

**SACRED HEART COLLEGE (AUTONOMOUS)**

**DEPARTMENT OF COMPUTER SCIENCE**

**BSC COMPUTER APPLICATIONS (TRIPLE MAIN)**

**Course plan**

**Academic Year 2018-19**

**Semester 2**

**PROGRAMME OUTCOME**

PROGRAMME OUTCOME	
PO1	<b>Critical Thinking:</b> Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO2	<b>Effective Communication:</b> Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the word by connecting people, ideas, books, media and technology.
PO3	<b>Effective Citizenship:</b> Demonstrate empathetic social concern and equity centered national development, and the ability to act an informed awareness of issues and participate in civic life through volunteering.
PO 4	<b>Environment and Sustainability:</b> Understand the issues of environmental contexts and sustainable development.
PO5	<b>Ethics:</b> Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO6	<b>Global Perspective:</b> Understand the economic, social and ecological connections that link the world's nations and people.

PROGRAM SPECIFIC OUTCOMES	
PSO1	Prepare graduates who will have a successful professional career in software industry, government, academia, research, and other areas where computer applications are deployed.
PSO2	Give an overview of the topics in Computer science like networking, web development, database queries, cyber security and software engineering.
PSO3	Develop programming skills, networking skills, learn applications, packages, programming languages and modern techniques of IT
PSO4	Apply theoretical concepts to design and develop programs and develop industry-focused skills to lead a successful career.
PSO5	Acquire good knowledge and understanding in advanced areas of mathematics and statistics.

### Course Structure

<b>Course Code</b>	<b>Title of The Course</b>	<b>No. Hrs./Week</b>	<b>Credits</b>	<b>Total Hrs./Sem</b>
15U2CCENG2	Critical Thinking, Academic Writing & Presentation	5	4	90
15U2CRCAP03	Micro Processors & Computer Organization	4	3	72
15U2CRCAP04	Data Structures Using 'C'	4	3	72
15U2PRCAP2	Data Structures Using C (Lab)	4	3	72
15U2CRCMT2	Analytic Geometry, Trigonometry & Matrices	4	3	72
15U2CRCST2	Probability and Statistics	4	3	72
15U2ARENV1	Environmental Science	5	4	90

**COURSE PLAN (15U2CCENG3: CRITICAL THINKING, ACADEMIC WRITING AND PRESENTATION)**

<b>PROGRAMME</b>	<b>BSc COMPUTER APPLICATIONS(TRIPLE MAIN)</b>	<b>SEMESTER</b>	<b>2</b>
<b>COURSE CODE AND TITLE</b>	<b>15U2CCENG3: CRITICAL THINKING, ACADEMIC WRITING AND PRESENTATION</b>	<b>CREDIT</b>	<b>4</b>
<b>HOURS/WEEK</b>	<b>5</b>	<b>HOURS/SEM</b>	<b>90</b>
<b>FACULTY NAME</b>	<b>GREESHMA BALACHANDRAN</b>		

	<b>COURSE OUTCOMES</b>	<b>PO / PSOs</b>
CO1	Comprehends fundamental concepts of critical reasoning and develops the capacity to read and respond critically, drawing conclusions, generalizing, differentiating fact from opinion and creating their own arguments.	PO1, PSO2
CO2	Develops appropriate and impressive writing styles for various contexts.	PO1, PSO2
CO3	Write and correct structural imperfections and edit what they have written.	PO1, PSO2
CO4	Develops capacity for making academic presentations effectively and impressively	PO1, PSO2

<b>CO - PO/PSO Mapping</b>										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4
CO 1	3							2		
CO 2	3							2		
CO 3	1							2		
CO 4	1							2		

