**J.J. COLLEGE OF ARTS AND SCIENCE (Autonomous)**

**PUDUKKOTTAI – 622422**

## DEPARTMENT OF COMPUTER SCIENCE

## B.Sc. COMPUTER SCIENCE

**Proposed Course Structure based on UGC - LOCF and TANSCHE**
**(Choice Based Credit System)**

**(Applicable for the candidates admitted from the academic year 2022-2023 onwards)**

| | **Programme Educational Objectives** |
|---|---|
| **PO – 1** | To make learners aware of the diachronic and synchronic dimensions of their chosen area of specialization |
| **PO – 2** | To introduce learners to the latest developments in the chosen area |
| **PO – 3** | To give learners a frame of reference that will help them see issues in their interrelation with related fields or lend them a focus on particular areas and approaches |
| **PO – 4** | To give learners a practical orientation in the skills acquired in their areas through Major-Based and Skill-Based Optionals |
| **PO – 5** | To promote an inter-disciplinary approach to put their areas of specialization in relation to other relevant domains of knowledge |
| **PO – 6** | To cultivate in learners the skills and methodologies specific to their areas |
| **PO – 7** | To promote citizenship qualities by sensitizing learners to issues of the environment, gender and socio-ethical values |
| **PO – 8** | To promote a concern for society through suitable extension activities |
| **PO – 9** | To promote man-making education through extra-curricular activities like Sports, Fine-Arts and Cultural Programmes |
| **PO – 10** | To contribute to the formation of character and personality through socialization activities and leadership training through Association and Club Activities. |

| | **Programme Outcomes** |
|---|---|
| **PO – 1** | Acquire theoretical and practical knowledge and enhance the employability skills of the Graduates |
| **PO – 2** | Identify and analyze the problem and formulate solutions with appropriate consideration for the public Health, Safety, Security and Sustainable Environment |

| | |
|---|---|
| **PO – 3** | Acquire the responsibility to contribute for the personal development , the development of the community and to respect the ethical values, social responsibilities and diversity |
| **PO – 4** | Function as an individual and as a member, leader in diverse teams and in multidisciplinary settings |
| **PO – 5** | Recognize the need for and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change |

| | **Programme Specific Outcomes** |
|---|---|
| **PSO – 1** | An ability to identify, formulate, and develop solutions to computational challenges |
| **PSO – 2** | An ability to apply mathematical theories, algorithmic principles, and computer science theories in modelling and designing of computational systems |
| **PSO – 3** | An ability to design, implement and evaluate a real time systems to meet desired needs within realistic constraints. |
| **PSO – 4** | Acquire understanding of professional and ethical responsibility along with understanding of mathematics and computer oriented concepts |
| **PSO – 5** | Function on multidisciplinary teams and communicate effectively and resolve practical problems |

