

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 | Critical Thinking: 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 | Effective Communication: 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 | Effective Citizenship: 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 | Environment and Sustainability: Understand the issues of environmental contexts and sustainable development. |
| PO5 | Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | Global Perspective: Understand the economic, social and ecological connections that link the world's nations and people. |

BSC COMPUTER APPLICATIONS (Triple Main)

| 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. |

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| PSO5 | Acquire good knowledge and understanding in advanced areas of mathematics and statistics. |
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Course Structure

| Course Code | Title of The Course | No. Hrs./Week | Credits | Total Hrs./Sem |
|-------------|--|---------------|---------|----------------|
| 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)

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

| | PROGRAMME OUTCOME |
|------|--|
| PO 1 | Critical Thinking: 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. |
| PO 2 | Effective Communication: 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. |
| PO 3 | Effective Citizenship: 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 | Environment and Sustainability: Understand the issues of environmental contexts and sustainable development. |
| PO5 | Ethics: Recognise different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO 6 | Global Perspective: Understand the economic, social and ecological connections that link the world's nations and people. |

| PROGRAM SPECIFIC OUTCOMES | |
|----------------------------------|---|
| PSO1 | Demonstrate knowledge about the socio-historical and cultural context of literary works in English and demonstrate in-depth knowledge about select texts. |
| PSO2 | Identify and describe the thematic and literary features of select works in English and align them with the socio-political and cultural milieu. |
| PSO3 | Articulate knowledge through oral, written or performative means, using appropriate style and register |
| PSO4 | Edit text, set the layout, create illustrations and publish articles, journals and books. |
| PSO5 | Demonstrate an understanding of various critical theories and reading strategies and engage with texts - literary, performance, visual etc, – from the point of view of various critical approaches and draw from them the dynamics of the relationship between nature and culture. |
| PSO6 | Conduct independent research in the area of literary and cultural studies and produce new and critical knowledge |

| COURSE OUTCOMES | |
|------------------------|---|
| 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. |
| CO2 | Develops appropriate and impressive writing styles for various contexts. |
| CO3 | Write and correct structural imperfections and edit what they have written. |
| CO4 | Develops capacity for making academic presentations effectively and impressively |

| Sessions | Topic | Method | Course Outcome |
|-----------------|--|---|-----------------------|
| 1 | Introduction to Critical Thinking | Lecture | CO 1 |
| 2 | Reasoning and Arguments | Discussion | CO1 |
| 3 | Deductive and Inductive Arguments | Lecture | CO1 |
| 4 | Fallacies | Lecture | CO1 |
| 5 | Inferential Comprehension | Reading Exercises | CO1 |
| 6 | Critical Thinking and Academic Writing | Lecture | CO1 |
| 7 | Critical Thinking and Academic Writing | Exercises | CO1 |
| 8 | Writing Models | Introductory Lecture | CO2 |
| 9 | Writing Letters | General Principles | CO2 |
| 10 | Writing a Letter to the Editor | Exercise - 1 | CO2 |
| 11 | Letter to the Editor | Discussion on the Samples done | CO2 |
| 12 | Resume | General Guidelines | CO2 |
| 13 | Resume Writing | Writing Exercise | CO2 |
| 14 | Resume Writing | Discussion on the samples | CO2 |
| 15 | Covering Letter | General Introduction and Writing Exercise | CO2 |
| 16 | Covering Letter | Discussion on the samples | CO2 |
| 17 | Emails | General Instructions and Writing Exercise | CO2 |
| 18 | Emails | Discussion on the Samples | CO2 |
| 19 | Interview Skills | Discussion on the general principles | CO2 |
| 20 | Group Discussion | Practical sessions and Evaluation | CO2 |
| 21 | Accuracy in Academic writing | Lecture | CO3 |
| 22 | Articles and Determiners | Lecture and discussion | CO3 |
| 23 | Nouns and Pronouns | Lecture | CO3 |
| 24 | Subject-verb agreement | Lecture and discussion | CO3 |
| 25 | Phrasal verbs | Lecture | CO3 |