**Indicators: 0- No Mapping strength, 1. Low, 2. Medium, 3. High**

<b>No. of Sessions</b>	<b>Topic</b>	<b>Method</b>	<b>Course Outcome</b>
2	Introduction to Critical Thinking	Lecture	CO 1
2	Reasoning and Arguments	Discussion	CO1
2	Deductive and Inductive Arguments	Lecture	CO1
2	Fallacies	Lecture	CO1
2	Inferential Comprehension	Reading Exercises	CO1
2	Critical Thinking and Academic Writing	Lecture	CO1
2	Critical Thinking and Academic Writing	Exercises	CO1
2	Writing Models	Introductory Lecture	CO2
2	Writing Letters	General Principles	CO2
2	Writing a Letter to the Editor	Exercise - 1	CO2
2	Letter to the Editor	Discussion on the Samples done	CO2
2	Resume	General Guidelines	CO2
2	Resume Writing	Writing Exercise	CO2
2	Resume Writing	Discussion on the samples	CO2
2	Covering Letter	General Introduction and Writing Exercise	CO2
2	Covering Letter	Discussion on the samples	CO2
2	Emails	General Instructions and Writing Exercise	CO2
2	Emails	Discussion on the Samples	CO2
2	Interview Skills	Discussion on the general principles	CO2
2	Group Discussion	Practical sessions and Evaluation	CO2
2	Accuracy in Academic writing	Lecture	CO3
2	Articles and Determiners	Lecture and discussion	CO3
2	Nouns and Pronouns	Lecture	CO3
2	Subject-verb agreement	Lecture and discussion	CO3
2	Phrasal verbs	Lecture	CO3

2	Modals	Lecture	CO3
2	Tenses	Lecture and demonstration	CO3
2	Conditional clauses	General Instructions and Writing Exercise	CO3
2	Relative Pronouns	Lecture and demonstration	CO3
2	Passive Voices	Lecture and illustration	CO3
2	Conjunctions	Lecture	CO3
2	Embedded questions	Demonstration	CO3
2	Punctuations and Abbreviations	General Instructions and Writing Exercise	CO3
2	Soft skills for academic presentations	Presentation and lecture	CO4
2	Effective communication skills	Lecture	CO4
2	How to structure presentation	Lecture and Demonstration	CO4
2	Flip Charts, OHP, Power point presentation	Demonstration	CO4
2	Clarity and brevity in presentation	Lecture	CO4
2	Interaction and persuasion	Lecture	CO4
2	Interview skills	Face to face interaction, demonstration	CO4
2	Group Discussion	Demonstration and Lecture	CO4
2	Group Discussion	Demonstration and Lecture	CO4
6	Revision	Discussion and revising the topics	CO4
Total = 90 Sessions			

### ASSIGNMENT

	<b>Date of completion</b>	<b>Topic of Assignment &amp; Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)</b>	<b>Course Outcome</b>
1	14/2/19	Draft a Resume for applying for the career you wish to choose	CO 2

### REFERENCE

Marilyn Anderson, Pramod K Nayar and Madhucchandra Sen. Critical Thinking, Academic Writing and Presentation Skills. Pearson Education and Mahatma Gandhi University

### COURSE PLAN (15U2CRCAP3 :MICROPROCESSORS & COMPUTER ORGANIZATION)

<b>PROGRAMME</b>	<b>BSc COMPUTER APPLICATIONS(TRIPLE MAIN)</b>	<b>SEMESTER</b>	<b>2</b>
<b>COURSE CODE AND TITLE</b>	<b>15U2CRCAP3: MICROPROCESSORS &amp; COMPUTER ORGANIZATION</b>	<b>CREDIT</b>	<b>4</b>
<b>HOURS/WEEK</b>	<b>4</b>	<b>HOURS/SEM</b>	<b>72</b>
<b>FACULTY NAME</b>	<b>RENSI K RANJITH</b>		

	<b>COURSE OUTCOMES</b>	<b>PO/ PSO</b>	<b>CL</b>
CO 1	Understand the organization of a computer system in terms of its main components	PO1, PSO1, PSO2	U
CO 2	Understand addressing methods, instruction sequencing and execution.	PO1, PSO2, PSO3	U
CO 3	Understand the detailed operation of a microprocessor	PO1, PSO1,PSO2	U
CO 4	Understand different processor architectures	PO1, PSO1, PSO2,PSO4	U
CO 5	Understand the central processing unit, memory and memory mapping techniques	PO1, PSO1, PSO2	U

CL\* Cognitive Level

CO - PO/PSO Mapping										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4
CO 1	3	0	0	0	0	0	3	2	0	0
CO 2	3	0	0	0	0	0	0	2	2	0
CO 3	3	0	0	0	0	0	3	2	0	0
CO 4	3	0	0	0	0	0	3	2	0	3
CO 5	3	0	0	0	0	0	3	2	0	0