| Sem | Part | Course code | Course Title | Hrs/ Week | Credits | Exam Hours | Marks | | Total Marks |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Int | Ext | |
| I | I | U1R2TL1/ HL1/FL1 | Language Course – I | 6 | 3 | 3 | 25 | 75 | 100 |
| | II | U1R2EL1 | English Language course – I | 6 | 3 | 3 | 25 | 75 | 100 |
| | III | U1R2CSCC1 | Programming in C | 5 | 5 | 3 | 25 | 75 | 100 |
| | | U1R2CSCC2P | C Programming Practical | 3 | 3 | 3 | 40 | 60 | 100 |
| | | U1R2CSCC3 | Digital Computer Fundamentals | 5 | 4 | 3 | 25 | 75 | 100 |
| | | U1R2MCSAC1 | Allied I – Algebra and Calculus | 5 | 4 | 3 | 25 | 75 | 100 |
| **TOTAL** | | | | **30** | **22** | | | | **600** |
| II | I | U2R2TL2/ HL2/FL2 | Language Course – II | 5 | 3 | 3 | 25 | 75 | 100 |
| | II | U2R2EL2 | English Language course – II | 5 | 3 | 3 | 25 | 75 | 100 |
| | III | U2R2CSCC4 | Data Structures and Algorithms | 5 | 5 | 3 | 25 | 75 | 100 |
| | | U2R2CSCC5P | Data Structures using C Practical | 3 | 3 | 3 | 40 | 60 | 100 |
| | | U2R2MCSAC2 | Allied II – Operations Research | 5 | 4 | 3 | 25 | 75 | 100 |
| | | U2R2MCSAC3 | Allied III – Numerical Methods and Statistics | 5 | 4 | 3 | 25 | 75 | 100 |
| | IV | U2R2AECC1 | Ability Enhancement Compulsory Course – 1 Environmental Studies | 2 | 2 | 3 | 25 | 75 | 100 |
| **TOTAL** | | | | **30** | **24** | | | | **700** |
| III | I | U3R2TL3/ HL3/FL3 | Language Course – III | 6 | 3 | 3 | 25 | 75 | 100 |
| | II | U3R2EL3 | English Language course – III | 6 | 3 | 3 | 25 | 75 | 100 |
| | III | U3R2CSCC6 | Java Programming | 5 | 5 | 3 | 25 | 75 | 100 |
| | | U3R2CSCC7P | Java Programming Practical | 3 | 3 | 3 | 40 | 60 | 100 |
| | | U3R2APHAC4 | Allied IV– Applied Physics | 5 | 4 | 3 | 25 | 75 | 100 |
| | | - | Allied V – Applied Physics Practical | 3 | * | | * | * | * |
| | IV | U3R2AECC2 | Ability Enhancement Compulsory Course – 2 Value Education | 2 | 2 | 3 | 25 | 75 | 100 |
| **TOTAL** | | | | **30** | **20** | | | | **600** |
| IV | I | U4R2TL4/ HL4/FL4 | Language Course – IV | 6 | 3 | 3 | 25 | 75 | 100 |
| | II | U4R2EL4 | English Language course – IV | 6 | 3 | 3 | 25 | 75 | 100 |
| | III | U4R2CSCC8 | Relational Database Management System | 5 | 5 | 3 | 25 | 75 | 100 |
| | | U4R2CSCC9P | SQL and PLSQL Practical | 3 | 3 | 3 | 40 | 60 | 100 |
| | | U4R2APHAC5P | Allied V – Applied Physics Practical | 3 | 3 | 3 | 40 | 60 | 100 |
| | | U4R2APHAC6 | Allied VI – Applied Physics | 5 | 4 | 3 | 25 | 75 | 100 |
| | IV | U4R2CSSEC1:1/1:2 | Skill Enhancement Course – 1 (1:1/1:2) | 2 | 2 | 3 | 25 | 75 | 100 |
| **TOTAL** | | | | **30** | **23** | | | | **700** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| V | III | U5R2CSCC10 | Operating System | 7 | 5 | 3 | 25 | 75 | 100 |
| | | U5R2CSCC11 | Open Source Technology | 7 | 5 | 3 | 25 | 75 | 100 |
| | | U5R2CSCC12 | Open Source Technology Practical | 3 | 3 | 3 | 40 | 60 | 100 |
| | | U5R2CSDSE1:1/ 1:2/1:3 | Discipline Specific Elective – 1 (1:1/ 1:2/1:3) | 6 | 5 | 3 | 25 | 75 | 100 |
| | IV | U5R2CSSEC2:1 /2:2 | Skill Enhancement Course – 2 (2:1/2:2) | 4 | 2 | 3 | 25 | 75 | 100 |
| | | U5R2**GEC1 | Generic Elective Course - 1 To be chosen from other dept. | 3 | 2 | 3 | 25 | 75 | 100 |
| **TOTAL** | | | | **30** | **22** | | | | **600** |
| VI | III | U6R2CSCC13 | Mini Project | 6 | 5 | 3 | | | 100 |
| | | U6R2CSCC14 | Web Technology | 5 | 5 | 3 | 25 | 75 | 100 |
| | | U6R2CSCC15 | Web Technology Practical | 3 | 3 | 3 | 40 | 60 | 100 |
| | | U6R2CSDSE2:1/ 2:2/2:3 | Discipline Specific Elective – 2 (2:1/ 2:2/2:3) | 5 | 5 | 3 | 25 | 75 | 100 |
| | | U6R2CSDSE3:1/ 3:2/3:3 | Discipline Specific Elective – 3(3:1/3:2/3:3) | 5 | 5 | 3 | 25 | 75 | 100 |
| | IV | U6R2CSSEC3:1/ 3:2 | Skill Enhancement Course – 3 (3:1/3:2) | 2 | 2 | 3 | 25 | 75 | 100 |
| | | U6R2**GEC2 | Generic Elective Course - 2 To be chosen from other dept. | 2 | 2 | 3 | 25 | 75 | 100 |
| | | U6R2AECC3 | Ability Enhancement Compulsory Course – 3 Gender Studies | 2 | 1 | 3 | 25 | 75 | 100 |
| | V | | Extension Activities | - | 1 | | | | --- |
| | | | Extra Credit Online Course – MOOCS | - | -4 | | | | --- |
| **TOTAL** | | | | **30** | **29 (4)** | | | | **800** |
| **GRAND TOTAL** | | | | | **140(4)** | | | | **4000** |