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|----|--|---|-----|
| 26 | Modals | Lecture | CO3 |
| 27 | Tenses | Lecture and demonstration | CO3 |
| 28 | Conditional clauses | General Instructions and Writing Exercise | CO3 |
| 29 | Relative Pronouns | Lecture and demonstration | CO3 |
| 30 | Passive Voices | Lecture and illustration | CO3 |
| 31 | Conjunctions | Lecture | CO3 |
| 32 | Embedded questions | Demonstration | CO3 |
| 33 | Punctuations and Abbreviations | General Instructions and Writing Exercise | CO3 |
| 34 | Soft skills for academic presentations | Presentation and lecture | CO4 |
| 35 | Effective communication skills | Lecture | CO4 |
| 36 | How to structure presentation | Lecture and Demonstration | CO4 |
| 37 | Flip Charts, OHP, Power point presentation | Demonstration | CO4 |
| 38 | Clarity and brevity in presentation | Lecture | CO4 |
| 39 | Interaction and persuasion | Lecture | CO4 |
| 40 | Interview skills | Face to face interaction, demonstration | CO4 |
| 41 | Group Discussion | Demonstration and Lecture | CO4 |
| 42 | Group Discussion | Demonstration and Lecture | CO4 |
| 43 | Revision | Discussion and revising the topics | CO4 |

ASSIGNMENT

| | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) | Couse Outcome |
|---|--------------------|---|---------------|
| 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)

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

| | COURSE OUTCOMES | PO/ PSO | CL |
|------|--|----------------------|-----------|
| 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

| SESSION | TOPIC | LEARNING RESOURCES | VALUE ADDITIONS | COURSE OUTCOME |
|-----------------|--------------------------------|---------------------------|------------------------|-----------------------|
| MODULE I | | | | |
| 1 | Functional units of a computer | Lecture | | CO 1 |
| 2 | Basic operational concepts | Lecture | | CO 1 |

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|------------------|---|-------------|--|------|
| 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 | | | |
| MODULE II | | | | |
| 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 | CIA-1 | | | |

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|-------------------|-------------------|-------------|--|------|
| 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 | | |
| MODULE III | | | | |
| 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 |

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|------------------|---|---------|--|------|
| 51 | Pentium 4. | Lecture | | CO 4 |
| MODULE IV | | | | |
| 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 |
| CIA II | | | | |
| MODULE V | | | | |
| 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) | Couse 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) | Couse 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)

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

| | COURSE OUTCOMES | PO/ PSO | CL |
|-----|---|----------------|-----------|
| 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 |

| SESSION | TOPIC | LEARNING RESOURCES | VALUE ADDITIONS | COURSE OUTCOME |
|-----------------|---|---------------------------|------------------------|-----------------------|
| MODULE 1 | | | | |
| 1. | Basics of C programs | Lecture | | |
| 2. | Syllabus discussion | Lecture | | |
| 3. | Concept of Structured data: Data structure definition | Lecture | | CO2 |

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|-----------------|--|-------------|------------|-----|
| 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 | | | CO3 |
| 11. | Searching Techniques | Lecture | Demo Video | CO2 |
| 12. | Linear search algorithm | | | CO3 |
| 13. | Binary search algorithm | | | CO3 |
| 14. | Sparse Matrix | Lecture | | CO1 |
| 15. | Polynomial Addition | Lecture | | CO1 |
| MODULE 2 | | | | |
| 16. | Concepts of stack and queue | Lecture | | CO1 |
| 17. | Organization and operation on stacks | Lecture | | CO1 |
| 18. | Push and pop operation | PPT/Lecture | | CO2 |
| 19. | Traversing of stack | PPT/Lecture | | CO2 |
| 20. | Applications of stacks | PPT/Lecture | | CO2 |
| 21. | Polish Notations | PPT/Lecture | | CO2 |

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|-----------------|--|-------------|------------|-----|
| 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. | CIA – I | | | |
| 32. | Answer Discussion | Discussion | | |
| 33. | Organization and operations on queues | Lecture | | C02 |
| 34. | Insert and delete Operations | Lecture | Demo video | C03 |
| 35. | Types of Queues | Lecture | | C02 |
| 36. | Applications of Queues | Lecture | | C02 |
| 37. | Linear and Circular Queue | Lecture | | C02 |
| 38. | Circular queue insertion | Lecture | | C02 |
| 39. | Circular queue deletion | Lecture | | C02 |
| MODULE 3 | | | | |
| 40. | Concepts of Linked lists | Lecture | | C01 |
| 41. | Static memory allocation | Lecture | | C01 |
| 42. | Dynamic memory allocation | Lecture | | C01 |

