# FATIMA COLLEGE (AUTONOMOUS)

**Re-Accredited with "A" Grade by NAAC (3rd Cycle)**

**74th Rank in India Ranking 2020 (NIRF) by MHRD**

**Maryland, Madurai- 625 018, Tamil Nadu, India**

**NAME OF THE DEPARTMENT: INFORMATION TECHNOLOGY**

**NAME OF THE PROGRAMME : B.Sc.**

**PROGRAMME CODE : USIT**

**ACADEMIC YEAR : 2021-22**

## VISION OF THE DEPARTMENT

To be the center of excellence in training the students in Information Technology to excel both as a professional and as a responsible woman in the society.

## MISSION OF THE DEPARTMENT

- Empower women by teaching them technology and life lessons.
- Encourage students to be the change in the society.
- Educate students and prepare them in various aspects of IT industry.
- Provide leadership quality for effective strategic and tactical planning in use of technology.
- Instill the power of faith and hope so they could be the blessing to their next generation.

## PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

| | |
|---|---|
| **PEO 1** | Our graduates will be academic, digital and information literates, creative, inquisitive, innovative and desirous for the "more" in all aspects |
| **PEO 2** | They will be efficient individual and team performers, exhibiting progress, flexibility, transparency and accountability in their professional work |
| **PEO 3** | The graduates will be effective managers of all sorts of real – life and professional circumstances, making ethical decisions, pursuing excellence within the time framework and demonstrating apt leadership skills |
| **PEO 4** | They will engage locally and globally evincing social and environmental stewardship demonstrating civic responsibilities and employing right skills at the right |

| | |
|---|---|
| | moment. |

## GRADUATE ATTRIBUTES (GA)

Fatima College empowers her women graduates holistically. A Fatimite achieves all-round empowerment by acquiring Social, Professional and Ethical competencies. A graduate would sustain and nurture the following attributes:

| I. SOCIAL COMPETENCE | |
|---|---|
| **GA 1** | Deep disciplinary expertise with a wide range of academic and digital literacy |
| **GA 2** | Hone creativity, passion for innovation and aspire excellence |
| **GA 3** | Enthusiasm towards emancipation and empowerment of humanity |
| **GA 4** | Potentials of being independent |
| **GA 5** | Intellectual competence and inquisitiveness with problem solving abilities befitting the field of research |
| **GA 6** | Effectiveness in different forms of communications to be employed in personal and professional environments through varied platforms |
| **GA 7** | Communicative competence with civic, professional and cyber dignity and decorum |
| **GA 8** | Integrity respecting the diversity and pluralism in societies, cultures and religions |
| **GA 9** | All – inclusive skill sets to interpret, analyse and solve social and environmental issues in diverse environments |
| **GA 10** | Self awareness that would enable them to recognise their uniqueness through continuous self-assessment |

| | |
|---|---|
| | in order to face and make changes building on their strengths and improving their weaknesses |
| **GA 11** | Finesse to co-operate exhibiting team-spirit while working in groups to achieve goals |
| **GA 12** | Dexterity in self-management to control their selves in attaining the kind of life that they dream for |
| **GA 13** | Resilience to rise up instantly from their intimidating setbacks |
| **GA 14** | Virtuosity to use their personal and intellectual autonomy in being life-long learners |
| **GA 15** | Digital learning and research attributes |
| **GA 16** | Cyber security competence reflecting compassion, care and concern towards the marginalised |
| **GA 17** | Rectitude to use digital technology reflecting civic and social responsibilities in local, national and global scenario |
| **II. PROFESSIONAL COMPETENCE** | |
| **GA 18** | Optimism, flexibility and diligence that would make them professionally competent |
| **GA 19** | Prowess to be successful entrepreuners and become employees of trans-national societies |
| **GA 20** | Excellence in Local and Global Job Markets |
| **GA 21** | Effectiveness in Time Management |
| **GA 22** | Efficiency in taking up Initiatives |
| **GA 23** | Eagerness to deliver excellent service |
| **GA 24** | Managerial Skills to Identify, Commend and tap Potentials |

| III. ETHICAL COMPETENCE | |
|---|---|
| **GA 25** | Integrity and be disciplined in bringing stability leading a systematic life promoting good human behaviour to build better society |
| **GA 26** | Honesty in words and deeds |
| **GA 27** | Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life |
| **GA 28** | Social and Environmental Stewardship |
| **GA 29** | Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience |
| **GA 30** | Right life skills at the right moment |

## PROGRAMME OUTCOMES (PO)

The learners will be able to

| | |
|---|---|
| **PO 1** | Apply acquired scientific knowledge to solve complex issues. |
| **PO 2** | Attain Analytical skills to solve complex cultural, societal and environmental issues. |
| **PO 3** | Employ latest and updated tools and technologies to analyse complex issues. |
| **PO 4** | Demonstrate Professional Ethics that foster Community, Nation and EnvironmentBuilding Initiatives. |

## PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of B.Sc. Information TechnologyProgramme, the graduates would be able to

| | |
|---|---|
| **PSO 1** | Apply computational techniques and software principles for designing of software systems. |
| **PSO 2** | Develop efficient and effective software systems using modern computer techniques. |
| **PSO 3** | Acquire fundamental concepts, methods and practices of Information Technology to develop theoretical and practical skill sets. |
| **PSO 4** | Justify the optimum technique to allocate memory resources, processors, I/O peripherals to provide optimal programmatic solution to a real world problem. |
| **PSO 5** | Support to gain skills on basic as well as trendy software languages and packages to design web sites, web apps, mobile apps and real time software projects. |
| **PSO 6** | Promote the students to generalize and distinguish the characters of different systems for different environment. |
| **PSO 7** | Trigger the students to enroll in to the research areas of IT industry like cloud computing and data analytics. |
| **PSO 8** | Able to become entrepreneur and to pursue career in IT industries. |

**FATIMA COLLEGE (AUTONOMOUS), MADURAI-18**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**PROGRAMME CODE : USIT**

## PART – I – TAMIL / FRENCH / HINDI– 12 CREDITS

## PART – I – TAMIL

**Offered by The Research Centre of Tamil**

| S. NO | SEM. | COURSE CODE | COURSE TITLE | HRS | CREDIT | CIA Mks | ESE Mks | TOT. MKS |
|---|---|---|---|---|---|---|---|---|
| 1. | I | 19TL1C1 | Language-Modern Literature<br>பொதுத்தமிழ் - இக்கால இலக்கியம் | 5 | 3 | 40 | 60 | 100 |
| 2. | II | 19TL2C2 | Language - Bakthi Literature<br>பொதுத்தமிழ் - பக்தி இலக்கியம் | 5 | 3 | 40 | 60 | 100 |
| 3. | III | 19TL3C3 | Language- Epic Literature<br>பொதுத்தமிழ் - காப்பிய இலக்கியம் | 5 | 3 | 40 | 60 | 100 |
| 4. | IV | 19TL4C4 | Language-Sangam Literature<br>பொதுத்தமிழ் - சங்க இலக்கியம் | 5 | 3 | 40 | 60 | 100 |
| | | | **Total** | 20 | 12 | | | |

## PART – I –FRENCH

**Offered by TheDepartment of French**

| S. NO | SEM. | COURSE CODE | COURSE TITLE | HRS | CREDIT | CIA Mks | ESE Mks | TOT. MKs |
|---|---|---|---|---|---|---|---|---|
| 1. | I | 19RL1C1 | PART 1 LANGUAGE FRENCH - LE NIVEAU INTRODUCTIF | 5 | 3 | 40 | 60 | 100 |
| 2. | II | 19RL2C2 | PART 1 LANGUAGE FRENCH - LE NIVEAU DÉCOUVERTE | 5 | 3 | 40 | 60 | 100 |
| 3. | III | 19RL3C3 | PART 1 LANGUAGE FRENCH - NIVEAU INTERMEDIAIRE | 5 | 3 | 40 | 60 | 100 |
| 4. | IV | 19RL4C4 | PART 1 LANGUAGE FRENCH - NIVEAU DE SUIVRE | 5 | 3 | 40 | 60 | 100 |
| | | | **Total** | 20 | 12 | | | |

## PART – I – HINDI

**Offered by TheDepartment of Hindi**

| S. NO | SEM. | COURSE CODE | COURSE TITLE | HRS | CREDIT | CIA Mks | ESE Mks | TOT. MKs |
|---|---|---|---|---|---|---|---|---|
| 1. | I | 19DL1C1 | PART 1 LANGUAGE HINDI - VYAKARAN AUR KARYALAYEEN HINDI | 5 | 3 | 40 | 60 | 100 |
| 2. | II | 19DL2C2 | PART 1 LANGUAGE HINDI -SRIJANATMAK HINDI AUR GADHYA | 5 | 3 | 40 | 60 | 100 |
| 3. | III | 19DL3C3 | PART 1 LANGUAGE HINDI - HINDI SAHITHYA KA AADHIKAAL AUR BHAKTHIKAAL | 5 | 3 | 40 | 60 | 100 |
| 4. | IV | 19DL4C4 | PART 1 LANGUAGE HINDI - REETIKALEEN HINDI SAHITHYA AUR AADHUNIK KAAL | 5 | 3 | 40 | 60 | 100 |
| | | | **Total** | 20 | 12 | | | |

## PART – II -ENGLISH – 12 CREDITS

**Offered by The Research Centre of English**

| S. NO | SEM. | COURSE CODE | COURSE TITLE | HRS | CREDIT | CIA Mks | ESE Mks | TOT. MKS |
|---|---|---|---|---|---|---|---|---|
| 1. | I | 19EL1WB | BASIC COMMUNICATIVE ENGLISH | 5 | 3 | 40 | 60 | 100 |
| 2. | | 19EL1WI | INTERMEDIATE COMMUNICATIVE ENGLISH | 5 | 3 | 40 | 60 | 100 |
| 3. | | 19EL1WA | ADVANCED COMMUNICATIVE ENGLISH | 5 | 3 | 40 | 60 | 100 |
| 4. | II | 19EL2WB | ENGLISH FOR EFFECTIVE COMMUNICATION (BASIC) | 5 | 3 | 40 | 60 | 100 |
| 5. | | 19EL2WI | ENGLISH FOR EMPOWERMENT (INTERMEDIATE) | 5 | 3 | 40 | 60 | 100 |
| 6. | | 19EL2WA | ENGLISH FOR CREATIVE WRITING (ADVANCED) | 5 | 3 | 40 | 60 | 100 |
| 7. | III | 19EL3WN | ENGLISH FOR DIGITAL ERA | 5 | 3 | 40 | 60 | 100 |
| 8. | IV | 19EL4WN | ENGLISH FOR INTEGRATED DEVELOPMENT | 5 | 3 | 40 | 60 | 100 |
| | | | **Total** | **20** | **12** | | | |

## PART – III -MAJOR, ALLIED & ELECTIVES – 95 CREDITS

### MAJOR CORE COURSES INCLUDING PRACTICALS

| S.NO | SEM. | COURSECODE | COURSE TITLE | HRS | CREDIT | CIA Mks | ESE Mks | TOT. Mks |
|---|---|---|---|---|---|---|---|---|
| 1. | I | 21I1CC1 | PROGRAMMING IN C | 6 | 4 | 40 | 60 | 100 |
| 2. | | 21I1CC2 | LAB I : PROGRAMMING IN C | 6 | 3 | 40 | 60 | 100 |
| 3. | II | 21I2CC3 | DATA STRUCTURES USING C++ | 6 | 4 | 40 | 60 | 100 |
| 4. | | 21I2CC4 | LAB II: DATA STRUCTURES USING C++ | 6 | 3 | 40 | 60 | 100 |
| 5. | III | 19I3CC5 | DATABASE MANAGEMENT SYSTEM | 6 | 4 | 40 | 60 | 100 |
| 6. | | 19I3CC6 | LAB III: RDBMS | 6 | 3 | 40 | 60 | 100 |
| 7. | IV | 19I4CC7 | PROGRAMMING IN JAVA | 6 | 4 | 40 | 60 | 100 |
| 8. | | 19I4CC8 | LAB IV:JAVA PROGRAMMING | 6 | 3 | 40 | 60 | 100 |
| 9. | V | 19I5CC9 | .NET PROGRAMMING | 5 | 5 | 40 | 60 | 100 |
| 10. | | 19I5CC10 | LAB IN.NET PROGRAMMING | 6 | 3 | 40 | 60 | 100 |
| 11. | | 19I5CC11 | SOFTWARE ENGINEERING | 5 | 3 | 40 | 60 | 100 |
| 12. | | 19I5CC12 | DATA COMMUNICATION AND NETWORKING | 5 | 5 | 40 | 60 | 100 |
| 13. | VI | 19I6CC13 | PYTHON | 5 | 5 | 40 | 60 | 100 |

| S.NO | SEM. | COURSECODE | COURSE TITLE | HRS | CREDIT | CIA Mks | ESE Mks | TOT. Mks |
|---|---|---|---|---|---|---|---|---|
| | | | PROGRAMMING | | | | | |
| **14.** | | 19I6CC14 | LAB VI : PYTHON PROGRAMMING | 6 | 3 | 40 | 60 | 100 |
| **15.** | | 19I6CC15 | INFORMATION STORAGE AND MANAGEMENT | 5 | 5 | 40 | 60 | 100 |
| **16.** | | 19I6CC16 | PROJECT | - | 3 | 40 | 60 | 100 |

**ALLIEDCOURSES- 20 CREDITS**

| S.NO | SEM. | COURSECODE | COURSE TITLE | HRS | CREDIT | CIA Mks | ESE Mks | TOT. MKs |
|---|---|---|---|---|---|---|---|---|
| 1. | I | 19G1ACI1 | DISCRETE MATHEMATICS | 5 | 5 | 40 | 60 | 100 |
| 2. | II | 19G2ACI2 | OPERATIONS RESEARCH | 5 | 5 | 40 | 60 | 100 |
| 3. | III | 19I3AC3 | DIGITAL PRINCIPLES AND COMPUTER ARCHITECTURE | 5 | 5 | 40 | 60 | 100 |
| 4. | IV | 19I4AC4 | OPERATING SYSTEMS AND LINUX | 5 | 5 | 40 | 60 | 100 |

**ELECTIVES-**

| S.No | SEM. | COURSECODE | COURSE TITLE | HRS | CREDIT | CIA Mks | ESE Mks | TOT. Mks |
|---|---|---|---|---|---|---|---|---|
| 1. | V | 19I5ME1/<br>19I5ME2 | DATA MINING CONCEPTS/<br>SOFT COMPUTING | 5 | 5 | 40 | 60 | 100 |

| S.No | SEM. | COURSECODE | COURSE TITLE | HRS | CREDIT | CIA Mks | ESE Mks | TOT. Mks |
|---|---|---|---|---|---|---|---|---|
| 2. | VI | 19I6ME3/ 19I6ME4 | CLOUD TECHNOLOGIES/ MOBILE COMMUNICATION | 5 | 5 | 40 | 60 | 100 |
| 3. | | 19I6ME5/ 19I6ME6 | NETWORK SECURITY/ COMPUTER GRAPHICS | 5 | 5 | 40 | 60 | 100 |

**PART – IV – 20 CREDITS**

- **VALUE EDUCATION**
- **ENVIRONMENTAL AWARENESS**
- **NON MAJOR ELECTIVE**
- **SKILL BASED COURSES**

| S. No | SEM. | COURSECODE | COURSE TITLE | HRS | CREDIT | CIA Mks | ESE Mks | TOT. Mks |
|---|---|---|---|---|---|---|---|---|
| 1. | I | 19G1VE1 | Value Education (Including Meditation in Action Movement) | 1 | 1 | 40 | 60 | 100 |
| 2. | | 19I1NME | Image Editing Tool | 2 | 2 | 40 | 60 | 100 |
| 3. | II | 21G2VE2 | Value Education | 1 | 1 | 40 | 60 | 100 |
| 4. | | 19I2NME | Image Editing Tool | 2 | 2 | 40 | 60 | 100 |
| 5. | III | 19I3EN1 | Environmental Education | 1 | 1 | 40 | 60 | 100 |
| 6. | | 19I3SB1 | Automation Skills | 2 | 2 | 40 | 60 | 100 |
| 7. | IV | 19I4EN2 | Environmental Education | 1 | 1 | 40 | 60 | 100 |
| 8. | | 19I4SB2 | Analytical Skills | 2 | 2 | 40 | 60 | 100 |
| 9. | V | 19I5SB3 | Web Technology | 2 | 2 | 40 | 60 | 100 |
| 10. | | 19I5SB4 | PHP | 2 | 2 | 40 | 60 | 100 |

| S. No | SEM. | COURSECODE | COURSE TITLE | HRS | CREDIT | CIA Mks | ESE Mks | TOT. Mks |
|---|---|---|---|---|---|---|---|---|
| 11. | VI | 19I6SB5 | 3D Animation Software | 2 | 2 | 40 | 60 | 100 |
| 12. | | 19I6SB6 | Image Manipulation Tools | 2 | 2 | 40 | 60 | 100 |

**PART – V – 1 CREDIT**

**OFF-CLASS PROGRAMMES - ALL PART-V**

**SHIFT - II**

| S. No | SEM. | COURSE CODE | COURSE TITLE | HRS | CREDIT | TOT. Mks |
|---|---|---|---|---|---|---|
| 1. | I - IV | 21S4PED | Physical Education | 30/ SEM | 1 | 100 |
| 2. | | 21S4YRC | Youth Red Cross | | | |
| 3. | | 21S4NSS | NSS | | | |
| 4. | | 21S4RTC | Rotaract | | | |
| 5. | | 21S4WEC | Women Empowerment Cell | | | |
| 6. | | 21S4ACUF | AICUF | | | |

**OFF-CLASS PROGRAMME**

**ADD-ON COURSES**

| COURSE CODE | Courses | Hrs. | Credits | Semester in which the course is offered | CIA Mks | ESE Mks | Total Marks |
|---|---|---|---|---|---|---|---|
| **21UAD2CA** | **COMPUTER APPLICATIONS** | 40 | 2 | I&II | 40 | 60 | 100 |
| | **ONLINE SELF LEARNING COURSE**- Foundation | 40 | 3 | I | 50 | - | 50 |

| COURSE CODE | Courses | Hrs. | Credits | Semester in which the course is offered | CIA Mks | ESE Mks | Total Marks |
|---|---|---|---|---|---|---|---|
| | Course for Arts | | | | | | |
| | **ONLINE SELF LEARNING COURSE-** Foundation Course for Science | 40 | 3 | II | 50 | - | 50 |
| | **ETHICAL STUDIES**- Value Education | 15 | 2 | III-VI | 50 each Semester | - | 100 |
| | **HUMAN RIGHTS** | 15 | 2 | V | - | - | 100 |
| | **OUTREACH PROGRAMME**- Reach Out to Society through Action**ROSA** | 100 | 3 | V & VI | - | - | 100 |
| | **PROJECT** | 30 | 4 | VI | 40 | 60 | 100 |
| | **READING CULTURE** | 10/Semester | 1 | II-VI | - | - | - |
| | **TOTAL** | | 20 + | | | | |

**EXTRA CREDIT COURSES**

| COURSE CODE | COURSE | HRS. | CREDITS | SEMESTER IN WHICH THE COURS | CIA MKS | ESE MKS | TOTAL MARKS |
|---|---|---|---|---|---|---|---|

| | | | | E IS OFFER ED | | | |
|---|---|---|---|---|---|---|---|
| 21I1SLK1 | SELF LEARNING COURSES for ADVANCED LEARNERS: **TRENDS IN INFORMATION TECHNOLOGY** | - | 2 | I | 40 | 60 | 100 |
| 21I2SL1 | SELF LEARNING COURSES for ADVANCED LEARNERS: **PRIV ACY AND SECURITY IN ONLINE SOCIAL MEDIA.** | - | 2 | I | 40 | 60 | 100 |
| 21I3SL1 | SELF LEARNING COURSES for ADVANCED LEARNERS: **VIDEO EDITING TOOLS** | - | 2 | I | 40 | 60 | 100 |
| 21I4SL1 | SELF LEARNING COURSES for ADVANCED LEARNERS: **INTRODUCTION TO COMPUTER FORENSICS** | - | 2 | I | 40 | 60 | 100 |
| 21I5SL1 | SELF LEARNING COURSES for ADVANCED LEARNERS: **GREEN COMPUTING** | - | 2 | I | 40 | 60 | 100 |
| 21J6SLI1 | SELF LEARNING COURSES for ADVANCED LEARNERS: **DATA SCIENCE & TOOLS** | - | 2 | I | 40 | 60 | 100 |
| | **MOOC COURSES / International Certified online Courses** (Department | - | Minimu m 2 Credits | I – VI | - | - | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM UGC / CEC | | | | | | |

**OFF CLASS PROGRAMMES:**

**19UGVAI1 - Crash Course: Animation Software**
**21UGVAI2 - Dynamic web site design using HTML 5**

Skill Development 100%

# I B.Sc. Information Technology

## SEMESTER –I

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 21I1CC1 | Programming In C | Lecture | 6 | 4 |

**COURSE DESCRIPTION**

This course content plays a vital role in building the fundamental knowledge in programming.

**COURSE OBJECTIVES**

To impart knowledge on basic concepts in Computer and to demonstrate the fundamental programming techniques in C.

**UNITS**

**UNIT –I INTRODUCTION TO C: (17HRS.)**

Overview of C: Introduction – Importance of C – Sample C Program – Basic Structure of C Program – Programming Style – Executing a C Program. Keywords and Identifiers – Constants –Variables - Data types – Declaration of Variables- Assigning values to variables – Defining symbolic constants - Operators and Expressions.

**UNIT –II DECISION-MAKING STATEMENTS(17 HRS.)**

Decision Making and Branching: Introduction – Decision making with IF statement- Simple IF statement- the IF-Else statement- Nesting of If-Else statement- The Else-if ladder- The switch statement- The ?: operator- **The Go to statement(Self Study).**

Decision Making and Looping: Introduction – The While statement- The Do statement – The For statement – Jumps in loops.

**UNIT –III: ARRAYS, STRUCTURES& UNIONS (17 HRS.)**

Arrays : Introduction – One Dimensional arrays – Two Dimensional Arrays- Initializing Two dimension Arrays – Multi Dimensional arrays

Structures &Unions : Introduction – Defining Structures- Declaring Structure Variables – Accessing Structure Members - Structure Initialization- **Unions (Self Study).**

**UNIT –IV FUNCTIONS (17HRS.)**

**FUNCTIONS** User Defined Functions: Definitions of Functions – Return Values and their types – Function Calls –Function Declarations – Category of Functions - Nesting of Functions – Recursion- Passing Arrays to Functions – **Passing Strings to Functions (Self Study).**

Pointers : Introduction – Accessing the Address of a Variable – Declaring pointer variable – Pointers and Arrays- Array of Pointers – Pointers as Function Arguments – Functions Returning Pointers – Pointers to Functions – **Pointers and Structures(Self Study).**

**UNIT –V FILE MANAGEMENT & GRAPHICS (17 HRS.)**

File Management in C: Introduction – Defining and Opening a file – Closing file- Input Output operations on files – Error Handling during I/O operations – Random Access to files.

C Graphics: Introduction to graphics- colours in c graphics-graphics functions.

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5HRS.)**

Real- time Applications using C

**TEXT BOOK:**

1. Balagurusamy, E. Programming in ANSI C , 7e. Tata McGraw-Hill Education, 2018. ( Chapters: 1, 2, 3, 5, 6, 7, 9, 10, 12)

**REFERENCES:**

1. Byron Gottfried, “Programming with C”, 2nd edition, (Indian Adapted Edition), TMH Publication.
2. Yashavant Kanetkar, “Let us C”, 16th Edition, BPB publication, 2017

**OPEN EDUCATIONAL RESOURCES:**

1. C Tutorial - Learn C Programming - W3schools.in
   https://www.w3schools.in/c-tutorial.
2. C Tutorial
   https://www.tutorialspoint.com/cprogramming/index.htm

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1INTRODUCTION TO COMPUTER SYSTEM** | | | | |
| 1.1 | Introduction – Importance of C | 1 | Discussion | Black Board |
| 1.2 | Sample C Program | 2 | Chalk & Talk | Black Board |
| 1.3 | Programming Style | 1 | Lecture | LCD |
| 1.4 | Executing a C Program | 1 | Discussion | Google classroom |
| 1.5 | Keywords and Identifiers | 1 | Chalk & Talk | Black Board |
| 1.6 | Constants –Variables | 2 | Discussion | Google classroom |
| 1.7 | Data types | 2 | Lecture | PPT & White board |
| 1.8 | Declaration of Variables | 2 | Chalk & Talk | Black Board |
| 1.9 | Assigning values to variables | 2 | Chalk & Talk | Black Board |
| 1.10 | Defining symbolic constants | 2 | Chalk & Talk | Black Board |
| 1.11 | Operators and Expressions. | 1 | Chalk & Talk | Black Board |
| **UNIT -2DECISION-MAKING STATEMENTS** | | | | |
| 2.1 | Decision Making and Branching Introduction | 1 | Lecture | PPT & White board |
| 2.2 | Decision making with IF statement, Simple IF statement | 2 | Chalk &Talk | Green Board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 2.3 | The IF-Else statement, Nesting of If-Else statement | 2 | Chalk & Talk | Black Board |
| 2.4 | The Else-if ladder, The switch statement | 2 | Chalk & Talk | Black Board |
| 2.5 | The ?: operator | 2 | Chalk & Talk | Black Board |
| 2.6 | The Go to statement (Self Study). | 2 | Discussion | Google classroom |
| 2.7 | Decision Making and Looping Introduction | 2 | Lecture | Google classroom |
| 2.8 | The While statement | 2 | Chalk & Talk | Black Board |
| 2.9 | The Do statement | 1 | Chalk & Talk | Black Board |
| 2.10 | The For statement, Jumps in loops | 1 | Chalk & Talk | Black Board |
| **UNIT – 3 ARRAYS ,STRUCTURES & UNIONS** | | | | |
| 3.1 | Arrays Introduction | 1 | Discussion | PPT & White board |
| 3.2 | One Dimensional arrays | 2 | Chalk & Talk | Green Board |
| 3.3 | Two Dimensional Arrays | 1 | Chalk & Talk | Black Board |
| 3.4 | Initializing Two dimension Arrays | 2 | Chalk & Talk | Black Board |
| 3.5 | Multi-Dimensional arrays | 2 | Discussion | Black Board |
| 3.6 | Structures & Unions Introduction | 1 | Lecture | PPT & White board |
| 3.7 | Defining Structures | 1 | Lecture | Black Board |
| 3.8 | Declaring Structure Variables | 1 | Chalk & Talk | Black Board |
| 3.9 | Accessing Structure Members | 2 | Chalk & Talk | Black Board |
| 3.10 | Structure Initialization | 2 | Chalk & Talk | Black Board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 3.11 | Unions (Self Study) | 2 | Discussion | Google classroom |
| **UNIT – 4 FUNCTIONS** | | | | |
| 4.1 | User Defined Functions | 1 | Discussion | PPT & White board |
| 4.2 | Definitions of Functions | 2 | Chalk & Talk | Green Board |
| 4.3 | Return Values and their types | 2 | Chalk & Talk | Black Board |
| 4.4 | Function Calls, Function Declarations | 2 | Chalk & Talk | Black Board |
| 4.5 | Category of Functions, Nesting of Functions | 2 | Discussion | Black Board |
| 4.6 | Recursion, Passing Arrays to Functions | 2 | Lecture | Green Board |
| 4.7 | Accessing the Address of a Variable – Declaring pointer variable | 2 | Discussion | Black Board |
| 4.8 | Pointers and Arrays- Array of Pointers – Pointers as Function Arguments | 2 | Chalk & Talk | Black Board |
| 4.9 | Functions Returning Pointers | 1 | Chalk & Talk | Black Board |
| 4.10 | Pointers to Functions | 1 | Discussion | Google classroom |
| **UNIT – 5 POINTERS AND FILE MANAGEMENT** | | | | |
| 5.1 | Introduction – Defining and Opening a file | 2 | Lecture | PPT & White board |
| 5.2 | Closing file | 1 | Chalk & Talk | Black Board |
| 5.3 | Input Output operations on files | 2 | Lecture | Black Board |
| 5.4 | Error Handling during I/O operations | 2 | Chalk & Talk | Black Board |
| 5.5 | Random Access to files | 2 | Chalk & Talk | Black Board |
| 5.6 | Introduction to graphics | 2 | Chalk & | Black |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | | | Talk | Board |
| 5.7 | colours in c graphics | 1 | Discussion | Google classroom |
| 5.8 | Graphics functions. | 1 | Chalk & Talk | Black Board |
| 5.9 | Graphics functions. | 2 | Chalk & Talk | Black Board |
| 5.10 | Graphics functions. | 2 | Lecture | Black Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Real- time Applications using C | 2 | Discussion | Black Board |
| 6.2 | Real- time Applications using C | 3 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1 | T2 | Quiz | Assignment | OBT/PPT | | | | |
| | 10 Mks. | 10 Mks. | 5 Mks. | 5 Mks | 5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i) | Section A (ii) | Section B | Section C | Section D | Section E | Total | |
|---|---|---|---|---|---|---|---|---|

| | 5 Mks. | 5 Mks | 8 Mks. | 12 Mks | 20 Mks. | 10 Mks. | 60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | Nos | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand the basic concepts in Computer & C Programming. | K1 | PSO1& PSO2 |
| CO 2 | Identify and Apply different construct available for iteration such as 'for', 'while' and 'do-while'. | K1, K2 | PSO2 |
| CO 3 | Understand various storage concepts. | K1 & K3 | PSO4 |
| CO 4 | Develop C programs using functions. | K1, K2 &K3 | PSO3 |
| CO 5 | Summarize the concepts of Pointers and Files. | K2 & K4 | PSO6 |

## Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 3 | 1 | 1 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: Mrs.T. Leena Prema Kumari**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Employability 100%

## I B.Sc. Information Technology

## SEMESTER –I

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 21I1CC2 | LAB I : PROGRAMMING IN C | Practical | 6 | 3 |

### COURSE DESCRIPTION

This course content plays a vital role in building the basic programming skill in C language.

### COURSE OBJECTIVES

To develop problem solving skill by using various concepts in C language.

### PROGRAM LIST

1. Program using input and output statements.
2. Program using Operators.
3. Program using Conditional Statements.
4. Program using Switch Case Statements.
5. Program using Looping Statements.
6. Programs for Array Manipulations.
7. Program using String Functions
8. Program using Functions.
9. Program using Recursion.
10. Program using Structures
11. Program using Unions.
12. String Manipulation Programs
13. Program using Pointers
14. File Manipulation Programs
15. Command line arguments

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 1 | Program using input and output statements. | 6 | Demonstration | Desktop PC |
| 2 | Program using Operators. | 6 | Demonstration | Desktop PC |
| 3 | Program using Conditional Statements. | 6 | Demonstration | Desktop PC |
| 4 | Program using Switch Case Statements. | 6 | Demonstration | Desktop PC |
| 5 | Program using Looping Statements. | 6 | Demonstration | Desktop PC |
| 6 | Programs for Array Manipulations. | 6 | Demonstration | Desktop PC |
| 7 | Program using String Functions | 6 | Demonstration | Desktop PC |
| 8 | Program using Functions. | 6 | Demonstration | Desktop PC |
| 9 | Program using Recursion. | 6 | Demonstration | Desktop PC |
| 10 | Program using Structures | 6 | Demonstration | Desktop PC |
| 11 | Program using Unions. | 6 | Demonstration | Desktop PC |
| 12 | String Manipulation Programs | 6 | Demonstration | Desktop PC |
| 13 | Program using Pointers | 6 | Demonstration | Desktop PC |
| 14 | File Manipulation Programs | 6 | Demonstration | Desktop PC |
| 15 | Command line arguments | 6 | Demonstration | Desktop PC |
| 16. | Programs using Graphics | 6 | Demonstration | Desktop PC |

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Know the concept of Problem solving. | K2, K3 | PSO1& PSO2 |
| CO 2 | Implement various concepts in C. | K2, K3 | PSO2 |
| CO 3 | Apply the concepts of Functions, Structures and Unions in C program | K2, K3 | PSO3 |
| CO 4 | Make use of pointers using C programs. | K2, K3 | PSO3 |
| CO 5 | Apply and Use the file concepts in C programs. | K3, K4 | PSO6 |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **CIA** | **ESE** | **Total** |
| **20** | **15** | **5** | **40** | **60** | **100** |

**C1 –** Average of Two Model Test Marks

**C2 -** Average of Program Completion and Record Work

**C3 -** Non-Scholastic

## Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 3 | 1 | 1 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: Mrs.T.Leena Prema Kumari**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

**Entrepreneurship 100%**

# I B.Sc. Information Technology

## SEMESTER –I

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I1NME | IMAGE EDITING TOOL | Practical | 2 | 2 |

**COURSE DESCRIPTION**

This course content is enables other disciplined students to strengthen and increase the understanding of basis Multimedia application software like Photoshop and Corel Draw.