**CC- Core Course / AC – Allied Course /DSE – Discipline Specific Elective / SEC – Skill Enhancement Course / GEC – Generic Elective Course / AECC – Ability Enhancement Compulsory Course /P – Practical Total Credit – 140 / Total Marks – 4000. Extension activities shall be outside the instruction hours.**

## DISCIPLINE SPECIFIC ELECTIVE COURSES

**Discipline Specific Elective - 1**

1. Software Engineering
2. Software Testing
3. System Administration and Maintenance

**Discipline Specific Elective - 2**

1. Object Oriented Programming using C++
2. PHP Programing
3. Internet Programming

**Discipline Specific Elective - 3**

1. Computer Networks
2. Data Mining and Warehousing
3. Multimedia Systems

## SKILL ENHANCEMENT COURSES

**Skill Enhancement Course - 1**

1. HTML and Web Design
2. Mobile Application Development

**Skill Enhancement Course - 2**

1. Photoshop and Flash
2. Corel Draw and Page Maker

**Skill Enhancement Course - 3**

1. Perl Programming
2. Python Programming

## GENERIC ELECTIVE COURSES

**Generic Elective Course - 1 (Offered by the Department)**

1. Introduction to Internet Concepts
2. Office Automation

**Generic Elective Course - 2 (Offered by the Department)**

1. Web Services
2. Web Programming

# Language Course I

**நோக்கம்**

| | | | |
|---|---|---|---|
| **தலைப்பு** | **: இக்கால இலக்கியம் - இலக்கணம்** | **வரிசைஎண்** | **: c1** |
| **பருவம்** | **: முதலாம் பருவம்** | **தாள் குறியீடு:U1R2TL1** | |
| **பிரிவு** | **: பகுதிஐ தமிழ்** | **மதிப்புப் புள்ளி:** | **3** |
| **மதிப்பெண்** | **: CIA -25, EA -75** | **கற்றல் நேரம்** | **: 75 மணி** |

1. தற்காலதமிழ் இலக்கியத்தின் நவீனத்தன்மையைஅறிந்துகொள்ளல்
2. வசனகவிதையின் அமைப்புமுறையைப் புரிந்துகொள்ளல்
3. புதுக்கவிதைக்கும் மரபுக்கவிதைக்கும் உள்ளவேறுபாட்டுத் தன்மையைப் பிரித்துக் காட்டுதல்
4. உரைநடைவாசிப்பின் மூலம் நாநெகிழ்ப் பயிற்சிஅளித்தல்
5. சமூகமாற்றத்திற்குச் சிறந்தஊடகம் கதை இலக்கியம் என்பதைஆய்ந்தறியத் தூண்டுதல்

