-06-2017	Data and Signals-Analog and Digital Signals-Wave Length, Bit Rate, Bit Length	Using PPT presentation
8	20-06-2017	Transmission Impairment-Attenuation, Distortion and Noise	Using PPT presentation
9	21-06-2017 22-06-2017	Bandwidth Utilization: Multiplexing – FDM,TDM,WDM and Spreading	Using PPT presentation
10	27-06-2017	Transmission Media –Guided Media	Using PPT presentation
11	28-06-2017	Switching- Circuit Switching, Datagram Network, Virtual Circuit - Dial up Modem	Using PPT presentation
12	29-06-2017	Data Link layer	Using PPT presentation
13	28-06-2017 30-06-2017	Error detection and Correction Codes	Using PPT presentation
14	03-07-2017 04-07-2017	Framing, Flow Control and Error Control	Using PPT presentation
15	05-07-2017 06-07-2017	Protocol for Noisy and Noiseless Channel	Using PPT presentation
16	10-07-2017 11-07-2017	Multiple Access: Random Access- ALOHA, CSMA, CSMA/CD	Using PPT presentation
Before the 1st Internal Exam – 40% of the syllabus will be completed			
17	12-07-2017 13-07-2017 17-07-2017	First Internal Examination	
Term II			
18	18-07-2017 19-07-2017	Channelisation Methods	Using PPT presentation

19	24-07-2017 25-07-2017	Wired and Wireless LAN	Using PPT presentation
20	26-07-2017 27-07-2017	Wireless WAN-Cellular Telephony and Satellite Networks	Using PPT presentation
21	31-07-2017 01-08-2017	Mobile Computing: Wireless networks: Wireless communication concepts; classification of wireless networks.	Using PPT presentation
22	02-08-2017 03-08-2017	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.	Using PPT presentation
23	08-08-2017 09-08-2017	Connecting Devices: Hubs, Switches, Repeaters, Bridges, Routers – Gateway	Using PPT presentation
24	10-08-2017 11-08-2017	Network Layer: Host to Host delivery - Logical Addressing	Using PPT presentation
25	21-08-2017	Internet protocol: IPV4 and IPV6	Using PPT presentation
26	22-08-2017	Address Mapping – ICMP – IGMP, Uni Casting, Multicasting and Broadcasting	Using PPT presentation
27	23-08-2017	Transport Layer: UDP – TCP	Using PPT presentation
28	24-08-2017 28-08-2017	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	29-08-2017 30-08-2017 31-08-2017	Second Internal Examination	
Term III			
30	05-09-2017	Application Layer: Name Space – Domain Name System, Voice over IP	Using PPT presentation
31	06-09-2017	Telnet, FTP, SMTP, and Voice over IP	Using PPT presentation
32	07-09-2017 08-09-2017	Cryptography-Symmetric Key Cryptography and Asymmetric key Cryptography	Using PPT presentation
33	18-09-2017	Telnet, FTP, SMTP, and Voice over IP	Using PPT presentation
34	19-09-2017	Cloud Computing: cloud computing overview, definition and characteristics, grid computing	Using PPT presentation
35	20-09-2017	Difference between grid computing and cloud computing, advantages of cloud computing	Using PPT presentation
36	22-09-2017	Cloud service models/types (IaaS, PaaS, SaaS, BPaaS), cloud deployment models (public, private, hybrid, and community clouds).	Using PPT presentation
Before the Semester Exam – 100% of the syllabus will be completed			
37	25-09-2017 26-09-2017 27-09-2017	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.	28-06-2017
2	Physical layer and Data link layer of OSI model	28-06-2017
3	Network layer and Transport layer of OSI model.	28-06-2017
4	Session layer, Presentation layer and Application layer of OSI model.	28-06-2017
5	TCP/IP protocol and four levels of Addressing of TCP/IP.	28-06-2017
6	Analog signals, digital signals, Periodic and Non-periodic Signals, Sine Wave, Peak Amplitude, Period and Frequency.	28-06-2017
7	Analog signals, Phase, Wavelength, Bandwidth, Bit rate, and Bit length.	28-06-2017
8	Transmission impairment, Attenuation and Distortion and Noise.	28-06-2017
9	Multiplexing, Frequency Division Multiplexing and other applications of FDM.	28-06-2017
10	Wavelength Division Multiplexing, Time Division Multiplexing and Spread Spectrum.	28-06-2017
11	Transmission Media and Guided Media.	28-06-2017
12	Transmission Media and Unguided Media.	28-06-2017
13	Switching: Circuit Switching, Packet Switching, Datagram Networks and Virtual Circuit Networks	28-06-2017
14	Types of Errors – Redundancy – Detection versus Correction – Forward Error Correction versus Retransmission – Coding – Modular Arithmetic.	28-06-2017
15	Block Coding: Error Detection – Error Correction – Hamming Distance – Minimum Hamming Distance.	28-06-2017