**COURSE OBJECTIVES**

To impart, practical knowledge on various editing techniques in Photoshop and Corel draw.

**UNITS**

**UNIT –I BASICS OF CORELDRAW (6HRS.)**

Introduction-Getting Started-Creating A New File - Title Bar-Menu Bar- Tool Bar – Work Area-Views. TEXT Introduction-Text Tool-Converting Text-Formatting Text- Webdings Changing the Alignment-Applying Effects

**UNIT –II IMAGE& LAYOUT (6 HRS.)**

Bitmap Images-Vector Image-Resizing-Rotating-Skewing-Moving-Cropping-Importing Images-Adding Special Effects-Converting to Bitmap-Exporting Images.PAGE LAYOUT: Changing the Page Size-Changing the Layout-Changing the Background.

**UNIT –III PHOTOSHOP : SELECTION AND PAINTING TOOLS (6 HRS.)**

Marquee Tool-Crop Tool-Lasso Tool-Move Tool, Rubber/clone Stamp tool-

Eraser Tool-Paint Brush Tool-Art History/History Brush Tool-Text Tool.

**UNIT –IV TRANSFORMATIONS (6 HRS.)**

Resizing: Resizing an image- Resizing a canvas- Resizing a selection Rotating: Rotate 180 degrees and 90 degrees clockwise or counter clockwise- Rotate by degrees- Rotate a selection.

**UNIT –V FILTERS (6 HRS.)**

Sharpen Filters: Sharpen, Sharpen more, Blur Filters: Blur, Blur-more,Distort Filters: Pinch(Squeezing, bulging), Pixellate Filters: crystallize, Extracting an part of image from background image.

**LAB EXERCISE**

1. Drawing Basic Shapes
2. Text Effect
3. Effects
4. Image Editing
5. Layout and Page Size Change
6. Tools
7. Resizing Image
8. Rotating Image
9. Filters

**REFERENCES:**

1. Kumar Bittu, “Adobe Photoshop”, ISBN: 978-9350570166, V&S Publishers.
2. Photoshop 7 Complete reference , ISBN 978-0072223118 - Greenberg – McGraw Hill Publications.

**Digital Open Educational Resources (DOER):**

1. Photoshop Online Training https://www.tutorialspoint.com/photoshop_online_training/index.asp
1. https://www.entheosweb.com/tutorials/coreldraw/liquid_lext/default.asp

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 BASICS OF CORELDRAW** | | | | |
| 1.1 | Creating A New File, Title Bar, Menu Bar, Tool Bar | 2 | Demonstration | Desktop PC |
| 1.2 | Work Area Views, Text Introduction, Text Tool Converting Text & Formatting Text | 1 | Demonstration | Desktop PC |
| 1.3 | Changing the Font Size Decorating the Text | 2 | Demonstration | Desktop PC |
| 1.4 | Changing the Alignment-Applying Effects | 1 | Demonstration | Desktop PC |
| **UNIT -2 IMAGE & LAYOUT** | | | | |
| 2.1 | Bitmap Images, Vector Image, Resizing, Rotating, Skewing Moving, Cropping | 2 | Demonstration | Desktop PC |
| 2.2 | Importing Images, Adding Special Effects, Converting to Bitmap, Exporting Images. | 1 | Demonstration | Desktop PC |
| 2.3 | Page Layout, Changing the Page Size, Changing the Layout, Applying Styles | 2 | Demonstration | Desktop PC |
| 2.4 | Applying Bitmaps to the Background, Changing the Background, | 1 | Demonstration | Desktop PC |
| **UNIT -3 PHOTOSHOP : SELECTION AND PAINTING TOOLS** | | | | |
| 3.1 | Marquee Tool, Crop Tool, LassoTool, Move Tool | 2 | Demonstration | Desktop PC |
| 3.2 | Rubber/clone Stamp tool, Eraser Tool, Paint Brush Tool | 2 | Demonstration | Desktop PC |
| 3.3 | Art History Tool, History Brush Tool, Text Tool. | 2 | Demonstration | Desktop PC |
| **UNIT -4 TRANSFORMATIONS** | | | | |
| 4.1 | Resizing an image, Resizing a Canvas | 2 | Demonstration | Desktop PC |
| 4.2 | Resizing a selection Rotating, Rotate 180 degrees and 90 Degrees | 2 | Demonstration | Desktop PC |
| 4.3 | Clockwise or counter clockwise, Rotate by degrees-Rotate a selection. | 2 | Demonstration | Desktop PC |
| **UNIT -5 FILTERS** | | | | |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 5.1 | Sharpen Filters, Blur Filters Distort Filters | 2 | Demonstration | Desktop PC |
| 5.2 | Pinch(Squeezing, bulging), Pixelate Filters | 2 | Demonstration | Desktop PC |
| 5.3 | Extracting a part of image from background image. | 2 | Demonstration | Desktop PC |

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Construct simple vector graphics using basic drawing elements and shape commands. | K2, K3 | PSO1& PSO2 |
| CO 2 | Apply basic shape commands and image effects in processing raster format pictures | K2, K3 | PSO1, PSO2 & PSO3 |
| CO 3 | Understand the basic tools for editing images. | K2, K3 | PSO1& PSO2 |
| CO 4 | Develop effective graphics for both web and print media. | K2, K3 | PSO1, PSO2 & PSO3 |
| CO 5 | Apply layer features and layer management techniques for creating Web pages and Invitations. | K2, K3 | PSO1, PSO2 & PSO3 |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|
| C1 | C2 | C3 | CIA | ESE | Total |
| 20 | 15 | 5 | 40 | 60 | 100 |

**C1 –** Average of Two Model Test Marks

**C2 -** Average of Program Completion and Record Work

**C3 -** Non-Scholastic

## Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 3 | 3 | 1 | 2 | 2 | 3 | 2 | 2 |
| CO4 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 2 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 3 | 1 | 1 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## I B.Sc. Information Technology

## SEMESTER –II

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 21I2CC3 | DATA STRUCTURES USING C++ | Lecture | 6 | 4 |

**COURSE DESCRIPTION**

This course introduces the basic concepts of C++. It also aims at facilitate the students to know the Data Structure concepts.

**COURSE OBJECTIVES**

To impart Technical and Practical knowledge in Object oriented Programming with C++ & Data Structures.

**UNITS**

**UNIT –I OBJECT ORIENTED CONCEPTS (17 HRS.)**

Classes and Objects: Specifying a class Defining Member functions- A C++ Program with Class-Making an Outside function Inline – Nesting of Member Function - Memory allocation for objects- Static Data Members & Member Functions - Array of Objects - Friendly functions- Local Classes. Constructors and Destructors: Constructors- Parameterized Constructors- Multiple Constructors in Class- **copy constructors- Dynamic Constructors(Self Study)**- Destructors.

**UNIT –II OPERATOR OVERLOADING & INHERITANCE (17 HRS.)**

Defining operator overloading - Overloading unary operators-Overloading binary operators-using friend function -manipulation of strings using operators-rules for overloading operators- Extending Classes: Introduction-Defining derived classes-single inheritance- Multiple Inheritance-Multilevel

Inheritance-**Hierarchical inheritance- Hybrid Inheritance(Self Study)**- Virtual Base classes- Abstract Classes- Constructor in Derived Classes- Member Classes: Nesting of Classes.

**UNIT –III POINTERS, VIRTUAL FUNCTIONS & POLYMORPHISM (17 HRS.)**

Pointers: Pointers to Objects – This Pointers – Pointers to Derived Class - Virtual Functions- Pure virtual function - **Virtual Constructors and Destructors (Self Study)**.DATA STRUCTURES: Introduction to Data Structures – Types of Data Structures - Data Structures Operations.

**UNIT –IV LINKED LIST, STACKS & QUEUES (17 HRS.)**

Linked List –Basic Concepts – Linked List Implementation – Types of Linked List- Circular Linked List – Doubly Linked List – Stack – Stack Operations – Stack Implementation – Queue – Basic Concepts –Queue Operations –Queue Implementations - Circular queues –Priority Queue – **Double Ended Queues (Self Study).**

**UNIT –V TREES, SEARCHING AND SORTING (17 HRS.)**

Trees: Basic Concepts - Binary trees – Binary Tree Representation - Binary tree Traversal - Binary Search tree – Tree Variants – Sorting Techniques – Searching Techniques

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5HRS.)**

Real- time Applications using C++

**TEXT BOOK:**

1. Balagurusamy, E. Object Oriented Programming and Data Structures, Tata McGraw-Hill Education, 2015. Chapters 4,6, 7,8,9,10,12,13,14,15,16,17

**REFERENCES:**

1. Dewhurst, Stephen C., and Kathy T. Stark.Programming in C++. Prentice-Hall, Inc., 1989.
2. Lafore, Robert. Object-oriented programming in Turbo C++.Galgotia publications, 2001.
3. Allen, Weiss Mark. Data structures and algorithm analysis in C++.Pearson Education India, 2007.

**Digital Open Educational Resources (DOER):**

1. Data Structure and Algorithms Tutorial

https://www.tutorialspoint.com/data_structures_algorithms/index.htm

2. Introduction To Data Structure

https://www.w3schools.in/data-structures-tutorial/intro/

3. C++ Tutorial

https://www.tutorialspoint.com/cplusplus/index.htm

4. C++ Tutorials and Resources

https://www.w3schools.in/category/cplusplus-tutorial/

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 OBJECT ORIENTED CONCEPTS** | | | | |
| 1.1 | Classes and Objects:Specifying a class Defining Memberfunctions, C++ Program with Class | 2 | Chalk & Talk | Black Board |
| 1.2 | Making an Outside function InlineNesting of Member Function | 2 | Chalk & Talk | Black Board |
| 1.3 | Memory allocation for objectsStatic Data Members & Member Functions | 3 | Lecture | PPT& White board |
| 1.4 | Array of Objects, Friendly functions, Local Classes | 2 | Lecture | Smart Board |
| 1.5 | Constructors and Destructors: Constructors | 2 | Lecture | Black Board |
| 1.6 | Parameterized Constructors | 2 | Discussion | Google classroom |
| 1.7 | Multiple Constructors in Class, Destructors. | 2 | Chalk & Talk | Green Board |
| 1.8 | Copy constructors, Dynamic Constructors (Self Study) | 2 | Discussion | Black Board |
| **UNIT -2 OPERATOR OVERLOADING & INHERITANCE** | | | | |
| 2.1 | Defining operator overloading:Overloading unary operators, Overloading binary operators | 3 | Lecture | Green Board Charts |
| 2.2 | Using friend function, Manipulation of strings using operators-Rules for overloading operators | 4 | Chalk & Talk | Green Board |
| 2.3 | Extending Classes:Introduction, Defining Derived Classes, Single Inheritance | 3 | Chalk &Talk | Black Board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 2.4 | Multiple Inheritance, Multilevel Inheritance, Virtual Base classes, Abstract Classes | 3 | Chalk & Talk | Black Board |
| 2.5 | Hybrid Inheritance, Hierarchical Inheritance (Self Study) | 1 | Discussion | Black Board |
| 2.6 | Constructor in Derived Classes, Member Classes: Nesting of Classes. | 3 | Chalk & Talk | Black Board |
| **UNIT -3 POINTERS, VIRTUAL FUNCTIONS & POLYMORPHISM** | | | | |
| 3.1 | Pointers:Pointers to Objects, This Pointers | 4 | Chalk & Talk | Black Board |
| 3.2 | Pointers to Derived Class, Virtual Functions, Pure virtual function. | 4 | Chalk & Talk | Black Board |
| 3.2 | Virtual Constructors and Destructors (Self Study) | 1 | Discussion | Black Board |
| 3.3 | Data Structures:Introduction to Data Structures, Types of Data Structures | 4 | Chalk & Talk | Black Board |
| 3.4 | Data Structures Operations | 4 | Chalk & Talk | Black Board |
| **UNIT -4LINKED LIST, STACKS & QUEUES** | | | | |
| 4.1 | Linked List –Basic Concepts | 1 | Chalk & Talk | Black Board |
| 4.2 | Linked List Implementation, Types of Linked List | 3 | Chalk & Talk | Black Board |
| 4.3 | Circular Linked List, DoublyLinked List | 3 | Lecture | PPT& White board |
| 4.4 | Stack Operations, Stack Implementation | 4 | Chalk & Talk | Black Board |
| 4.5 | Basic Concepts, Queue Operations, QueueImplementations. | 3 | Lecture | PPT& White board |
| 4.6 | Circular queues, Priority Queue | 2 | Chalk & Talk | Black Board |
| 4.7 | Double Ended Queues(Self Study) | 1 | Discussion | Black Board |
| **UNIT -5TREES, SEARCHING AND SORTING** | | | | |
| 5.1 | **Trees:** Basic Concepts, Binary trees | 4 | Chalk & Talk | Black Board |
| 5.2 | Binary Tree Representation, Binary tree Traversal | 4 | Chalk & Talk | Black Board |
| 5.3 | Binary Search tree, Tree Variants | 4 | Chalk & Talk | Black Board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 5.4 | Sorting Techniques, Searching Techniques | 5 | Discussion | Google classroom |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Real- time Applications using C++ | 5 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

**End Semester - UG**

| Levels | Section A (i) 5 Mks. | Section A (ii) 5 Mks | Section B 8 Mks. | Section C 12 Mks | Section D 20 Mks. | Section E 10 Mks. | Total 60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | Nos | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand how to apply the major OOPs concepts to implement encapsulation, inheritance and polymorphism. | K1, K2 | PSO1& PSO2 |
| CO 2 | Implement an achievable practical application and analyze issues related to object-oriented techniques in the C++ programming language | K1, K2 & K3 | PSO2& PSO3 |
| CO 3 | Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures. | K1 & K3 | PSO1, PSO2 & PSO3 |
| CO 4 | Use linear and non-linear data structures like Stacks, Queues, and Linked List. | K1, K2&K3 | PSO1, PSO2 & PSO3 |
| CO 5 | Analyze various Searching and Sorting Techniques using | K2 & K4 | PSO5 &PSO6 |

## Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| CO4 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 2 |
| CO5 | 1 | 1 | 1 | 1 | 3 | 3 | 1 | 1 |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 1 | 3 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 1 | 3 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

**Forwarded By**

**HOD'S**

**Signatu**

**V. Mageshwari**

Employability 100%

# I B.Sc. Information Technology

## SEMESTER –II

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 21I2CC4 | LAB II: DATA STRUCTURES USING C++ | Practical | 6 | 3 |

**COURSE DESCRIPTION**

This course enables students to identify, formulate all techniques of software development in the C++ Programming Language and demonstrate these techniques.

**COURSE OBJECTIVES**

To give programming skills on various concepts in Data Structures using C++ programs.

**PROGRAM LIST**

1. Programs using operators, decision making statements and looping statements.
2. Program using Classes and Objects
3. Program using Inline Functions.
4. Program using Functions with default arguments
5. Program using Polymorphism
6. Program using Constructors
7. Program using Destructors
8. Program using Inheritance & Its types
9. Program using Operator overloading
10. Program using Friend Functions.
11. Program for Stack Implementation
12. Program for Queue Implementation
13. Program for Linked List Implementation
14. Program for Binary Tree traversal
15. Program for Searching Techniques
16. Program for Sorting Techniques

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 1 | Programs using operators | 3 | Demonstration | Desktop PC |
| 2 | Program using decision making statements and loopingstatements. | 3 | Demonstration | Desktop PC |
| 3 | Program using Classes and Objects | 6 | Demonstration | Desktop PC |
| 4 | Program using Inline Functions. | 3 | Demonstration | Desktop PC |
| 5 | Program using Functions with default arguments | 6 | Demonstration | Desktop PC |
| 6 | Program using Polymorphism | 3 | Demonstration | Desktop PC |
| 7 | Program using Constructors | 6 | Demonstration | Desktop PC |
| 8 | Program using Destructors | 6 | Demonstration | Desktop PC |
| 9 | Program using Inheritance & Its types | 6 | Demonstration | Desktop PC |
| 10 | Program using Operatoroverloading | 6 | Demonstration | Desktop PC |
| 11 | Program using FriendFunctions. | 6 | Demonstration | Desktop PC |
| 12 | Program for Stack Implementation | 6 | Demonstration | Desktop PC |
| 13 | Program for Queue Implementation | 6 | Demonstration | Desktop PC |
| 14 | Program for Linked List Implementation | 6 | Demonstration | Desktop PC |
| 15 | Program for Binary Tree traversal | 6 | Demonstration | Desktop PC |
| 16 | Program for Searching Techniques | 6 | Demonstration | Desktop PC |
| 17 | Program for Sorting Techniques | 6 | Demonstration | Desktop PC |

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Implement an achievable practical application on object-oriented techniques in the C++ programming language. | K2, K3 | PSO1& PSO2 |
| CO 2 | Implement linear and non-linear data structures like Stacks, Queues, linked list. | K2, K3 | PSO2& PSO3 |
| CO 3 | Demonstrate the concept of classes and their types by using C++ objects. | K2, K3 | PSO3 |
| CO 4 | Apply the concept of polymorphism and inheritance in C++. | K2, K3 | PSO3 |
| CO 5 | Implement practical applications by applying Searching and Sorting Techniques using C++. | K3, K4 | PSO5 |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **CIA** | **ESE** | **Total** |
| **20** | **15** | **5** | **40** | **60** | **100** |

**C1 –** Average of Two Model Test Marks

**C2 -** Average of Program Completion and Record Work

**C3 -** Non-Scholastic

## Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 1 | 3 | 2 | 2 | 3 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 1 | 2 | 2 | 2 | 2 |
| CO5 | 2 | 2 | 2 | 1 | 3 | 3 | 1 | 1 |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated **-1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Entrepreneurship 100%

## I B.Sc. Information Technology

## SEMESTER –II

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I2NME | IMAGE EDITING TOOL | Practical | 2 | 2 |

**COURSE DESCRIPTION**

This course content is enables other disciplined students to strengthen and increase the understanding of basis Multimedia application software like Photoshop and Corel Draw.

**COURSE OBJECTIVES**

To impart, practical knowledge on various editing techniques in Photoshop and Corel draw.

**UNITS**

**UNIT –I BASICS OF CORELDRAW (6HRS.)**

Introduction-Getting Started-Creating A New File - Title Bar-Menu Bar- Tool Bar – Work Area-Views. TEXT Introduction-Text Tool-Converting Text-Formatting Text- Webdings Changing the Alignment-Applying Effects

**UNIT –II IMAGE& LAYOUT (6 HRS.)**

Bitmap Images-Vector Image-Resizing-Rotating-Skewing-Moving-Cropping-Importing Images-Adding Special Effects-Converting to Bitmap-Exporting Images.PAGE LAYOUT: Changing the Page Size-Changing the Layout-Changing the Background.

**UNIT –III PHOTOSHOP : SELECTION AND PAINTING TOOLS (6 HRS.)**

Marquee Tool-Crop Tool-Lasso Tool-Move Tool, Rubber/clone Stamp tool-Eraser Tool-Paint Brush Tool-Art History/History Brush Tool-Text Tool.

**UNIT –IV TRANSFORMATIONS (6 HRS.)**

Resizing: Resizing an image- Resizing a canvas- Resizing a selection Rotating: Rotate 180 degrees and 90 degrees clockwise or counter clockwise- Rotate by degrees- Rotate a selection.

**UNIT –V FILTERS (6 HRS.)**

Sharpen Filters: Sharpen, Sharpen more, Blur Filters: Blur, Blur-more,Distort Filters: Pinch(Squeezing, bulging), Pixellate Filters: crystallize, Extracting an part of image from background image.

**LAB EXERCISE**

1. Drawing Basic Shapes
2. Text Effect
3. Effects
4. Image Editing
5. Layout and Page Size Change
6. Tools
7. Resizing Image
8. Rotating Image
9. Filters

**REFERENCES:**

1. Kumar Bittu, “Adobe Photoshop”, ISBN: 978-9350570166, V&S Publishers.
2. Photoshop 7 Complete reference , ISBN 978-0072223118 - Greenberg – McGraw Hill Publications.

**Digital Open Educational Resources (DOER):**

1. Photoshop Online Training https://www.tutorialspoint.com/photoshop_online_training/index.asp
2. https://www.entheosweb.com/tutorials/coreldraw/liquid_lext/default.asp

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 BASICS OF CORELDRAW** | | | | |
| 1.1 | Creating A New File, Title Bar, Menu Bar, Tool Bar | 2 | Demonstration | Desktop PC |
| 1.2 | Work Area Views, Text Introduction, Text Tool Converting Text & Formatting Text | 1 | Demonstration | Desktop PC |
| 1.3 | Changing the Font Size Decorating the Text | 2 | Demonstration | Desktop PC |
| 1.4 | Changing the Alignment-Applying Effects | 1 | Demonstration | Desktop PC |
| **UNIT -2 IMAGE & LAYOUT** | | | | |
| 2.1 | Bitmap Images, Vector Image, Resizing, Rotating, Skewing Moving, Cropping | 2 | Demonstration | Desktop PC |
| 2.2 | Importing Images, Adding Special Effects, Converting to Bitmap, Exporting Images. | 1 | Demonstration | Desktop PC |
| 2.3 | Page Layout, Changing the Page Size, Changing the Layout, Applying Styles | 2 | Demonstration | Desktop PC |
| 2.4 | Applying Bitmaps to the Background, Changing the Background, | 1 | Demonstration | Desktop PC |
| **UNIT -3 PHOTOSHOP : SELECTION AND PAINTING TOOLS** | | | | |
| 3.1 | Marquee Tool, Crop Tool, LassoTool, Move Tool | 2 | Demonstration | Desktop PC |
| 3.2 | Rubber/clone Stamp tool, Eraser Tool, Paint Brush Tool | 2 | Demonstration | Desktop PC |
| 3.3 | Art History Tool, History Brush Tool, Text Tool. | 2 | Demonstration | Desktop PC |
| **UNIT -4 TRANSFORMATIONS** | | | | |
| 4.1 | Resizing an image, Resizing a Canvas | 2 | Demonstration | Desktop PC |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 4.2 | Resizing a selection Rotating, Rotate 180 degrees and 90 Degrees | 2 | Demonstration | Desktop PC |
| 4.3 | Clockwise or counter clockwise, Rotate by degrees-Rotate a selection. | 2 | Demonstration | Desktop PC |
| **UNIT -5 FILTERS** | | | | |
| 5.1 | Sharpen Filters, Blur Filters Distort Filters | 2 | Demonstration | Desktop PC |
| 5.2 | Pinch(Squeezing, bulging), Pixelate Filters | 2 | Demonstration | Desktop PC |
| 5.3 | Extracting a part of image from background image. | 2 | Demonstration | Desktop PC |

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Construct simple vector graphics using basic drawing elements and shape commands. | K2, K3 | PSO1& PSO2 |
| CO 2 | Apply basic shape commands and image effects in processing raster format pictures | K2, K3 | PSO1, PSO2 & PSO3 |
| CO 3 | Understand the basic tools for editing images. | K2, K3 | PSO1& PSO2 |
| CO 4 | Develop effective graphics for both web and print media. | K2, K3 | PSO1, PSO2 & PSO3 |
| CO 5 | Apply layer features and layer management techniques for creating Web pages and Invitations. | K2, K3 | PSO1, PSO2 & PSO3 |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **CIA** | **ESE** | **Total** |
| **20** | **15** | **5** | **40** | **60** | **100** |

**C1 –** Average of Two Model Test Marks

**C2 -** Average of Program Completion and Record Work

**C3 -** Non-Scholastic

### Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 3 | 3 | 1 | 2 | 2 | 3 | 2 | 2 |
| CO4 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 2 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 3 | 1 | 1 |

### Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |

| | | | | |
|---|---|---|---|---|
| **CO5** | **1** | **1** | **1** | **1** |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated **-1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## II B.Sc. Information Technology

## SEMESTER –III

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I3CC5 | DATABASE MANAGEMENT SYSTEM | Lecture | 6 | 4 |

**COURSE DESCRIPTION**

This course introduces database design and creation using DBMS software. It also imparts various concepts in database management system.

**COURSE OBJECTIVES**

To facilitate the student to understand the various functionalities of DBMS software and perform many operations related to creating, manipulating and maintaining databases for Real-world applications.

**UNITS**

**UNIT –I DATABASES (17 HRS.)**

Purpose of database systems - View of data- Database languages – Relational Databases – Database Design - Data Storage and Querying – Transaction Management- Database Architecture - Data mining and Information Retrieval – Specialty Databases - Analysis — Database users and Administrators. Relational Model - Structure of relational databases – Database Schema – Keys – Schema Diagram – **Relational Operations (Self Study).**

**UNIT –II SQL (17 HRS.)**

Background – Data Definition - Basic structure of SQL Queries - Set operations - Aggregate functions - Null values -nested sub queries – Complex Queries - Views - Modifications of the database – Joins – Views - relations - Embedded SQL – Dynamic SQL – SQL Functions and **procedures(Self Study).**

**UNIT –III DATABASE DESIGN (17 HRS.)**

Normalization - Atomic Domains and First Normal Form –Decomposition - Functional Dependencies - Multivalued Dependencies - Normal forms

**UNIT –IV RELATIONAL QUERY LANGUAGES AND E-R MODEL (17 HRS.)**

Algebra - The Tuple Relational Calculus - The Domain Relational Calculus - E-R Model - Constraints - E- R Diagram - **Extended E - R Features ( Self Study) .**

**UNIT –V PL/SQL (17 HRS.)**

Introduction - The generic PL/SQL Block - The PL/SQL execution environment – PL/SQL - Control Structure. Introduction to cursors - Cursor FOR loops. Advantages of using Procedure or Function - Procedures versus Functions - Database triggers - **Deleting a trigger (Self Study).**

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Multidimensional databases - Mobile databases - Multimedia databases

**TEXT BOOK:**

1. Silberschatz, Abraham, Henry F. Korth, and S. Sudarshan." Database System Concepts.", 6th edition, McGraw Hill Education Private Limited (2016).chapters 1, 2, 3, 4, 5, 6, 7, 8
2. Bayross, Ivan. SQL, PL/SQL: The programming language of Oracle.BPB publications, 2010.chapters 15, 16, 18

**REFERENCES:**

1. Leon, Alexis, and Mathews Leon.Database management systems. Vikas Publishing House Pvt. Limited, 2010.
2. Elmasri, R., &Navathe, S. B. (2011).Database systems.Boston, MA: Pearson Education.

**Digital Open Educational Resources (DOER):**

1. Dbms Tutorial: Database Management System - Javatpoint https://www.javatpoint.com/dbms-tutorialIntroduction To Data Structure
2. Database Management System Tutorial - Tutorialspoint

https://www.tutorialspoint.com/dbms/index.htm

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 DATABASES** | | | | |
| 1.1 | Purpose of database systems | 1 | Discussion | Black Board |
| 1.2 | View of data, Database languages | 2 | Chalk & Talk | Black Board |
| 1.3 | Relational Databases, Database Design | 1 | Lecture | LCD |
| 1.4 | Data Storage and Querying | 1 | Discussion | Google classroom |
| 1.5 | Transaction Management, Database Architecture | 1 | Chalk & Talk | Black Board |
| 1.6 | Data mining and Information Retrieval | 2 | Chalk & Talk | Black Board |
| 1.7 | Specialty Databases, Database users and Administrators | 2 | Lecture | PPT & White board |
| 1.8 | Relational Model, Structure of relational databases | 2 | Chalk & Talk | Black Board |
| 1.9 | Database Schema | 2 | Chalk & Talk | Black Board |
| 1.10 | Keys, Schema Diagram | 2 | Chalk &Talk | Black Board |
| 1.11 | Relational Operations (Self Study) | 1 | Discussion | Google classroom |
| **UNIT -2 SQL** | | | | |
| 2.1 | Data Definition | 1 | Lecture | PPT & White board |
| 2.2 | Basic structure of SQL Queries | 2 | Chalk & Talk | Green Board |
| 2.3 | Set operations, Aggregate functions | 2 | Chalk & Talk | Black Board |
| 2.4 | Null values Nested sub queries | 2 | Chalk & Talk | Black Board |
| 2.5 | Complex Queries | 2 | Chalk & Talk | Black Board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 2.6 | Views, Modifications of the database | 2 | Chalk & Talk | Black Board |
| 2.7 | Joins, Relations | 2 | Lecture | Google classroom |
| 2.8 | Embedded SQL | 2 | Chalk & Talk | Black Board |
| 2.9 | Dynamic SQL, SQL Functions | 1 | Chalk & Talk | Black Board |
| 2.10 | SQL Procedures (Self Study) | 1 | Discussion | Google classroom |
| **UNIT – 3 DATABASE DESIGN** | | | | |
| 3.1 | Normalization | 1 | Discussion | PPT & White board |
| 3.2 | Atomic Domains | 2 | Chalk &Talk | Green Board |
| 3.3 | First Normal Form (1NF) | 1 | Chalk & Talk | Black Board |
| 3.4 | Decomposition | 2 | Chalk & Talk | Black Board |
| 3.5 | Functional Dependencies | 2 | Discussion | Black Board |
| 3.6 | Multivalued Dependencies | 1 | Lecture | PPT & White board |
| 3.7 | Second Normal Form (2NF) | 1 | Lecture | Black Board |
| 3.8 | Third Normal Form (3NF) | 1 | Chalk & Talk | Black Board |
| 3.9 | Boyce-Codd Normal Form (BCNF) | 2 | Chalk & Talk | Black Board |
| 3.10 | Fourth Normal Form (4NF) | 2 | Chalk & Talk | Black Board |
| 3.11 | Fifth Normal Form (5NF) | 2 | Chalk & Talk | Black Board |
| **UNIT – 4 RELATIONAL QUERY LANGUAGES AND E-R MODEL** | | | | |
| 4.1 | Algebra | 2 | Discussion | PPT & White board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 4.2 | The Tuple Relational Calculus | 3 | Chalk & Talk | Green Board |
| 4.3 | The Domain Relational Calculus | 3 | Chalk & Talk | Black Board |
| 4.4 | E-R Model | 3 | Chalk & Talk | Black Board |
| 4.5 | Constraints | 3 | Discussion | Black Board |
| 4.6 | E- R Diagram | 2 | Lecture | Green Board |
| 4.7 | Extended E - R Features ( Self Study) | 1 | Discussion | Black Board |
| **UNIT – 5 PL/SQL** | | | | |
| 5.1 | Introduction, The generic PL/SQL Block | 2 | Lecture | PPT & White board |
| 5.2 | The PL/SQL execution environment | 1 | Chalk & Talk | Black Board |
| 5.3 | PL/SQL | 2 | Lecture | Black Board |
| 5.4 | Control Structure | 2 | Chalk & Talk | Black Board |
| 5.5 | Introduction to cursors | 2 | Chalk & Talk | Black Board |
| 5.6 | Cursor FOR loops | 2 | Chalk & Talk | Black Board |
| 5.7 | Advantages of using Procedure or Function | 1 | Chalk & Talk | Black Board |
| 5.8 | Procedures versus Functions | 1 | Chalk & Talk | Black Board |
| 5.9 | Database triggers | 2 | Chalk & Talk | Black Board |
| 5.10 | Deleting a trigger (Self Study) | 2 | Discussion | Google classroom |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Multidimensional databases | 2 | Discussion | Black Board |
| 6.2 | Mobile databases, Multimedia databases | 3 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| K1 | 2 | 2 | - | - | - | 4 | - | 4 | 10 % |
| K2 | 2 | 2 | 5 | - | - | 9 | - | 9 | 22.5 % |
| K3 | 3 | 3 | - | - | 5 | 11 | - | 11 | 27.5 % |
| K4 | 3 | 3 | - | 5 | - | 11 | - | 11 | 27.5 % |
| Non Scholastic | - | - | - | - | - | | 5 | 5 | 12.5 % |
| Total | 10 | 10 | 5 | 5 | 5 | 35 | 5 | 40 | 100 % |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| K1 | 5 | 5 | - | 4 | - | - | 14 | 23.33 % |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| **SCHOLASTIC** | | | | | **NON - SCHOLASTIC** | **MARKS** | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |

| | | | | | |
|---|---|---|---|---|---|
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Explain the structure and model of the relational database system. | K1 | PSO1& PSO2 |
| CO 2 | Design multiple tables and use group functions, sub queries. | K1, K2, | PSO2 |
| CO 3 | Design a database based on a data model considering the normalization to a specified level. | K1 & K3 | PSO4 |
| CO 4 | Develop E- R model based tables. | K1, K2, K3 & | PSO3 |
| CO 5 | Evaluate different PL/SQL blocks. | K2 & K4 | PSO6 |

## Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **3** | **2** | **2** | **2** | **1** | **1** | **1** |
| **CO2** | **1** | **3** | **1** | **2** | **2** | **2** | **2** | **1** |
| **CO3** | **2** | **1** | **1** | **3** | **2** | **3** | **2** | **2** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **CO4** | **2** | **2** | **3** | **1** | **2** | **2** | **2** | **2** |
| **CO5** | **2** | **2** | **2** | **1** | **1** | **3** | **1** | **1** |

**Mapping of C0s with POs**

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 |
| CO4 | 3 | 1 | 1 | 1 |
| CO5 | 1 | 3 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

## II B.Sc. Information Technology

## SEMESTER –III

Employability 100%

***For those who joined in 2019 onwa***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I3CC6 | LAB III RDBMS | Practical | 6 | 3 |

### COURSE DESCRIPTION

This course gives hands on experience in relational database management system.