கூறு: 1 **இக்கால இலக்கியவரலாறு, இலக்கணம்** **(15hrs)**

இக்கால இலக்கியவரலாறு–உரைநடை,சிறுகதை,புதினம்,கவிதை,நாட்டுப்புறஇலக்கியம், இலக்கணம் - ஆகுபெயர்கள்

கூறு: 2 **வசனகவிதை** **(15hrs)**

பாரதியார்–கண்ணன் பாட்டு - கண்ணன் என் சேவகன்,பாரதிதாசன் - வாளினைஎடுடா,கவிமணி தேசிகவிநாயகம் பிள்ளை–மலரும் மாலையும் - பாரதியும் பட்டிக்காட்டனும்,வாணிதாசன் - புதிய ஆத்திசூடி,நாட்டுப்புறப்பாட்டு–நாற்று நடும் பாட்டு,கதைப்பாடல் - 1980 வைகைவெள்ளத்துயர்

கூறு: 3 **புதுக்கவிதை** **(15hrs)**

அப்துல்ரகுமான் - ஆலாபனை–ஆறா(த)அறிவு,மீரா - ஊசிகள் - நான் அவன் நண்பன்,மு.மேத்தா - ஆகாயத்திற்கு அடுத்தவீடு,வெ.இறையன்பு–பூபாளத்திற்குஒருபுல்லாங்குழல் - நிறவெறிக்குகறுப்பு, சூ.செல்லப்பா –தேன்கிண்ணம் - புழுதிக்காட்டுப் புலம்பல்,ஆங்கரைப் பைரவி–விரல் தொட்டவானம் - புத்தகம்

கூறு: 4 **உரைநடை** **(15hrs)**

பாரதியார் - கொள்கைக்கும் செயலுக்குமுள்ள தூரம்,நா.சஞ்சீவி - மொழிவழிப் பொழுதுபோக்குகள்,மு.வரதராசன் - தங்கைக்கு, பூ.ஆலாலசுந்தரம் - பழந்தமிழர் பண்பு,ரா.பி.சேதுபிள்ளை- கலையும் கற்பனையும்,பால் வளன் அரசு–தமிழகக் கோவில்கள், எஸ். வையாபுரிப்பிள்ளை–கம்பனும் தமிழும்

**கூறு: 5 சிறுகதை** **(12hrs)**

செம்பைமணவாளன் - தவம,அண்டனூர் சுரா–மிடற்றுத் தாகம்,சுரே' மான்யா–உயிர் நிலம்,சோலச்சி–கதையல்ல,ந.சோலையப்பன் - பூமராங்,புதுகைசஞ்சீவி–திருமதிதலைவர்,மிடறுமுருகதாஸ் - தூக்குக் கூடை

**பாடநூல்கள்**:

| | | |
|---|---|---|
| இலக்கியவரலாறு | - | துறைவெளியீடு |
| செய்யுள் திரட்டு | - | துறைவெளியீடு |
| நிறப்பிரிகை (சிறுகதைத் தொகுதி) | - | துறைவெளியீடு |
| உரைமாலை (உரைநடைத் தொகுதி) | - | துறைவெளியீடு |

**இப்பாடத்தினைக் கற்பதின் மூலம் மாணவர்கள் பெறும் பயன்கள**

| Sl.No | Course Outcomes | Knowledge Level |
|---|---|---|
| CO1 | காலந்தோறும் தமிழ் இலக்கியம் கடந்துவந்த காலச்சுவடுகளை அறிந்துகொள்வர் | K2 |

| | | |
|---|---|---|
| **CO2** | கவிதையில் கையாளப்பட்டுள்ளச் சொல்லாடலைக் கண்டுணர்வர் | **K2** |
| **CO3** | புதுக்கவிதையின் வரலாற்றுக்குரியக் கருப்பொருளைமதிப்பிடுவர் | **K5** |
| **CO4** | உரைநடைவாசிப்புத் திறனில் மேன்மைஅடைவர் | **K2** |
| **CO5** | சிறுகதைப் படைப்பதில் உள்ளநுணுக்கங்களைவரையறைசெய்வர் | **K4** |