16	Linear Block Codes: Some Linear Block Code. Cyclic Codes: Cyclic Redundancy Check – Checksum.	28-06-2017
17	Framing: Fixed-size framing, Variable-size framing, Character-oriented protocol and Bit-oriented protocol	28-06-2017
18	Flow control, Error control, Simplest protocol, Stop-and-Wait protocol.	28-06-2017
19	Noisy Channels: Stop-and-Wait Automatic Repeat Request, Go-back-N Automatic Repeat Request and Selective Repeat Automatic Repeat Request	28-06-2017
20	Multiple Access: Random Access, ALOHA, Slotted ALOHA, CSMA and CSMA/CD.	28-06-2017
21	Wired LAN, Wireless WAN, Cellular Telephony and Satellite Networks.	28-06-2017
22	Connecting Devices: Hubs, Switches, Repeaters, Bridges, Routers and Gateway.	28-06-2017
23	IPV4 and its packet format.	28-06-2017
24	Advantages of IPV6 than IPV4.	28-06-2017
25	ICMP, IGMP, Multicast Routing Protocols.	28-06-2017
26	Wireless WAN-Cellular Telephony and Satellite Networks	28-06-2017
27	Wireless networks: Wireless communication concepts; classification of wireless networks.	28-06-2017
28	Cellular networks (1G, 2G, 3G, 4G), WLAN, WPAN, WMAN, Satellite Networks	28-06-2017
29	Mobile and Wireless Devices –Need for Mobile Computing, Mobility management: Handoff and location management concepts.	28-06-2017
30	Transport Layer: UDP – TCP, Congestion Control: Open and Closed loop.	28-06-2017
31	Application Layer: Name Space – Domain Name Space – Label, Domain Name- fully and partially qualified domain names.	28-06-2017
32	Remote logging - Telnet, FTP, SMTP, and Voice over IP.	28-06-2017

	Cryptography: Symmetric and Asymmetric.	
33	Cloud Computing: cloud computing overview, definition and characteristics,	28-06-2017
34	grid computing, difference between grid computing and cloud computing, advantages of cloud computing,	28-06-2017
35	Cloud service models/types (public, private, hybrid, and community clouds), cloud deployment models (IaaS, PaaS, SaaS, BPaaS)	28-06-2017

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.
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Seminars Using PPT – Details & Guidelines:

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

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

10	After preparation, talk through the presentation aloud, to correct the timing – 20 minutes is the time limit.
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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 Yashwant Kanetkar - 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	2/6/17	Introductory Session	Lecturing	
2	3/6/17	Basic concept of object oriented programming	Lecturing	
3	4/6/17	benefits of oops	Lecturing	
4	5/6/17	Structure of C++ Program	Lecturing	
5	8/6/17	Basic, derived and user defined data types	Lecturing	
6	9/6/17	Symbolic constants	Lecturing	
7	10/6/17	operators in C++	Lecturing	
8	11/6/17	Control Structures	Lecturing	
9	12/6/17	Functions in C+	Lecturing	
10	16/6/17	The main function, function prototyping	Lecturing	
11	16/6/17	call by reference-return by reference	Lecturing	
12	17/6/17	inline function	Lecturing	
13	18/6/17	function overloading	Lecturing	
14	19/6/17	friend functions	Lecturing	
15	22/6/17	virtual functions	Lecturing	
16	23/6/17	specifying a class	Lecturing	

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

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

71	29/9/17	Evaluation of the Course		

ASSIGNMENTS

	Date of submission/completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Weightage
1	29/6/17	Basics of C++	5 marks
2	3/8/17	Notes of 2 and 3 unit	5 marks
3	23/9/17	Previous question papers	5 marks

SYSTEM ANALYSIS AND DESIGN

Course Description:

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

Objectives:

- understand the principles of systems analysis and design
- be able to carry out a structured analysis of business systems requirements
- be able to design business systems solutions
- understand

Learning Outcomes:

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

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

Sessions	Date	Topic	Method	Remarks/Reference
1.	1/6/17	Discussing Syllabus		
2.	2/6/17	System and its concepts	Lecturing	
3.	5/6/17	Elements of system	Lecturing	
4.	6/6/17	Characteristics of system	Lecturing	
5.	7/6/17	Information systems concepts	Lecturing	
6.	9/6/17	Business information systems	Lecturing	
7.	12/6/17	Describing the business organization	Lecturing	
8.	13/6/17	organization chart , organization function list	Lecturing	
9.	14/6/17	information system levels - operational, lower, middle, top management	Lecturing	
10.	16/6/17	the system development life cycle concepts	Lecturing	
11.	19/6/17	hardware and software end products.	Lecturing	
12.	20/6/17	Life cycle activities- life cycle flow chart, task	Lecturing	
13.	21/6/17	management review, baseline specifications	Lecturing	
14.	23/6/17	role of system analyst	Lecturing	
15.	26/6/17	REVISION	Discussion	

16.	27/6/17	REVISION	Test paper	
17.	28/6/17	Basic tool of system analysis identification codes – definition, need for codes	Lecturing	
18.	30/6/17	code plan, code dictionary	Lecturing	
19.	3/7/17	common type of codes	Lecturing	
20.	4/7/17	Notes Preparation	Libraray	
21.	5/7/17	forms design	Lecturing	
22.	7/7/17	basic parts of form	Lecturing	
23.	10/7/17	style and types of form, principles of form design	Lecturing	
24.	11/7/17	REVISION	Discussion	
25.	12/7/17	Tools for structure analysis and design: Types of basic charts	Using Powerpoint	
26.	14/7/17	decision tables	Using Powerpoint	
27.	17/7/17	decision trees	Using Powerpoint	
28.	18/7/17	structured English	Using Powerpoint	
29.	19/7/17	data flow diagram	Using Powerpoint	
30.	21/7/17	data flow diagram example	Using Powerpoint	
31.	24/7/17	data dictionary	Using Powerpoint	
32.	25/7/17	CIA I	2 Hrs	
33.	26/7/17	Discussion on CIA	Lecturing	
34.	28/7/17	system flow charts	Lecturing	
35.	31/7/17	flow charting symbols	Lecturing	
36.	1/8/17	information oriented flow charts	Lecturing	
37.	2/8/17	process oriented flow charts,	Lecturing	
38.	4/8/17	HIPO charts.	Lecturing	
39.	7/8/17	REVISION	Test Paper	
40.	8/8/17	Study phase: Study phase activities	Lecturing	
41.	9/8/17	information service request	Lecturing	

42.	11/8/17	initial investigation	Lecturing	
43.	14/8/17	fact finding techniques	Lecturing	
44.	16/8/17	fact analysis techniques	Lecturing	
45.	18/8/17	steps in feasibility analysis	Lecturing	
46.	21/8/17	study phase report	Lecturing	
47.	22/8/17	Design phase: Design phase activities	Lecturing	
48.	23/8/10	structure design, input design- input data	Lecturing	
49.	25/8/17	input media and devices	Lecturing	
50.	28/8/17	CIA II	2 Hrs	
51.	29/8/17	output design, design phase report	Lecturing	
52.	30/8/17	Development phase: Development phase activities	Lecturing	
53.	1/9/17	bottom up and top down computer program development	Lecturing	
54.	4/9/17	training- programmer, operator, user trainings	Lecturing	
55.	5/9/17	conversion; change over plan, PERT	Lecturing	
56.	6/9/17	steps in computer program development;	Lecturing	
57.	8/9/17	structured programming	Lecturing	
58.	11/9/17	development phase report	Lecturing	
59.	12/9/17	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)	Weightage
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

Additional Reading List

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/Referenc e
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	01-11-2017	Definition of Internet, WWW, URL, webpage, website, hypertext, HTML, HTML5, CSS, PHP and MYSQL.	Using PPT presentation
2	02-11-2017 03-11-2017	Features of HTML. HTML Tags: Head, Body, Basic, Heading, Comments, Formatting tags, Image, Link, List, Marquee, Table, Frame, Form.	Using PPT presentation