### COURSE OBJECTIVES

To facilitate the students with hands on training on SQL to design Databases. It also gives an exposure to database design and E-R Modeling.

### PROGRAM LIST

1. DDL Commands
2. DML Commands
3. DCL Commands
4. TCL Commands
5. Programs on Mathematical functions.
6. Programs on string functions.
7. Programs on Aggregate functions.
8. Programs on Date functions.
9. Program using Data Constraints like Primary Key, Foreign key, check constraints.
10. Programs on Sub queries
11. Programs on Nested queries
12. Programs on Group by and Order by
13. Implementing the concepts of Joins
14. Programs using decision making and looping statements.
15. PL/SQL program using Cursors
16. PL/SQL program using Cursors and Loops
17. PL/SQL program using triggers.
18. Programs using Forms

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 1 | DDL Commands | 6 | Demonstration | Desktop PC |
| 2 | DML Commands | 6 | Demonstration | Desktop PC |
| 3 | DCL Commands | 6 | Demonstration | Desktop PC |
| 4 | TCL Commands | 6 | Demonstration | Desktop PC |
| 5 | Programs on Mathematical functions. | 6 | Demonstration | Desktop PC |
| 6 | Programs on string functions. | 6 | Demonstration | Desktop PC |
| 7 | Programs on Aggregate functions. | 6 | Demonstration | Desktop PC |
| 8 | Programs on Date functions. | 6 | Demonstration | Desktop PC |
| 9 | Program using Data Constraints like Primary Key, Foreign key, check constraints. | 6 | Demonstration | Desktop PC |
| 10 | Programs on Sub queries | 6 | Demonstration | Desktop PC |
| 11 | Programs on Nested queries | 3 | Demonstration | Desktop PC |
| 12 | Programs on Group by and Order by | 3 | Demonstration | Desktop PC |
| 13 | Implementing the concepts of Joins | 4 | Demonstration | Desktop PC |
| 14 | Programs using decision making and looping statements. | 5 | Demonstration | Desktop PC |
| 15 | PL/SQL program using Cursors | 5 | Demonstration | Desktop PC |
| 16 | PL/SQL program using Cursors and Loops | 5 | Demonstration | Desktop PC |
| 17 | PL/SQL program using triggers. | 5 | Demonstration | Desktop PC |

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Explain Various SQL Commands. | K2, K3 | PSO1& PSO2 |
| CO 2 | Write SQL queries to user specifications. | K2, K3 | PSO2 |
| CO 3 | Design database schema considering normalization and relationships within database. | K2, K3 | PSO3 |
| CO 4 | Develop PL/SQL Programs. | K2, K3 | PSO2& PSO8 |
| CO 5 | Develop triggers, procedures and Cursors. | K3, K4 | PSO8 |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **CIA** | **ESE** | **Total** |
| **20** | **15** | **5** | **40** | **60** | **100** |

**C1 –** Average of Two Model Test Marks

**C2 -** Average of Program Completion and Record Work

**C3 -** Non-Scholastic

## Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 1 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 1 | 3 | 2 | 2 | 3 | 2 | 2 |
| CO4 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 3 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

**Forwarded By** **HOD'S**

**Signature**

**V. Mageshwari**

Skill Development 100%

## II B.Sc. Information Technology

## SEMESTER –III

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I3AC3 | DIGITAL PRINCIPLES AND COMPUTER ARCHITECTURE | Lecture | 5 | 5 |

**COURSE DESCRIPTION**

The course content plays a vital role in making the students to understand the basic digital components.

**COURSE OBJECTIVES**

To make the student familiar with digital logic, data representation and functional design of arithmetic and logic unit that is capable of performing arithmetic operations and floating point operations.

**UNITS**

**UNIT –I DIGITAL LOGIC CIRCUITS (14HRS.)**

Digital Computers- Logic Gates- Boolean algebra: Complement of a Function - K-Map Simplification: Product of Sum Simplification- Don't Care Condition. Combinational Circuits: Half Adder- Full Adder. Flip- Flops: SR Flip Flop- D Flip Flop - JK Flip Flop - T Flip Flop -**Edge Triggered Flip Flops (Self Study).**

**UNIT –II DATA REPRESENTATION (14 HRS.)**

Data Types: Number Systems- Octal and Hexadecimal Numbers- Decimal Representation- Alphanumeric Representation. Complements:1's Complement- 2's Complement- Subtraction of Unsigned Numbers. Fixed-Point Representation: Integer Representation-Arithmetic Addition- Arithmetic

Subtraction –Overflow- Decimal Fixed Point Representation.**Floating Point Representation - Other Binary Codes (Self Study)**- Error Detection Codes.

**UNIT –III DIGITAL COMPONENTS (14 HRS.)**

Integrated Circuits – Decoders - Encoders – Multiplexers - Registers - Shift Register - Binary Counters.Memory Unit: Random - Access Memory - Read Only Memory - **Types of ROMs (Self Study).**General Register Organization:Control Word - Examples of Micro operations - Stack Organization- Reverse Polish Notation - Evaluation of Arithmetic Expression

**UNIT –IV CENTRAL PROCESSING UNIT (14 HRS.)**

Instruction formats: Three Address Instruction - Two Address Instruction – One Address Instruction- Zero Address Instructions - RISC Instruction - Addressing Modes: Types. Data Transfer and Manipulation: Data Transfer Instruction - Data Manipulation Instructions - Arithmetic Instruction –Logical and Bit Manipulation Instructions - Shift Instruction – Program Control : Program Interrupts - Types of Interrupt- Reduced Instruction Set Computer: **CISC Characteristics- RISC Characteristics(Self Study).**

**UNIT –V MEMORY ORGANIZATION (14 HRS.)**

Memory Hierarchy - Main Memory: RAM and ROM Chips.Auxiliary Memory: **Magnetic Disks- Magnetic Tape(Self Study)** - Associative Memory. Cache Memory: Associative Mapping - Direct Mapping – Set Associative Mapping. Virtual Memory: Address Space and Memory Space.

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Recent Development computer architecture.

**TEXT BOOK:**

1. Mano, M. Morris.Computer system architecture.Prentice-Hall of India, 2013.Chapter 1.1 - 1.6, 3.1 - 3.6, 2.1-2.7, 8.1- 8.8, 12.1-12.6

**REFERENCES:**

1. Dasgupta, Subrata. Computer Architecture: A Modern Synthesis.Volume 1, Foundations.John Wiley & Sons, 1989.

2. Hwang, Kai, and Faye A. Briggs.Computer architecture and parallel processing.McGraw-Hill, 1985.

**Digital Open Educational Resources (DOER):**

1. Binary Numbers Representation - Tutorialspoint https://www.tutorialspoint.com/.../digital_circuits_binary_numbers_representation.htm
2. Digital Electronics and Logic Design Tutorials - Geeksforgeeks https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 DIGITAL LOGIC CIRCUITS** | | | | |
| 1.1 | Syllabus Discussion, Digital Computers | 1 | Discussion | Black Board |
| 1.2 | Logic Gates, Boolean algebra | 2 | Chalk & Talk | Black Board |
| 1.3 | Complement of a Function | 1 | Lecture | LCD |
| 1.4 | K-Map Simplification -POS | 2 | Chalk & Talk | Smart Board |
| 1.5 | K-Map Simplification -SOP | 1 | Chalk & Talk | Black Board |
| 1.6 | Don't Care Condition, Combinational Circuits | 1 | Discussion | Google classroom |
| 1.7 | Half Adder, Full Adder | 2 | Lecture | PPT & White board |
| 1.8 | Flip- Flops Introduction | 1 | Chalk & Talk | Black Board |
| 1.9 | SR Flip Flop, D Flip Flop | 1 | Chalk & Talk | Black Board |
| 1.10 | JK Flip Flop , T Flip Flop | 1 | Chalk & Talk | Black Board |
| 1.11 | Edge Triggered Flip Flops (Self Study) | 1 | Discussion | Google classroom |
| **UNIT -2 DATA REPRESENTATION** | | | | |
| 2.1 | Number Systems- Octal and Hexadecimal Numbers | 1 | Lecture | PPT & White board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 2.2 | Decimal Representation, Alphanumeric Representation | 2 | Chalk & Talk | Green Board |
| 2.3 | Complements:1's Complement-2's Complement | 2 | Chalk & Talk | Black Board |
| 2.4 | Subtraction of Unsigned Numbers | 2 | Chalk & Talk | Black Board |
| 2.5 | Fixed- Point Representation: Integer Representation | 2 | Chalk & Talk | Black Board |
| 2.6 | Arithmetic Addition, Arithmetic Subtraction | 1 | Chalk & Talk | Green Board |
| 2.7 | Overflow | 1 | Lecture | Google classroom |
| 2.8 | Decimal Fixed Point Representation. | 1 | Chalk & Talk | Black Board |
| 2.9 | Floating Point Representation.Other Binary Codes. (Self Study) | 1 | Discussion | Google classroom |
| 2.10 | Error Detection Codes | 1 | Chalk & Talk | Black Board |
| **UNIT - 3DIGITAL COMPONENTS** | | | | |
| 3.1 | Integrated Circuits | 1 | Discussion | PPT & White board |
| 3.2 | Decoders, Encoders | 2 | Chalk & Talk | Green Board |
| 3.3 | Multiplexers | 1 | Chalk & Talk | Black Board |
| 3.4 | Registers, Shift Register | 2 | Chalk & Talk | Black Board |
| 3.5 | Binary Counters | 2 | Discussion | Black Board |
| 3.6 | Memory Unit: Random Access Memory, Read Only Memory | 1 | Lecture | PPT & White board |
| 3.7 | Types of ROMs (Self Study) | 1 | Discussion | Google classroom |
| 3.8 | General Register Organization, Control Word | 1 | Chalk &Talk | Black Board |
| 3.9 | Examples of Micro operations | 1 | Chalk & | Black |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | | | Talk | Board |
| 3.10 | Stack Organization | 1 | Chalk & Talk | Black Board |
| 3.11 | Reverse Polish Notation, Evaluation of Arithmetic Expression | 1 | Chalk & Talk | Black Board |
| **UNIT - 4CENTRAL PROCESSING UNIT** | | | | |
| 4.1 | Instruction formats: Three Address Instruction | 1 | Discussion | PPT & White board |
| 4.2 | Two Address Instruction, One Address Instruction | 1 | Chalk & Talk | Green Board |
| 4.3 | Zero Address Instructions, RISC Instruction | 1 | Chalk & Talk | Black Board |
| 4.4 | Addressing Modes: Types. | 1 | Chalk & Talk | Black Board |
| 4.5 | Data Transfer and Manipulation: Data Transfer Instruction, Data Manipulation Instructions | 2 | Discussion | Black Board |
| 4.6 | Arithmetic Instruction | 1 | Lecture | PPT & White board |
| 4.7 | Logical and Bit Manipulation Instructions | 2 | Discussion | Black Board |
| 4.8 | Shift Instruction, Program Control | 2 | Chalk & Talk | Black Board |
| 4.9 | Program Interrupts - Types of Interrupt | 1 | Chalk &Talk | Black Board |
| 4.10 | Reduced Instruction Set Computer | 1 | Chalk & Talk | Black Board |
| 4.11 | CISC Characteristics- RISC Characteristics (Self Study) | 1 | Discussion | Google classroom |
| **UNIT – 5MEMORY ORGANIZATION** | | | | |
| 5.1 | Memory Hierarchy | 1 | Lecture | PPT & White board |
| 5.2 | Main Memory: RAM and ROM Chips | 1 | Chalk & Talk | Black Board |
| 5.3 | Auxiliary Memory: Magnetic | 2 | Discussio | Google |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | Disks- Magnetic Tape (Self Study) | | n | classroom |
| 5.4 | Associative Memory. Cache Memory | 2 | Chalk & Talk | Black Board |
| 5.5 | Associative Mapping - Direct Mapping | 2 | Chalk & Talk | Black Board |
| 5.6 | Set Associative Mapping | 2 | Chalk & Talk | Black Board |
| 5.7 | Virtual Memory | 2 | Chalk &Talk | Black Board |
| 5.8 | Address Space and Memory Space | 2 | Chalk & Talk | Black Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Recent Development computer architecture | 2 | Discussio n | Google classroom |
| 6.2 | Recent Development computer architecture | 3 | Lecture | PPT & White board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Explain about digital logic circuits. | K1 | PSO1& PSO2 |
| CO 2 | Compute simple arithmetic operations for fixed-point and floating-point addition and subtraction. | K1, K2 & K3 | PSO2 |
| CO 3 | Understand various digital components. | K1 & K3 | PSO4 |
| CO 4 | Construct an instruction set capable of performing a specified set of operations. | K3 | PSO3& PSO6 |
| CO 5 | Demonstrate a memory system for a given set of specifications. | K3& K4 | PSO6 |

### Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 1 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 2 |
| CO4 | 2 | 3 | 2 | 1 | 2 | 3 | 2 | 2 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 |

### Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |

| | | | | |
|---|---|---|---|---|
| **CO5** | **1** | **1** | **1** | **1** |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Employability 100%

## II B.Sc. Information Technology

## SEMESTER –III

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I3SB1 | SKILLL BASED – Automation Skills | Practical | 2 | 2 |

**COURSE DESCRIPTION**

This course trains students how to use MS Office applications use in office work such as creating professional-quality documents, store, organize and analyze information, arithmetic operations, functions and create dynamic slide presentations with animation, narration, images, and much more, digitally and effectively.

**COURSE OBJECTIVES**

To impart knowledge on various concepts in MS Word, Excel, PowerPoint & Publisher.

**UNITS**

**UNIT –I WORD (6 HRS.)**

Windows Basics – Introduction to word – Editing a document - Move and Copy text - Formatting text & Paragraph – Enhancing document – Columns, Tables and Other features.

**UNIT –II EXCEL (6 HRS.)**

Introduction to worksheet – getting started with Excel – Editing cell & using Commands and functions – Moving & Copying , Inserting & Deleting Rows & Columns - Printing work sheet.

**UNIT –III ADVANCED FEATURES IN EXCEL (6 HRS.)**

Creating charts – Naming ranges and using statistical, math and financial functions, in a worksheet – Additional formatting commands and toolbar – other commands & functions.

**UNIT –IV POWERPOINT (6 HRS.)**

Overview of Power point – presenting shows for corporate and commercial using Power point

**UNIT –V ADVANCED FEATURES OF POWER POINT (6 HRS.)**

Formatting text and objects to customize the look of publication- Add, Resize, Rotate, and Group objects- Creation of Product Catalogue- Create bookmarks and hyperlinks.

**PROGRAM LIST**

**MS-WORD**

1. **Text Manipulation:**Writing a paragraph about the institution and Change the font size and type, Spell check, Aligning and justification of Text
2. **Bio data:** Preparing Bio-data.
3. **Find and Replace:**Writinga paragraph about individual and do the following. Find and Replace, Use Numbering Bullets, Footer and Headers.
4. **Tables and manipulation:** Creation, Insertion, Deletion (Columns and Rows). Create a mark sheet.
5. **Mail Merge:** Prepare an invitation to invite friends for birthday party. Prepare at leastfive letters.

**MS-EXCEL**

1. Data sorting-Ascending and Descending (both numbers and alphabets)
2. Mark list preparation for a student
3. Individual Pay Bill preparation.
4. Invoice Report preparation.
5. Drawing Graphs. Take your own table.

**MS-POWERPOINT**

1. Create a slide show presentation for a seminar.
2. Preparation of Organization Charts
3. Create a slide show presentation to display percentage of marks in each semester for all students
4. Use bar chart(X-axis: Semester, Y-axis: % marks).
5. Use different presentation template different transition effect for each

slide.

**REFERENCES:**

1. Holden, Greg. Microsoft Office 2007 in Simple Steps. Prentice Hall Press, 2009.

**Digital Open Educational Resources (DOER):**

1. Free Microsoft Office Tutorials At Gcfglobal
https://edu.gcfglobal.org/en/subjects/office/

**COURSE CONTENTS & LECTURE SCHEDULE:**

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1WORD** | | | | |
| 1.1 | Windows Basics, Introduction to word, Editing a document, Move and Copy text | 1 | Demonstration | Desktop PC |
| 1.2 | Formatting text & Paragraph | 1 | Demonstration | Desktop PC |
| 1.3 | Enhancing document, Columns | 2 | Demonstration | Desktop PC |
| 1.4 | Tables and Other features. | 2 | Demonstration | Desktop PC |
| **UNIT-2EXCEL** | | | | |
| 2.1 | Introduction to worksheet, getting started with Excel | 1 | Demonstration | Desktop PC |
| 2.2 | Printing work sheet | 2 | Demonstration | Desktop PC |
| 2.3 | Editing cell & using Commands and functions | 1 | Demonstration | Desktop PC |
| 2.4 | Moving & Copying, Inserting & Deleting Rows & Columns | 2 | Demonstration | Desktop PC |
| **UNIT-3 ADVANCED FEATURES IN EXCEL** | | | | |
| 3.1 | Creating charts | 1 | Demonstration | Desktop PC |
| 3.2 | Naming ranges and using statistical function | 1 | Demonstration | Desktop PC |
| 3.3 | Math and financial function in a worksheet | 1 | Demonstration | Desktop PC |
| 3.4 | Additional formatting | 1 | Demonstration | Desktop |

| | | | | |
|---|---|---|---|---|
| | commands and toolbar | | | PC |
| 3.5 | Other commands & functions | 2 | Demonstration | Desktop PC |
| **UNIT-4POWERPOINT** | | | | |
| 4.1 | Overview of Power point | 2 | Demonstration | Desktop PC |
| 4.2 | Commercial Presentation using Power point | 1 | Demonstration | Desktop PC |
| 4.3 | Presentation shows for corporate | 3 | Demonstration | Desktop PC |
| **UNIT -5ADVANCED FEATURES OF POWER POINT** | | | | |
| 5.1 | Formatting text and objects to customize the look of publication | 1 | Demonstration | Desktop PC |
| 5.2 | Add, Resize, Rotate, and Group objects | 2 | Demonstration | Desktop PC |
| 5.3 | Creation of Product Catalogue | 1 | Demonstration | Desktop PC |
| 5.4 | Create bookmarks and hyperlinks. | 2 | Demonstration | Desktop PC |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i) 5 Mks. | Section A (ii) 5 Mks | Section B 8 Mks. | Section C 12 Mks | Section D 20 Mks. | Section E 10 Mks. | Total 60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| C1 | C2 | C3 | C4 | C5 | C6 | CIA | ESE | Total |
| 10 | 10 | 5 | 5 | 5 | 5 | 40 | 60 | 100 |

**UG CIA Components**

| | | | Nos | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

***The best out of two will be taken into account***

## OURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Use Word to prepare organizational documents. | K2, K3 | PSO1, PSO2& PSO3 |
| CO 2 | Design financial & other business applications requiring mathematical calculations using spread sheet software. | K2, K3 | PSO1, PSO2& PSO3 |
| CO 3 | Develop various charts--pie, bar, line, column, & area using spread sheet software. | K2, K3 | PSO1, PSO2& PSO3 |
| CO 4 | Create Dynamic presentations with animation. | K2, K3 | PSO1, PSO2& PSO3 |
| CO 5 | Demonstrate presentations with narration and images. | K3, K4 | PSO1, PSO2, PSO3 & PSO7 |

## Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 3 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 3 | 3 | 3 | 2 | 2 | 1 | 2 | 2 |
| CO4 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 2 |
| CO5 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 1 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. MAGESHWARI**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## II B.Sc. Information Technology

## SEMESTER –IV

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I4CC7 | PROGRAMMING IN JAVA | Lecture | 6 | 4 |

**COURSE DESCRIPTION**

This course enable the students to build object oriented java programs using the concept of abstraction, encapsulation, exception handling, packages, interfaces, threads and AWT controls. It also imparts the ability to develop projects in java with JDBC connectivity.

**COURSE OBJECTIVES**

To acquaint the students with various techniques of Java Programming and help them to create effective programs in this language.

**UNITS**

**UNIT – I : INTRODUCTION & BASIC CONCEPTS (17 HRS.)**

Overview of Java Language: Introduction-Simple Java Program-More of Java-An Application with two classes-Java Program Structure-Java Tokens-Java Statements- Implementing a Java Program-Java Virtual machine-Command Line Arguments

Constants, variables, and Data types: Introduction-Constants-Variables-Data types –Declaration of variables- Giving values to variables-Scope of variables-symbolic constants-Type casting – Getting values of variables-standard default values.

**UNIT –II:BRANCHING, LOOPING & CLASSES (17 HRS.)**

Decision Making and Branching: Introduction-Decision Making with if

statements- simple if statements- the If Else Statement-Nesting of If Else Statements- The else if Ladder- The switch Statement- The ?: Operator

Decision Making and Looping : Introduction- The while Statement-The do statement- The for Statement- Jumps in Loops- Labeled Loops.

Classes, Objects and Methods: Introduction- Defining a class- Adding Variables- Adding Methods- Creating Objects- Accessing Class Members- Constructors- Methods Overloading- Static Members- Nesting of Methods- Inheritance- Overriding Methods- Final Variables and Methods- Final Classes- Finalizer Methods- Abstract Methods and Classes- Visibility Control.

**UNIT –III:CLASSES& OBJECTS (17 HRS.)**

Class fundamentals-Declaring objects-Assigning object reference variables-introducing methods-Constructors-this keyword-finalize() method-overloading methods-using object as parameters-Argument passing- returning object-Recursion- Nested &Inner Classes.

Inheritance & Polymorphism: Inheritance-using super-**Method overriding (Self Study).**

**UNIT –IVPACKAGES , INTERFACE & EXCEPTION HANDLING (17 HRS.)**

Packages – Access Protection- Importing Packages-Interfaces.Exception :Exception Handling Function-Exception types-**Uncaught exception(Self Study)**-using try & catch.

**UNIT –III MULTITHREADING PROGRAMMING (17 HRS.)**

Life cycle of thread-Creating & Running Threads-Methods in thread classes.

java. lang PACKAGES: Type wrapper-The number class- the byte, short, integer and Long classes- the float and Double classes-The character class-The Boolean class- the process class- the runtime class- The system class – the object class- the math class- **the string class- string Buffer class (Self Study)**.

**APPLET:** The Life cycle of Applet- The Applet class- Development and Execution of as simple Applet- Syntax of Applet tag.

**UNIT –IV ABSTRACT WINDOW TOOLKIT (17 HRS.)**

Events-Listeners-Event Handling Methods-Labels-Button Control-Checkbox Control-radio button control-Choice control-List control-Scrollbars-Flow Layout- **Border Layout(Self Study).**

**UNIT –V JAVA DATABASE CONNECTIVITY (17 HRS.)**

Establishing a Connection-Creation of Data Tables-Entering Data into the tables _ Table Updating-Use of Prepared Statement- Obtaining Metadata-Using Transaction-Scrollable Result sets-**Stored Procedure (Self Study).**

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Latest Trends in Java Technologies (Angular, React)

**TEXT BOOK:**

1. Schildt, Herbert. "Java: the complete reference." (2017).Chapters: 6, 7, 8, 9, 10, 11
2. Muthu, C. "Programming with JAVA." Vijay Nicole Imprints, Chennai (2004).Chapters: 25, 8, 16, 9, 10, 11, 18, 19

**REFERENCES:**

1. Horstmann, Cay S., and Gary Cornell.Core Java: Advanced Features.Vol. 2.Pearson Education, 2013.
2. Naughton, Patrick, and Herbert Schildt. "The complete reference java 2." (2003).
3. Arnold, Ken, et al. The Java programming language.Vol. 2. Reading: Addison-wesley, 2000.

**Digital Open Educational Resources (DOER):**

1. Java Tutorial :
https://www.tutorialspoint.com/java/
2. Java Tutorial For Beginners: Learn in 7 Days
https://www.guru99.com/java-tutorial.html

**COURSE CONTENTS & LECTURE SCHEDULE**

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT – I CLASSES & OBJECTS** | | | | |
| 1.1 | Class fundamentals, Declaring objects, Assigning object reference variables, introducing methods | 5 | Chalk & Talk | Black Board |
| 1.2 | Constructors, this keyword, finalize() method | 4 | Chalk & Talk | Black Board |
| 1.3 | overloading methods, using object as parameters, Argument passing, returning object, Recursion | 4 | Lecture | PPT& White board |
| 1.4 | Nested &Inner Classes, Inheritance & Polymorphism, Inheritance | 3 | Lecture | Smart Board |
| 1.5 | Method overriding (Self Study) | 1 | Discussion | Black Board |
| **UNIT – II: PACKAGES, INTERFACE& EXCEPTION HANDLING** | | | | |
| 2.1 | Packages, Access Protection | 4 | Chalk & Talk | Black Board |
| 2.2 | Importing Packages, Interfaces | 5 | Chalk & Talk | Black Board |
| 2.3 | Exception Handling Function | 4 | Lecture | PPT& White board |
| 2.4 | Exception types, using try & catch | 3 | Lecture | Smart Board |
| 2.5 | Uncaught exception (Self Study) | 1 | Discussion | Black Board |
| **UNIT – III: MULTITHREADING PROGRAMMING** | | | | |
| 3.1 | Life cycle of thread, Creating &Running Threads | 4 | Chalk &Talk | Black Board |

| | | | | |
|---|---|---|---|---|
| 3.2 | Methods in thread classes, java. Lang, PACKAGES: Type wrapper-The number class | 4 | Chalk &Talk | Black Board |
| 3.3 | The byte, short, integer and Long classes, the float and Double classes | 3 | Lecture | PPT& White board |
| 3.4 | The character class, The Boolean class, the process class, the runtime class | 3 | Lecture | Smart Board |
| 3.5 | The system class, the object class, the math class | 2 | Lecture | Black Board |
| 3.6 | String Buffer class (Self Study) | 1 | Discussion | Black Board |
| **UNIT – IV : ABSTRACT WINDOW TOOLKIT - I** | | | | |
| 4.1 | Events, Listeners, Event Handling Methods, Labels, Button Control | 4 | Chalk & Talk | Black Board |
| 4.2 | Checkbox Control, radio button control, Choice control, List control, Scrollbars, Flow Layout | 4 | Chalk & Talk | Black Board |
| 4.3 | Border Layout (Self Study) | 1 | Discussion | Black Board |
| 4.3 | ABSTRACT WINDOW TOOLKIT - II :Windows & frames, Menus, Dialogs, Mouse Events and their Listener | 2 | Lecture | PPT& White board |
| 4.3 | Adapter Classes, Inner classes, Anonymous Inner classes | 2 | Lecture | Smart Board |
| 4.4 | SWING:JApplet class, Icons, JLabelControl, JTextfield Control, JButton Control, JCheckbox | 2 | Chalk & Talk | Black Board |
| 4.5 | Control, JRadioButton Control, Menus, JSlider Control, JComboBoxConrol, JgtabbedPane Control, JScrollPane Control | 2 | Chalk & Talk | Black Board |
| **UNIT – V : JAVA DATABASE CONNECTIVITY** | | | | |
| 5.1 | JAVA DATABASE | 4 | Chalk & | Black |

| | | | | |
|---|---|---|---|---|
| | CONNECTIVITY:Establishing a Connection, Creation of Data Tables | | Talk | Board |
| 5.2 | Entering Data into the tables, Table Updating-Use of Prepared Statement | 3 | Chalk & Talk | Black Board |
| 5.3 | Obtaining Metadata, Using Transaction, Scrollable Result sets | 3 | Lecture | PPT& White board |
| 5.4 | Stored Procedure (Self Study) | 1 | Discussion | Black Board |
| 5.5 | SERVLETS: Servlet and Dynamic Web pages, Life cycle of a servlet, A simple servlet | 4 | Lecture | Smart Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Latest Trends in Java Technologies - Angular | 2 | Discussion | Black Board |
| 6.2 | Latest Trends in Java Technologies - React | 3 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |

| | |
|---|---|
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand the concepts of Object-Oriented Programming & Java Programming Constructs. | K1 & K2 | PSO1& PSO2 |
| CO 2 | Understand basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords. | K1 & K2 | PSO1, PSO2 &PSO3 |
| CO 3 | Understand the concept of exception handling and Input/output operations. | K1 & K2 | PSO1& PSO2 |
| CO 4 | Design Java & Java applet based applications. | K2 & K3 | PSO6 |
| CO 5 | Analyze & Design the concept of Event Handling and Abstract Window Toolkit. | K3 & K4 | PSO3 &PSO8 |

### Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 3 | 3 | 1 | 2 | 2 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 2 | 1 | 2 | 3 | 2 | 2 |
| CO5 | 2 | 2 | 3 | 1 | 1 | 2 | 1 | 3 |

**Mapping of COs with POs**

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 |
| CO4 | 3 | 1 | 1 | 1 |
| CO5 | 1 | 3 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated **-1**

**COURSE DESIGNER:**

1. **Staff Name: V.MAGESHWARI**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Employability 100%

## II B.Sc. Information Technology

## SEMESTER –IV

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I4CC8 | LAB IV - JAVA PROGRAMMING | Practical | 6 | 3 |

**COURSE DESCRIPTION**

This course gives hands on experience, practices the concepts of java programming language, and develops solutions for real world problems.

**COURSE OBJECTIVES**

To give programming skills on various concepts in JAVA.

**PROGRAM LIST**

1. Programs using Operator, Assignment Operator, Increment& Decrement Operator, Logical Operator and Bitwise Operator.
2. Programs Using IF, Conditional Operator, Array, While Loop, For Loop, Switch& Break and Continue.
3. Programs using the concept Overloading.
4. Programs using the concept Inheritance and Constructor
5. Programs using the concept Interface and Overriding .
6. Programs using the concept Built-in and User defined Exception Handling and Threads.
7. Programs using the concept Threads.
8. Programs using the concept String Handling.
9. Programs using the concept Packages
10. Programs for creating Applet.

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 1 | Programs using Operator, Assignment Operator, Increment& Decrement Operator, Logical Operator and Bitwise Operator. | 9 | Demonstration | Desktop PC |
| 2 | Programs Using IF, Conditional Operator, Array, While Loop, For Loop, Switch& Break and Continue. | 9 | Demonstration | Desktop PC |
| 3 | Programs using the concept Overloading. | 9 | Demonstration | Desktop PC |
| 4 | Programs using the concept Inheritance and Constructor | 9 | Demonstration | Desktop PC |
| 5 | Programs using the concept Interface and Overriding . | 9 | Demonstration | Desktop PC |
| 6 | Programs using the concept Built-in and User defined Exception Handling and Threads. | 9 | Demonstration | Desktop PC |
| 7 | Programs using the concept Threads. | 9 | Demonstration | Desktop PC |
| 8 | Programs using the concept String Handling. | 9 | Demonstration | Desktop PC |
| 9 | Programs using the concept Packages | 9 | Demonstration | Desktop PC |
| 10 | Programs for creating Applet. | 9 | Demonstration | Desktop PC |

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Implement Object Oriented programming concept using operators and control Structures. | K2, K3 | PSO1& PSO2 |
| CO 2 | Design java programs using inheritance, interfaces and packages. | K2, K3 | PSO1, PSO2 & PSO3 |
| CO 3 | Implement exception handling mechanism and multithreading concept. | K2, K3 | PSO1, PSO2 & PSO3 |
| CO 4 | Design Java applet based applications. | K2, K3 | PSO6 & PSO8 |
| CO 5 | Design applications to Handle Events using AWT components. | K3, K4 | PSO6 & PSO8 |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **CIA** | **ESE** | **Total** |
| **20** | **15** | **5** | **40** | **60** | **100** |

**C1 –** Average of Two Model Test Marks

**C2 -** Average of Program Completion and Record Work

**C3 -** Non-Scholastic

## Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 3 | 3 | 3 | 2 | 2 | 1 | 2 | 2 |
| CO4 | 2 | 2 | 2 | 1 | 2 | 3 | 2 | 3 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 3 |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 3 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 3 | 1 |
| CO5 | 1 | 1 | 1 | 3 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: Mrs. V. Mageshwari**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

Skill Development 100%

## II B.Sc. Information Technology

## SEMESTER – IV

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I4AC4 | OPERATING SYSTEMS AND LINUX | Lecture | 6 | 4 |

**COURSE DESCRIPTION**

This course content plays a vital role in making the students to understand the basic operating system concept.

**COURSE OBJECTIVES**

To introduce basic concepts and principles of operating systems, which include memory management, process management, file management.

**UNITS**

**UNIT –I OPERATING SYSTEM OVERVIEW (17 HRS.)**

Operating System Overview: Operating System Objectives and **Functions(Self Study)**, the Evolution of Operating System, Major Achievements. Processes: Process, Process states- Two state, Five State, Suspended Process.