Indicators: 0- No Mapping strength, 1. Low, 2. Medium, 3. High

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	COURSE OUTCOME
<b>MODULE I</b>				
1	Functional units of a computer	Lecture		CO 1
2	Basic operational concepts	Lecture		CO 1
3	Basic operational concepts	Lecture		CO 1
4	Basic operational concepts	Lecture		CO 1
5	Bus structure	Lecture		CO 1
6	Addressing methods	PPT/Lecture		CO 2
7	Addressing methods	PPT/Lecture		CO 2
8	Memory locations and addresses,	Lecture		CO 2
9	Instructions and instruction sequencing	Lecture		CO 2
10	Instructions and instruction sequencing	Lecture		CO 2
11	Instruction execution	Lecture		CO 2
12	Instruction execution	Lecture		CO 2



13	Instruction execution	Lecture		CO 2
14	Revision			
<b>MODULE II</b>				
15	Introduction to 8086	Lecture		CO 3
16	Pin-out Diagram	Lecture		CO 3
17	Pin-out Diagram	Lecture		CO 3
18	Operating modes	Lecture		CO 3
19	Operating modes	Lecture		CO 3
20	Operation of 8086	Lecture		CO 3
21	Operation of 8086	Lecture		CO 3
22	Registers	Lecture		CO 3
23	Registers	Lecture		CO 3
24	Interrupts	Lecture		CO 3
25	Interrupts	Lecture		CO 3
26	<b>CIA-1</b>			
27	Bus Cycle	Lecture		CO 3
28	Bus Cycle	Lecture		CO 3
29	Addressing modes	PPT/Lecture		CO 3
30	Addressing modes	Lecture		CO 3
31	Addressing modes	Lecture		CO 3
32	Revision	Lecture		
<b>MODULE III</b>				
33	16 bit processors	Lecture		CO 4
34	32 bit processors	Lecture		CO 4
35	64 bit processors	Lecture		CO 4

36	Intel 80286	Lecture		CO 4
37	Intel 80286	Lecture		CO 4
38	Intel 80286	Lecture		CO 4
39	80386	Lecture		CO 4
40	80386	Lecture		CO 4
41	80386	Lecture		CO 4
42	80486	Lecture		CO 4
43	80486	Lecture		CO 4
44	80486	Lecture		CO 4
45	Pentium	Lecture		CO 4
46	Pentium	Lecture		CO 4
47	Pentium Pro	Lecture		CO 4
48	Pentium Pro	Lecture		CO 4
49	Pentium II	Lecture		CO 4
50	Pentium III	Lecture		CO 4
51	Pentium 4.	Lecture		CO 4
<b>MODULE IV</b>				
53	General Register Organization	Lecture		CO 5
54	Register stack	Lecture		CO 5
55	Register stack	Lecture		
56	Memory stack	Lecture		CO 5
57	Memory stack	Lecture		CO 5
58	Reverse Polish Notation	Lecture		CO 5
59	Evaluation of arithmetic expression	Lecture		CO 5
60	Instruction Formats	Lecture		CO 5

61	Instruction Classification & Program control instructions	Lecture		CO 5
62	Data transfer instructions	Lecture		CO 5
63	Data transfer instructions	Lecture		CO 5
<b>CIA II</b>				
<b>MODULE V</b>				
66	Organization of RAM	Lecture		CO 5
67	SRAM, DRAM	Lecture		CO 5
68	ROM,PROM,EROM,EEPROM	Lecture		CO 5
69	Auxiliary memory	Lecture		CO 5
70	Virtual Memory	Lecture		CO 5
71	Memory mapping Techniques	Lecture		CO 5
72	Revision			

#### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcome
1	17/1/2019	Architecture of 8086	CO 3
2	28/1/2019	Data manipulation Instructions	CO 5

#### GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcome
1	8/2/2019	Compare different microprocessors(Group Discussion)	CO 5

## REFERENCES

- B RAM -Fundamentals of microprocessors and micro computers
- M M Mano – Computer Architecture
- Advanced microprocessors & peripherals – Architecture Programming & interfacing by A K Ray & K M Bhurchand
- R S. Gaonkar- Micro processor Architecture, Programming and applications with 8085.
- Venugopal and Ravikanth- Introduction to assembly language programming in 8086
- Barry B. Brey- Intel Microprocessors 8086