3	06-11-2017 07-11-2017 08-11-2017	HTML Form elements: Input, Select, TextArea and Button.	Using PPT presentation
4	09-11-2017 10-11-2017	Input Types: Text, Password, Submit, Reset, Radio, Checkbox, Button.	Using PPT presentation
5	16-11-2017 17-11-2017	Introduction to CSS: Steps for website design and development process.	Using PPT presentation
6	20-11-2017	Three ways to insert CSS: Internal style sheet, external sheet and inline style.	Using PPT presentation
7	21-11-2017	Definition of DHTML, Javascript, DOM	Using PPT presentation
8	22-11-2017 23-11-2017	HTML DOM events: mouse events, keyboard events and form events.	Using PPT presentation
9	27-11-2017 28-11-2017	Javascript programs.	Using PPT presentation
10	01-12-2017	Introduction to HTML5: Introducing Dream Weaver, Difference between HTML and HTML5	Using PPT presentation
11	04-12-2017	New Elements: <article> and <figcaption>.	Using PPT presentation
12	05-12-2017	New Input elements: number, date and email.	Using PPT presentation
13	06-12-2017 07-12-2017	Canvas: Line and Text. SVG: Circle and Rectangle.	Using PPT presentation
14	08-12-2017 11-12-2017	Difference between SVG and Canvas, Video, Audio, Drag/Drop, Geolocation.	Using PPT presentation
15	12-12-2017 13-12-2017 14-12-2017	Form Elements: <datalist>, <keygen> and <output>. Form Attributes: formaction, formenctype, formmethod, and formtarget.	Using PPT presentation
16	15-12-2017 18-12-2017 19-12-2017	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	20-12-2017 21-12-2017 22-12-2017	First Internal Examination	
Term II			
18	02-01-2018 03-01-2018	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	04-01-2018 05-01-2018	Box Model: Border, Outline, Margin, Padding, Positioning, Floating and Align. Navigation Bar, Image Gallery.	Using PPT presentation
20	08-01-2018 09-01-2018	Introduction to PHP: PHP Basics Syntax, PHP Variables, Expression, PHP Operators, PHP Conditional Events and Switch case	Using PPT presentation
21	10-01-2018 11-01-2018 12-01-2018	PHP Flow Control and Loops, Types of Errors, Array, For each Loop, String Manipulation and Regular Expression	Using PPT presentation
22	15-01-2018 16-01-2018 17-01-2018	Global Array: \$_SERVER, \$_GET, \$_POST, \$_COOKIE, \$_FILES and \$_SESSION.	Using PPT presentation
23	18-01-2018 19-01-2018 23-01-2018	String inbuilt functions: strlen(), str_word_count(), strrev(), stripslashes() and str_replace(). Math functions: abs(), ceil(), floor(), max(), min(), pow() and sqrt(). Array Inbuilt functions: sort(), rsort(), asort(), ksort(), arsort() and krsort().	
24	24-01-2018 25-01-2018 29-01-2018	Second Internal Exam	
25	30-01-2018	Using HTML Forms: PHP form handling, get data sent from form fields through GET and POST method, form validation.	Using PPT presentation

26	01-02-2018	Sessions: create, retrieve, modify and delete. Cookies: create, retrieve, modify and delete.	Using PPT presentation
27	02-02-2018	Introduction to PHP MySQL. Data Types: Numeric, Text, Date and Time data types.	Using PPT presentation
28	05-02-2018	Database structure, tables	Using PPT presentation
Before the 2 nd Internal Exam – 80% of the syllabus will be completed			
Term III			
29	06-02-2018	MySQL naming rules and columns data types	Using PPT presentation
30	07-02-2018	PHP MySQL - INSERT INTO, SELECT, ORDER BY, WHERE and LIKE, UPDATE, DELETE	Using PPT presentation
31	08-02-2018	Connection with MySQL and display of data.	
32	20-02-2018 21-02-2018	Connection with MySQL and insertion of data.	Using PPT presentation
32	22-02-2018	Connection with MySQL and update of data.	Using PPT presentation
33	23-02-2018	Connection with MySQL and deletion of data.	
Before the Semester Exam – 100% of the syllabus will be completed			
33	26-02-2018 27-02-2018 28-02-2018	Revision Days Attendance will be closed.	Interaction