**UNIT –II CONCURRENCY (17 HRS.)**

**Concurrency:** Principles of Concurrency, Mutual Exclusion – Hardware Support, Semaphores, Monitors, Message Passing. **Deadlock:Principles of Deadlock(Self Study)**, Deadlock Prevention, Deadlock Detection, Deadlock Avoidance.

**UNIT –III MEMORY MANAGEMENT & SCHEDULING (17 HRS.)**

**Memory Management:** Memory Management Requirements, Memory Partitioning, Paging, Segmentation. **Uni-processor Scheduling**: Types of Processors Scheduling, Scheduling Algorithm, Scheduling Criteria, FIFO, Round Robin, Shortest Process Next, **Shortest Remaining Time (Self Study)**, Highest Response Ratio.

**UNIT –IV I/O MANAGEMENT AND DISK SCHEDULING (17 HRS.)**

**I/O Management and Disk Scheduling:** I/O devices, Organization of the I/O Function, I/O Buffering, Disk Scheduling. **File Management:** Overview, File Organization and Access, File Directories, **File Sharing (Self Study)**.

**UNIT –V LINUX FILE STRUCTURE, SHELL & FILE MANAGEMENT OPERATIONS (17 HRS.)**

**The Shell:** The Command Line, Command Line Editing, Filename Expansion: *, ?, [ ], Standard Input/output and Redirection, Pipes |,Redirecting and Piping the Standard Error: >&, 2>. Jobs: Background, Kills, and Interruptions. **Linux Files, Directories:** The File Structure, Listing, Displaying, and Printing Files: ls, cat, more, less, and lpr, Managing Directories: mkdir, rmdir, ls, cd, and pwd, File and **Directory Operations: fi nd, cp, mv, rm, and ln (Self Study).**

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Recent advancements in Operating System (Ubuntu, MAC OS, Apple iOS, Android OS )

**TEXT BOOK:**

1. Stallings, William. Operating systems: internals and design principles. Boston: Prentice Hall, 7th edition, 2014. Chapters: 1.1-1.3, 2.1-2.2, 4.1-4.5, 5.1 - 5.4, 6.1 - 6.4, 8.1-8.2, 10.1 -10.5, 11.1 - 11.6
2. Petersen, Richard. Linux: the complete reference. McGraw-Hill Professional, 6th edition, 2000.Chapter 3, 6

**REFERENCES:**

1. Deitel, Harvey M., Paul J. Deitel, and David R. Choffnes. Operating systems. Pearson/Prentice Hall, 2008.

2. Madnick, Stuart E., and John J. Donovan. Operating Systems: Instructor's Manual to Accompany Operating Systems. Erg. Bd. McGraw-Hill, 2007.

**Digital Open Educational Resources (DOER):**

1. Operating System Tutorial - Tutorialspoint
https://www.tutorialspoint.com/operating_system/index.htm
2. Learn Operating System (os) Tutorial - Javatpoint
https://www.javatpoint.com/os-tutorial
3. Operating System Tutorial | Studytonight
https://www.studytonight.com/operating-system

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 OPERATING SYSTEM OVERVIEW** | | | | |
| 1.1 | Operating System Overview | 1 | Discussion | Black Board |
| 1.2 | Operating System Objectives | 2 | Chalk & Talk | Black Board |
| 1.3 | Functions (Self Study) | 1 | Discussion | Google classroom |
| 1.4 | The Evolution of Operating System | 2 | Lecture | PPT & White board |
| 1.5 | Major Achievements | 1 | Chalk & Talk | Black Board |
| 1.6 | Process | 1 | Discussion | Google classroom |
| 1.7 | Process states- Two state | 3 | Chalk & Talk | Black Board |
| 1.8 | Process states-Five State | 3 | Chalk & Talk | Black Board |
| 1.9 | Suspended Process | 3 | Chalk & Talk | Black Board |
| **UNIT -2 CONCURRENCY** | | | | |
| 2.1 | Concurrency, Principles of Concurrency | 1 | Lecture | PPT & White board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 2.2 | Mutual Exclusion | 2 | Chalk & Talk | Green Board |
| 2.3 | Hardware Support, Semaphores | 2 | Chalk & Talk | Black Board |
| 2.4 | Monitors, Message Passing | 2 | Chalk & Talk | Black Board |
| 2.5 | Deadlock | 2 | Chalk & Talk | Black Board |
| 2.6 | Principles of Deadlock (Self Study) | 1 | Discussion | Google classroom |
| 2.7 | Deadlock Prevention | 2 | Chalk & Talk | Black Board |
| 2.8 | Deadlock Detection | 3 | Chalk & Talk | Black Board |
| 2.9 | Deadlock Avoidance | 2 | Chalk & Talk | Black Board |
| **UNIT - 3MEMORY MANAGEMENT & SCHEDULING** | | | | |
| 3.1 | Memory Management, Memory Management Requirements | 1 | Discussion | PPT & White board |
| 3.2 | Memory Partitioning | 2 | Chalk & Talk | Green Board |
| 3.3 | Paging | 2 | Chalk & Talk | Black Board |
| 3.4 | Segmentation | 2 | Chalk & Talk | Black Board |
| 3.5 | Uni-processor Scheduling, Types of Processors Scheduling | 2 | Discussion | Black Board |
| 3.6 | Scheduling Algorithm | 1 | Lecture | PPT & White board |
| 3.7 | Scheduling Criteria | 1 | Chalk & Talk | Black Board |
| 3.8 | FIFO, Round Robin | 1 | Chalk & Talk | Black Board |
| 3.9 | Shortest Remaining Time (Self Study) | 1 | Discussion | Google classroom |
| 3.10 | Highest Response Ratio | 2 | Chalk & Talk | Black Board |
| 3.11 | Shortest Process Next | 2 | Chalk & Talk | Black Board |
| **UNIT - 4I/O MANAGEMENT AND DISK SCHEDULING** | | | | |
| 4.1 | I/O Management and Disk Scheduling | 2 | Discussion | PPT & White board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 4.2 | I/O devices | 2 | Chalk & Talk | Green Board |
| 4.3 | Organization of the I/O Function | 2 | Chalk & Talk | Black Board |
| 4.4 | I/O Buffering | 2 | Chalk & Talk | Black Board |
| 4.5 | Disk Scheduling | 2 | Discussion | Black Board |
| 4.6 | File Management | 2 | Lecture | PPT & White board |
| 4.7 | File Organization and Access | 2 | Discussion | Black Board |
| 4.8 | File Directories | 2 | Chalk & Talk | Black Board |
| 4.9 | File Sharing (Self Study) | 1 | Discussion | Google classroom |
| **UNIT - 5 LINUX FILE STRUCTURE, SHELL & FILE MANAGEMENT OPERATIONS** | | | | |
| 5.1 | The Shell, The Command Line | 1 | Lecture | PPT & White board |
| 5.2 | Command Line Editing | 2 | Chalk & Talk | Black Board |
| 5.3 | Filename Expansion: *, ?, [ ] | 2 | Discussion | Google classroom |
| 5.4 | Standard Input/output and Redirection, Pipes \| | 2 | Chalk & Talk | Black Board |
| 5.5 | Redirecting and Piping the Standard Error: >&, 2> | 2 | Chalk & Talk | Black Board |
| 5.6 | Jobs: Background, Kills, and Interruptions | 2 | Chalk & Talk | Black Board |
| 5.7 | Linux Files, Directories | 2 | Chalk & Talk | Black Board |
| 5.8 | The File Structure, Listing, Displaying, and Printing Files: ls, cat, more, less, and lpr | 2 | Chalk & Talk | Black Board |
| 5.9 | Managing Directories: mkdir, rmdir, ls, cd, and pwd | 1 | Chalk & Talk | Green Board |
| 5.10 | File and Directory Operations: find, cp, mv, rm, and ln (Self Study) | 1 | Discussion | Google classroom |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Recent advancements in Operating System - Ubuntu | 1 | Discussion | Google classroom |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 6.2 | MAC OS | 1 | Lecture | Black Board |
| 6.3 | Apple iOS | 1 | Lecture | Black Board |
| 6.4 | Android OS | 2 | Lecture | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1 | T2 | Quiz | Assignment | OBT/PPT | | | | |
| | 10 Mks. | 10 Mks. | 5 Mks. | 5 Mks | 5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i) | Section A (ii) | Section B | Section C | Section D | Section E | Total | |
|---|---|---|---|---|---|---|---|---|

| | 5 Mks. | 5 Mks | 8 Mks. | 12 Mks | 20 Mks. | 10 Mks. | 60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |

| | | | | | |
|---|---|---|---|---|---|
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

***The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Describe the evolution, types, structure and functions of operating systems. | K1& K2 | PSO1& PSO2 |
| CO 2 | Explain techniques involved in concurrency and deadlock. | K1& K2 | PSO1 |
| CO 3 | Describe memory management and processor scheduling used in operating systems. | K1& K2 | PSO4 |
| CO 4 | Implement disk scheduling algorithm for a given scenario. | K1, K2& K3 | PSO3& PSO4 |
| CO 5 | Execute Linux basic commands and shell scripts. | K3& K4 | PSO7 & PSO8 |

### Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **CO2** | **3** | **2** | **2** | **2** | **2** | **2** | **2** | **1** |
| **CO3** | **2** | **2** | **2** | **3** | **2** | **2** | **2** | **2** |
| **CO4** | **2** | **2** | **3** | **3** | **2** | **2** | **2** | **2** |
| **CO5** | **2** | **2** | **2** | **2** | **2** | **2** | **3** | **3** |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Employability 100%

## II B.Sc. Information Technology

## SEMESTER – IV

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I4SB2 | ANALYTICAL SKILLS | Lecture | 2 | 2 |

**COURSE DESCRIPTION**

This course content plays a vital role for clearing any competitive exam and it covers all the Quantitative Aptitude topics and an in-depth understanding of this subject.

**COURSE OBJECTIVES**

To prepare the student with the range of skills which facilitate them to enhance their employability quotient and do well in the professional space.

**UNITS**

**UNIT –I QUANTITATIVE APTITUDE – I (6HRS.)**

Different Number System, More on Numbers, Ratio and Proportion, Percentage, Approximate Value Calculation.

**UNIT –II QUANTITATIVE APTITUDE – II (6 HRS.)**

Mixtures, Averages, Time and Distance, Problems Based on Trains, Rowing Downstream and Upstream.

**UNIT –III QUANTITATIVE APTITUDE – III (6 HRS.)**

Pipes and Cistern, Races, Games, Time and Work, Clocks, Mensuration Area and Volume.

**UNIT –IV VERBAL REASONING- I (6 HRS.)**

SERIES: Locating Wrong Number, Probability, Data Interpretation, Data Sufficiency Series Completion, Analogy, Classification, Coding – Decoding, Blood Relations, Puzzle Test.

**UNIT –V VERBAL REASONING- II (6 HRS.)**

Direction Sense Test, Alphabetical Quibble, Number,Ranking & time, Sequence test, Mathematical Operations, Logical Sequence of Words, Arithmetical Reasoning.

**REFERENCES:**

1. Aggarwal, R. S. Quantitative Aptitude. S. Chand, 2017.

**Digital Open Educational Resources (DOER):**

1. Quantitative Aptitude Tutorial - Tutorialspoint
https://www.tutorialspoint.com/quantitative_aptitude/index.htm
2. Aptitude Tutorial - Students Tutorial
https://www.studentstutorial.com/aptitude/aptitude-tutorial.php/aptitude-tutorial.php

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1** | **QUANTITATIVE APTITUDE – I** | | | |
| 1.1 | Syllabus Discussion | 1 | Discussion | Black Board |
| 1.2 | Different Number System | 1 | Chalk & Talk | Black Board |
| 1.3 | More on Numbers | 1 | Chalk & Talk | Black Board |
| 1.4 | Ratio and Proportion | 1 | Chalk & Talk | Black Board |
| 1.5 | Percentage | 1 | Chalk & Talk | Black Board |
| 1.6 | Approximate Value Calculation | 1 | Chalk & Talk | Black Board |
| **UNIT -2** | **QUANTITATIVE APTITUDE – II** | | | |
| 2.1 | Mixtures | 1 | Chalk & Talk | Black Board |
| 2.2 | Averages | 1 | Chalk & Talk | Black Board |
| 2.3 | Time and Distance | 1 | Chalk | Black |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | | | &Talk | Board |
| 2.4 | Problems Based on Trains | 1 | Chalk & Talk | Black Board |
| 2.5 | Rowing Downstream and Upstream | 2 | Chalk & Talk | Black Board |
| **UNIT - 3QUANTITATIVE APTITUDE – III** | | | | |
| 3.1 | Pipes and Cistern | 1 | Chalk & Talk | Black Board |
| 3.2 | Races | 1 | Chalk & Talk | Black Board |
| 3.3 | Games | 1 | Chalk & Talk | Black Board |
| 3.4 | Time and Work | 1 | Chalk & Talk | Black Board |
| 3.5 | Clocks | 1 | Chalk & Talk | Black Board |
| 3.6 | Mensuration Area and Volume | 1 | Chalk & Talk | Black Board |
| **UNIT - 4VERBAL REASONING- I** | | | | |
| 4.1 | Locating Wrong Number | 1 | Chalk & Talk | Black Board |
| 4.2 | Probability | 1 | Chalk & Talk | Black Board |
| 4.3 | Data Interpretation, Data Sufficiency Series Completion | 1 | Chalk & Talk | Black Board |
| 4.4 | Analogy, Classification | 1 | Chalk & Talk | Black Board |
| 4.5 | Coding – Decoding | 1 | Chalk & Talk | Black Board |
| 4.6 | Blood Relations, Puzzle Test | 1 | Chalk & Talk | Black Board |
| **UNIT - 5VERBAL REASONING- II** | | | | |
| 5.1 | Direction Sense Test, Alphabetical Quibble | 1 | Chalk & Talk | Black Board |
| 5.2 | Ranking & time | 1 | Chalk & Talk | Black Board |
| 5.3 | Sequence test | 1 | Chalk & Talk | Black Board |
| 5.4 | Mathematical Operations | 1 | Chalk & Talk | Black Board |
| 5.5 | Logical Sequence of Words | 1 | Chalk & Talk | Black Board |
| 5.6 | Arithmetical Reasoning | 1 | Chalk &Talk | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| K1 | 2 | 2 | - | - | - | 4 | - | 4 | 10 % |
| K2 | 2 | 2 | 5 | - | - | 9 | - | 9 | 22.5 % |
| K3 | 3 | 3 | - | - | 5 | 11 | - | 11 | 27.5 % |
| K4 | 3 | 3 | - | 5 | - | 11 | - | 11 | 27.5 % |
| Non Scholastic | - | - | - | - | - | | 5 | 5 | 12.5 % |
| Total | 10 | 10 | 5 | 5 | 5 | 35 | 5 | 40 | 100 % |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| K1 | 5 | 5 | - | 4 | - | - | 14 | 23.33 % |
| K2 | - | - | 8 | 4 | - | - | 12 | 20 % |
| K3 | - | - | - | - | 20 | - | 20 | 33.33 % |
| K4 | - | - | - | 4 | - | 10 | 14 | 23.34 % |
| Total | 5 | 5 | 8 | 12 | 20 | 10 | 60 | 100 % |

| CIA | |
|---|---|
| Scholastic | 35 |

| | |
|---|---|
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand the short cut methods. | K1& K2 | PSO1& PSO3 |

| | | | |
|---|---|---|---|
| CO 2 | Apply general mathematical techniques. | K2 & K3 | PSO1& PSO3 |
| CO 3 | Develop their critical thinking. | K2 & K3 | PSO1& PSO3 |
| CO 4 | Recall the formulas. | K1& K2 | PSO1& PSO2 |
| CO 5 | Solve the sums by applying shortcut methods with time management. | K2 & K3 | PSO8 |

## Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 3 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 3 | 1 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 3 | 1 | 3 | 2 | 2 | 1 | 2 | 2 |
| CO4 | 3 | 3 | 2 | 1 | 2 | 2 | 2 | 2 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 3 |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated **-1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## III B.Sc. Information Technology

## SEMESTER – V

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I5CC9 | .NET PROGRAMMING | Lecture | 5 | 5 |

**COURSE DESCRIPTION**

This course introduces .NET Framework and imparts various concepts in .NET framework.

**COURSE OBJECTIVES**

To facilitate the students to understand, the features of .NET framework and use the design of the language to develop robust software.

**UNITS**

**UNIT –I INTRODUCTION (14HRS.)**

The Origin of .Net Technology - Common Language -Runtime (CLR), Common Type System (CTS) - Common Language Specification(CLS) –Garbage Collector – Memory Management– **Visual studio .NET (Self Study).**

**UNIT –II C# (14 HRS.)**

Building Blocks of C# - Type Conversion – Functions – Delegates - Error Handling – Exception Handling – Classes in c# - Access modifiers – Interface – Collections – Generics – **As Operator (Self Study).**

**UNIT –`III Window Programming and Data Access (14 HRS.)**

Controls **– Common Controls (Self Study)** – Container controls – Menus and Toolbars – Deployment - File System – XML - Databases and ADO.NET -

ADO.NET classes – Data Binding

**UNIT –IV ASP.NET (14 HRS.)**

Features – **Life Cycle(Self Study)** - Server Controls – Control Structure – Functions – HTML Events – ASP.NET web control events – Event driven Programming – Postback - Reading from databases – HTML Server control – Web Server controls – Validation Controls.

**UNIT –V DOT NET ASSEMBLIES (14 HRS.)**

State Management – **View State(Self Study)** - Control State – Hidden Field - Session – Cookies – Session Events – Web Services – XML – SOAP – Building ASP.NET Web Services.

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

MVC Framework - WPF - AJAX

**TEXT BOOK:**

1. Anand Jain, "Programming With Dot Net", Vision Publications, 4th Edition 2019

**REFERENCES:**

1. Bruce Barstow, Tony Martin, “Visual Basic. NET in 60 Minutes a Day Bible”, Willey Dreamtech India (P) Ltd., 1st Edition, 2003.
2. Visual Basic .Net Programming Black Book by STEVEN HOLZNER, Dreamtech Press
3. Dean Alan Hume, “Fast ASP.NET Websites”, Manning Publications Co, 2013.

**Digital Open Educational Resources (DOER):**

1. Asp and Asp.net Tutorials
https://www.w3schools.com/asp/default.ASP
2. Asp.net Tutorial

https://www.tutorialspoint.com/asp.net/index.htm

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1INTRODUCTION** | | | | |
| 1.1 | The Origin of .Net Technology | 1 | Discussion | Black Board |
| 1.2 | Common Language -Runtime (CLR) | 2 | Chalk & Talk | Black Board |
| 1.3 | Common Type System (CTS) | 2 | Lecture | LCD |
| 1.4 | Common Language Specification(CLS) | 2 | Discussion | Google classroom |
| 1.5 | Garbage Collector | 3 | Chalk & Talk | Black Board |
| 1.6 | Memory Management | 2 | Chalk & Talk | Black Board |
| 1.7 | Visual studio .NET (Self Study). | 2 | Discussion | Google classroom |
| **UNIT -2C#** | | | | |
| 2.1 | Building Blocks of C# | 1 | Lecture | PPT & White board |
| 2.2 | Type Conversion | 1 | Chalk & Talk | Green Board |
| 2.3 | Functions | 2 | Chalk & Talk | Black Board |
| 2.4 | Delegates - Error Handling | 2 | Chalk & Talk | Black Board |
| 2.5 | Exception Handling – Classes in c# | 2 | Chalk & Talk | Black Board |
| 2.6 | Access modifiers | 2 | Chalk & Talk | Black Board |
| 2.7 | Interface – Collections | 2 | Lecture | Google classroom |
| 2.8 | Generics | 1 | Chalk & Talk | Black Board |
| 2.9 | As Operator (Self Study) | 1 | Discussion | Google classroom |
| **UNIT – 3 Window Programming and Data Access** | | | | |
| 3.1 | Controls | 2 | Chalk & Talk | Green Board |
| 3.2 | Common Controls (Self Study) | 1 | Discussion | Google classroom |
| 3.3 | Container controls – Menus and Toolbars – | 2 | Chalk & Talk | Black Board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 3.4 | Deployment | 1 | Chalk & Talk | Black Board |
| 3.5 | File System | 2 | Discussion | Black Board |
| 3.6 | XML | 1 | Lecture | PPT & White board |
| 3.7 | Databases and ADO.NET | 1 | Lecture | Black Board |
| 3.8 | ADO.NET classes | 2 | Chalk & Talk | Black Board |
| 3.9 | Data Binding | 2 | Chalk & Talk | Black Board |
| **UNIT – 4 ASP.NET** | | | | |
| 4.1 | Features | 2 | Discussion | PPT & White board |
| 4.2 | Life Cycle (Self Study) | 1 | Chalk & Talk | Green Board |
| 4.3 | Server Controls – Control Structure | 2 | Chalk & Talk | Black Board |
| 4.4 | Functions – HTML Events – ASP.NET web control events | 2 | Chalk & Talk | Black Board |
| 4.5 | Event driven Programming – Postback - Reading from databases | 3 | Discussion | Black Board |
| 4.6 | HTML Server control - Web Server controls | 2 | Lecture | Green Board |
| 4.7 | Validation Controls | 2 | Discussion | Black Board |
| **UNIT – 5 DOT NET ASSEMBLIES** | | | | |
| 5.1 | State Management | 2 | Lecture | PPT & White board |
| 5.2 | View State (Self Study) | 1 | Discussion | PPT & White board |
| 5.3 | Control State | 2 | Lecture | Black Board |
| 5.4 | Hidden Field | 2 | Chalk & Talk | Black Board |
| 5.5 | Session | 2 | Chalk & Talk | Black Board |
| 5.6 | Cookies | 2 | Chalk & Talk | Black Board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 5.7 | Session Events | 1 | Chalk & Talk | Black Board |
| 5.8 | Web Services | 1 | Chalk & Talk | Black Board |
| 5.9 | XML – SOAP | 2 | Chalk & Talk | Black Board |
| 5.10 | Building ASP.NET Web Services | 2 | Chalk & Talk | Black Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | MVC Framework | 2 | Discussion | Black Board |
| 6.2 | WPF, AJAX | 3 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1 | T2 | Quiz | Assignment | OBT/PPT | | | | |
| | 10 Mks. | 10 Mks. | 5 Mks. | 5 Mks | 5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i) | Section A (ii) | Section B | Section C | Section D | Section E | Total | |
|---|---|---|---|---|---|---|---|---|

| | 5 Mks. | 5 Mks | 8 Mks. | 12 Mks | 20 Mks. | 10 Mks. | 60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| | | | | | | | | |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | | **Nos** | | |
|---|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | | 1 | - | 10 Mks |

| | | | | | |
|---|---|---|---|---|---|
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

***The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Explain the .NET framework | K1, K2 | PSO1 |
| CO 2 | Apply C# concepts in developing software solutions based on user requirements. | K2 & K3 | PSO1 &PSO2 |
| CO 3 | Design basic GUI applications using .NET. | K2 & K3 | PSO3& PSO5 |
| CO 4 | Demonstrate advanced features of ASP.NET programming. | K2 & K3 | PSO2 &PSO3 |
| CO 5 | Develop windows application and web applications in .NET framework analyzing user requirements. | K3& K4 | PSO5, PSO7 & PSO8 |

## Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 3 | 3 | 1 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 1 | 3 | 2 | 3 | 1 | 2 | 2 |
| CO4 | 2 | 3 | 3 | 1 | 2 | 1 | 2 | 2 |
| CO5 | 1 | 1 | 1 | 1 | 3 | 1 | 3 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 3 | 1 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Entrepreneurship 100%

## III B.Sc. Information Technology

## SEMESTER – V

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I5CC10 | LAB V: .NET PROGRAMMING | Practical | 6 | 3 |

**COURSE DESCRIPTION**

This course gives hands on experience in C# Programming with dot net.

**COURSE OBJECTIVES**

To facilitate the students to understand the dot net framework environment and programming concepts in dot net framework.

**PROGRAM LIST**

1. Program using control statements
2. Program using array
3. Console Application
4. Creating Simple window application
5. Window application with ADO.NET
6. Using ADO.NET to insert, modify, update and delete.
7. Window application using Data Grid for displaying records.
8. Creating Simple web application
9. Creating Web application with ADO.NET
10. Creating Web application with Data Grid
11. Creating Web application with data binding concepts

12. Program implementing validation control
13. XML reading
14. XML writing

## COURSE CONTENTS & LECTURE SCHEDULE

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 1 | Program using control statements | 6 | Demonstration | Desktop PC |
| 2 | Program using array | 6 | Demonstration | Desktop PC |
| 3 | Console Application | 6 | Demonstration | Desktop PC |
| 4 | Creating Simple window application | 6 | Demonstration | Desktop PC |
| 5 | Window application with ADO.NET | 6 | Demonstration | Desktop PC |
| 6 | Using ADO.NET to insert, modify, update and delete. | 6 | Demonstration | Desktop PC |
| 7 | Window application using Data Grid for displaying records. | 6 | Demonstration | Desktop PC |
| 8 | Creating Simple web application | 6 | Demonstration | Desktop PC |
| 9 | Creating Web application with ADO.NET | 7 | Demonstration | Desktop PC |
| 10 | Creating Web application with Data Grid | 7 | Demonstration | Desktop PC |
| 11 | Creating Web application with data binding concepts | 7 | Demonstration | Desktop PC |
| 12 | Program implementing validation control | 7 | Demonstration | Desktop PC |
| 13 | XML reading | 7 | Demonstration | Desktop PC |
| 14 | XML writing | 7 | Demonstration | Desktop PC |

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand various application types. | K2& K3 | PSO1& PSO2 |
| CO 2 | Create dynamic window application. | K2 & K3 | PSO2& PSO3 |
| CO 3 | Use asp.net controls in web application. | K2 & K3 | PSO5 & PSO6 |
| CO 4 | Build interactive Webpages. | K2 & K3 | PSO5, PSO6 &PSO8 |
| CO 5 | Use XML in web application. | K3 & K3 | PSO6& PSO8 |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **CIA** | **ESE** | **Total** |
| **20** | **15** | **5** | **40** | **60** | **100** |

**C1 –** Average of Two Model Test Marks

**C2 -** Average of Program Completion and Record Work

**C3 -** Non-Scholastic

## Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 1 | 2 | 2 | 3 | 3 | 2 | 2 |
| CO4 | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 3 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 3 | 1 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## III B.Sc. Information Technology

## SEMESTER – V

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I5CC11 | SOFTWARE ENGINEERING | Lecture | 5 | 3 |

**COURSE DESCRIPTION**

This course introduces the basic steps involved in Software Development Life Cycle (SDLC).

**COURSE OBJECTIVES**

To facilitate the students to analyze risk in software design and quality and to plan, design, develop and validate the software project.

**UNITS**

**UNIT –I SOFTWARE ENGINEERING AND PLANNING (14HRS.)**

Size factors – Quality and Productivity Factors – Managerial Issues. Planning a Software Project - Problem definition – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – **Other Planning Activities (Self Study).**

**UNIT –II SOFTWARE COST ESTIMATION (14 HRS.)**

Software Cost Estimation - **Software Cost Factors(Self Study)** – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

**UNIT –III SOFTWARE REQUIREMENTS (14 HRS.)**

The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

**UNIT –IV SOFTWARE DESIGN AND IMPLEMENTATION (14 HRS.)**

Software Design - Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections - Design Guidelines - Structured Coding Techniques - Single Entry, Single Exit constructs – **Coding Style – Documentation Guidelines (Self Study).**

**UNIT –V VERIFICATION, VALIDATION AND MAINTENANCE (14 HRS.)**

Verification and Validation Techniques - Quality Assurance – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification - Software Maintenance - Enhancing Maintainability During Development – Managerial Aspects of Software Maintenance – Configuration Management – **Source-Code Metrics – Other Maintenance Tools and Techniques (Self Study).**

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Agile Model – Scrum - Extreme Programming

**TEXT BOOK:**

1. Fairley, Richard. Software engineering concepts. McGraw-Hill, Inc., 1985.Chapters 1, 2, 3, 4, 5, 6, 8.1 - 8.7, 9.1 - 9.5

**REFERENCES:**

1. Pressman, Roger S. Software engineering: a practitioner's approach. Palgrave macmillan, 2005.
2. Humphrey, Watts S. A discipline for software engineering. Addison-Wesley Longman Publishing Co., Inc., 1995.

**Digital Open Educational Resources (DOER):**

1. Software Engineering Tutorial - Tutorialspoint
https://www.tutorialspoint.com/software_engineering/index.htm
2. Software Engineering Tutorial - Tutorialride.com
https://www.tutorialride.com/software-engineering/software-engineering-tutorial.htm

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1SOFTWARE ENGINEERING AND PLANNING** | | | | |
| 1.1 | Size factors | 2 | Discussion | Black Board |
| 1.2 | Quality and Productivity Factors | 2 | Chalk & Talk | Black Board |
| 1.3 | Managerial Issues | 2 | Lecture | LCD |
| 1.4 | Planning a Software Project | 2 | Lecture | LCD |
| 1.5 | Problem definition | 2 | Chalk & Talk | Black Board |
| 1.6 | Developing a Solution Strategy | 1 | Chalk & Talk | Black Board |
| 1.7 | Planning the Development Process | 1 | Chalk & Talk | Black Board |
| 1.8 | Planning an Organizational Structure | 1 | Chalk & Talk | Black Board |
| 1.9 | Other Planning Activities (Self Study) | 1 | Discussion | Google classroom |
| **UNIT -2SOFTWARE COST ESTIMATION** | | | | |
| 2.1 | Software Cost Estimation | 2 | Lecture | PPT & White board |
| 2.2 | Software Cost Factors (Self Study) | 2 | Discussion | Google classroom |
| 2.3 | Software Cost Estimation Techniques | 3 | Chalk & Talk | Black Board |
| 2.4 | Software Cost Estimation Techniques | 3 | Discussion | Google classroom |
| 2.5 | Staffing-Level Estimation | 2 | Lecture | Google classroom |
| 2.6 | Estimating Software Maintenance Costs | 2 | Chalk & Talk | Black Board |
| **UNIT – 3 SOFTWARE REQUIREMENTS** | | | | |
| 3.1 | The Software Requirements Specification | 2 | Discussion | PPT & White board |
| 3.2 | Formal Specification Techniques | 2 | Chalk &Talk | Green Board |
| 3.3 | Relational Notation | 2 | Discussio | Black |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | | | n | Board |
| 3.4 | State oriented notation | 2 | Chalk & Talk | Black Board |
| 3.5 | Languages and Processors for Requirements Specification | 2 | Chalk & Talk | Black Board |
| 3.6 | PSL/PSA, RSL/REVS, GIST | 2 | Lecture | PPT & White board |
| 3.7 | SADT, SSA | 2 | Chalk & Talk | Black Board |
| **UNIT – 4 SOFTWARE DESIGN AND IMPLEMENTATION** | | | | |
| 4.1 | Software Design, Fundamental Design Concepts, Modules and Modularization Criteria | 2 | Discussio n | PPT & White board |
| 4.2 | Design Notations, Design Techniques | 2 | Chalk & Talk | Green Board |
| 4.3 | Detailed Design Considerations | 2 | Chalk & Talk | Black Board |
| 4.4 | Real-Time and Distributed System Design | 2 | Chalk & Talk | Black Board |
| 4.5 | Test Plans, Milestones, Walkthroughs, and Inspections | 2 | Chalk &Talk | Black Board |
| 4.6 | Design Guidelines, Structured Coding Techniques, Coding Style | 2 | Discussio n | Black Board |
| 4.7 | Documentation Guidelines (Self Study) | 2 | Chalk & Talk | Black Board |
| **UNIT – 5 VERIFICATION, VALIDATION AND MAINTENANCE** | | | | |
| 5.1 | Verification and Validation Techniques | 2 | Lecture | PPT & White board |
| 5.2 | Quality Assurance, Static Analysis, Symbolic Execution | 2 | Discussio n | PPT & White board |
| 5.3 | Unit Testing and Debugging | 2 | Lecture | Black Board |
| 5.4 | System Testing, Formal Verification | 2 | Chalk & Talk | Black Board |
| 5.5 | Software Maintenance, | 2 | Chalk & | Black |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | Managerial Aspects of Software Maintenance | | Talk | Board |
| 5.6 | Configuration Management, Source-Code Metrics | 2 | Chalk & Talk | Black Board |
| 5.7 | Other Maintenance Tools and Techniques (Self Study) | 2 | Chalk & Talk | Black Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Agile Model | 2 | Discussion | Black Board |
| 6.2 | Scrum, Extreme Programming | 3 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i) | Section A (ii) | Section B | Section C | Section D | Section E | Total | |
|---|---|---|---|---|---|---|---|---|

| | 5 Mks. | 5 Mks | 8 Mks. | 12 Mks | 20 Mks. | 10 Mks. | 60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |

| | | | | | |
|---|---|---|---|---|---|
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

***The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand how to plan a software project. | K1& K2 | PSO1& PSO2 |
| CO 2 | Analyze the cost estimate and problem complexity using various estimation techniques. | K2, K3 & K4 | PSO3 |
| CO 3 | Prepare the SRS, Design document, Project plan of a given software system. | K2, K3 & K4 | PSO2& PSO3 |
| CO 4 | Apply Software design and implementation ideas in S/W project development. | K2, K3 & K4 | PSO2& PSO3 |
| CO 5 | Generate test cases using White Box testing and Black Box testing. | K2, K3 & K4 | PSO7& PSO8 |

## Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **CO2** | **2** | **1** | **3** | **2** | **2** | **2** | **2** | **1** |
| **CO3** | **1** | **3** | **3** | **2** | **1** | **1** | **2** | **2** |
| **CO4** | **2** | **3** | **3** | **1** | **2** | **2** | **2** | **2** |
| **CO5** | **1** | **1** | **1** | **1** | **1** | **2** | **3** | **3** |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 2 | 1 | 3 | 1 |
| CO2 | 2 | 1 | 1 | 3 |
| CO3 | 1 | 2 | 3 | 1 |
| CO4 | 1 | 3 | 1 | 1 |
| CO5 | 1 | 1 | 3 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated **-1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## III B.Sc. Information Technology

## SEMESTER – V

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I5CC12 | DATA COMMUNICATION & NETWORKING | Lecture | 5 | 5 |

**COURSE DESCRIPTION**

This course is to provide information about various data communication techniques like switching and networking concepts which includes layers and their corresponding protocols.