| **இக்கால இலக்கியம், இலக்கணம்** | | | | | | **U1R2TL1** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Out comes | **Programme Outcomes (POs)** | | | | | **Programme Specific Outcomes(PSOs)** | | | | | **Mean Score** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| CO1 | **3** | **3** | **3** | **2** | **3** | **2** | **3** | **2** | **3** | **2** | **2.6** |
| CO2 | **3** | **3** | **2** | **3** | **2** | **2** | **3** | **2** | **3** | **2** | **2.5** |
| CO3 | **3** | **2** | **3** | **2** | **3** | **3** | **3** | **2** | **3** | **2** | **2.6** |
| CO4 | **3** | **2** | **3** | **3** | **2** | **2** | **3** | **2** | **2** | **2** | **2.4** |
| CO5 | **3** | **3** | **3** | **2** | **2** | **3** | **3** | **3** | **3** | **2** | **2.7** |
| Mean Overall Score | | | | | | | | | | | **2.56** |
| Result | | | | | | | | | | | **High** |

# English Language Course I

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| I | 3 | 60 | U1R2EL1 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**OBJECTIVES**:

| | |
|---|---|
| **1** | To expose the learner to modern English prose. |
| **2** | To extend learners communication skills through suitable tasks. |
| **3** | To expand the learners passive and active vocabulary and repertoire of structures. |
| **4** | To develop the ability in independent writing. |
| **5** | To provide enough practice for real life applications of language (English) |

**UNIT – I** **(Inst. Hrs: 09)**

| | |
|---|---|
| A.P.J Abdul Kalam | My vision for India |
| Jim Corbett | A Deed of Bravery |
| Bertrand Russell | Has Man A Future? |

**UNIT – II** **(Inst. Hrs:12)**

Swami Vivekananda The Secret of Work

| | |
|---|---|
| C.E.M. Joad | Our |
| Nirad C. Chaudhuri | CivilizationThe |
| Rabindranath | Great City |
| Tagore | The Auspicious Vision |

**UNIT – III** **(Inst. Hrs: 17)**

Synonyms - Antonyms - Homonyms - One Word Substitutes - Idioms and Phrases-Use of Articles, Prepositions, Analysis of Simple Sentences into SVOCA, Tag Questions, Framing questions to suit responses - short form responses both positive and negative to questions.

**UNIT - IV** **(Inst. Hrs: 17)**

Comprehension Exercises oral and written - 12 passages (multiple choice & Questions and Answers supplemented by listening exercises to be given by the teacher)

**UNIT – V** **(Inst. Hrs:17 )**

Letter Writing - Both formal & Informal, Jumbled words and sentences, Paragraph Writing (Hints Development)

Units III, IV and V from workbook appended to the textbook

**Web Resources**

https://rufusonline.blogspot.com/2011/10/my-visions-for-india-drapjabdul-kalam.html
https://mastanappa.blogspot.com/2016/03/our-civilization-c-e-m-joad-additional.html
http://xylemofenglish.blogspot.com/2016/05/the-secret-of-work-by-swami-vivekananda.html?m=1

https://peacenews.info/node/5147/bertrand-russell-has-man-future
http://sittingbee.com/the-auspicious-vision-rabindranath-tagore/

**OUTCOME:**

| Course Name - Prose and English for Communication | Course Code - U1R2EL1 | Knowledge Level |
|---|---|---|
| **On completion of the course, students will be able to** | | |
| **CO1** | discover and respond to aspects of language like diction, syntax, and style. | **K3** |
| **CO2** | perceive features like tense and time reference, polysemy, ambiguity and paraphrase. | **K5** |
| **CO3** | formulate ordinary dialogues and conversations in real life. | **K6** |
| **CO4** | appraise communicative acts like narrating an incident, describing a process, etc. | **K5** |
| **CO5** | develop skills in speaking and writing. | **K6** |