### COURSE PLAN (15U2CRCAP04: DATA STRUCTURES USING C)

<b>PROGRAMME</b>	<b>BSc COMPUTER APPLICATIONS</b>	<b>SEMESTER</b>	<b>2</b>
<b>COURSE CODE AND TITLE</b>	<b>15U2CRCAP04: DATA STRUCTURES USING C</b>	<b>CREDITS</b>	<b>3</b>
<b>HOURS/WEEK</b>	<b>4</b>	<b>HOURS/SEM</b>	<b>72</b>
<b>FACULTY NAME</b>	<b>ACHAMMA CHERIAN</b>		

	<b>COURSE OUTCOMES</b>	<b>PO/ PSO</b>	<b>CL</b>
CO1	Understand a variety of techniques for designing algorithms.	PO1/PSO3	A
CO2	Understand a wide variety of data structures and should be able to use them appropriately to solve problems	PO1/PSO3	U
CO3	Understand some fundamental algorithms.	PO1/PSO3, PSO4	U
CO4	Understand the file organization concepts	PO1/PSO3, PSO4	U

CO - PO/PSO Mapping										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4
CO 1	3								1	
CO 2	3								0	
CO 3	1								2	1
CO 4	1								2	1

Indicators: 0- No Mapping strength, 1. Low, 2. Medium, 3. High

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	COURSE OUTCOME
<b>MODULE 1</b>				
1.	Basics of C programs	Lecture		
2.	Syllabus discussion	Lecture		
3.	Concept of Structured data: Data structure definition	Lecture		CO2
4.	Types and classification of data structures	Lecture		CO2
5.	Types of Arrays	Lecture		CO2
6.	Arrays – representation of array in the memory	PPT/Lecture		CO2
7.	linear array operations	PPT/Lecture		CO2
8.	Sorting Techniques	Lecture	Demo Video	CO2
9.	Bubble sort algorithm			CO3

10.	Selection sort algorithm			C03
11.	Searching Techniques	Lecture	Demo Video	C02
12.	Linear search algorithm			C03
13.	Binary search algorithm			C03
14.	Sparse Matrix	Lecture		C01
15.	Polynomial Addition	Lecture		C01
<b>MODULE 2</b>				
16.	Concepts of stack and queue	Lecture		C01
17.	Organization and operation on stacks	Lecture		C01
18.	Push and pop operation	PPT/Lecture		C02
19.	Traversing of stack	PPT/Lecture		C02
20.	Applications of stacks	PPT/Lecture		C02
21.	Polish Notations	PPT/Lecture		C02
22.	Conversion between infix to postfix & prefix representations	PPT/Lecture		C02
23.	Conversion of infix to prefix using parenthesis method	PPT/Lecture		C02
24.	Conversion of infix to postfix using parenthesis method	PPT/Lecture		C02
25.	Conversion of infix to prefix using stack	PPT/Lecture		C03
26.	Conversion of infix to postfix using stack	PPT/Lecture		C03
27.	Expression Evaluation	PPT/Lecture		C03
28.	Revision	Seminar		

29.	Revision	Seminar		
30.	Doubt Clearans	Discussion		
31.	<b>CIA – I</b>			
32.	Answer Discussion	Discussion		
33.	Organization and operations on queues	Lecture		CO2
34.	Insert and delete Operations	Lecture	Demo video	CO3
35.	Types of Queues	Lecture		CO2
36.	Applications of Queues	Lecture		CO2
37.	Linear and Circular Queue	Lecture		CO2
38.	Circular queue insertion	Lecture		CO2
39.	Circular queue deletion	Lecture		CO2
<b>MODULE 3</b>				
40.	Concepts of Linked lists	Lecture		CO1
41.	Static memory allocation	Lecture		CO1
42.	Dynamic memory allocation	Lecture		CO1
43.	Types of linked list	Lecture		CO1
44.	Linked list using pointers	Lecture		CO1
45.	Insertion and deletion operation on singly linked list	Lecture		CO3
46.	Insertion and deletion operation on doubly linked list	Lecture		CO3
47.	Circular linked list	Lecture		CO3
48.	garbage collection	Lecture		CO2
<b>MODULE 4</b>				