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|-----------------|--|------------|--|-----|
| 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 |
| MODULE 4 | | | | |
| 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. | CIA – II | | | |
| 62. | Answer Discussion | Discussion | | |
| MODULE 5 | | | | |

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|-----|---------------------------------------|-------------|--|-----|
| 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) | Couse 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)

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

| | COURSE OUTCOMES | PO/ PSO | CL |
|-----|---|----------------|-----------|
| 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

| SESSION | TOPIC | LEARNING RESOURCES | VALUE ADDITIONS | COURSE OUTCOME |
|------------------|--|---------------------------|------------------------|-----------------------|
| MODULE I | | | | |
| 1 | Tangents and Normals (parametric form only) of a conic | Lecture | | CO 1, CO2 |
| 2 | Orthoptic locus | Lecture | | CO 1, CO2 |
| 3 | Pole and Polar | Lecture | | CO 1, CO2 |
| 4 | Chord in terms of given points | Lecture | | CO 1, CO2 |
| 5 | Conjugate diameters of ellipse and hyperbola | Lecture | | CO 1, CO2 |
| 6 | Asymptotes of a hyperbola | Lecture | | CO 1, CO2 |
| 7 | conjugate hyperbola | Lecture | | CO 1,C O2 |
| 8 | rectangular hyperbola | Lecture | | CO 1, CO2 |
| MODULE II | | | | |
| 9 | Polar co-ordinates | Lecture | | CO 3 |
| 10 | polar equation of a line | Lecture | | CO 3 |
| 11 | polar equation of a circle | Lecture | | CO 3 |

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|-------------------|--|---------|--|------|
| 12 | polar equation of a conic | Lecture | | CO 3 |
| 13 | Polar equations of tangent and normal to these curves | Lecture | | CO 3 |
| 14 | CIA-1 | | | |
| MODULE III | | | | |
| 15 | Introductory Session | Lecture | | CO 4 |
| 16 | Circular and hyperbolic functions of a complex variable | Lecture | | CO 4 |
| 17 | Separation into real and imaginary parts | Lecture | | CO 4 |
| 18 | Factorisation of $x^n-1, x^{n+1}, x^{2n} - 2x^na^n\cos n\theta + a^{2n}$ | Lecture | | CO 4 |
| 19 | Summation of infinite series by C + i S method | Lecture | | CO 4 |
| MODULE IV | | | | |
| 20 | Rank of a Matrix | Lecture | | CO 5 |
| 21 | Non-Singular and Singular matrices | Lecture | | CO 5 |
| 22 | Inverse of a matrix by elementary Transformations | Lecture | | CO 5 |
| 23 | Equivalent matrices | Lecture | | CO 5 |
| 24 | Row Canonical form | Lecture | | CO 5 |
| 25 | Normal form | Lecture | | CO 5 |
| 26 | Elementary matrices only | Lecture | | CO 5 |
| CIA - II | | | | |
| 27 | Systems of Linear equations | Lecture | | CO 5 |
| 28 | System of non homogeneous solution using matrices | Lecture | | CO 5 |
| 29 | Cramer's rule | Lecture | | CO 5 |
| 30 | System of homogeneous equations | Lecture | | CO 5 |
| 31 | Characteristic equation of a matrix | Lecture | | CO 5 |
| 32 | Characteristic roots and characteristic vectors | Lecture | | CO 5 |
| 33 | 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) | Couse 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)

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

| | COURSE OUTCOMES | PO/ PSO | CL |
|------|---|----------------|-----------|
| 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 identification, Probable error, Coefficient of determination, Linear regression (Three variable case), partial & multiple correlations - their expressional properties (no derivation). | PO1, PSO5 | U |

CL* Cognitive Level

| 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 |

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|-------------|---|-------------|-----------------|------|
| 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 |
| CIA1 | | | | |
| 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 variables | PPT/Lecture | | CO 3 |
| 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 |

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|---------------|----------------------------------|-------------|-------|------|
| 48 | Problems | PPT/Lecture | | CO 4 |
| 49 | Rank correlation | PPT/Lecture | | CO 4 |
| 50 | Problems | PPT/Lecture | | CO 4 |
| CIA II | | | | |
| 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 |

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:

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