**COURSE OBJECTIVES**

To impart knowledge on data communication technologies, protocol and their applications.

**UNITS**

**UNIT –I INTRODUCTION (14 HRS.)**

Data communications-components-data representation-data flow. Networks-distributed Processing-Network criteria-Physical structures-Network Models-Categories of Networks-Interconnection of Networks; Internetwork.osi model: Layered Architecture-Peer-to-peer Processes-Encapsulation. Layers in the osi model: Physical layer-Data Link Layer-Network Layer-transport layer-Session Layer-Presentation layer-Application Layer-Summary of layers.TCP/IP Protocol Suite: Physical and Data link layer-Network layer-transport Layer-Application Layers. **Addressing: physical Addresses-Logical Addresses-Port Addresses-Specific Addresses (Self Study).**

**UNIT –II SWITCHING (14 HRS.)**

Transmission Media-Guided Media-Twisted pair cable-Coaxial Cable-Fiber-optic cable unguided media: wireless-Radio waves-microwaves-Infrared.

Circuit Switched Networks-Three Phases-Efficiency-Delay-Circuit-Switched Technology in Telephone Networks-Datagram Networks-Routing Table-Efficiency- Delay-Datagram Networks in the Internet-Virtual-Circuit Networks-Addressing-Three Phases-Efficiency-Delay in Virtual-Circuit Networks- **Circuit-Switched Technology in WANs (Self Study).**

DATALINK CONTROL: Framing-Fixed Size Framing-Variable-Size framing. Flow and error control- Protocols: Point-to-point protocol-framing-Transition Phases-Multiplexing-Multilink PPP.

**UNIT –III NETWORK LAYER: INTERNET PROTOCOL (14 HRS.)**

INTERNETWORKING-need for Network Layer-internet As a Datagram Network-Internet as a Connectionless Network.IPv4-Dtagram-IPv6-Advantages-Packet format-Extension Headers. Transition from IPv4 To IPv6-Dual Stack-Tunneling-Header Translation. NETWORK LAYER:DELIVERY,FORWARDING AND ROUTING-Delivery-direct versus Indirect delivery-Forwarding- Forwarding Techniques- Forwarding Process-Routing Table. Unicast Routing Protocols-Optimization-Intra-and Inter domain Routing-**Distance Vector routing (Self Study).**

**UNIT –IV TRANSPORT LAYER (14 HRS.)**

PROCESS-TO-PROCESS DELIVERY-client/Server paradigm-Multiplexing and Demultiplexing-Connectionless versus Connection-oriented Service-Reliable versus unreliable-Three Protocols. User Datagram Protocol-Well-Known ports of UDP-User datagram-checksum-UDP operation-Use of UDP.TCP-TCP Services-TCP features-Segment-A TCP connection-.SCTP-SCTP Services-SCTP Features-**Packet format (Self Study).**

**UNIT –V APPLICATION LAYER (14 HRS.)**

Name space-Flat Name Space-Hierarchical space-domain Name space-Label-domain Name-Domain-distribution of Name space-Hierarchy of name Servers-Zone-Root Server-Primary and secondary servers-DNS in the Internet-generic domains-Country Domains-Inverse domain-DNS Messages-Header. REMOTE

LOGGING,ELECTRONIC MAIL,AND FILE TRANSFER-Remote Logging-Telnet-Electronic Mail-Architecture-User Agent-Message Transfer Agent-PoP and IMAP-Web-Based Mail-**File Transfer Protocol-Anonymous FTP (Self Study).**

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Routing Protocols for Ad Hoc Mobile Wireless Networks, Broadband Communications Networks

**TEXT BOOK:**

1. Forouzan, A. Behrouz. Data communications & networking. Tata McGraw-Hill Education, 2007. Chapters: 1, 2, 3, 7, 8, 11, 19, 20,22, 23, 25, 26.

**REFERENCES:**

1. Tanenbaum, Andrew S. "Computer Networks Forth Edition." Vrije Universiteit (2003).
2. Madhulika Jain, Satish Jain, Jain, M. "Data Communication and Networking". BPB Publications, Updated Edition

**Digital Open Educational Resources (DOER):**

1. Computer Network Tutorial - Javatpoint

https://www.javatpoint.com/computer-network-tutorial

2. Computer Network Tutorials

https://www.geeksforgeeks.org/computer-network-tutorials/

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1INTRODUCTION** | | | | |
| 1.1 | Data communications, components, data representation | 1 | Discussion | Black Board |
| 1.2 | Networks, distributed Processing | 1 | Chalk & Talk | Black Board |
| 1.3 | Network criteria, Physical structures | 1 | Lecture | LCD |
| 1.4 | Network Models, Categories of Networks | 1 | Lecture | LCD |
| 1.5 | Interconnection of Networks | 1 | Chalk & | Black |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | | | Talk | Board |
| 1.6 | Internetwork, OSI model, Layered Architecture | 2 | Chalk & Talk | Black Board |
| 1.7 | Peer-to-peer Processes, Encapsulation | 1 | Discussion | Google classroom |
| 1.8 | Layers in the OSI model | 2 | Chalk & Talk | Black Board |
| 1.9 | TCP/IP Protocol Suite | 2 | Chalk & Talk | Black Board |
| 1.10 | Addressing: physical Addresses, Logical Addresses, Port Addresses | 1 | Chalk & Talk | Black Board |
| 1.11 | Specific Addresses (Self Study) | 1 | Discussion | Google classroom |
| **UNIT -2SWITCHING** | | | | |
| 2.1 | Transmission Media | 1 | Lecture | PPT & White board |
| 2.2 | Circuit Switched Networks | 1 | Chalk & Talk | Green Board |
| 2.3 | Datagram Networks in the Internet | 2 | Chalk & Talk | Black Board |
| 2.4 | Circuit-Switched Technology in WANs (Self Study). | 2 | Discussion | Google classroom |
| 2.5 | DATALINK CONTROL: Framing-Fixed Size Framing-Variable | 2 | Chalk & Talk | Black Board |
| 2.6 | Size framing, Flow and error control | 2 | Chalk & Talk | Black Board |
| 2.7 | Protocols: Point-to-point protocol | 2 | Lecture | Google classroom |
| 2.8 | Transition Phases | 1 | Chalk & Talk | Black Board |
| 2.9 | Multiplexing, Multilink PPP | 1 | Chalk & Talk | Black Board |
| **UNIT – 3 NETWORK LAYER: INTERNET PROTOCOL** | | | | |
| 3.1 | INTERNETWORKING, Internet As a Datagram Network | 1 | Discussion | PPT &White board |
| 3.2 | Internet as a Connectionless | 2 | Chalk & | Green |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | Network | | Talk | Board |
| 3.3 | IPv4-Dtagram-IPv6-Advantages | 1 | Chalk & Talk | Black Board |
| 3.4 | Packet format, Extension Headers | 2 | Chalk & Talk | Black Board |
| 3.5 | Transition from IPv4 To IPv6-Dual Stack | 2 | Discussion | Black Board |
| 3.6 | Tunneling, Header Translation | 1 | Lecture | PPT & White board |
| 3.7 | NETWORK LAYER:DELIVERY,FORWARDING AND ROUTING | 1 | Lecture | Black Board |
| 3.8 | Delivery, direct versus Indirect delivery | 1 | Chalk & Talk | Black Board |
| 3.9 | Forwarding, Forwarding Techniques, Forwarding Process | 2 | Chalk & Talk | Black Board |
| 3.10 | Routing Table, Unicast Routing Protocols | 2 | Chalk & Talk | Black Board |
| 3.11 | Optimization, Intra-and Inter domain | 1 | Chalk & Talk | Black Board |
| 3.12 | Routing-Distance Vector routing (Self Study) | 1 | Discussion | Google classroom |
| **UNIT – 4 TRANSPORT LAYER** | | | | |
| 4.1 | PROCESS-TO-PROCESS DELIVERY | 2 | Discussion | PPT & White board |
| 4.2 | Multiplexing and Demultiplexing | 2 | Chalk & Talk | Green Board |
| 4.3 | Connectionless versus Connection, Reliable versus unreliable | 2 | Chalk & Talk | Black Board |
| 4.4 | Three Protocols, User Datagram Protocol | 2 | Chalk & Talk | Black Board |
| 4.5 | UDP operation, Use of UDP | 2 | Discussion | Black Board |
| 4.6 | TCP-TCP Services, TCP features, Segment | 1 | Lecture | Green Board |
| 4.7 | TCP connection | 1 | Chalk & | Black |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | | | Talk | Board |
| 4.8 | SCTP-SCTP Services, SCTP Features | 1 | Chalk & Talk | Black Board |
| 4.9 | Packet format (Self Study) | 1 | Discussion | Black Board |
| **UNIT – 5 APPLICATION LAYER** | | | | |
| 5.1 | Name space, Flat Name Space, Hierarchical space, domain Name space | 2 | Lecture | PPT & White board |
| 5.2 | Label, domain Name,Domain, Distribution of Name space | 1 | Discussion | PPT & White board |
| 5.3 | Hierarchy of name Servers | 2 | Lecture | Black Board |
| 5.4 | Zone, Root Server, Primary and secondary servers | 2 | Chalk & Talk | Black Board |
| 5.5 | DNS in the Internet, Country Domains, Inverse domain | 2 | Chalk & Talk | Black Board |
| 5.6 | DNS Messages, Header | 2 | Chalk & Talk | Black Board |
| 5.7 | REMOTE LOGGING,ELECTRONIC MAIL,AND FILE TRANSFER | 1 | Chalk & Talk | Black Board |
| 5.8 | Remote Logging, Telnet-Electronic Mail | 1 | Chalk & Talk | Black Board |
| 5.9 | IMAP-Web-Based Mail | 2 | Chalk & Talk | Black Board |
| 5.10 | File Transfer Protocol-Anonymous FTP (Self Study) | 2 | Discussion | Black Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Routing Protocols for Ad Hoc Mobile Wireless Networks | 2 | Discussion | Black Board |
| 6.2 | Broadband Communications Networks | 3 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|

| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
|---|---|---|---|---|---|---|---|---|---|
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |

| | |
|---|---|
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING | PSOs ADDRESSE |
|---|---|---|---|

| | | TO REVISED BLOOM'S TAXONOMY) | D |
|---|---|---|---|
| CO 1 | Describe the components of a data communications system. | K1& K2 | PSO1& PSO2 |
| CO 2 | Identify key considerations in selecting various switching techniques and various transmission media in networks. | K1& K2 | PSO1& PSO2 |
| CO 3 | Describe the various types of Protocols in Network layer and their features. | K1& K2 | PSO3 &PSO4 |
| CO 4 | Illustrates the functionality of transport layer and their corresponding protocols. | K1, K2& K3 | PSO3 & PSO6 |
| CO 5 | Analyze different usage of application layer protocols. | K3& K4 | PSO7 |

## Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 2 | 3 | 3 | 1 | 1 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 1 | 2 | 3 | 2 | 2 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 2 |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 2 | 1 | 3 | 1 |
| CO2 | 2 | 1 | 1 | 3 |

| | | | | |
|---|---|---|---|---|
| **CO3** | **1** | **2** | **3** | **1** |
| **CO4** | **1** | **3** | **1** | **1** |
| **CO5** | **1** | **1** | **3** | **1** |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. MAGESHWARI**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## III B.Sc. Information Technology

## SEMESTER – V

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I5ME1 | DATA MINING CONCEPTS | Lecture | 5 | 5 |

**COURSE DESCRIPTION**

This course introduces the basic concepts, principles, methods, implementation techniques, and applications of data mining.

**COURSE OBJECTIVES**

To facilitate the student to understand the concepts of data mining and to understand various techniques involved in data mining.

**UNITS**

**UNIT –I DATA MINING AND APPLICATIONS (14 HRS.)**

Data mining concepts – Database & Data Warehouse - Data Mining functionalities - Technologies used - Data Mining Applications – **Major Issues in Data Mining(Self Study).**

**UNIT –II DATA PREPROCESSING (14 HRS.)**

Preprocessing the data – Data cleaning – Data Integration – Data Reduction – Data Transformation and **Data Discretization (Self Study).**

**UNIT –III DATA MINING TECHNIQUES (14 HRS.)**

Mining Frequent Patterns - Association Rule Mining – The Apriori Algorithm – FP Growth - Correlation Analysis.

**UNIT –IV CLASSIFICATION (14 HRS.)**

Classification – Decision Tree induction - Constructing decision tree – ID3 algorithm – Pruning – Bayesian Classification – Rule Based Classification.

**UNIT –V CLUSTERING AND ADVANCED DATA MINING CONCEPTS**

**(14 HRS.)**

Cluster Analysis – Clustering Methods – Partitioning Methods - Hierarchical Methods – Density Based Methods – Outlier Analysis – **Web Mining , Text Mining, Mining Multimedia Data and Mining data Streams (Self Study).**

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Artificial Neural Networks - Genetic algorithm

**TEXT BOOK:**

1. Han, Jiawei, Jian Pei, and Micheline Kamber.Data mining: concepts and techniques.Elsevier, 2011.Chapters: 1, 13.3, 3, 6, 8.1- 8.4, 10.1 – 10.4.12.1, 13.1.3

**REFERENCES:**

1. Pujari, Arun K. Data mining techniques. Universities press, 2001.
2. Adriaans, Pieter, and Dolf Zantinge. "Data Mining. 1996." Addision-Wesley, Harlow.

**Digital Open Educational Resources (DOER):**

1. Data Mining Tutorial - Tutorialspoint
https://www.tutorialspoint.com/data_mining/index.htm
2. Data Mining Tutorial
https://www.tutorialride.com/data-mining/data-mining-tutorial.htm

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1DATA MINING AND APPLICATIONS** | | | | |
| 1.1 | Data mining concepts | 2 | Discussion | Black Board |
| 1.2 | Database | 2 | Chalk & Talk | Black Board |
| 1.3 | Data Warehouse | 2 | Lecture | LCD |
| 1.4 | Data Mining functionalities | 2 | Lecture | LCD |
| 1.5 | Technologies used | 2 | Chalk & Talk | Black Board |
| 1.6 | Data Mining Applications | 2 | Chalk & Talk | Black Board |
| 1.7 | Major Issues in Data Mining (Self Study) | 2 | Discussion | Google classroom |
| **UNIT -2DATA PREPROCESSING** | | | | |
| 2.1 | Preprocessing the data | 2 | Lecture | PPT & White board |
| 2.2 | Why we need preprocessing | 2 | Chalk & Talk | Green Board |
| 2.3 | Data cleaning | 2 | Chalk & Talk | Black Board |
| 2.4 | Data Integration | 2 | Discussion | Google classroom |
| 2.5 | Data Reduction | 2 | Chalk & Talk | Black Board |
| 2.6 | Data Transformation | 2 | Chalk & Talk | Black Board |
| 2.7 | Data Discretization (Self Study) | 2 | Lecture | Google classroom |
| **UNIT – 3 DATA MINING TECHNIQUES** | | | | |
| 3.1 | Mining Frequent Patterns | 2 | Discussion | PPT & White board |
| 3.2 | Association Rule Mining | 2 | Chalk & Talk | Green Board |
| 3.3 | ARM Algorithm | 2 | Chalk & Talk | Black Board |
| 3.4 | The Apriori Introduction | 2 | Chalk & Talk | Black Board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 3.5 | Apriori Algorithm | 2 | Discussion | Black Board |
| 3.6 | FP Growth Algorithm | 2 | Lecture | PPT & White board |
| 3.7 | Correlation Analysis | 2 | Lecture | Black Board |
| **UNIT – 4 CLASSIFICATION** | | | | |
| 4.1 | Classification | 2 | Discussion | PPT & White board |
| 4.2 | Decision Tree induction | 2 | Chalk & Talk | Green Board |
| 4.3 | Constructing decision tree | 2 | Chalk & Talk | Black Board |
| 4.4 | ID3 algorithm | 2 | Chalk & Talk | Black Board |
| 4.5 | Pruning | 2 | Discussion | Black Board |
| 4.6 | Bayesian Classification | 2 | Lecture | Green Board |
| 4.7 | Rule Based Classification | 2 | Chalk & Talk | Black Board |
| **UNIT – 5 CLUSTERING AND ADVANCED DATA MINING CONCEPTS** | | | | |
| 5.1 | Cluster Analysis | 2 | Lecture | PPT & White board |
| 5.2 | Clustering Methods | 2 | Discussion | PPT & White board |
| 5.3 | Partitioning Methods | 2 | Lecture | Black Board |
| 5.4 | Hierarchical Methods | 2 | Chalk & Talk | Black Board |
| 5.5 | Density Based Methods | 2 | Chalk & Talk | Black Board |
| 5.6 | Outlier Analysis | 2 | Chalk & Talk | Black Board |
| 5.7 | Web Mining , Text Mining, Mining Multimedia Data and Mining data Streams (Self Study) | 2 | Chalk & Talk | Black Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Artificial Neural Networks | 2 | Discussion | Black Board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 6.2 | Genetic algorithm | 3 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i) 5 Mks. | Section A (ii) 5 Mks | Section B 8 Mks. | Section C 12 Mks | Section D 20 Mks. | Section E 10 Mks. | Total 60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| C1 | C2 | C3 | C4 | C5 | C6 | CIA | ESE | Total |
| 10 | 10 | 5 | 5 | 5 | 5 | 40 | 60 | 100 |

**UG CIA Components**

| | | | | Nos | | |
|---|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | | 1 | - | 10 Mks |
| **C3** | - | Assignment | | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | | 2 * | - | 5 Mks |
| **C5** | - | Quiz | | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | | - | 5 Mks |

***The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Identify data mining tools and techniques in building intelligent machines. | K1& K2 | PSO1& PSO2 |
| CO 2 | Understand different preprocessing techniques. | K1& K2 | PSO3 |
| CO 3 | Analyze various data mining algorithms while applying in real time applications. | K4 | PSO6 |
| CO 4 | Compare various supervised and unsupervised learning techniques in data mining. | K2 & K4 | PSO7 & PSO8 |
| CO 5 | Illustrate the mining techniques like association, classification and clustering. | K2 & K4 | PSO7 & PSO8 |

## Mapping of COs with PSOs

**HOD'S**

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 1 | 2 | 2 | 2 | 3 | 2 | 2 |
| CO4 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 3 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 1 | 1 | 1 | 1 |
| CO2 | 3 | 1 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 3 | 1 | 1 |
| CO5 | 1 | 1 | 3 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

**Forwarded By**

**V. Mageshwari**

Skill Development 100%

## III B.Sc. Information Technology

## SEMESTER – V

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I5ME2 | SOFT COMPUTING | Lecture | 5 | 5 |

**COURSE DESCRIPTION**

This course introduces the basic concepts, principles, methods, implementation techniques, and applications of Soft computing.

**COURSE OBJECTIVES**

To facilitate the student to understand the concepts of Neural Networks and to understand various techniques involved in Soft computing.

**UNITS**

**UNIT –I INTRODUCTION (14 HRS.)**

Neural Networks-Application Scope of Neural Networks-fuzzy logic-genetic algorithm-Hybrid systems- Artificial Neural Network**:** Fundamental Concepts- Artificial neural network-Biological neural network-Brain vs. computer- **Evolution of neural network(self study).**

**UNIT –II ANN (14 HRS.)**

Basic models of ANN-Important Terminologies of ANN- Supervised learning Networks-Perceptron Networks- Theory-perceptron learning rule- architecture- flowchart of training process- perceptron training algorithm for single output classes- perception testing algorithm

**UNIT –III FUZZY LOGIC, CLASSIC SETS AND FUZZY SETS (14 HRS.)**

Introduction to fuzzy logic- Classical Sets- Operations on classical Sets – Union-Intersection – Complements-Difference-Fuzzy sets- Fuzzy set operation-Union-Intersection –**Complement – More operation on Fuzzy sets (self study).**

**UNIT –IV GENETIC ALGORITHM (14 HRS.)**

Need of genetic algorithm-Biological background-the cell-chromosomes-genetics-reproduction-natural selection-**Traditional optimization and search techniques (self study).**

**UNIT –V HYBRID SYSTEMS (14 HRS.)**

**Hybrid Systems:** Introduction: Neuro-fuzzy Hybrid Systems- Comparison o fuzzy systems with neural networks-characteristics of neuro fuzzy hybrid systems-Adaptive Neuro Fuzzy Inference system-Properties of genetic Neuro hybrid systems-Genetic algorithm Based back propagation network.

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Evolutionary computation, and probabilistic theory

**TEXT BOOK:**

1. “Principles of Soft Computing” Second Edition- S.N.Sivanandam , S.N. Deepa-Wlley India pvt.Ltd.,

**REFERENCES:**

1. Genetic Algorithms: Search and Optimization, E. Goldberg.
2. Neuro-Fuzzy Systems, Chin Teng Lin, C. S. George Lee, PHI.
3. Build_Neural_Network_With_MS_Excel_sample by Joe choong
4. Neural Networks, Fuzzy Logic and Genetic Algorithms: Synthesis & Applications,S.Rajasekaran, G. A. Vijayalakshami, PHI.

**Digital Open Educational Resources (DOER):**

1. http://digitalthinkerhelp.com/what-is-soft-computing-and-its-applications-and-techniques
2. https://www.tutorialspoint.com/fuzzy_logic/index.html
3. https://nptel.ac.in/courses/106105173/

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 INTRODUCTION** | | | | |
| 1.1 | Neural Networks-Application Scope of Neural Networks | 2 | Discussion | Black Board |
| 1.2 | fuzzy logic-genetic algorithm | 2 | Chalk & Talk | Black Board |
| 1.3 | Hybrid systems | 2 | Lecture | LCD |
| 1.4 | Artificial Neural Network**:** Fundamental Concepts | 2 | Lecture | LCD |
| 1.5 | Artificial neural network | 2 | Chalk & Talk | Black Board |
| 1.6 | Biological neural network-Brain vs. computer | 2 | Chalk & Talk | Black Board |
| 1.7 | Evolution of neural network(self study). | 2 | Discussion | Google classroom |
| **UNIT -2 ANN** | | | | |
| 2.1 | Basic models of ANN-Important Terminologies of ANN | 2 | Lecture | PPT & White board |
| 2.2 | Supervised learning Networks-Perceptron Networks | 2 | Chalk & Talk | Green Board |
| 2.3 | Theory-perceptron learning rule | 2 | Chalk & Talk | Black Board |
| 2.4 | architecture- flowchart of training process | 2 | Discussion | Google classroom |
| 2.5 | perceptron training algorithm for single output classes | 3 | Chalk & Talk | Black Board |
| 2.6 | perception testing algorithm | 3 | Chalk & Talk | Black Board |
| **UNIT – 3 FUZZY LOGIC** | | | | |
| 3.1 | Introduction to fuzzy logic-Classical Sets | 2 | Discussion | PPT & White board |
| 3.2 | Operations on classical Sets | 2 | Chalk & Talk | Green Board |
| 3.3 | Union- Intersection | 2 | Chalk & Talk | Black Board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 3.4 | Complements-Difference | 2 | Chalk & Talk | Black Board |
| 3.5 | Fuzzy sets- Fuzzy set operation | 2 | Discussion | Black Board |
| 3.6 | Union-Intersection – Complement | 2 | Lecture | PPT & White board |
| 3.7 | More operation on Fuzzy sets (self study). | 2 | Lecture | Black Board |
| **UNIT – 4 GENETIC ALGORITHM** | | | | |
| 4.1 | Need of genetic algorithm | 2 | Discussion | PPT & White board |
| 4.2 | Biological background | 2 | Chalk & Talk | Green Board |
| 4.3 | the cell-chromosomes | 2 | Chalk & Talk | Black Board |
| 4.4 | genetics-reproduction-natural selection | 4 | Chalk & Talk | Black Board |
| 4.5 | Traditional optimization and search techniques (self study). | 4 | Discussion | Black Board |
| **UNIT – 5 HYBRID SYSTEMS** | | | | |
| 5.1 | Introduction: Neuro-fuzzy Hybrid Systems | 2 | Lecture | PPT & White board |
| 5.2 | Comparison o fuzzy systems with neural networks-characteristics of neuro fuzzy hybrid systems- | 2 | Discussion | PPT & White board |
| 5.3 | Adaptive Neuro Fuzzy Inference system | 2 | Lecture | Black Board |
| 5.4 | Properties of genetic Neuro hybrid systems | 4 | Chalk & Talk | Black Board |
| 5.5 | Genetic algorithm Based back propagation network. | 4 | Chalk &Talk | Black Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | evolutionary computation | 2 | Discussion | Black Board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 6.2 | probabilistic theory | 3 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1 | T2 | Quiz | Assignment | OBT/PPT | | | | |
| | 10 Mks. | 10 Mks. | 5 Mks. | 5 Mks | 5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| K1 | 2 | 2 | - | - | - | 4 | - | 4 | 10 % |
| K2 | 2 | 2 | 5 | - | - | 9 | - | 9 | 22.5 % |
| K3 | 3 | 3 | - | - | 5 | 11 | - | 11 | 27.5 % |
| K4 | 3 | 3 | - | 5 | - | 11 | - | 11 | 27.5 % |
| Non Scholastic | - | - | - | - | - | | 5 | 5 | 12.5 % |
| Total | 10 | 10 | 5 | 5 | 5 | 35 | 5 | 40 | 100 % |

**End Semester - UG**

| Levels | Section A (i) 5 Mks. | Section A (ii) 5 Mks | Section B 8 Mks. | Section C 12 Mks | Section D 20 Mks. | Section E 10 Mks. | Total 60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| C1 | C2 | C3 | C4 | C5 | C6 | CIA | ESE | Total |
| 10 | 10 | 5 | 5 | 5 | 5 | 40 | 60 | 100 |

**UG CIA Components**

| | | | Nos | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | To Improve Data Analysis Solutions is to strengthen the dialogue between the statistics and soft computing | K1& K2 | PSO1& PSO2 |
| CO 2 | To understand the fundamental theory and concepts of neural networks, neuro-modeling, several neural network paradigms and its applications. | K1& K2 | PSO3 |
| CO 3 | To understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic control and other machine intelligence applications of fuzzy logic | K4 | PSO6 |
| CO 4 | To understand the basics of an evolutionary computing paradigm known as genetic algorithms and its application to engineering optimization problems. | K2 & K4 | PSO7 & PSO8 |
| CO 5 | To analyze Artificial Neural Networks and its applications. | K2 & K4 | PSO7 & PSO8 |

## Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| CO4 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 3 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 1 | 3 | 3 |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS.T. LEENA PREMA KUMARI**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

## III B.Sc. Information Technology

## SEMESTER – V

Employability 100%

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I5SB3 | SKILL BASED - WEB TECHNOLOGY | Practical | 2 | 2 |

**COURSE DESCRIPTION**

This course gives hands on experience in Web development Technologies.

**COURSE OBJECTIVES**

To develop the skills andproject-based experience needed for entry into web application and development careers.

**PROGRAM LIST**

**HTML Programs**

1. Web page with heading, font, <HR> and marquee tags
2. Web page linking
3. Web page using <a> tag with target attributes.
4. Web page using table tag
5. Web page using forms and list tags
6. Web page with text fields, radio button and combo box.
7. Image map for given image.

**CSS**

1. Styling page with CSS
2. Validating page with CSS
3. Different Borders using CSS
4. Different margin using CSS
5. Font and Text using CSS
6. Positioning

**Java Script**

1. Displaying a popup using Javascript
2. Form validation
3. Email validation

4. Regular expression validation

**XML**

1. Creating CD Catalog using XML
2. Creating Plant Catalog using XML
3. Creating Food Menu using XML
4. Creating food menu styled with an XSLT style sheet
5. XML and DTD
6. XML and CSS
7. DTD and XSD

**REFERENCES:**

Web Technology : A Developers Perspective – second edition - N P Gopalan, J Akilandeswari, Prentice Hall of India Pvt. Ltd., New Delhi, 2008.

**Digital Open Educational Resources (DOER) :**

1. https://www.w3schools.com
2. https://www.tutorialspoint.com/php/index.htm

## COURSE CONTENTS & LECTURE SCHEDULE

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 1 | Web page with heading, font, <HR> and marquee tags | 3 | Demonstration | Desktop PC |
| 2 | Web page linking | 3 | Demonstration | Desktop PC |
| 3 | Web page using <a> tag with target attributes. | 3 | Demonstration | Desktop PC |
| 4 | Web page using table tag | 3 | Demonstration | Desktop PC |
| 5 | Web page using forms and list tags | 3 | Demonstration | Desktop PC |
| 6 | Web page with text fields, radio button and combo box. | 3 | Demonstration | Desktop PC |
| 7 | Image map for given image. | 3 | Demonstration | Desktop PC |
| 8 | Styling page with CSS | 3 | Demonstration | Desktop PC |
| 9 | Validating page with CSS | 3 | Demonstration | Desktop PC |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 10 | Different Borders using CSS | 3 | Demonstration | Desktop PC |
| 11 | Different margin using CSS | 3 | Demonstration | Desktop PC |
| 12 | Font and Text using CSS | 3 | Demonstration | Desktop PC |
| 13 | Positioning | 3 | Demonstration | Desktop PC |
| 14 | Displaying a popup using Javascript | 3 | Demonstration | Desktop PC |
| 15 | Form validation | 3 | Demonstration | Desktop PC |
| 16 | Email validation | 3 | Demonstration | Desktop PC |
| 17 | Regular expression validation | 3 | Demonstration | Desktop PC |
| 18 | Creating CD Catalog using XML | 3 | Demonstration | Desktop PC |
| 19 | Creating Plant Catalog using XML | 3 | Demonstration | Desktop PC |
| 20 | Creating Food Menu using XML | 3 | Demonstration | Desktop PC |
| 21 | Creating food menu styled with an XSLT style sheet | 3 | Demonstration | Desktop PC |
| 22 | XML and DTD | 4 | Demonstration | Desktop PC |
| 23 | XML and CSS | 4 | Demonstration | Desktop PC |
| 24 | DTD and XSD | 4 | Demonstration | Desktop PC |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|

| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
|---|---|---|---|---|---|---|---|---|---|
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Explain Various HTML tags. | K2 & K3 | PSO1& PSO2 |
| CO 2 | Design webpages with advanced HTML controls. | K2 & K3 | PSO3 &PSO5 |
| CO 3 | Design Web pages using CSS. | K2 & K3 | PSO2,PSO3, PSO5 & PSO8 |
| CO 4 | Develop client side Scripting using JavaScript. | K2 & K3 | PSO2,PSO3, PSO5 &PSO8 |
| CO 5 | Develop webpages with XML. | K2 & K3 | PSO2,PSO3, PSO5 & PSO8 |

## Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 2 | 3 | 2 | 3 | 2 | 2 | 1 |
| CO3 | 1 | 3 | 3 | 2 | 3 | 2 | 2 | 3 |
| CO4 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 3 |
| CO5 | 1 | 3 | 3 | 1 | 3 | 2 | 1 | 3 |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 1 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

## III B.Sc. Information Technology

## SEMESTER – V

Employability 100%

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I5SB4 | SKILL BASED - PHP | Practical | 2 | 2 |

**COURSE DESCRIPTION**

This is a Web scripting language PHP able tobuild dynamic Web applications. Semantics and syntax of the PHP language, including discussion on the practical problems that PHP solves.

**COURSE OBJECTIVES**

The objective of this course is to provide the necessary knowledge to design and develop dynamic, database-driven web applications using PHP.