49.	Concept of recursion	Lecture		CO2
50.	Definition of trees	Lecture		CO2
51.	Binary trees	Lecture		CO2
52.	Types of Trees	Lecture		CO2
53.	Strictly binary trees, complete binary tree	Lecture		CO2
54.	Binary search tree	Lecture		CO2
55.	Creation of binary search tree	Lecture		CO2
56.	Traversing methods	Lecture		CO3
57.	AVL Tree	Lecture		CO1
58.	Revision	Seminar		
59.	Revision	Seminar		
60.	Doubt Clearans	Discussion		
61.	<b>CIA – II</b>			
62.	Answer Discussion	Discussion		
<b>MODULE 5</b>				
63.	File Concepts	Lecture		CO4
64.	<i>Concepts of file organizations</i>	Lecture		CO4
65.	Types of file organizations	Lecture		CO4
66.	Sequential file organization	PPT/Lecture		CO4
67.	Random file organization	PPT/Lecture		CO4
68.	Linked file organization	PPT/Lecture		CO4
69.	Inverted files, Cellular partitioning	PPT/Lecture		CO4
70.	Hashing function & Techniques	PPT/Lecture		CO4
71.	Revision	Seminar		



72.	Revision	Seminar		
-----	----------	---------	--	--

### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcome
1	15/12/18	Conversion of infix to postfix using stack	CO3
2	20/1/19	Construction of binary search tree	CO2
3	20/2/19	File organizations	CO4

### REFERENCES:

- Data Structures Through C (A Practical Approach), G.S Baluja Danapat Rai & Co.
- Fundamentals of Data Structures, Ellis Horowitz and Sartaj Sajni Galgotia Publications
- 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

**COURSE PLAN (15U1CRCMT02: ANALYTIC GEOMETRY, TRIGONOMETRY AND MATRICES)**

<b>PROGRAMME</b>	<b>BSc COMPUTER APPLICATION(TRIPLE MAIN)</b>	<b>SEMESTER</b>	<b>2</b>
<b>COURSE CODE AND TITLE</b>	<b>15U1CRCMT02: ANALYTIC GEOMETRY, TRIGONOMETRY AND MATRICES</b>	<b>CREDIT</b>	<b>3</b>
<b>HOURS/WEEK</b>	<b>4</b>	<b>HOURS/SEM</b>	<b>72</b>
<b>FACULTY NAME</b>	<b>Ms. ANEESHA</b>		

	<b>COURSE OUTCOMES</b>	<b>PO/ PSO</b>	<b>CL</b>
CO1	Identify more ideas of conics	PO1, PSO5	U
CO2	Apply the equation of tangent, normal at a point on a conic	PO1, PSO5	U,A
CO3	Describe the polar equation of a line, circle , tangent and normal to conics	PO1 PSO5	U,A
CO4	Familiarize how to separate real and imaginary parts of hyperbolic functions of a complex variable.	PO1, PSO5	An
CO5	Describe rank of a matrix,characteristic roots and characteristic vectors	PO1, PSO5	U
CO6	Apply Cayley-Hamilton theorem to find inverse of a matrix	PO1,PSO5	A

CL\* Cognitive Level

<b>CO - PO/PSO Mapping</b>											
	<b>PO 1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO 4</b>	<b>PO 5</b>	<b>PO 6</b>	<b>PSO 1</b>	<b>PSO 2</b>	<b>PSO 3</b>	<b>PSO 4</b>	<b>PSO5</b>
<b>CO 1</b>	<b>3</b>										<b>2</b>
<b>CO 2</b>	<b>3</b>										<b>2</b>
<b>CO 3</b>	<b>1</b>										<b>1</b>
<b>CO 4</b>	<b>1</b>										<b>2</b>
<b>CO 5</b>	<b>1</b>										<b>2</b>
<b>CO 6</b>	<b>1</b>										<b>2</b>