## Relationship Matrix for CO, PO, PSO

| Title of the Course : **Prose and English for Communication** | | | | | | Course code : **U1R2EL1** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcome (CO)** | Programme Outcome (PO) | | | | | Programme Specific Outcome (PSO) | | | | | **Mean Scoreof COs** |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO – 1** | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 2 | 3 | 2 | 2.5 |
| **CO – 2** | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2.4 |
| **CO – 3** | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 2.5 |
| **CO – 4** | 2 | 2 | 3 | 2 | 1 | 3 | 2 | 2 | 3 | 3 | 2.3 |
| **CO – 5** | 3 | 3 | 2 | 2 | 3 | 1 | 3 | 2 | 3 | 1 | 2.3 |
| | | | | | | | | | **Mean Overall Score** | | **2.40** |
| | | | | | | | | | **Result** | | **HIGH** |

# Core Course I – Programming in C

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| I | 5 | 60 | U1R2CSCC1 | 25 | 75 | 100 | EMPLOYABILITY |

## COURSE OBJECTIVES

- To provide knowledge about usage of data, operators and library functions
- To give understanding about control structures
- To provide a comprehensive use of functions and storage classes
- To impart knowledge to handle arrays, strings, structures and unions
- To learn and acquire art of pointers and file operations

**UNIT – I: C Fundamentals** **Hours: 12**

C fundamentals Character set - Identifier and keywords - data types - constants - Variables - Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical, Assignment and Conditional Operators - Library functions.

**UNIT–II: Data input output functions and Control Structures** **Hours: 12**

Data input output functions - Simple C programs - Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue, go to statements - Comma operator.

**UNIT–III: Functions and Storage Classes** **Hours: 12**

Functions -Definition - proto-types - Passing arguments - Recursions. Storage Classes - Automatic, External, Static, Register Variables.

**UNIT–IV: Arrays, Structures and Unions** **Hours: 12**

Arrays - Defining and Processing - Passing arrays to functions - Multi- dimension arrays - Arrays and String. Structures - User defined data types - Unions - Bit wise operations.

**UNIT–V: Pointers and Files** **Hours: 12**

Pointers - Declarations - Passing pointers to Functions - Operation in Pointers - Pointer and Arrays - Arrays of Pointers - Structures and Pointers - Files: Creating Processing, Opening and Closing a data file.

## TEXT BOOK

1. E.Balagurusamy, "Programming in ANSI C", Fifth Edition, Tata McGraw Hill.

## REFERENCE BOOKS

1. B.W. Kernighan and D M.Ritchie, "The C Programming Language",2nd

Edition, PHI, 1988.
2. H. Schildt, "C: The Complete Reference", 4th Edition. TMH Edition, 2000.
3. Gottfried B.S, "Programming with C", Second Edition, TMH Pub. Co. Ltd., New Delhi 1996.
4. Kanetkar Y, "Let us C", BPB Pub., New Delhi, 1999.

## WEB REFERENCES

1. https://www.javatpoint.com/c-programming-language-tutorial/
2. https://www.programiz.com/c-programming/
3. https://www.tutorialspoint.com/cprogramming/index.htm/
4. https://www.geeksforgeeks.org/c-programming-language
5. https://www.freecodecamp.org/news/what-is-the-c-programming-language-beginner-tutorial

## COURSE OUTCOMES

On successful completion of this course, the students would be able to

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Interpret data types, variables and constants | **K5** |
| **CO: 2** | Apply input and output routines and control structures efficiently | **K3** |
| **CO: 3** | Write and use function, calls and strings | **K1** |
| **CO: 4** | Interpret and use the common data structures typically found in C programs – namely arrays, and structures | **K5** |
| **CO: 5** | Experiment with handle pointers, and files | **K3** |

## CO – PO MAPPING

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | **2.4** |
| CO 2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | **2.5** |
| CO 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.5** |
| CO 4 | 3 | 2 | 3 | 1 | 2 | 3 | 3 | 2 | 3 | 2 | **2.4** |
| CO 5 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **2.8** |