**UNITS**

**Unit 1: Introduction to Web (6 HRS)**

Introduction - WWW architecture- Fundamentals of HTML - Text formatting tags - Marquee & Inserting images, Links - Lists - Creating tables - Frames - Working with form elements.

**Unit II:Cascading Style Sheets& JavaScripts (6 HRS)**

CSS introduction - CSS properties - Controlling Fonts, Text formatting - Text-pseudo classes, Selectors, Links, Backgrounds, Lists - Introduction to Java Script - Functions and events - Popup boxes-alert, prompt, conform box - Built-in objects, writing JavaScript form validation

**Unit III: Introduction to PHP (6 HRS)**

Introduction - Server side scripting - Role of web server software - PHP comments, variables - echo and print - PHP operators, data types - Branching statements - Loops – Arrays

**Unit IV:PHP functions, Cookie, Error Handling (6 HRS)**

PHP functions - PHP form - Passing information between pages, $_GET, $_POST, $_REQUEST. - String functions - session and cookie management - Error handling in PHP

**Unit V: PHP with MYSQL (6 HRS)**

Functions for MySQL connectivity and operation- mysql_connect, mysql_select_db, mysql_query - mysql_fetch_row, mysql_fetch_array, mysql_result, mysql_list_fields, mysql_num_fields, insertion - Updation and deletion of data using PHP - Displaying data from MySQL in webpage

**REFERENCES:**

1. Dave W Mercer, Allan Kent, Steven D Nowicki, David Mercer, Dan Squier, Wankyu Choi - Beginning PHP‖, Wiley Publishing, Inc

2. Ivan Bayross -“HTML, DHTML, JavaScript, Pearl & CGI”, Fourth Revised Edition, BPB Publication

3. “Programming PHP”,RasmusLerdorf and Kevin Tatore, Shroff Publishers & Distributors Pvt.Ltd

4. “Beginning PHP”, Dave W Mercer, Allan Kent, Steven D Nowicki, David Mercer, Dan Squier, Wankyu Choi, Wiley Publishing

**Digital Open Educational Resources (DOER):**

1. https://www.tutorialspoint.com › php
2. https://www.php.net › manual › tutorial

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 INTRODUCTION TO WEB** | | | | |
| 1.1 | Introduction - WWW architecture | 2 | Demonstration | Desktop PC |
| 1.2 | Fundamentals of HTML | 1 | Demonstration | Desktop PC |
| 1.3 | Text formatting tags, Lists Creating tables | 1 | Demonstration | Desktop PC |
| 1.4 | Marquee & Inserting images, Links | 1 | Demonstration | Desktop PC |
| 1.5 | Frames, Working with form elements | 1 | Demonstration | Desktop PC |
| **UNIT -2 CASCADING STYLE SHEETS& JAVASCRIPTS** | | | | |
| 2.1 | CSS introduction - CSS properties - Controlling Fonts | 2 | Demonstration | Desktop PC |
| 2.2 | Text formatting - Text- pseudo classes, Selectors, Links, Backgrounds, Lists | 1 | Demonstration | Desktop PC |
| 2.3 | Introduction to Java Script - Functions and events - Popup boxes-alert, prompt, conform box | 2 | Demonstration | Desktop PC |
| 2.4 | Built-in objects, writing JavaScript form validation | 1 | Demonstration | Desktop PC |
| **UNIT -3INTRODUCTION TO PHP** | | | | |
| 3.1 | Introduction, Server side scripting, Role of web server software | 1 | Demonstration | Desktop PC |
| 3.2 | PHP comments, variables - echo and print | 1 | Demonstration | Desktop PC |
| 3.3 | PHP operators, data types | 1 | Demonstration | Desktop PC |
| 3.4 | Branching statements ,Loops ,Arrays | 1 | Demonstration | Desktop PC |
| **UNIT -4 PHP FUNCTIONS, COOKIE, ERROR HANDLING** | | | | |
| 4.1 | PHP Functions | 2 | Demonstration | Desktop PC |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 4.2 | PHP form, Passing information between pages | 1 | Demonstration | Desktop PC |
| 4.3 | -, $_GET, $_POST,_REQUEST. | 1 | Demonstration | Desktop PC |
| 4.4 | String functions - session and cookie management | 1 | Demonstration | Desktop PC |
| 4.5 | Error handling in PHP | 1 | Demonstration | Desktop PC |
| **UNIT -5 PHP with MYSQL** | | | | |
| 5.1 | Functions for MySQL connectivity and operation, insertion | 1 | Demonstration | Desktop PC |
| 5.2 | Queries on Select, Update | 1 | Demonstration | Desktop PC |
| 5.3 | Queries in fetch, List | 1 | Demonstration | Desktop PC |
| 5.4 | Updation and deletion of data using PHP | 1 | Demonstration | Desktop PC |
| 5.5 | Displaying data from MySQL in webpage | 1 | Demonstration | Desktop PC |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| K1 | 2 | 2 | - | - | - | 4 | - | 4 | 10 % |
| K2 | 2 | 2 | 5 | - | - | 9 | - | 9 | 22.5 % |
| K3 | 3 | 3 | - | - | 5 | 11 | - | 11 | 27.5 % |
| K4 | 3 | 3 | - | 5 | - | 11 | - | 11 | 27.5 % |
| Non Scholastic | - | - | - | - | - | | 5 | 5 | 12.5 % |
| Total | 10 | 10 | 5 | 5 | 5 | 35 | 5 | 40 | 100 % |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| K1 | 5 | 5 | - | 4 | - | - | 14 | 23.33 % |
| K2 | - | - | 8 | 4 | - | - | 12 | 20 % |
| K3 | - | - | - | - | 20 | - | 20 | 33.33 % |
| K4 | - | - | - | 4 | - | 10 | 14 | 23.34 % |
| Total | 5 | 5 | 8 | 12 | 20 | 10 | 60 | 100 % |

| CIA | |
|---|---|
| Scholastic | 35 |
| Non Scholastic | 5 |
| | 40 |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| C1 | C2 | C3 | C4 | C5 | C6 | CIA | ESE | Total |
| 10 | 10 | 5 | 5 | 5 | 5 | 40 | 60 | 100 |

**UG CIA Components**

| | | | Nos | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

***The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Describe fundamentals of web.Introduce the creation of static webpage using HTML. | K2 & K3 | PSO1& PSO2 |
| CO 2 | Describe the importance of CSS in web development | K2 & K3 | PSO2 &PSO3 |
| CO 3 | Describe the function of JavaScript as a dynamic webpage creating tool | K2 & K3 | PSO2, PSO3&PSO7 |
| CO 4 | Distinguish PHP as a server side programming language | K2 & K3 | PSO2, PSO3 &PSO7 |
| CO 5 | Outline the principles behind using MySQL as a backend DBMS with PHP | K3 & K4 | PSO7& PSO8 |

### Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 3 | 3 | 2 | 2 | 2 | 3 | 2 |
| CO4 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 2 |
| CO5 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 1 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

**Staff Name: MRS.T.CHARANYA NAGAMMAL**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

**Skill Development 100%**

## III B.Sc. Information Technology

## SEMESTER – VI

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I6CC13 | PYTHON PROGRAMMING | Lecture | 5 | 5 |

**COURSE DESCRIPTION**

This course is designed to introduce the python programming language. The focus of the course is to provide students with an introduction to programming, utilities, multitasking, GUI and network applications.

**COURSE OBJECTIVES**

To acquire Object Oriented Skills and programming skills in core Python.

**UNITS**

**UNIT –I INTRODUCTION (14 HRS.)**

Problem Solving – Definition of a program – Software Bug- Programming Errors. Algorithms- Definition of Algorithm-Characteristics of Algorithm – **Flowcharts, System Configuration (Self Study)**-Downloading Python-Testing python working properly-Installation of Python on Linux.

**BASICS OF PYTHON PROGRAMMING:** Structure of Python – Keywords – variable – comments- data types- Literals-Constants – Operators – Operator Precedence.

**UNIT –II PYTHON I/P & O/P STATEMENT (14 HRS.)**

Input statement in Python – Output statement in Python – Python String

Formatting Options – Python Math Library.

**PYTHON PROGRAMS ON CONTROL STATEMENT:** Decision Making – if statement – **if- else statement (Self Study)** – if- else if – else Repetition Statement – for loop.

**UNIT –III USER – DEFINED FUNCTION (14 HRS.)**

Syntax of user defined function – flowcharts – local variables and global variables –Return statements – Function Arguments in Python- Default Parameter – call- by -value vs Call – by – reference in Python- Nested function in Python – Closure Function Python – **Anonymous Function in Python (Self Study)**– Function Composition in Python – Recursive Function in Python.**PYTHON PROGRAM ON STRING:**Strings in Python -Reading Strings from Keyboard – Accessing Strings – Modifying String in Python – String Concatenation – String updating – Iterating through a string – String Membership Operations – Built – in String Function – Escape Sequence in Python.

**UNIT –IV PYTHON LIST (14 HRS.)**

Read a List Type from a keyboard – Accessing Elements of a List – Modifying Elements of a List – Basic List Operation - Built in function – List function – List Duplication and comparison of Two Lists.

**PYTHON PROGRAMS ON TUPLES:**How to read a List Type from a keyboard- Accessing Elements of a Tuple – Modifying Elements of a Tuple- Deleting Elements of a Tuple – **Basic Tuple Operation – Tuple Built-in Functions (Self Study).**

**UNIT –V PYTHON DICTIONARY (14 HRS.)**

Creating a Dictionary and Printing a Dictionary – Accessing Dictionary Elements – Modifying a Dictionary – Delete Operations on Dictionary- Dictionary Key properties- Comparing Two Dictionaries- Python Dictionary Built in functions- How to generate Keys, Values and Items for Python Dictionary- Copying and Updating a dictionary.

**PYTHON FILES:**Writing into Files- Reading from Files– **Reading Lines from Files(Self Study)** – Stripping Characters from Files – Filename and Paths –

Format operator- Command Line Arguments- Exception in Python -Python Modules _ Python Packages.

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Advanced Concepts of Python (Machine Learning in Python, Data Processing using Python).

**TEXT BOOK:**

1. Kulkarani, PROBLEM SOLVING AND PYTHON PROGRAMMING, Published by Yes Dee Publishing Pvt Ltd., Edition 2017. Chapters: 1.1-1.5,1.10,2.1-2.4,3.1-3.5,4.1- 4.10, 5.1-5.4, 6.1, 6.2, 6.4, 6.8, 6.10, 6.18, 7.1-7.12, 7.15, 8.1-8.11, 9.1-9.9, 10.1-10.7, 11.1-11.10, 12.1-12.9, 12.17, 12.8

**REFERENCES:**

1. Zelle, John M. Python programming: an introduction to computer science. Franklin, Beedle & Associates, Inc., 2004.
2. Jeeva Jose, Sojan Lal, P, Introduction to Computing & Problem Solving with Python.

**Digital Open Educational Resources (DOER):**

1. Python Tutorial

https://www.tutorialspoint.com/python/

2. https://www.w3schools.com/python/python_reference.asp

**COURSE CONTENTS & LECTURE SCHEDULE:**

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT - IINTRODUCTION TO PYTHON PROGRAMMING** | | | | |
| 1.1 | Problem Solving, Definition of a program, Software Bug, Programming Errors. Algorithms | 3 | Chalk & Talk | Black Board |
| 1.2 | Definition of Algorithm, Characteristics of Algorithm | 3 | Chalk & Talk | Black Board |

| | | | | |
|---|---|---|---|---|
| 1.3 | Flowcharts, System Configuration (Self Study) | 2 | Discussion | Black Board |
| 1.4 | Downloading Python, Testing python working properly, Installation of Python on Linux | 3 | Lecture | Smart Board |
| 1.5 | Structure of Python, Keywords, variable, comments, data types, Literals, Constants, Operators, Operator Precedence. | 3 | Lecture | Black Board |
| **UNIT – II: PYTHON I/P & O/P STATEMENT** | | | | |
| 2.1 | Input statement in Python, Output statement in Python | 3 | Chalk & Talk | Black Board |
| 2.2 | Python String Formatting Options, Python Math Library. | 4 | Chalk & Talk | Black Board |
| 2.3 | Decision Making, if statement | 3 | Lecture | PPT& White board |
| 2.4 | if- else statement (Self Study) | 1 | Lecture | Smart Board |
| 2.5 | if- else if, else Repetition Statement, for loop | 3 | Lecture | Black Board |
| **UNIT – IIIUSER – DEFINED FUNCTION** | | | | |
| 3.1 | Syntax of user defined function, Return statements, Function Arguments in Python | 2 | Chalk &Talk | Black Board |
| 3.2 | Default Parameter, call- by - value vs Call – by – reference in Python | 2 | Chalk & Talk | Black Board |
| 3.3 | Nested function in Python, Closure Function Python | 2 | Lecture | PPT& White board |
| 3.4 | Anonymous Function in Python (Self Study) | 1 | Lecture | Smart Board |
| 3.5 | Function Composition in Python, Recursive Function in Python | 1 | Lecture | Black Board |
| 3.6 | Strings in Python, Reading Strings from Keyboard, Accessing Strings | 1 | Discussion | Google classroom |
| 3.7 | Modifying String in Python, String Concatenation, String updating | 2 | Chalk & Talk | Green Board |
| 3.8 | Iterating through a string, String Membership Operations | 2 | Discussion | Black Board |
| 3.9 | Built – in String Function, Escape Sequence in Python | 1 | Chalk & Talk | Black Board |
| **UNIT – IV PYTHON LIST** | | | | |
| 4.1 | Read a List Type from a keyboard, Accessing Elements of | 2 | Chalk & Talk | Black Board |

| | | | | |
|---|---|---|---|---|
| | a List | | | |
| 4.2 | Modifying Elements of a List, Basic List Operation | 2 | Chalk & Talk | Black Board |
| 4.3 | Built in function, List function, List Duplication and comparison of Two Lists | 2 | Lecture | PPT& White board |
| 4.4 | Accessing Elements of a Tuple | 2 | Lecture | Smart Board |
| 4.5 | Modifying Elements of a Tuple | 2 | Lecture | Black Board |
| 4.6 | Deleting Elements of a Tuple | 3 | Discussion | Google classroom |
| 4.7 | Basic Tuple Operation, Tuple Built-in Functions (Self Study) | 1 | Discussion | Black Board |
| **UNIT – V PYTHON DICTIONARY** | | | | |
| 5.1 | Creating a Dictionary and Printing a Dictionary | 3 | Chalk & Talk | Black Board |
| 5.2 | Accessing Dictionary Elements, Modifying a Dictionary, Delete Operations on Dictionary | 2 | Chalk & Talk | Black Board |
| 5.3 | Writing into Files, Reading from Files | 2 | Lecture | PPT& White board |
| 5.4 | Reading Lines from Files (Self Study) | 1 | Discussion | Black Board |
| 5.5 | Stripping Characters from Files, Filename and Paths, Format operator | 2 | Lecture | Black Board |
| 5.6 | Command Line Arguments, Exception in Python, Python Modules, Python Packages | 2 | Discussion | Google classroom |
| 5.7 | Dictionary Key properties, Comparing Two Dictionaries, Python Dictionary Built in functions | 2 | Chalk & Talk | Green Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Machine Learning in Python | 2 | Discussion | Black Board |
| 6.2 | Data Processing using Python | 3 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1 10 Mks. | T2 10 Mks. | Quiz 5 Mks. | Assignment 5 Mks | OBT/PPT 5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| K1 | 2 | 2 | - | - | - | 4 | - | 4 | 10 % |
| K2 | 2 | 2 | 5 | - | - | 9 | - | 9 | 22.5 % |
| K3 | 3 | 3 | - | - | 5 | 11 | - | 11 | 27.5 % |
| K4 | 3 | 3 | - | 5 | - | 11 | - | 11 | 27.5 % |
| Non Scholastic | - | - | - | - | - | | 5 | 5 | 12.5 % |
| Total | 10 | 10 | 5 | 5 | 5 | 35 | 5 | 40 | 100 % |

## End Semester - UG

| Levels | Section A (i) 5 Mks. | Section A (ii) 5 Mks | Section B 8 Mks. | Section C 12 Mks | Section D 20 Mks. | Section E 10 Mks. | Total 60Mks. | |
|---|---|---|---|---|---|---|---|---|
| K1 | 5 | 5 | - | 4 | - | - | 14 | 23.33 % |
| K2 | - | - | 8 | 4 | - | - | 12 | 20 % |
| K3 | - | - | - | - | 20 | - | 20 | 33.33 % |
| K4 | - | - | - | 4 | - | 10 | 14 | 23.34 % |
| Total | 5 | 5 | 8 | 12 | 20 | 10 | 60 | 100 % |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Identify the basic concepts of python program. | K1& K2 | PSO1& PSO2 |
| CO 2 | Apply the Input and output statements in python. | K2 & K3 | PSO1& PSO2 |
| CO 3 | Analyze the usage of function control structure. | K3 & K4 | PSO3 |
| CO 4 | Describe String, List and Tuples. | K2 & K3 | PSO3& PSO6 |
| CO 5 | Create Python Dictionary and Files. | K2, K3& K4 | PSO7 & PSO8 |

### Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 3 | 3 | 1 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 1 | 3 | 2 | 2 | 2 | 2 | 2 |
| CO4 | 2 | 1 | 3 | 2 | 2 | 3 | 2 | 2 |
| CO5 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 3 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. LEENA PREMA KUMARI**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Entrepreneurship 100%

## III B.Sc. Information Technology

## SEMESTER – VI

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I6CC14 | LAB VI PYTHON PROGRAMMING | Practical | 6 | 3 |

**COURSE DESCRIPTION**

This course content plays a vital role in building the basic programming skill in Python.

**COURSE OBJECTIVES**

The focus of the lab is to provide students with an introduction to programming, I/O, and visualization using the Python programming language as a practical session. The goal of this course is to train the students to face the industrial requirements.

**PROGRAM LIST**

1. Python Using String
2. Python Using List
3. Python Using Dictionary
4. Python Using Tuple
5. Python Using Sets
6. Python Using Array
7. Python Using Condition Statements and Loops
8. Python Using Functions
9. Python Using Date Time
10. Python Using Class

11. Python Using Data Structure
12. Python Using Search and Sorting
13. Python Using Recursion
14. Python Using Math
15. Python Using File I/O

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 1 | Python Using String | 6 | Demonstration | Desktop PC |
| 2 | Python Using List | 6 | Demonstration | Desktop PC |
| 3 | Python Using Dictionary | 6 | Demonstration | Desktop PC |
| 4 | Python Using Tuple | 6 | Demonstration | Desktop PC |
| 5 | Python Using Sets | 6 | Demonstration | Desktop PC |
| 6 | Python Using Array | 6 | Demonstration | Desktop PC |
| 7 | Python Using ConditionStatements and Loops | 6 | Demonstration | Desktop PC |
| 8 | Python Using Functions | 6 | Demonstration | Desktop PC |
| 9 | Python Using Date Time | 6 | Demonstration | Desktop PC |
| 10 | Python Using Class | 6 | Demonstration | Desktop PC |
| 11 | Python Using Recursion | 6 | Demonstration | Desktop PC |
| 12 | Python Using Search and Sorting | 6 | Demonstration | Desktop PC |
| 13 | Python Using Math | 6 | Demonstration | Desktop PC |
| 14 | Python Using Loops | 6 | Demonstration | Desktop PC |
| 15 | Python Using File I/O | 6 | Demonstration | Desktop PC |

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Demonstrate the basic concepts of variables expressions. | K2 & K3 | PSO1& PSO2 |
| CO 2 | Develop basic python programs with I/O operations. | K2 & K3 | PSO2, PSO3 & PSO5 |
| CO 3 | Develop programs with function control structure. | K2 & K3 | PSO2, PSO3& PSO5 |
| CO 4 | Apply strings and lists in python. | K2 & K3 | PSO3& PSO5 |
| CO 5 | Develop python programs with files. | K3 & K4 | PSO6, PSO7 & PSO8 |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **CIA** | **ESE** | **Total** |
| **20** | **15** | **5** | **40** | **60** | **100** |

**C1 –** Average of Two Model Test Marks

**C2 -** Average of Program Completion and Record Work

**C3 -** Non-Scholastic

### Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 3 | 2 | 3 | 2 | 2 | 1 |
| CO3 | 1 | 3 | 3 | 2 | 3 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 |
| CO5 | 1 | 2 | 1 | 1 | 1 | 3 | 3 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 1 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. LEENA PREMA KUMARI**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## III B.Sc. Information Technology

## SEMESTER – VI

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I6CC15 | INFORMATION STORAGE AND MANAGEMENT | Lecture | 5 | 5 |

**COURSE DESCRIPTION**

This course provides a comprehensive understanding of the various storage infrastructure components in classic and virtual environments. It enables the students to make informed decisions in an increasingly complex IT environment.

**COURSE OBJECTIVES**

To impart the comprehensive understanding of all segments of Storage Technologies.

**UNITS**

**UNIT –I STORAGE SYSTEM (14 HRS.)**

Introduction to Information Storage and Management: Information storage – Evolution of Storage Architecture – Data Center Infrastructure – Virtualization and Cloud Computing – Data Center Environment: Application – DBMS – Host – **Connectivity (Self Study).**

**UNIT –II DATA PROTECTION (14 HRS.)**

RAID: RAID Implementation methods – RAID Array Components – RAID Techniques – RAI levels. Intelligent Storage System: Components of an Intelligent Storage System – **Storage Provisioning (Self Study).**

**UNIT –III STORAGE NETWORKING TECHNOLOGIES (14 HRS.)**

Fibre Channel Storage area Networks: Fibre Channel: Overview - The SAN and

Its Evolution – Components of FC SAN – Network Attached Storage: General Purpose Servers Vs NAS Devices – Benefits of NAS – **File System and Network File Sharing (Self Study)**– Components of NAS.

**UNIT –IV BACKUP, ARCHIVE AND REPLICATION (14 HRS.)**

Backup and Archive: Backup Purpose – Backup Considerations – Backup Granularity - Recovery Considerations – Backup Methods – Backup Architecture – Backup and Restore Operations – **Data Archive(Self Study)** – Archiving Solution Architecture

**UNIT –V SECURING AND MANAGING STORAGE INFRASTRUCTURE**

**(14 HRS.)**

Securing the Storage Infrastructure: Information Security Framework – Risk Triad- Storage Security Domains- Managing the Storage infrastructure: **Monitoring the Storage Infrastructure(Self Study).**

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Latest storage device (Cloud, SSD(solid-state drive), NVMe (Non-Volatile Memory Express).

**TEXT BOOK:**

1. Somasundaram, Gnanasundaram, and Alok Shrivastava, eds. Information storage and management: storing, managing, and protecting digital information in classic, virtualized, and cloud environments. John Wiley & Sons, 2012. Chapters - 1.1 – 1.4, 2.1 – 2.4, 3.1-3.4, 4.1- 4.2, 5.1-5.3, 7.1-7.4, 10.1 – 10.7, 10.13, 10.14, 14.1 – 14.3, 15.1

**REFERENCES:**

1. Robert Spalding, “Storage Networks ” The Complete Reference, Tata McGraw Hill, 2003
2. Marc Fairley, “Building Storage Networks”, Tata McGraw Hill, 2001

**Digital Open Educational Resources (DOER):**

1. Management Information System Tutorial

https://www.tutorialspoint.com/management_information_system/index.htm

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 STORAGE SYSYEM** | | | | |
| 1.1 | Introduction to Information Storage and Management: Information storage | 3 | Chalk & Talk | Black Board |
| 1.2 | Evolution of Storage Architecture | 3 | Chalk & Talk | LCD |
| 1.3 | Data Center Infrastructure, Virtualization and Cloud Computing | 3 | Lecture | PPT& White board |
| 1.4 | Data Center Environment: Application DBMS, Host | 3 | Lecture | Smart Board |
| 1.5 | Connectivity (Self Study) | 2 | Discussion | Black Board |
| **UNIT -2 DATA PROTECTION** | | | | |
| 2.1 | RAID: RAID Implementation methods, RAID Array Components | 4 | Lecture | PPT& White board |
| 2.2 | RAID Techniques – RAID levels | 4 | Lecture | PPT& White board |
| 2.3 | Intelligent Storage System: Components of an Intelligent Storage System | 4 | Discussion | Black Board |
| 2.4 | Storage Provisioning (Self Study) | 2 | Discussion | Black Board |
| **UNIT -3 STORAGE NETWORKING TECHNOLOGIES** | | | | |
| 3.1 | Fibre Channel Storage area Networks: Fibre Channel-Overview | 2 | Chalk & Talk | Black Board |
| 3.2 | The SAN and Its Evolution | 2 | Discussion | Google classroom |
| 3.3 | Components of FC SAN | 2 | Lecture | Black Board |
| 3.4 | Network Attached Storage: General Purpose Servers Vs NAS Devices | 3 | Lecture | PPT& White board |
| 3.5 | Benefits of NAS | 2 | Chalk & Talk | Black Board |
| 3.6 | File System and Network File Sharing (Self Study) | 1 | Discussion | Google classroom |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 3.7 | Components of NAS | 2 | Chalk & Talk | Black Board |
| **UNIT – 4 BACKUP, ARCHIVE AND REPLICATION** | | | | |
| 4.1 | Backup and Archive: Backup Purpose | 2 | Lecture | Black Board |
| 4.2 | Backup Considerations, Backup Granularity | 2 | Chalk & Talk | Black Board |
| 4.3 | Recovery Considerations, Backup Methods | 2 | Lecture | Black Board |
| 4.4 | Backup Architecture | 2 | Chalk & Talk | Black Board |
| 4.5 | Backup and Restore Operations | 2 | Discussion | Google classroom |
| 4.6 | Data Archive (Self Study) | 2 | Lecture | PPT& White board |
| 4.7 | Archiving Solution Architecture | 2 | Discussion | Google classroom |
| **UNIT -5 SECURING AND MANAGING STORAGE INFRASTRUCTURE** | | | | |
| 5.1 | Securing the Storage Infrastructure: Information Security Framework | 5 | Lecture | Black Board |
| 5.2 | Risk Triad- Storage Security Domains | 5 | Lecture | PPT& White board |
| 5.3 | Managing the Storage infrastructure | 3 | Chalk & Talk | Black Board |
| 5.4 | Monitoring the Storage Infrastructure (Self Study) | 1 | Discussion | Google classroom |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Cloud, SSD(solid-state drive) | 2 | Discussion | Black Board |
| 6.2 | NVMe (Non-Volatile Memory Express | 3 | Discussion | Black Board |

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |

| | |
|---|---|
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Know the concepts of Storage and Data structure Environment based on growth and challenges in IT. | K1& K2 | PSO1& PSO2 |
| CO 2 | Understand data protection by using related and recent techniques. | K1& K2 | PSO1& PSO2 |
| CO 3 | Identify the parameters of managing and monitoring the storage infrastructure and manage the solutions. | K1, K2 & K3 | PSO3 & PSO4 |
| CO 4 | Know backup and archival data in both classic and virtualized environment. | K1& K2 | PSO6 |
| CO 5 | Analyze, Monitoring and managing the storage infrastructure in cloud environments. | K3& K4 | PSO7 & PSO8 |

## Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 3 | 3 | 1 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 1 | 3 | 3 | 2 | 2 | 2 | 2 |
| CO4 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 2 |
| CO5 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 3 |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 1 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## III B.Sc. Information Technology

## SEMESTER –I

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I6ME3 | CLOUD TECHNOLOGIES | Lecture | 5 | 5 |

**COURSE DESCRIPTION**

This course facilitates the students to understand, analyze the various applications of cloud tool and also provide solutions for cloud security and storage.

**COURSE OBJECTIVES**

To impart the knowledge about the Computations done in cloud, its architecture and to build their own cloud.

**UNITS**

**UNIT –I UNDERSTANDING CLOUD COMPUTING (14 HRS.)**

Origin and Influence- Basic concepts and terminology-goals and benefits-Risks and challenges. FUNDAMENTAL CONCEPTS AND MODELS: **Roles and Boundaries-Cloud Characteristics-Cloud Delivery Models (Self Study).**

**UNIT –II CLOUD ENABLING TECHNOLOGY (14 HRS.)**

Broad band Network and Internet Architecture-Data center Technology-Virtualization Technology-Web Technology-Multitenant Technology-**Service Technology (Self Study)**.

**UNIT –III FUNDAMENTAL CLOUD SECURITY (14 HRS.)**

Basic terms and Concepts-Threat Agents-Cloud Security Threats.**Cloud Infrastructure Mechanism:** Virtual server-cloud storage devices-cloud usage monitor-Resource replication-**readymade Environment(Self Study).**

**UNIT –IV SPECIALIZED CLOUD MECHANISMS (14 HRS.)**

Automated Scaling Listener-Load balancer-SLA monitor-Pay-per-use monitor-Audit monitor. Hypervisor-**Multi Device Broker-state management database (Self Study)-**Remote Administration System-Resource Management System-SLA Management System-Billing Management System.

**UNIT –V CLOUD COMPUTING ARCHITECTURE (14 HRS.)**

Workload Distribution Architecture-Resource Pooling Architecture-Cloud Bursting Architecture-Redundant Storage Architecture.ADVANCED CLOUD ARCHITECTURES:Hypervisor clustering architecture-Load balanced virtual server instances architecture-Zero downtime architecture- cloud balancing architecture.

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (14HRS.)**

Virtual server-cloud storage devices.

**TEXT BOOK:**

1. Erl, Thomas, Ricardo Puttini, and Zaigham Mahmood.CLOUD COMPUTING: CONCEPTS, TECHNOLOGY & ARCHITECTURE.Pearson Education, 2013.CHAPTER 3.1-3.4, 4.1-4.4, 5.1-5.6, 6.1-6.3, 7.2-7.6, 8.1-8.10,9.1-9.4,10.1-10.4, 10.5-10.8, 11.1, 11.2, 11.6, 11.8.

**REFERENCES:**

1. Buyya, Rajkumar, James Broberg, and Andrzej M. Goscinski, eds. Cloud computing: Principles and paradigms. Vol. 87.John Wiley & Sons, 2010.
2. Rhoton, John. "Cloud Computing Explained: Implementation Handbook for Enterprises. 2009." Recursive Limited.
3. Linthicum, David S. Cloud computing and SOA convergence in your enterprise: a step-by-step guide. Pearson Education, 2009.

**Digital Open Educational Resources (DOER):**

1. Learn Cloud Computing Tutorial - Java point

   https://www.javatpoint.com/cloud-computing-tutorial
2. Cloud Computing Tutorial For Beginners

https://www.guru99.com/cloud-computing-for-beginners.html

**COURSE CONTENTS & LECTURE SCHEDULE:**

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT – I UNDERSTANDINGCLOUDCOMPUTING** | | | | |
| 1.1 | Origin and Influence | 4 | Chalk & Talk | Black Board |
| 1.2 | Basic concepts and terminology, goals and benefits | 4 | Chalk & Talk | Black Board |
| 1.3 | Risks and challenges | 4 | Lecture | PPT& White board |
| 1.4 | Roles and Boundaries-Cloud Characteristics-Cloud Delivery Models (Self Study). | 2 | Discussion | Black Board |
| **UNIT – IICLOUDENABLINGTECHNOLOGY** | | | | |
| 2.1 | Broad band Network and Internet Architecture | 3 | Chalk & Talk | Black Board |
| 2.2 | Data center Technology | 3 | Chalk & Talk | Black Board |
| 2.3 | Virtualization Technology, Web Technology | 4 | Lecture | PPT& White board |
| 2.4 | Multitenant Technology | 2 | Lecture | Smart Board |
| 2.5 | Service Technology (Self Study) | 2 | Discussion | Black Board |
| **UNIT – III FUNDAMENTALCLOUDSECURITY** | | | | |
| 3.1 | Basic terms and Concepts, Threat Agents | 3 | Chalk & Talk | Black Board |
| 3.2 | Cloud Security Threats | 3 | Chalk & Talk | Black Board |
| 3.3 | Cloud InfrastructureMechanism:Virtual server | 2 | Lecture | PPT& White board |
| 3.4 | cloud storage devices, cloud usage monitor | 2 | Lecture | Smart Board |
| 3.5 | Resource replication | 2 | Chalk & Talk | Black Board |
| 3.6 | Readymade Environment (Self Study) | 2 | Discussion | Black Board |
| **UNIT – IV SPECIALIZEDCLOUDMECHANISMS** | | | | |

| | | | | |
|---|---|---|---|---|
| 4.1 | Automated Scaling Listener, Load balancer | 2 | Chalk & Talk | Black Board |
| 4.2 | SLAmonitor, Pay-per-use monitor, Audit monitor | 3 | Chalk & Talk | Black Board |
| 4.3 | Fail over system, Hypervisor, Resource cluster | 3 | Chalk & Talk | Black Board |
| 4.3 | Remote Administration System-Resource Management System- | 3 | Chalk & Talk | Black Board |
| 4.4 | SLA Management System-Billing Management System. | 3 | Chalk & Talk | Black Board |
| **UNIT – V CLOUD COMPUTING ARCHITECTURE** | | | | |
| 5.1 | Identity and access management | 3 | Chalk & Talk | Black Board |
| 5.2 | single sign on, Cloud Based security groups | 3 | Chalk & Talk | Black Board |
| 5.3 | Hardened Virtual Server Images | 2 | Lecture | PPT& White board |
| 5.4 | Fundamental cloud architecture | 2 | Lecture | Smart Board |
| 5.5 | ADVANCED CLOUD ARCHITECTURES: Hypervisorclustering architecture | 2 | Discussion | Black Board |
| 5.6 | -Load balanced virtual server instances architecture-Zero downtime architecture- cloud balancing architecture. | 2 | Discussion | Black Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Virtual server-cloud storage devices | 5 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand fundamental concepts of cloud service and deployment models. | K1& K2 | PSO1& PSO2 |
| CO 2 | Identify the importance of virtualization along with their technologies. | K1& K2 | PSO3 |
| CO 3 | Analyze different cloud computing Services. | K3 & K4 | PSO6 |
| CO 4 | Analyze the components and the security in cloud. | K3 & K4 | PSO6 |
| CO 5 | Illustrate different design & develop backup strategies for cloud data based on features. | K3 & K4 | PSO6, PSO7 & PSO8 |

### Mapping of COs with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 2 | 1 | 1 | 2 | 3 | 2 | 2 |
| CO4 | 2 | 2 | 1 | 2 | 2 | 3 | 2 | 2 |
| CO5 | 1 | 2 | 1 | 1 | 1 | 3 | 3 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. LEENA PREMA KUMARI**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## III B.Sc. Information Technology

## SEMESTER –VI

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I6ME4 | MOBILE COMMUNICATION | Lecture | 5 | 5 |

**COURSE DESCRIPTION**

This course gives the ability to acquire the knowledge about the technologies in mobile computing and its security issues.