Indicators: 0- No Mapping strength, 1. Low, 2. Medium, 3. High

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	COURSE OUTCOME
<b>MODULE I</b>				
1 – 3	Tangents and Normals (parametric form only) of a conic	Lecture		CO 1, CO2
4 – 6	Orthoptic locus	Lecture		CO 1, CO2
7 – 9	Pole and Polar	Lecture		CO 1, CO2
10 – 12	Chord in terms of given points	Lecture		CO 1, CO2
13 – 15	Conjugate diameters of ellipse and hyperbola	Lecture		CO 1, CO2
16 – 18	Asymptotes of a hyperbola	Lecture		CO 1, CO2
19 – 21	conjugate hyperbola	Lecture		CO 1, CO2
22 – 24	rectangular hyperbola	Lecture		CO 1, CO2
<b>MODULE II</b>				
25 – 27	Polar co-ordinates	Lecture		CO 3
28 – 30	polar equation of a line	Lecture		CO 3
31 – 33	polar equation of a circle	Lecture		CO 3
34 – 36	polar equation of a conic	Lecture		CO 3
37- 39	Polar equations of tangent and normal to these curves	Lecture		CO 3
CIA-1				
<b>MODULE III</b>				
40 – 42	Introductory Session	Lecture		CO 4
43 – 45	Circular and hyperbolic functions of a complex variable	Lecture		CO 4
46 – 48	Separation into real and imaginary parts	Lecture		CO 4
49 – 51	Factorisation of $x^n-1, x^n+1, x^{2n} - 2x^n a^n \cos n\theta + a^{2n}$	Lecture		CO 4
52 - 54	Summation of infinite series by C + i S method	Lecture		CO 4
<b>MODULE IV</b>				
55 – 57	Rank of a Matrix	Lecture		CO 5
58 – 60	Non-Singular and Singular matrices	Lecture		CO 5
61 – 63	Inverse of a matrix by elementary Transformations	Lecture		CO 5
64 – 66	Equivalent matrices	Lecture		CO 5
67 – 69	Row Canonical form	Lecture		CO 5
70 – 72	Normal form	Lecture		CO 5
73 – 75	Elementary matrices only	Lecture		CO 5
CIA - II				
76 – 78	Systems of Linear equations	Lecture		CO 5
79 - 81	System of non homogeneous solution using matrices	Lecture		CO 5
82 – 84	Cramer's rule	Lecture		CO 5

86 – 87	System of homogeneous equations	Lecture		CO 5
88	Characteristic equation of a matrix	Lecture		CO 5
89	Characteristic roots and characteristic vectors	Lecture		CO 5
90	Cayley-Hamilton theorem (statement only) and simple applications	Lecture		CO 6

### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcome
1	16/12/2018	Problems of Conic section( Written )	CO1, CO2
2	20/1/2019	previous question paper( Written )	CO1,CO2, CO3, CO4,CO5 , CO6

### REFERENCES

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

**COURSE PLAN (15U2CRCST2 : PROBABILITY AND STATISTICS)**

<b>PROGRAMME</b>	<b>BACHELOR OF COMPUTER APPLICATIONS</b>	<b>SEMESTER</b>	<b>2</b>
<b>COURSE CODE AND TITLE</b>	<b>15U2CRCST2 : PROBABILITY AND STATISTICS</b>	<b>CREDIT</b>	<b>3</b>
<b>HOURS/WEEK</b>	<b>4</b>	<b>HOURS/SEM</b>	<b>60</b>
<b>FACULTY NAME</b>	<b>LAKSHMIPRIYA R</b>		

	<b>COURSE OUTCOMES</b>	<b>PO/ PSO</b>	<b>CL</b>
CO 1	Understand different approaches to probability - their properties, Addition & Multiplication theorem, Theorem of total probability.	PO1, PSO5	U
CO 2	Understand random variables, probability distributions - their properties, distribution functions, Reliability functions, change of variables (univariate case only).	PO1, PSO5	A
CO 3	Understand joint distribution of a pair of random variables, marginal & conditional distributions, independence of random variables.	PO1, PSO5	U
CO 4	Understand the concepts of correlation - its properties, different measures of correlation.	PO1, PSO5	An
CO 5	Understand the regression equations - their identificaion, Probable error, Coefficient of determination, Linear regression (Three variable case), partial & multiple correlations - their expressional properties (no derivation).	PO1, PSO5	U

CL\* Cognitive Level

<b>CO - PO/PSO Mapping</b>										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4
CO 1	3								1	
CO 2	3								2	
CO 3	1								2	
CO 4	1								2	
CO 5	1								2	
CO 6	1								2	