Sl.No	Topics	Submission Date
1	Define in detail about WWW, URL, webpage, website, hypertext, HTML, HTML5, CSS and PHP.	28-11-2017
2	Define in detail about the following with examples: Features of HTML, basic HTML Tags using example: Head, Body, Comments.	28-11-2017
3	Define in detail all formatting tags with examples.	28-11-2017
4	Define in detail Table with its all attributes. Write a program to create your class time table.	28-11-2017

5	Define Image, Link, List and Marquee Tags in detail with examples.	28-11-2017
6	Define in detail about the following Form elements with examples: Input, Select, TextArea and Button.	28-11-2017
7	Define in detail about the following Input Types with examples: Text, Password, Submit and Reset.	28-11-2017
8	Define in detail about the following Input Types with examples: Radio, Checkbox and Button.	28-11-2017
9	Explain Steps for website design and development process. Design a homepage of a university.	28-11-2017
10	Define in detail about the following three ways to insert CSS with examples: Internal style sheet, external sheet and inline style.	28-11-2017
11	Define in detail about DHTML, Javascript, DOM and the following HTML DOM events using examples: mouse events, keyboard events and form events.	28-11-2017
12	Write a Javascript program to create registration form and validation the data.	28-11-2017
13	Define about Dream Weaver and the difference between HTML & HTML5.	28-11-2017
14	Define in detail about new elements in HTML5 with examples: Article and Figcaption. New Input elements: number, date and email.	28-11-2017
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.	28-11-2017
16	Define in detail about the following tags using examples: Video, Audio, Drag/Drop, Geolocation. Form Elements: <datalist>, <keygen> and <output>.	28-11-2017
17	Define in detail about the following form attributes using examples: formaction, formenctype, formmethod, and formtarget.	28-11-2017
18	Define in detail about the following with examples: CSS Syntax, ID & Class, CSS Styling- Styling Backgrounds: background-color and background-image.	28-11-2017
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.	28-11-2017
20	Define in detail about the following with examples: Styling Tables: border-style, border-width and border-color.	28-11-2017
21	Define in detail about the following with examples: Box Model - Border, Outline, Margin, Padding, Positioning, Floating and Align. Navigation Bar, Image Gallery.	28-11-2017

22	Explain in detail about the following with examples: PHP Basics Syntax, PHP Variables, Expression and Operators.	28-11-2017
23	Explain in detail about the following with examples: PHP Flow Control and Loops.	28-11-2017
24	Explain in detail about the following with examples: Types of Errors, Array, For each Loop, String Manipulation and Regular Expression.	28-11-2017
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(), strrev(), stripslashes() and str_replace().	28-11-2017
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().	28-11-2017
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.	28-11-2017
28	Explain in detail about the following with examples: Sessions - create, retrieve, modify and delete.	28-11-2017
29	Explain in detail about the following with examples: Cookies - create, retrieve, modify and delete.	28-11-2017
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.	28-11-2017
31	Explain in detail about the following with examples: INSERT INTO, SELECT, ORDERBY.	28-11-2017
32	Explain in detail about the following with examples: WHERE and LIKE, UPDATE, DELETE.	28-11-2017
33	Explain Connection with MySQL and write a PHP program to insert of data into the table.	28-11-2017
34	Explain Connection with MySQL and write a PHP program to update the existing data.	28-11-2017

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, O'Reilly Media 2009.

COURSE PLAN
COURSE : DATABASE MANAGEMENT SYSTEM

Semester : IV
Course Code : 15U4CRCAP09
Course Teacher : Jisha Soman

Hours/Week: 04
Hours/Semester: 72

Course Description:

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

Objectives:

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

Learning Outcomes:

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

- Identify and define the information that is needed to design a database management system
- Build a database management system that satisfies relational theory with queries, forms, and reports.
- Understand the core terms, concepts and tools of relational database management systems.
- Design entity-relationship diagrams to represent simple database application scenarios