**COURSE OBJECTIVES**

To obtain knowledge on Mobile Computing Concepts and emerging technologies and applications.

**UNITS**

**UNIT –I INTRODUCTION (14HRS.)**

Mobile Computing – Dialogue Control – Networks – Middleware & Gateways - MOBILE COMPUTING ARCHITECTURE: History of computers and Internet – Architecture for mobile computing – **Three-tier architecture (Self Study).**

**UNIT –II MOBILE COMPUTING THROUGH TELEPHONY (14 HRS.)**

Evaluation of telephony – Multiple access procedures – Satellite Communication Systems. – EMERGING TECHNOLOGIES: Introduction – **Blue Tooth(Self Study)** – RFID – WiMAX – Mobile IP

**UNIT –III GSM & GPRS (14 HRS.)**

Global System for mobile communications – GSM Architecture – GSM Entities

– Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS- **Limitations(Self Study).**

**UNIT –IV WIRELESS APPLICATION PROTOCOL & WIRELESS LAN (14 HRS.)**

Introduction –WAP – MMS- GPRS Application –Wireless LAN: Introduction - Wireless LAN Advantages – IEEE 802.11 Standards – Wireless LAN Architecture – Mobility in Wireless LAN-Deploying Wireless LAN -Mobile Adhoc Networks and Sensor networks **(Self Study).**

**UNIT –V CDMA AND SECURITY (14 HRS.)**

Spread spectrum technology – CDMA vs. GSM – **Wireless Data(Self Study)** – Third generation networks – Applications on 3G. SECURITY ISSUES IN MOBLIE COMUTING: Information Security – Security Techniques & Algorithms.

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Recent Trends in Mobile Computing (Business Intelligence (BI) Mobile Apps, IoT, Non-Removable Battery and Memory).

**TEXT BOOK:**

1. Talukdar, Asoke K. Mobile Computing, 2E.Tata McGraw-Hill Education, 2010.Chapter 1.1 - 1.6, 2.1, 2.2 - 2.5, 3.1 - 3.3, 4.1 - 4.5, 5.1 - 5.5, 5.7, 7.1 - 7.7, 8.1-8.4,9.1, 9.2, 9.4 - 9.7, 10.1-10.7,20.1 - 20.3.

**REFERENCES:**

1. Stüber, Gordon L., and Gordon L. Stèuber.Principles of mobile communication.Vol.2. Norwell, Mass, USA: Kluwer Academic, 1996.
2. Schiller, Jochen H. Mobile communications.Pearson education, 2003.

**Digital Open Educational Resources (DOER):**

1. Mobile Communication Tutorial - Javatpoint

https://www.javatpoint.com/mobile-communication-tutorial

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 INTRODUCTION** | | | | |
| 1.1 | Mobile Computing, Dialogue Control | 3 | Chalk & Talk | Black Board |
| 1.2 | Networks, Middleware & Gateways | 3 | Lecture | PPT& White board |
| 1.3 | MOBILE COMPUTING ARCHITECTURE: History of computers and Internet | 3 | Lecture | Black Board |
| 1.4 | Architecture for mobile computing | 3 | Chalk & Talk | Black Board |
| 1.5 | Three-tier architecture (Self Study) | 2 | Discussion | Black Board |
| **UNIT -2MOBILE COMPUTING THROUGH TELEPHONY** | | | | |
| 2.1 | Evaluation of telephony | 2 | Chalk & Talk | Black Board |
| 2.2 | Multiple access procedures | 3 | Chalk & Talk | Black Board |
| 2.3 | Satellite Communication Systems | 3 | Lecture | PPT& White board |
| 2.4 | EMERGING TECHNOLOGIES, RFID | 2 | Lecture | Smart Board |
| 2.5 | Blue Tooth (Self Study) | 2 | Discussion | Google classroom |
| 2.6 | WiMAX, Mobile IP | 2 | Lecture | PPT& White board |
| **UNIT -3 GSM& GPRS** | | | | |
| 3.1 | Global System for mobile, communications | 2 | Chalk & Talk | Black Board |
| 3.2 | GSM Architecture, GSM Entities | 3 | Chalk & Talk | Black Board |
| 3.3 | Call routing in GSM, PLMN Interfaces | 3 | Lecture | PPT& White board |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| 3.4 | GSM Addresses and Identifiers, Network Aspects in GSM | 3 | Lecture | Smart Board |
| 3.5 | GPRS and packet data network GPRS network architecture | 1 | Chalk & Talk | Black Board |
| 3.6 | GPRS network operations ,Data services in GPRS | 2 | Discussion | Google classroom |
| **UNIT -4 WIRELESS APPLICATION PROTOCOL & WIRELESS LAN** | | | | |
| 4.1 | Introduction –WAP –IEEE 802.11 Standards | 3 | Chalk & Talk | Black Board |
| 4.2 | MMS- GPRS Application | 3 | Chalk & Talk | Black Board |
| 4.3 | Wireless LAN: Introduction - Wireless LAN Advantages | 3 | Lecture | PPT& White board |
| 4.4 | Wireless LAN Architecture | 2 | Lecture | Smart Board |
| 4.5 | Mobility in Wireless LAN- Deploying Wireless LAN | 2 | Discussion | Black Board |
| 4.6 | Mobile Adhoc Networks and Sensor networks | 1 | Discussion | Google classroom |
| **UNIT -5CDMA and SECURITY** | | | | |
| 5.1 | Spread spectrum technology – CDMA vs. GSM | 3 | Chalk &Talk | Black Board |
| 5.2 | Wireless Data (Self Study) – Third generation networks | 2 | Chalk & Talk | Black Board |
| 5.3 | Applications on 3G | 1 | Discussion | Google classroom |
| 5.4 | Security Issues In Moblie Computing: Information Security | 2 | Lecture | Smart Board |
| 5.5 | Security Techniques & Algorithms. | 3 | Discussion | Black Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Business Intelligence (BI) Mobile Apps | 2 | Discussion | Black Board |
| 6.2 | IoT, Non-Removable Battery and Memory | 3 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| K1 | 2 | 2 | - | - | - | 4 | - | 4 | 10 % |
| K2 | 2 | 2 | 5 | - | - | 9 | - | 9 | 22.5 % |
| K3 | 3 | 3 | - | - | 5 | 11 | - | 11 | 27.5 % |
| K4 | 3 | 3 | - | 5 | - | 11 | - | 11 | 27.5 % |
| Non Scholastic | - | - | - | - | - | | 5 | 5 | 12.5 % |
| Total | 10 | 10 | 5 | 5 | 5 | 35 | 5 | 40 | 100 % |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| K1 | 5 | 5 | - | 4 | - | - | 14 | 23.33 % |
| K2 | - | - | 8 | 4 | - | - | 12 | 20 % |
| K3 | - | - | - | - | 20 | - | 20 | 33.33 % |
| K4 | - | - | - | 4 | - | 10 | 14 | 23.34 % |
| Total | 5 | 5 | 8 | 12 | 20 | 10 | 60 | 100 % |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand the infrastructure to develop mobile communication systems. | K1& K2 | PSO1& PSO2 |
| CO 2 | Identify the characteristics of different multiple access techniques in mobile communication. | K1& K2 | PSO3 |
| CO 3 | Analyse the measures GSM systems and the entire protocol architecture of GSM. | K3 & K4 | PSO4 |
| CO 4 | Understand the GPRS technologies and architecture for communication using Mobile Devices. | K1& K2 | PSO3&PSO4 |
| CO 5 | Illustrate the Security issues in Mobile Computing. | K3 & K4 | PSO6, PSO7 & PSO8 |

### Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 2 | 1 | 3 | 2 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 2 |
| CO5 | 1 | 2 | 1 | 1 | 1 | 3 | 3 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 3 |
| CO3 | 1 | 1 | 3 | 1 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated **-1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

**Skill Development 100%**

## III B.Sc. Information Technology

## SEMESTER – VI

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I5ME5 | NETWORK SECURITY | Lecture | 5 | 5 |

**COURSE DESCRIPTION**

The course covers the basics of the science of encryption and network security technology. It also provides the knowledge about the various risks that networks are faced with in this day and age, focusing on the various vulnerabilities of systems.

**COURSE OBJECTIVES**

To provide a framework of knowledge related to mechanisms that makes Information secured over communication channels by adopting various types of cryptographic algorithms.

**UNITS**

**UNIT –I INTRODUCTION (14 HRS.)**

Computer Security : Need for security – Security Approaches – Principles of Security – Types of Attacks. Cryptography: Concepts and Techniques :**Plain text(Self Study)** and Cipher text – Substitution techniques – Transposition techniques

**UNIT –II TYPES OF CRYPTOGRAPHY (14 HRS.)**

Encryption and Decryption- Symmetric and Asymmetric Key Cryptography

Symmetric key Algorithm and AES : Introduction – **Algorithm types(Self**

**Study)** and modes – DES

**UNIT –III ASYMMETRIC KEY ALGORITHMS(14 HRS.)**

Introduction – History – **Overview(Self Study)** – RSA Algorithm – Digital Signature – Digital Certificates.

**UNIT –IV INTERNET SECURITY PROTOCOLS (14 HRS.)**

Basic concepts – Secure Socket Layer – Transport Layer Security – WAP Security – Security in GSM – **Security in 3G(Self Study)** – Link Security Vs Network Security.

**UNIT –V FIREWALLS& IP SECURITY (14 HRS.)**

**Firewall:** Introduction– **Types of Firewalls(Self Study)** - Firewall Configurations

**IP security:** Introduction – IPSec overview – Authentication Header – ESP – IP Sec Key Management .

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Current trend in network security (Ransomware. Malware in the Mobile Device Space, IoT Botnets)

**TEXT BOOK:**

1. Kahate, Atul. Cryptography and network security. Tata McGraw-Hill Education, 2013.

**REFERENCES:**

1. Stallings, William. Cryptography and network security, 4/E. Pearson Education India, 2006.
2. Stallings, William. Network Security Essentials: Applications and Standards, 4/e. Pearson Education India, 2003.

**Digital Open Educational Resources (DOER):**

1. Computer Network Security - Javatpoint

https://www.javatpoint.com/computer-network-security

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 INTRODUCTION** | | | | |
| 1.1 | Computer Security, Need for security | 2 | Discussion | Black Board |
| 1.2 | Security Approaches, Principles of Security | 2 | Chalk & Talk | Black Board |
| 1.3 | Types of Attacks | 2 | Lecture | LCD |
| 1.4 | Cryptography, Concepts and Techniques | 2 | Lecture | LCD |
| 1.5 | Plain text (Self Study) | 2 | Discussion | Google classroom |
| 1.6 | Cipher text | 2 | Chalk & Talk | Black Board |
| 1.7 | Substitution techniques, Transposition techniques | 2 | Chalk & Talk | Black Board |
| **UNIT -2TYPES OF CRYPTOGRAPHY** | | | | |
| 2.1 | Encryption and Decryption | 2 | Lecture | PPT & White board |
| 2.2 | Symmetric and Asymmetric Key Cryptography | 2 | Chalk & Talk | Green Board |
| 2.3 | Symmetric key Algorithm | 2 | Chalk & Talk | Black Board |
| 2.4 | AES | 2 | Discussion | Google classroom |
| 2.5 | Algorithm types (Self Study) | 2 | Lecture | Google classroom |
| 2.6 | DES | 2 | Chalk & Talk | Black Board |
| 2.7 | Modes | 2 | Chalk & Talk | Black Board |
| **UNIT – 3 ASYMMETRIC KEY ALGORITHMS** | | | | |
| 3.1 | Introduction | 2 | Discussion | PPT & White board |
| 3.2 | History | 2 | Chalk & Talk | Green Board |
| 3.3 | Overview (Self Study) | 2 | Discussion | Black Board |
| 3.4 | RSA Algorithm | 3 | Chalk & Talk | Black Board |
| 3.5 | Digital Signature | 3 | Chalk | Black |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | | | &Talk | Board |
| 3.6 | Digital Certificates | 2 | Lecture | PPT & White board |
| **UNIT – 4 INTERNET SECURITY PROTOCOLS** | | | | |
| 4.1 | Basic concepts | 2 | Discussion | PPT & White board |
| 4.2 | Secure Socket Layer | 2 | Chalk & Talk | Green Board |
| 4.3 | Transport Layer Security | 2 | Chalk & Talk | Black Board |
| 4.4 | WAP Security | 2 | Chalk & Talk | Black Board |
| 4.5 | Security in GSM | 2 | Chalk & Talk | Black Board |
| 4.6 | Security in 3G (Self Study) | 2 | Discussion | Black Board |
| 4.7 | Link Security Vs Network Security | 2 | Chalk & Talk | Black Board |
| **UNIT – 5 FIREWALLS & IP SECURITY** | | | | |
| 5.1 | Firewall, Introduction | 2 | Lecture | PPT & White board |
| 5.2 | Types of Firewalls (Self Study) | 2 | Discussion | PPT & White board |
| 5.3 | Firewall Configurations | 2 | Lecture | Black Board |
| 5.4 | IP security, Introduction | 2 | Chalk & Talk | Black Board |
| 5.5 | IPSec overview | 2 | Chalk & Talk | Black Board |
| 5.6 | Authentication Header | 2 | Chalk & Talk | Black Board |
| 5.7 | ESP, IP Sec Key Management | 2 | Chalk & Talk | Black Board |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Current trend in network security, Ransomware | 2 | Discussion | Black Board |
| 6.2 | Malware in the Mobile Device Space, IoT Botnets | 3 | Discussion | Black Board |

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

***The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand the basic concepts of security. | K1& K2 | PSO1& PSO2 |
| CO 2 | Analyze various cryptographic algorithms while applying practically. | K1, K2 & K4 | PSO2& PSO3 |
| CO 3 | Identify Asymmetric based cryptographic algorithms. | K1& K2 | PSO3 |
| CO 4 | Compare different internet security protocols. | K1& K2 | PSO6 |
| CO 5 | Summarize the concepts of firewall and IP security. | K3& K4 | PSO7 & PSO8 |

### Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 1 | 3 | 2 | 2 | 2 | 2 | 2 |
| CO4 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 2 |
| CO5 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 1 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. V. MAGESHWARI**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## III B.Sc. Information Technology

## SEMESTER – VI

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I6ME6 | COMPUTER GRAPHICS | Lecture | 5 | 5 |

**COURSE DESCRIPTION**

This course is designed to facilitate to understand, design and implementation of pictorial data and will make the students to be a successful Graphics programmer.

**COURSE OBJECTIVES**

To impart the core concepts of computer graphics. Apply graphics techniques to design and create graphics patterns.

**UNITS**

**UNIT –I INTRODUCTION (14HRS.)**

A survey of computer graphics: Computer-Aided Design - Presentation Graphics – **Computer Art – Entertainment – Education and Training(Self Study)** – Visualization – Image Processing – Graphical User Interfaces Overview of Graphics Systems: Video Display Devices – Raster Scan Systems – Random Scan Systems – Input Devices – Hard Copy Devices..

**UNIT –II OUTPUT PRIMITIVES (14 HRS.)**

Output Primitives: Points and Lines – Line Drawing Algorithms – Circle Generating Algorithms – Filled Area primitives.

**UNIT –III ATTRIBUTES OF OUTPUT PRIMITIVES (14 HRS.)**

**Line Attributes – Curve Attributes(Self Study)** – Color and Gray Scale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes–

Antialiasing

**UNIT –IV TWO –DIMENSIONAL GEOMETRIC TRANSFORMATIONS (14 HRS.)**

Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations – Transformations Between Coordinate Systems

**UNIT –V TWO –DIMENSIONAL VIEWING (14 HRS.)**

**The Viewing Pipeline(Self Study)** – Viewing Coordinate Reference Frame – Window –to- Viewport Coordinate Transformation – Two-Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – **Text Clipping– Exterior Clipping(Self Study).**

**UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)**

Current trends in Computer Graphics (Image-Based 3D Face Modeling, Holographic 3D Display System, Human Action Recognition Technology)

**TEXT BOOK:**

1. Hearn, Donald. Computer graphics, C version.Pearson Education India, 2012. Chapters: 1.1 – 1.8, 2.1-2.3, 2.5, 2.6, 3.1, 3.2, 3.5, 3.11, 4.1 – 4.8, 5.1 – 5.5, 6.1 – 6.11

**REFERENCES:**

1. Hughes, John F., et al. Computer graphics: principles and practice. Pearson Education, 2014.
2. McConnell, Jeffrey J. Computer graphics: theory into practice.Jones & Bartlett Learning, 2005.
3. Hill Jr, Francis S. Computer graphics using open gl. Pearson Education, 2008.
4. Newman, William M., and Robert F. Sproull.Principles of interactive computer graphics. McGraw-Hill, Inc., 1979.

**Digital Open Educational Resources (DOER):**

1. Computer Graphics Tutorial
   https://www.tutorialspoint.com/computer_graphics/index.htm
2. Computer Graphics Tutorial - Javatpoint

https://www.javatpoint.com/computer-graphics-tutorial

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 A SURVEY ON COMPUTER GRAPHICS** | | | | |
| 1.1 | A survey of computer graphics:Computer-Aided Design | 2 | Chalk & Talk | Black Board |
| 1.2 | Presentation Graphics | 1 | Lecture | PPT& White board |
| 1.3 | Computer Art, Entertainment, Education and Training (Self Study) | 1 | Discussion | Google classroom |
| 1.4 | Visualization | 2 | Lecture | Black Board |
| 1.5 | Image Processing, Graphical User Interfaces | 2 | Chalk & Talk | Black Board |
| 1.6 | Video Display Devices | 2 | Chalk & Talk | Black Board |
| 1.7 | Raster Scan Systems, Random Scan Systems | 2 | Chalk & Talk | Black Board |
| 1.8 | Input Devices, Hard Copy Devices | 2 | Lecture | PPT& White board |
| **UNIT -2 OUTPUT PRIMITIVES** | | | | |
| 2.1 | Points and Lines | 3 | Chalk & Talk | Black Board |
| 2.2 | Line Drawing Algorithms | 4 | Chalk & Talk | Black Board |
| 2.3 | Circle Generating Algorithms | 4 | Lecture | PPT& White board |
| 2.4 | Filled Area primitives. | 3 | Chalk &Talk | Black Board |
| **UNIT -3ATTRIBUTES OF OUTPUT PRIMITIVES** | | | | |
| 3.1 | Line Attributes, Curve Attributes(Self Study) | 2 | Discussion | Google classroom |
| 3.2 | Color and Gray Scale Levels | 3 | Lecture | PPT& White board |
| 3.3 | Area Fill Attributes | 3 | Lecture | Black Board |
| 3.4 | Character Attributes | 3 | Chalk & Talk | Black Board |
| 3.5 | Bundled Attributes | 3 | Chalk & | Black |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | Antialiasing | | Talk | Board |
| **UNIT -4TWO –DIMENSIONAL GEOMETRIC TRANSFORMATIONS** | | | | |
| 4.1 | Basic Transformations | 2 | Chalk & Talk | Black Board |
| 4.2 | Matrix Representations | 3 | Lecture | PPT& White board |
| 4.3 | Composite Transformations | 3 | Lecture | Black Board |
| 4.4 | Other Transformations | 3 | Discussion | Google classroom |
| 4.5 | Transformations Between Coordinate Systems | 3 | Chalk & Talk | Black Board |
| **UNIT -5TWO –DIMENSIONAL VIEWING** | | | | |
| 5.1 | The Viewing Pipeline, Viewing Coordinate Reference Frame | 2 | Chalk & Talk | Black Board |
| 5.2 | Window –to- Viewport Coordinate Transformation | 2 | Lecture | PPT& White board |
| 5.3 | Two-Dimensional Viewing Functions | 2 | Lecture | Black Board |
| 5.4 | Clipping Operations, Point Clipping, Line Clipping | 3 | Chalk & Talk | Black Board |
| 5.5 | Polygon Clipping , Curve Clipping | 3 | Chalk & Talk | Black Board |
| 5.6 | Text Clipping, Exterior Clipping (Self Study) | 2 | Discussion | Google classroom |
| **UNIT –6 DYNAMISM** | | | | |
| 6.1 | Image-Based 3D Face Modeling, Holographic 3D Display System | 2 | Discussion | Black Board |
| 6.2 | Human Action Recognition Technology | 3 | Discussion | Black Board |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **2** | **2** | **-** | **-** | **-** | **4** | - | **4** | 10 % |
| **K2** | **2** | **2** | **5** | **-** | **-** | **9** | - | **9** | 22.5 % |
| **K3** | **3** | **3** | **-** | **-** | **5** | **11** | - | **11** | 27.5 % |
| **K4** | **3** | **3** | **-** | **5** | **-** | **11** | - | **11** | 27.5 % |
| **Non Scholastic** | **-** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **10** | **10** | **5** | **5** | **5** | **35** | **5** | **40** | **100 %** |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| **K1** | **5** | **5** | **-** | **4** | **-** | - | **14** | 23.33 % |
| **K2** | **-** | **-** | **8** | **4** | **-** | - | **12** | 20 % |
| **K3** | **-** | **-** | **-** | **-** | **20** | - | **20** | 33.33 % |
| **K4** | **-** | **-** | **-** | **4** | **-** | 10 | **14** | 23.34 % |
| **Total** | **5** | **5** | **8** | **12** | **20** | **10** | **60** | **100 %** |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

***The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand the need and concepts of computer graphics. | K1& K2 | PSO1& PSO2 |
| CO 2 | Describe the procedure for points, lines and Circle. | K1& K2 | PSO3 |
| CO 3 | Analyze various attributes of output primitives. | K3& K4 | PSO3 |
| CO 4 | Illustrate two-dimensional geometric transformation. | K3& K4 | PSO3& PSO6 |
| CO 5 | Analyze windowing and clipping concepts. | K3& K4 | PSO6, PSO7 & PSO8 |

### Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 2 | 3 | 1 | 2 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2 |
| CO5 | 1 | 2 | 1 | 1 | 1 | 3 | 3 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 1 | 3 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 |
| CO4 | 3 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

**Forwarded By**

**V. Mageshwari**

**HOD'S Signature**

Entrepreneurship 100%

## III B.Sc. Information Technology

## SEMESTER – VI

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I6SE5 | SKILL BASED - 3D ANIMATION SOFTWARE | Practical | 2 | 2 |

**COURSE DESCRIPTION**

This course is designed to facilitate different animation techniques in animation software.

**COURSE OBJECTIVES**

To facilitate the student to understand the animation techniques and make the students to develop their 3D animations.

**UNITS**

**UNIT –I EXPLORING THE INTERFACE (6 HRS.)**

Introduction to Alice - download and install Alice 3.1-A brief tour of the Alice 3 IDE -A brief tour of the Menu Bar- Set Preferences -Touring the Gallery

**UNIT –II SETTING THE SCENE (6 HRS.)**

Adding an object to a scene- set object properties in the Scene editor- set special effects in a scene-Marking - position and resize an object in the Scene editor- Positioning sub-parts in Scene editor- align objects using a Snap grid-Cut, Copy, and Paste with the Clipboard

**UNIT –III LEARNING TO PROGRAM THROUGH ALICE (6 HRS.)**

Sequential & Parallel Execution - Do in order - Do together- Further nesting-

Branching & Looping-Conditional execution-Relational Operators-Randomness-Repetition-While loops- Lists.

**UNIT –IV EVENT HANDLING AND METHODS (6 HRS.)**

Interactive programming & event handling - Control of flow- Events- Event handing methods.

**UNIT –V 3D TEXT AND BILLBOARDS, SOUND (6 HRS.)**

Create 3D Text- Billboards- Creating a Sound- Adding a Sound - Posting on YouTube.

**PROGRAM LIST**

1. Alice Interface
2. Alice Objects
3. Alice Scene
4. Sequential and Parallel Execution
5. Branching and Looping
6. Event Handling
7. Methods
8. 3D text

**REFERENCES:**

1. Micheal Kolling, "Introduction to Programming with Green foot.

**Digital Open Educational Resources (DOER):**

http://www.alice.org/3.1/materials_videos.php

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1 EXPLORING THE INTERFACE** | | | | |
| 1.1 | Introduction to Alice, | 2 | Demonstratio | Desktop |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| | Download and install Alice 3.1 | | n | PC |
| 1.2 | A brief tour of the Alice 3 IDE | 1 | Demonstration | Desktop PC |
| 1.3 | A brief tour of the Menu Bar, Set Preferences | 2 | Demonstration | Desktop PC |
| 1.4 | Touring the Gallery | 1 | Demonstration | Desktop PC |
| **UNIT -2 SETTING THE SCENE** | | | | |
| 2.1 | Adding an object to a scene, Set object properties in the SceneEditor | 2 | Demonstration | Desktop PC |
| 2.2 | Set special effects in a scene marking, Position and resize an object in the Scene editor | 1 | Demonstration | Desktop PC |
| 2.3 | Positioning sub-parts in Scene editor- align objects using a Snap grid | 2 | Demonstration | Desktop PC |
| 2.4 | Cut, Copy, and Paste with the Clipboard | 1 | Demonstration | Desktop PC |
| **UNIT -3LEARNING TO PROGRAM THROUGH ALICE** | | | | |
| 3.1 | Sequential & Parallel Execution, Do in order & Do together | 1 | Demonstration | Desktop PC |
| 3.2 | Further nesting, Branching & Looping, Conditional execution | 2 | Demonstration | Desktop PC |
| 3.3 | Relational Operators, Randomness | 2 | Demonstration | Desktop PC |
| 3.4 | Repetition ,While loops, Lists | 1 | Demonstration | Desktop PC |
| **UNIT -4EVENT HANDLING AND METHODS** | | | | |
| 4.1 | Interactive programming & event handling | 2 | Demonstration | Desktop PC |
| 4.2 | Control of flow, Events | 2 | Demonstration | Desktop PC |
| 4.3 | Event handing methods | 2 | Demonstration | Desktop PC |
| **UNIT -5 3D TEXT AND BILLBOARDS, SOUND** | | | | |
| 5.1 | Create 3D Text, Billboards | 2 | Demonstration | Desktop PC |
| 5.2 | Creating a Sound & Adding a Sound | 2 | Demonstration | Desktop PC |
| 5.3 | Posting on YouTube | 2 | Demonstration | Desktop PC |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| K1 | 2 | 2 | - | - | - | 4 | - | 4 | 10 % |
| K2 | 2 | 2 | 5 | - | - | 9 | - | 9 | 22.5 % |
| K3 | 3 | 3 | - | - | 5 | 11 | - | 11 | 27.5 % |
| K4 | 3 | 3 | - | 5 | - | 11 | - | 11 | 27.5 % |
| Non Scholastic | - | - | - | - | - | | 5 | 5 | 12.5 % |
| Total | 10 | 10 | 5 | 5 | 5 | 35 | 5 | 40 | 100 % |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| K1 | 5 | 5 | - | 4 | - | - | 14 | 23.33 % |
| K2 | - | - | 8 | 4 | - | - | 12 | 20 % |
| K3 | - | - | - | - | 20 | - | 20 | 33.33 % |
| K4 | - | - | - | 4 | - | 10 | 14 | 23.34 % |
| Total | 5 | 5 | 8 | 12 | 20 | 10 | 60 | 100 % |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

***The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand basic concepts in Alice. | K2 & K3 | PSO1& PSO2 |
| CO 2 | Construct a scene. | K2 & K3 | PSO3 |
| CO 3 | Build program in Alice using looping and branching. | K2 & K3 | PSO3 & PSO6 |
| CO 4 | Apply event handlers in alice. | K2 & K3 | PSO1& PSO2 |
| CO 5 | Develop 3D animations. | K2 & K3 | PSO7 & PSO8 |

### Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 2 | 3 | 1 | 2 | 3 | 2 | 2 |
| CO4 | 3 | 3 | 1 | 2 | 2 | 1 | 2 | 2 |
| CO5 | 1 | 2 | 1 | 1 | 1 | 1 | 3 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 |
| CO3 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Employability 100%

## III B.Sc. Information Technology

## SEMESTER – VI

***For those who joined in 2019 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS/WEEK | CREDITS |
|---|---|---|---|---|---|
| USIT | 19I6SB6 | SKILL BASED - IMAGE MANIPULATION TOOLS | Practical | 2 | 2 |

**COURSE DESCRIPTION**

This course introduces the concepts and tools for design, create and manipulate images for integration in publication layout and web output by using the software tool.

**COURSE OBJECTIVES**

To introduce the concept of Vector based Drawing image editing techniques in Photoshop.

**UNITS**

**UNIT –I BASICS OF CORELDRAW (6 HRS.)**

Introduction-Getting Started-Creating A New File - Title Bar-Menu Bar- Tool Bar – Work Area-Views. TEXT Introduction-Text Tool-Converting Text-Formatting Text-Changing the Font Size-Decorating the Text-Webdings-Changing the Alignment-Applying Effects

**UNIT –II IMAGE& LAYOUT (6 HRS.)**

Bitmap Images-Vector Image-Resizing-Rotating-Skewing-Moving-Cropping-Importing Images-Adding Special Effects-Converting to Bitmap-Exporting Images. PAGE LAYOUT: Changing the Page Size-Changing the Layout-Applying Styles-Applying Bitmaps to the Background - Changing the

Background-Adding a Page Frame-Moving Between Pages.

**UNIT –III INTRODUCTION TO ADOBE PHOTOSHOP (6 HRS.)**

Getting Started With Photoshop: About Photoshop- Exploring the Toolbox - The New CS4 Applications Bar & the Options Bar -Exploring Panels & Menus - Creating & Viewing a New Document - Customizing the Interface - Setting Preferences - Navigating Photoshop - Menus and panels -Opening new files Opening existing files.

**UNIT –IV GETTING STARTED WITH LAYERS (6 HRS.)**

Understanding the Background Layer- Creating, Selecting, Linking &Deleting Layers- Locking & Merging Layers- Copying Layers, Using Perspective & Layer Styles- Filling & Grouping Layers- Introduction to Blending Modes- Blending Modes, Opacity & Fill- Creating & Modifying Text

**UNIT –V PHOTO RETOUCHING (6 HRS.)**

The Red Eye Tool- The Clone Stamp Tool- The Patch Tool & the Healing Brush Tool - The Spot Healing Brush Tool- The Color Replacement Tool- The Toning & Focus Tools - Painting with History.

**PROGRAM LIST**

1. Program to create text clipping effects
2. Program for Cropping using different techniques
3. Program to change background for the image
4. Program for Creation of Wedding Invitation
5. Program for Creation of Book Front page
6. Program for Creation of Image Web gallery
7. Program for Creation of Brochure
8. Program for Visiting card creation
9. Program for how to remove redeye & hotspot in the image
10. Program for Catalogue creation.

**REFERENCES:**

1. Kumar Bittu, “Adobe Photoshop”, ISBN: 978-9350570166, V&S Publishers.
2. Photoshop 7 Complete reference , ISBN 978-0072223118 - Greenberg – McGraw Hill Publications.