Indicators: 0- No Mapping strength, 1. Low, 2. Medium, 3. High

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	COURSE OUTCOME
1	Random Experiments, sample space	PPT	video	CO 1
2	Events, Algebra of events	PPT/Lecture		CO 1
3	Borel field of events. Approaches to probability	PPT/Lecture		CO 1
4	Statistical definition of probability	PPT/Lecture	e-resource	CO 1
5	Classical definition of probability	PPT/Lecture		CO 1
6	Axiomatic definition of probability	PPT/Lecture		CO 1
7	Addition theorem on probability, conditional probability	Lecture		CO 1
8	Independence of events	Lecture		CO 1
9	problems	Lecture		CO 1
10	problems	Lecture		CO 1
11	Theorem of total probability	PPT/Lecture		CO 1
12	Properties, Problems	PPT/Lecture		CO 1
13	Bayes theorem	PPT/Lecture		CO 1
14	problems			
15	Random variables	PPT/Lecture		CO 2
16	Probability distribution of discrete random variables, properties	Lecture		CO 2
17	Probability distribution of continuous random variables, properties	Lecture		CO 2
18	Distribution function	Lecture		CO 2
19	problems	Lecture		CO 2
<b>CIA1</b>				
20	Joint distribution of a pair of random variables,	PPT/Lecture		CO 2
21	marginal and conditional distributions	PPT/Lecture		CO 2
22	problems			
23	Independence of random variables	PPT/Lecture		CO 2
24	problems	Lecture		CO 2
25	Correlation and its properties	Lecture		CO 2
26	Rank correlation			
27	Regression equations	Lecture		CO 2
28	Coefficient of determination	Lecture		CO 2
29	Partial and multiple correlation	PPT/Lecture		CO 2
30	properties	PPT/Lecture		CO 2
31	Reliability functions	PPT/Lecture		CO 2
32	Change of variables			
	Problems			
33	Joint distribution of a pair of random	PPT/Lecture		CO 3

	variables			
34	Problems	PPT/Lecture		CO 3
35	Properties of joint p.d.f	PPT/Lecture		CO 3
36	Problems	Lecture	Quiz	CO 3
37	Distribution functions	Lecture	Q & Ans Session	CO 3
38	Marginal distribution	PPT/Lecture		CO 3
39	Problems	PPT/Lecture		CO 3
40	Conditional distribution	PPT/Lecture		CO 3
41	Problems	PPT/Lecture		CO 4
42	Independence of random variables	Lecture		CO 4
43	Problems			
44	Correlation	PPT/Lecture		CO 4
45	Types of correlations	PPT/Lecture		CO 4
46	Correlation coefficient	PPT/Lecture		CO 4
47	Properties of correlation coeff.	PPT/Lecture		CO 4
48	Problems	PPT/Lecture		CO 4
49	Rank correlation	PPT/Lecture		CO 4
50	Problems	PPT/Lecture		CO 4
<b>CIA II</b>				
51	Regression	PPT/Lecture		CO 5
52	Properties	PPT/Lecture	Video	CO 5
53	Multiple regression	PPT/Lecture		CO 5
54	Examination	PPT/Lecture		CO 5
55	Partial and multiple correlation			CO5
56 – 60	Revision			

### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of Completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcome
1	15/12/18	Problems on Correlation coefficient(Written)	CO2
2	12/1/19	Problems using probability and bayes theorem (written)	CO3

## REFERENCES:

- S.P. Gupta (2011): Statistical Methods 43rd edition,.Sultan Chand and Sons Delhi.
- Gupta S. C. and Kapoor V. K.(2014): Fundamentals of Mathematical Statistics, 11th edition, Sultan Chand and Sons
- B.L. Agarwal (2013): Basic Statistics, 6th edition, New Age International (p) Ltd.
- Parimal Mukhopadhyaya (1996): Mathematical Statistics, New Central Book Agency (p) Ltd, Calcutta
- Murray R Spiegel, John Schiller, R. Alu Srinivassan (2008): Theory and problems of PROBABILITY AND STATISTICS, 3rd edition Schaum's Outlines, Tata McGraw-Hill Publishing Company Ltd
- Rohatgi, V.K. and Saleh, A.K.MD.E.(2015).An Introduction to Probability and Statistics, (3rd ed.),John Wiley & Sons Inc