Sessions	Topic	Method	Remarks/Reference
1.	Syllabus Discussion	Discussion	

2.	Introduction about DBMS	Lecturing	Module I
3.	lecture/discussion of certain database software concepts and features	Lecturing	
4.	Characteristics of database approach	Using PPT	
5.	Data base users-DBA, Data base designers and end users	Using PPT	
6.	Advantages of using DBMS	Using PPT	
7.	Data Models	Using PPT	
8.	Schemas and instances	Using PPT	
9.	DBMS architecture	Using PPT	
10.	data independence and DBMS language-DDL, DML,DCL	Lecturing	
11.	Data Base system environment, DBMS Component and modules	Lecturing	
12.	ER Modeling - Introduction	Lecturing	
13.	Entity types, Entity sets, Attributes and Keys,	Lecturing	
14.	Assignment Questions	Discussion	
15.	Relationship Types, Relationship Sets relationship instances	Lecturing	
16.	Constraints on relationship types, Weak entity types	Lecturing	
17.	ER diagrams.	Lecturing	
18.	Exam	Class Test	
19.	Relational model concepts domains, attributes, tuples and	Lecturing	

	relations,.		Module II
20.	characteristics of relations	Lecturing	
21.	Relational Model constraints schemas, entity integrity, referential integrity and foreign keys with examples.	Lecturing	
22.	Relational algebra	Lecturing	
23.	Examples of queries in Relations Algebra	Lecturing	
24.	Tuple relations calculus, Domain relational calculus.	Lecturing	
25.	Relational Data base design using ER-to-Relational mapping	Lecturing	
26.	CIA I	Deptwise	
27.	SQL introduction	Lecturing	Module III
28.	DDL and DML commands	Lecturing	
29.	Adding constraints	Lecturing	
30.	Ordering of rows UNION,EXCEPT,INTERSET	Lecturing	
31.	Substring comparisons using LIKE operator, BETWEEN operator	Lecturing	
32.	Complex Queries-Nested queries,	Lecturing	
33.	EXISTS and UNIQUE functions, joining of tables,	Lecturing	

34.	Aggregate functions and grouping	Lecturing	
35.	Managing views	Lecturing	
36.	SQL Queries	LAB	
37.	SQL Queries	LAB	
38.	SQL Queries	LAB	
39.	SQL Queries	LAB	Module IV
40.	Data Normalization:- Informal Design Guide lines for relation schemas, and	Lecturing	
41.	Informal Design Guide lines for relation schemas	Lecturing	
42.	functional dependencies, Normal forms	Lecturing	
43.	First normal form	Lecturing	
44.	second normal form	Lecturing	
45.	third normal form,	Lecturing	
46.	Boyce- Codd normal form.	Discussion	
47.	Examples using normalization	Lecturing	
48.	Indexing structures for files- types of single level ordered indexes	Lecturing	
49.	types of single level ordered indexes	Lecturing	
50.	Introduction to transaction processing	Lecturing	
51.	Transaction and system	Lecturing	

	concepts		
52.	Desirable properties of transactions.	Lecturing	
53.	Database Security and Authorization:- Types of security	Lecturing	
54.	control measures, database security and the DBA	Lecturing	
55.	Data Mining Concept: Introduction to Data mining	Using PPT	Module V
56.	Approaches to data mining problems, Applications	Using PPT	
57.	Overview of data warehouse: Introduction	Using PPT	
58.	definition, characteristics, Building a data Ware House	Using PPT	
59.	problems and open issues in Data warehouses	Using PPT	
60.	Introduction to Big Data- What is Big Data. Why Big Data is Important	Using PPT	
61.	Characteristics, Tools, Applications	Using PPT	
62.	Attributes of Big Data	Using PPT	
63.	types of Data, Challenges of big Data.	Using PPT	
64.	Introduction to Hadoop: History	Using PPT	
65.	Advantages and limitations.	Using PPT	
66.	Discussion about previous question papers	Discussion	
67.	CIA II		

68.	Revision	seminars	
69.	Revision	seminars	
70.	Revision	seminars	
71.	Revision	Individual Viva	
72.	Revision	Individual Viva	

ASSIGNMENTS

	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Weightage
1	Advantages and application of DBMS	5 marks
2	ER diagram	5 marks
3	Normalisation	5 marks
4	Previous question papers	5 marks

Books of study:

- Fundamentals of Database Systems by RamezElmasri and Shamkant B. Navathe, Pearson Education, 5th edition
- Big Data and Hadoop by V. K. Jain

References:

- An Introduction to Database systems , C.J Date
- Data base Management Systems by Reghu Ramakrishnan - McGraw Hill International Edition.
- An Introduction to Database Systems by Bipin Desai -Galgoria Publications, 1991
- Big Data and Analytics by Subhashini Chellappan, Wiley, 2015

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	