**Digital Open Educational Resources (DOER):**

1. Photoshop Online Training

https://www.tutorialspoint.com/photoshop_online_training/index.asp

## COURSE CONTENTS & LECTURE SCHEDULE:

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -1BASICS OF CORELDRAW** | | | | |
| 1.1 | Introduction, Getting Started, Creating A New File, Title Bar, Menu Bar, Tool Bar | 2 | Demonstration | Desktop PC |
| 1.2 | Work Area Views, Text Introduction, Text Tool, Converting Text &FormattingText | 1 | Demonstration | Desktop PC |
| 1.3 | Changing the Font Size Decorating the Text | 2 | Demonstration | Desktop PC |
| 1.4 | Changing the Alignment, Applying Effects | 1 | Demonstration | Desktop PC |
| **UNIT -2IMAGE & LAYOUT** | | | | |
| 2.1 | Bitmap Images, Vector Image, Resizing, Rotating, Skewing Moving, Cropping | 2 | Demonstration | Desktop PC |
| 2.2 | Importing Images, Adding Special Effects, Converting to Bitmap, Exporting Images. | 1 | Demonstration | Desktop PC |
| 2.3 | Page Layout, Changing the Page Size, Changing the Layout, Applying Styles | 2 | Demonstration | Desktop PC |
| 2.4 | Applying Bitmaps to the Background, Changing the Background, Adding a Page Frame, Moving Between Pages. | 1 | Demonstration | Desktop PC |

| Module No. | Topic | No. of Lectures | Teaching Pedagogy | Teaching Aids |
|---|---|---|---|---|
| **UNIT -3INTRODUCTION TO ADOBE PHOTOSHOP** | | | | |
| 3.1 | About Photoshop, Exploring the Toolbox, The New CS4 Applications Bar & the Options Bar | 1 | Demonstration | Desktop PC |
| 3.2 | Exploring Panels & Menus, Creating & Viewing a New Document | 2 | Demonstration | Desktop PC |
| 3.3 | Customizing the Interface, Setting Preferences | 2 | Demonstration | Desktop PC |
| 3.4 | Navigating Photoshop, Menusand panels | 1 | Demonstration | Desktop PC |
| **UNIT -4 GETTING STARTED WITH LAYERS** | | | | |
| 4.1 | Understanding the Layer, Creating, Selecting, Linking &Deleting Layers | 2 | Demonstration | Desktop PC |
| 4.2 | Locking & Merging Layers, Copying Layers, Using Perspective | 1 | Demonstration | Desktop PC |
| 4.3 | Layer Styles, Filling &Grouping Layers, Introduction to Blending Modes | 1 | Demonstration | Desktop PC |
| 4.4 | Blending Modes, Opacity & Fill Creating & Modifying Text | 2 | Demonstration | Desktop PC |
| **UNIT -5 PHOTO RETOUCHING** | | | | |
| 5.1 | The Red Eye Tool, The Clone Stamp Tool, The Patch Tool & Healing Brush Tool | 2 | Demonstration | Desktop PC |
| 5.2 | The Spot Healing Brush Tool, The Color Replacement Tool | 2 | Demonstration | Desktop PC |
| 5.3 | The Toning & Focus ToolsPainting with History brush tools | 2 | Demonstration | Desktop PC |

## INTERNAL - UG

| Levels | C1 | C2 | C3 | C4 | C5 | Total Scholastic Marks | Non Scholastic Marks C6 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|---|
| | T1<br>10 Mks. | T2<br>10 Mks. | Quiz<br>5 Mks. | Assignment<br>5 Mks | OBT/PPT<br>5 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| K1 | 2 | 2 | - | - | - | 4 | - | 4 | 10 % |
| K2 | 2 | 2 | 5 | - | - | 9 | - | 9 | 22.5 % |
| K3 | 3 | 3 | - | - | 5 | 11 | - | 11 | 27.5 % |
| K4 | 3 | 3 | - | 5 | - | 11 | - | 11 | 27.5 % |
| Non Scholastic | - | - | - | - | - | | 5 | 5 | 12.5 % |
| Total | 10 | 10 | 5 | 5 | 5 | 35 | 5 | 40 | 100 % |

## End Semester - UG

| Levels | Section A (i)<br>5 Mks. | Section A (ii)<br>5 Mks | Section B<br>8 Mks. | Section C<br>12 Mks | Section D<br>20 Mks. | Section E<br>10 Mks. | Total<br>60Mks. | |
|---|---|---|---|---|---|---|---|---|
| K1 | 5 | 5 | - | 4 | - | - | 14 | 23.33 % |
| K2 | - | - | 8 | 4 | - | - | 12 | 20 % |
| K3 | - | - | - | - | 20 | - | 20 | 33.33 % |
| K4 | - | - | - | 4 | - | 10 | 14 | 23.34 % |
| Total | 5 | 5 | 8 | 12 | 20 | 10 | 60 | 100 % |

| CIA | |
|---|---|
| Scholastic | **35** |
| Non Scholastic | **5** |
| | **40** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

****The best out of two will be taken into account***

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Construct simple vector graphics by using basic drawing elements and shape commands. | K2 & K3 | PSO1& PSO2 |
| CO 2 | Apply basic shape commands and image effects in processing raster format pictures. | K2 & K3 | PSO2 &PSO3 |
| CO 3 | Design and edit images using image-editing tool. | K2 & K3 | PSO2 &PSO3 |
| CO 4 | Apply layer features for creating images for web and print. | K2 & K3 | PSO2 &PSO3 |
| CO 5 | Develop effective graphics for both web and print media. | K3 & K4 | PSO6 & PSO8 |

### Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 3 | 3 | 1 | 2 | 1 | 2 | 2 |
| CO4 | 2 | 3 | 3 | 2 | 2 | 1 | 2 | 2 |
| CO5 | 1 | 2 | 1 | 1 | 1 | 3 | 1 | 3 |

## Mapping of COs with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 |
| CO3 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## III B.Sc. Information Technology

## SEMESTER –I

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | HRS/WEEK | CREDITS |
|---|---|---|---|---|
| USIT | 21I1SLK1 | TRENDS IN INFORMATION TECHNOLOGY | - | 2 |

**COURSE DESCRIPTION**

The new trends and disruptive technologies in IT (Information Technology) emphasis is given to the way technologies create a competitive edge and generate business value. This year the course will have a special emphasis in cloud computing, artificial intelligence, internet of things, and big data.

**COURSE OBJECTIVES**

To impact the knowledge about the recent trends in IT

**UNITS**

**UNIT –I E-COMMERCE INTRODUCTION**

E-commerce Infrastructure: Introduction, E-commerce Infrastructure-An Overview, Hardware, Server Operating System, Software, Network Website

**UNIT –II MANAGING THE E-ENTERPRISE**

Managing the e-Enterprise: Introduction, e-Enterprise, Managing the e-Enterprise, E-business Enterprise, Comparison between Conventional Design and E-organisation, Organisation of Business in an e-Enterprise

**UNIT –III TRANSACTION PROCESSING SYSTEMS**

Transaction Processing Systems - Features of TPS -**E-World:** Features Of E-Commerce - Importance Of E-Commerce - Types of Electronic Commerce - E-

Commerce Activities -E-Learning - E-Banking - E-Governance - E-Agriculture- E-Logistics..

**UNIT –IV TYPES OF WIRELESS SERVICES**

Benefits - Working of Biometric Systems – Uses – Types - **RFID:** Components - Working of RFID - Advantages. Embedded Systems – UAV(Unmanned Aerial Vehicle) - GPS - 3G - 4G - 5G - Wi-Fi - Wi-Max – Bluetooth- Infrared Communication - Firewall - Data Security and Cryptography - Parallel and Distributed Computing – VLSI - Smart Card.

**UNIT –V BIG DATA**

Knowledge Management – CRM - BPO – KPO – NLP - Artificial Intelligence - Big data - Big data Analytics – Cloud – Mobile - Internet of things - Image Processing - Nano technology - Semantic web - Social media - Soft Computing -Speech Recognition - Virtual Reality and Augmented reality - Third Eye: A Shopping Assistant for the Visually Impaired - Machine Learning - Neural Network.

**UNIT –VI DYNAMISM(for CIA only)**

Applications of wireless services

**TEXT BOOK:**

1) Peter Nortorn‟s, “ Introduction to Computer”, TMH, 2004, ISBN-0-07-05-3142-0
2) ChetanShrivastava“ Fundamentals of Information Technology”, Kalyani publishers, 2002,
ISBN-81-7663-576-6
3) DrMadhulikaJain,“Information Technology Concept”, BPB,2006,ISBN – 81-7656-276-9
4) Alexis and Mathews Leon, “Fundamentals of Information Technology”, Leon Press, ISBN
:8182090105
5) Verma,“Computer, Internet & Multimedia – Dictionary”, Universities Press

**REFERENCE BOOKS:**

1) Suresh K. Basandra, Computers Today, Galgotia Publications Pvt Ltd., New Delhi.
2) Computer Applications In Business, R. Parameswaran

3) ITL Education Solutions Limited, Introduction to Information Technology,PearsonEducation,New Delhi.
4) Perry, P.J., Worldwide Web secrets, Comdex Publishing, New Delhi..
5) Davis,Gordon.B, and Olson, Malgrethe H., Management Information systems, Mcgraw Hill Book company
6) Emerging Trends in Information Technology, Mrs. Jigisha D. Pardesi
7) Textbook of Emerging Trends in Information Technology Paperback – 2011,by Ravi P Patki
8) E-world: Emerging Trends in Information Technology.by ArpitaGopal&Chandrani Singh
9)

**Digital Open Educational Resources (DOER) :**.

1. https://www.tutorialspoint.com/fundamentals_of_science_and_technology/information_technology.htm
2. https://www.tutorialspoint.com/fundamentals_of_science_and_technology/information_technology.htm

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | To understand how virtualization improves cloud computing and common standards for cloud. | K1 | PSO1 |
| CO 2 | Understand different cloud platforms, application and programming support for it. | K1, K2, | PSO2 |
| CO 3 | Understand Big Data primitives | K1 & K3 | PSO5 |
| CO 4 | Understand and demonstrate Big Data processing skills by developing applications | K1, K2, K3 & | PSO4 |
| CO 5 | Understand the applications & impact of big data technologies | K2 & K4 | PSO3 |

**HOD'S**

**Signature**

## Mapping of C0s with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 2 | 2 | 2 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 1 | 2 | 2 | 2 | 2 | 1 |
| CO3 | 1 | 2 | 1 | 1 | 3 | 2 | 2 | 2 |
| CO4 | 1 | 1 | 1 | 3 | 2 | 1 | 2 | 2 |
| CO5 | 1 | 2 | 3 | 1 | 1 | 1 | 1 | 1 |

## Mapping of C0s with POs

| CO/ PSO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | 1 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 |
| CO3 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

**COURSE DESIGNER:**

1. **Staff Name: Mrs. T. CHARANYA NAGAMMAL**

**Forwarded By**

**V. Mageshwari**

Skill Development 100%

## I B.Sc IT

## SEMESTER –II

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | HRS/ WEEK | CREDITS |
|---|---|---|---|---|
| USIT | 21I2SL1 | PRIVACY AND SECURITY IN ONLINE SOCIAL MEDIA | - | 2 |

**COURSE DESCRIPTION**

With increase in the usage of the Internet, there has been an exponential increase in the use of online social media and networks on the Internet. Privacy and security of online social media need to be investigated, studied and characterized from various perspectives. The course content plays a vital role in making the students to understand the basic issues related to privacy and security in online social media.

**COURSE OBJECTIVES**

To facilitate the student to understand, privacy and security issues in Online Social Media.

**UNITS**

**UNIT –I INTRODUCTION**

Fundamentals of Social Networks – Introduction to Security and Privacy in social Networks

**UNIT –II DATA AND SOCIAL MEDIA**

Data collection from Social Networks – Challenges – Opportunities and Pitfalls in Online Social Networks

**UNIT –III THREATS IN SOCIAL MEDIA**

Privacy and Security Threats in Online Social Media - Defenses - Controlled Information Sharing in Online Social Media

**UNIT –IV ISSUES IN ONLINE SOCIAL MEDIA**

Identity Management in Online Social Networks - Privacy – Security

**UNIT –V ETHICS AND POLICIES**

Policies and Privacy – Crowdsourcing – Ethics and social Media

**UNIT –VI DYNAMISM (for CIA only)**

Ethics

**TEXT BOOK:**

1) Material

**REFERENCE BOOKS:**

1) Chbeir, Richard. Security and privacy preserving in social networks.Ed. Bechara Al Bouna. Berlin: Springer, 2013.
2) Cross, Michael. Social media security: Leveraging social networking while mitigating risk.Newnes, 2013.
3) Ahn, Gail-Joon, Mohamed Shehab, and Anna Squicciarini. "Security and privacy in social networks." IEEE Internet Computing 15.3 (2011): 10-12.

**Digital Open Educational Resources (DOER) :.**

1. https://www.tutorialspoint.com/fundamentals_of_science_and_technology/information_technology.htm
2. https://www.tutorialspoint.com/fundamentals_of_science_and_technology/information_technology.htm

| Levels | C1 | C2 | C3 | C4 | Total Scholastic Marks | Non Scholastic Marks C5 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|
| | Session - wise Average<br>5 Mks. | Better of W1, W2<br>5 Mks | M1+M2<br>5+5=10 Mks. | MID-SEM TEST<br>15 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| K1 | 5 | - | - | 2 ½ | 7.5 | - | 7.5 | 18.75 % |
| K2 | - | 5 | 4 | 2 ½ | 11.5 | - | 11.5 | 28.75 % |
| K3 | - | - | 3 | 5 | 8 | - | 8 | 20 % |
| K4 | - | - | 3 | 5 | 8 | - | 8 | 20 % |
| Non Scholastic | - | - | - | - | | 5 | 5 | 12.5 % |
| Total | 5 | 5 | 10 | 15 | 35 | 5 | 40 | 100 % |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| C1 | C2 | C3 | C4 | C5 | C6 | CIA | ESE | Total |
| 10 | 10 | 5 | 5 | 5 | 5 | 40 | 60 | 100 |

**UG CIA Components**

| | | | Nos | | |
|---|---|---|---|---|---|
| C1 | - | Test (CIA 1) | 1 | - | 10 Mks |
| C2 | - | Test (CIA 2) | 1 | - | 10 Mks |
| C3 | - | Assignment | 1 | - | 5 Mks |
| C4 | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| C5 | - | Quiz | 2 * | - | 5 Mks |

**C6** - Attendance - 5 Mks

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand basic concepts in Social Media. | K1 | PSO3 |
| CO 2 | Explain the challenges in social media. | K1, K2 | PSO3 |
| CO 3 | Understand the threats in Social Media | K1 & K3 | PSO3 |
| CO 4 | Explain the issues in Social Media | K1, K2, K3 | PSO6 |
| CO 5 | Understand Policies and ethics related to Social Media | K1 & K3 | PSO6 |

### Mapping COs Consistency with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO3 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 2 | 1 | 1 | 3 | 1 | 1 |
| CO5 | 1 | 1 | 2 | 1 | 1 | 3 | 1 | 1 |

## Mapping of COs with Pos

| CO/ PSO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO2 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO4 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 3 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

**COURSE DESIGNER:**

1. **Staff Name: Dr. V. Jane Varamani Sulekha**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

**II B.Sc IT**

**SEMESTER –III**

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | HRS/ WEEK | CREDITS |
|---|---|---|---|---|
| USIT | 21I3SL1 | VIDEO EDITING TOOLS | - | 2 |

**COURSE DESCRIPTION**

Video Editing is all about practice. In the course, you will come across different subjects and concepts. The basics include editing videos, removing and including sound, correcting the colours, managing the picture, bringing continuity in the video, and adding some special effects.

**COURSE OBJECTIVES**

- To allow course participants to know how to edit video and produce quality videos with simple editing tools such as filmora, video pad and adobe premiere pro.
- To allow course participants to have the required skillset to produce videos for personal usage, corporate usage, marketing and even for events.

**UNITS:**

**Unit I : KDEnlive**: The Interface-Cut/shorten video with the razor tool-Add/remove/swap audio from video-Cut, copy, and move clips- Video and audio effects-Artistic effects and filters.

**Unit II** : **KDEnlive**: - Video speed and slow-Using video and audio tracks-Add intro & outro to video- Adjust audio levels & volume control- Picture slide show- **Transform,** crop and resize video.

**Unit III** : **OpenShot Video Editor**: Introduction-Installation-Main Window-Files-Clips-Transitions-Animation-Titles-Profiles.

**Unit IV : Blender** The Blender Interface- Working with Viewports- Applying Textures- Lighting and Cameras - Render Settings .

**Unit V : Blender:** Ray-Tracing (mirror, transparency, shadows)- Animation Basics Video Sequence Editor.

**UNIT –VI DYNAMISM (for CIA only)**

Case study review

**REFERENCE BOOKS:**


1. "Digital Nonlinear Editing: New Approaches to Editing Film and Video" by Thomas A Ohanian.
2. Some Procedures for Sound Editing on Videotape: Using JVC Editing Control Unit RM-86U and 6-Channel Mixer MI 5000" by Richard Raskin.
3. "Editing Digital Video: The Complete Creative and Technical Guide (Digital Video and Audio Series)" by Robert M Goodman and Patrick Mcgrath


**Digital Open Educational Resources (DOER) :**.

1. https://www.tjfree.com/free-creative-tools/kdenlive-2/
2. https://cdn.openshot.org/static/files/user-guide/developers.html
3. https://www.cdschools.org/cms/lib04/PA09000075/Centricity/Domain/81/BlenderBasics_4thEdition2011.pdf.

| Levels | C1 | C2 | C3 | C4 | Total Scholastic Marks | Non Scholastic Marks C5 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|
| | Session -wise Average<br>5 Mks. | Better of W1, W2<br>5 Mks | M1+M2<br>5+5=10 Mks. | MID-SEM TEST<br>15 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| K1 | 5 | - | - | 2 ½ | 7.5 | - | 7.5 | 18.75 % |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **K2** | - | **5** | **4** | **2 ½** | **11.5** | - | **11.5** | 28.75 % |
| **K3** | - | - | **3** | **5** | **8** | - | **8** | 20 % |
| **K4** | - | - | **3** | **5** | **8** | - | **8** | 20 % |
| **Non Scholastic** | - | - | - | - | | **5** | **5** | 12.5 % |
| **Total** | **5** | **5** | **10** | **15** | **35** | **5** | **40** | **100 %** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **CIA** | **ESE** | **Total** |
| **10** | **10** | **5** | **5** | **5** | **5** | **40** | **60** | **100** |

**UG CIA Components**

| | | | **Nos** | | |
|---|---|---|---|---|---|
| **C1** | - | Test (CIA 1) | 1 | - | 10 Mks |
| **C2** | - | Test (CIA 2) | 1 | - | 10 Mks |
| **C3** | - | Assignment | 1 | - | 5 Mks |
| **C4** | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| **C5** | - | Quiz | 2 * | - | 5 Mks |
| **C6** | - | Attendance | | - | 5 Mks |

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Earn how to combine basic design principles in video editing. | K1 | PSO3 |
| CO 2 | Generate a video by applying his knowledge. | K1 | PSO3 |
| CO 3 | Present the edited video. | K1 & K3 | PSO3 |
| CO 4 | Apply required corrections in his project and presents it in the class. | K1, K3 | PSO5 |
| CO 5 | Record short clips by using camera. | K1 & K3 | PSO6 |

**Mapping COs Consistency with PSOs**

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO3 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 1 |
| CO5 | 1 | 1 | 2 | 1 | 1 | 3 | 1 | 1 |

**Mapping of COs with Pos**

| CO/ PSO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **CO2** | **3** | **1** | **2** | **1** | **1** | **1** | **1** |
| **CO3** | **3** | **1** | **1** | **1** | **1** | **2** | **1** |
| **CO4** | **3** | **2** | **1** | **2** | **1** | **1** | **1** |
| **CO5** | **1** | **1** | **1** | **2** | **1** | **3** | **2** |

**Note**:  Strongly Correlated – **3**  Moderately Correlated – **2**
 Weakly Correlated -**1**

**COURSE DESIGNER:**

1. **Staff Name: T.Leena Prema Kumari**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## II B.Sc IT

## SEMESTER –IV

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | HRS/ WEEK | CREDITS |
|---|---|---|---|---|
| USIT | 21I4SL1 | INTRODUCTION TO COMPUTER FORENSICS | - | 2 |

**COURSE DESCRIPTION**

The course content plays a vital role in making the students to understand the basic concepts in Computer Forensics.

**COURSE OBJECTIVES**

To facilitate the student to understand, the basics in digital forensics and techniques for conducting the forensic examination on different digital devices.

**UNITS**

**UNIT –I INTRODUCTION**

Computer forensics fundamentals - Benefits of forensics - computer crimes - computer forensics evidence and courts, legal concerns and private issues.

**UNIT –II INVESTIGATIONS**

Understanding Computing Investigations – Procedure for corporate High-Tech investigations - understanding data recovery work station and software - conducting and investigations.

**UNIT –III DATAACQUISITION**

Understanding storage formats and digital evidence - determining the best acquisition method - acquisition tools - validating data acquisitions - performing RAID data acquisitions - remote network acquisition tools - other forensics acquisitions tools.

**UNIT –IV PROCESSING CRIMES AND INCIDENT SCENES**

Securing a computer incident or crime - seizing digital evidence at scene - storing digital evidence - obtaining digital hash - reviewing case.

**UNIT –V TOOLS**

Current computer forensics tools- software, hardware tools - validating and testing forensic software - addressing data-hiding techniques - performing remote acquisitions - E-Mail investigations- investigating email crime and violations - understanding E-Mail servers - specialized E-Mail forensics tool.

**UNIT –VI DYNAMISM (for CIA only)**

Reviewing cases

**TEXT BOOK:**

1) Warren G. Kruse II and Jay G. Heiser, “Computer Forensics: Incident Response Essentials”, Addison Wesley, 2002.
2) Nelson, B, Phillips, A, Enfinger, F, Stuart, C., “Guide to Computer Forensics and Investigations, 2nd ed., Thomson Course Technology, 2006, ISBN: 0-619-21706-5.

**REFERENCE BOOKS:**

1) Vacca, J, Computer Forensics, Computer Crime Scene Investigation, 2nd Ed, Charles River Media, 2005, ISBN: 1-58450-389.

**Digital Open Educational Resources (DOER) :**.

1) https://www.geeksforgeeks.org/introduction-of-computer-forensics/

| Levels | C1 | C2 | C3 | C4 | Total Scholastic Marks | Non Scholastic Marks C5 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|
| | Session - wise Average<br>5 Mks. | Better of W1, W2<br>5 Mks | M1+M2<br>5+5=10 Mks. | MID-SEM TEST<br>15 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **5** | **-** | **-** | **2 ½** | **7.5** | - | **7.5** | 18.75 % |
| **K2** | **-** | **5** | **4** | **2 ½** | **11.5** | - | **11.5** | 28.75 % |
| **K3** | **-** | **-** | **3** | **5** | **8** | - | **8** | 20 % |
| **K4** | **-** | **-** | **3** | **5** | **8** | - | **8** | 20 % |
| **Non Scholastic** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **5** | **5** | **10** | **15** | **35** | **5** | **40** | **100 %** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| C1 | C2 | C3 | C4 | C5 | C6 | CIA | ESE | Total |
| 10 | 10 | 5 | 5 | 5 | 5 | 40 | 60 | 100 |

**UG CIA Components**

| | | | Nos | | |
|---|---|---|---|---|---|
| C1 | - | Test (CIA 1) | 1 | - | 10 Mks |
| C2 | - | Test (CIA 2) | 1 | - | 10 Mks |
| C3 | - | Assignment | 1 | - | 5 Mks |
| C4 | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| C5 | - | Quiz | 2 * | - | 5 Mks |
| C6 | - | Attendance | | - | 5 Mks |

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Understand basic concepts in Computer forensics. | K1 | PSO3 |
| CO 2 | Explain different investigation procedures. | K1, K2 | PSO3 |
| CO 3 | Understand different Data acquisition mode. | K1 & K3 | PSO3 |
| CO 4 | Understand investigation process using computer forensics. | K1, K2, K3 | PSO6 |
| CO 5 | Know how to apply forensic analysis tools to recover important evidence for identifying computer crime. | K1 & K3 | PSO6 |

## Mapping COs Consistency with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO3 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 2 | 1 | 1 | 3 | 1 | 1 |
| CO5 | 1 | 1 | 2 | 1 | 1 | 3 | 1 | 1 |

## Mapping of COs with Pos

| CO/ PSO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO2 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO4 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 3 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

**COURSE DESIGNER:**

1. **Staff Name: Dr. V. Jane Varamani Sulekha**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

Skill Development 100%

## III B.Sc IT

## SEMESTER –V

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | HRS/ WEEK | CREDITS |
|---|---|---|---|---|
| USIT | 21I5SL1 | GREEN COMPUTING | - | 2 |

**COURSE DESCRIPTION**

The course content plays a vital role in making the students to understand the basic concepts in Green Computing.

**COURSE OBJECTIVES**

To facilitate the student to learn the fundamentals of Green Computing and to understand the issues related with Green compliance

**UNITS**

**UNIT –I INTRODUCTION**

Green IT Fundamentals - Business, IT, and the Environment – Green computing: carbon foot print, scoop on power – Green IT Strategies: Drivers, Dimensions, and Goals – Environmentally Responsible Business: Policies, Practices, and Metrics.

**UNIT –II GREEN ASSETS AND MODELING**

Green Assets: Buildings, Data Centers, Networks, and Devices – Green Business Process Management: Modeling, Optimization, and Collaboration – Green Enterprise Architecture – Environmental Intelligence – Green Supply Chains – Green Information Systems: Design and Development Models.

**UNIT –III GRID FRAMEWORK**

Virtualization of IT systems – Role of electric utilities, Telecommuting, teleconferencing and teleporting – Materials recycling – Best ways for Green PC – Green Data center – Green Grid framework.

**UNIT –IV GREEN COMPLIANCE**

Socio-cultural aspects of Green IT – Green Enterprise Transformation Roadmap – Green Compliance: Protocols, Standards, and Audits – Emergent Carbon Issues: Technologies and Future.

**UNIT –V CASE STUDIES**

The Environmentally Responsible Business Strategies (ERBS) – Case Study Scenarios for Trial Runs – Case Studies – Applying Green IT Strategies and Applications to a Home, Hospital, Packaging Industry and Telecom Sector.

**UNIT –VI DYNAMISM (for CIA only)**

Case study review

**TEXT BOOK:**

1) BhuvanUnhelkar, ―Green IT Strategies and Applications-Using Environmental Intelligence, CRC Press, June 2014.
2) Woody Leonhard, Katherine Murray, ―Green Home computing for dummies, August 2012.

**REFERENCE BOOKS:**

1) Alin Gales, Michael Schaefer, MikeEbbers, ―Green Data Center: steps for the Journey, Shroff/IBM rebook, 2011.
2) John Lamb, ―The Greening of IT, Pearson Education, 2009.
3) Jason Harris, ―Green Computing and Green IT- Best Practices on regulations & industry, Lulu.com, 2008
4) Carl speshocky, ―Empowering Green Initiatives with IT, John Wiley & Sons, 2010.
5) Wu Chun Feng (editor), ―Green computing: Large Scale energy efficiency, CRC Press

**Digital Open Educational Resources (DOER) :**.

1) https://www.tutorialspoint.com/environmental_studies/environmental_studies_towards_sustainable_future.htm

| Levels | C1 | C2 | C3 | C4 | Total Scholastic Marks | Non Scholastic Marks C5 | CIA Total | % of Assessment |
|---|---|---|---|---|---|---|---|---|
| | Session - wise Average<br>5 Mks. | Better of W1, W2<br>5 Mks | M1+M2<br>5+5=10 Mks. | MID-SEM TEST<br>15 Mks | 35 Mks. | 5 Mks. | 40Mks. | |
| **K1** | **5** | **-** | **-** | **2 ½** | **7.5** | - | **7.5** | 18.75 % |
| **K2** | **-** | **5** | **4** | **2 ½** | **11.5** | - | **11.5** | 28.75 % |
| **K3** | **-** | **-** | **3** | **5** | **8** | - | **8** | 20 % |
| **K4** | **-** | **-** | **3** | **5** | **8** | - | **8** | 20 % |
| **Non Scholastic** | **-** | **-** | **-** | - | | **5** | **5** | 12.5 % |
| **Total** | **5** | **5** | **10** | **15** | **35** | **5** | **40** | **100 %** |

## EVALUATION PATTERN

| SCHOLASTIC | | | | | NON - SCHOLASTIC | MARKS | | |
|---|---|---|---|---|---|---|---|---|
| C1 | C2 | C3 | C4 | C5 | C6 | CIA | ESE | Total |
| 10 | 10 | 5 | 5 | 5 | 5 | 40 | 60 | 100 |

**UG CIA Components**

| | | | Nos | | |
|---|---|---|---|---|---|
| C1 | - | Test (CIA 1) | 1 | - | 10 Mks |
| C2 | - | Test (CIA 2) | 1 | - | 10 Mks |
| C3 | - | Assignment | 1 | - | 5 Mks |
| C4 | - | Open Book Test/PPT | 2 * | - | 5 Mks |
| C5 | - | Quiz | 2 * | - | 5 Mks |
| C6 | - | Attendance | | - | 5 Mks |

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Acquire knowledge to adopt green computing practices to minimize negative impacts on the environment. | K1 | PSO3 |
| CO 2 | Enhance the skill in energy saving practices in their use of hardware. | K1, K2 | PSO3 |
| CO 3 | Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders. | K1 & K3 | PSO3 |
| CO 4 | Explain issues related to green compliances. | K1, K2, K3 | PSO6 |
| CO 5 | Understand the ways to minimize equipment disposal requirements | K1 & K3 | PSO6 |

## Mapping COs Consistency with PSOs

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 | PSO7 | PSO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO2 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO3 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 2 | 1 | 1 | 3 | 1 | 1 |
| CO5 | 1 | 1 | 2 | 1 | 1 | 3 | 1 | 1 |

## Mapping of COs with Pos

| CO/ PSO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO2 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO4 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 3 | 1 |

**Note**: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

**COURSE DESIGNER:**

1. **Staff Name: Dr. V. Jane Varamani Sulekha**

**Forwarded By**

**V. Mageshwari**

**HOD'S**

**Signature**

**Skill Development 100%**

## III B.Sc IT

## SEMESTER –VI

***For those who joined in 2021 onwards***

| PROGRAMME CODE | COURSE CODE | COURSE TITLE | CATEGORY | HRS | CREDITS |
|---|---|---|---|---|---|
| USCA | 21J6SLI1 | DATA SCIENCE AND TOOLS | PRACTICAL | - | 2 |

**COURSE DESCRIPTION**

This course gives basic understanding about big data analytics using R language and to disseminate knowledge in cutting edge technologies to store and visualize huge data.

**COURSE OBJECTIVES**

1. Recognize the essential notion of data science
2. Examine the Tools and skills of a data scientist
3. Figure out the working of R Tool

**UNITS**

**UNIT I : DATA SCIENCE AND DATA SCIENTISTS (6 HRS)**

Introduction – Need of Data Science – Business Intelligence Vs Data Analysis – Features – Life Cycle – Discovery – Data Preparation – Model Planning – Model Building – Operationalize – Communicate Results – Who are Data Scientists? – Skills needed for Data Scientists

**UNIT II : TOOLS FOR DATA SCIENCE (6 HRS)**

EXCEL – R Tool - Apache Hadoop – BigML – SaS – MATLAB – WEKA – Tableau – QlikView

**UNIT III : R TOOL** **(6 HRS)**

Startup – The Workspace – Variable – Constants – Data Types – R Operators

**UNIT IV : R STATEMENTS AND FUNCTIONS** **(6 HRS)**

Control Statements – If – If.. Else – Switch – Looping Statements – Functions – Strings

**UNIT V : R INTERFACES AND VISUALIZATION** **(6 HRS)**

CSV Files – Excel Files – XML Files – R Database – Pie Chart – Bar Chart – Histograms – Line Graphs – Statistical Display of Results

**WEB REFERENCES :**

https://data-flair.training/blogs/data-science-tools/

**OER REFERENCES :**

https://github.com/chaconnewu/free-data-science-books

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

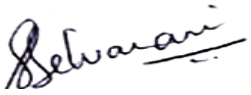
| NO. | COURSE OUTCOMES | KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY) | PSOs ADDRESSED |
|---|---|---|---|
| CO 1 | Foresee the life cycle of data science and the skills of data scientists. | K1 | PSO1& PSO2 |
| CO 2 | Compare the pros and cons of the tools of data science | K1, K2 | PSO2, PSO3 |

| | | | |
|---|---|---|---|
| CO 3 | Analyze the methodologies R Tool | **K1 & K3** | **PSO3, PSO5** |
| CO 4 | Implement the programming erect of R. | **K1, K2 & K3** | **PSO5, PSO8** |
| CO 5 | Design the code for the problems related to data science using R | **K3 & K4** | **PSO8** |

**COURSE DESIGNER:**

1. **Staff Name : Ms. S. Selvarani**

**Forwarded By**



**(S.Selvarani)**

**HOD'S Signature & Name**