Mean Overall Relationship is **2.52** which is **HIGH**

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# Core Course II – C Programming Practical

| SEMESTER | CREDITS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|
| | | | INT | EXT | TOTAL | |
| I | 3 | U1R2CSCC2P | 40 | 60 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To encourage the students to work on basic concepts of the C-programminglanguage
- To train the students to use control structures and loops in real time problems
- To make the students handle and analyze arrays and strings
- To enumerate knowledge about the function handling
- To implement structures and file operations and hence improve the programming skills through C language

1. **Summation of Series**
   i. Sin(x)
   ii. Cos(x)
   iii. Exp(x) (Comparison with built in functions)

2. **String Manipulation**
   i. Counting the number of vowels, consonants, words, white spaces in a line of text and array of lines.
   ii. Reverse a string and check for palindrome.
   iii. Finding and replacing substrings.

3. **Recursion**
   i. nPr, nCr
   ii. Fibonacci sequence
   iii. Factorial

4. **Matrix Manipulation**
   i. Addition
   ii. Subtraction
   iii. Multiplication
   iv. Transpose

5. **Sorting and Searching**
   i. Insertion Sort
   ii. Bubble Sort
   iii. Linear Search
   iv. Binary Search

**COURSE OUTCOMES**

On completion of this course, the students would be able to

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Compile and trace the execution of programs in C language | **K6** |
| **CO: 2** | Use control structures and loops and strings | **K3** |
| **CO: 3** | Experiment with user defined functions using recursion | **K3** |
| **CO: 4** | Analyze and implement two-dimensional arrays for matrix operations | **K4** |
| **CO: 5** | Apply sorting and searching techniques | **K3** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **2.8** |
| **CO 2** | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | **2.7** |
| **CO 3** | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | **2.6** |
| **CO 4** | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | **2.6** |
| **CO 5** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |

Mean Relationship value is **2.7** which is **HIGH**

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# Core Course III – Digital Computer Fundamentals

| SEMESTER | CREDIT | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| I | 5 | 60 | U1R2CSCC3 | 25 | 75 | 100 | SKILL DEVELOPMENT |

## COURSE OBJECTIVES

- To train the students about the basic concepts of Digital Computer Fundamentals and in-depth knowledge of logic gates.
- To impart knowledge on Boolean Algebra and work out problems on Boolean functions using theorems and K-Maps
- To analyze design, develop, debug and document combinational circuits.
- To analyze and design basic sequential digital circuits such as flip flops and registers.
- To analyze and design simple systems composed of programmable logic such as ROMs and RAMs

**UNIT – I: Number Systems and Codes** **HOURS: 12**

Number Systems and Codes: Number System – Base Conversion – Binary Codes – Code Conversion. Digital Logic: Logic Gates – Truth Tables – Universal Gates.

**UNIT – II: Boolean Algebra** **HOURS: 12**

Boolean Algebra: Laws and Theorems – SOP, POS Methods – Simplification of Boolean Functions – Using Theorems, K-Map, Prime – Implicant Method – Binary Arithmetic: Binary Addition – Subtraction – Various Representations of Binary Numbers – Arithmetic Building Blocks – Adder – Subtractor.

**UNIT – III: Combinational Logic:** **HOURS: 12**

Combinational Logic: Multiplexers – Demultiplexers – Decoders – Encoders – Code Converters – Parity Generators and Checkers.

**UNIT – IV: Sequential Logic** **HOURS: 12**

Sequential Logic: RS, JK, D, and T Flip-Flops – Master-Slave Flip-Flops. Registers: Shift Registers – Types of Shift Registers.

**UNIT – V: Counters** **HOURS: 12**

Counters: Asynchronous and Synchronous Counters – Ripple – Ring Counters. Memory: Basic Terms and Ideas – Types of ROMs – Types of RAMs.

## TEXT BOOK

1. V.Rajaraman and T.Radhakrishnan, *Digital Computer Design*, Prentice Hallof

India, 2001

2. D.P.Leach and A.P.Malvino, *Digital Principles and Applications* – TMH – Fifth Edition – 2002.
3. M. Moris Mano, *Digital Logic and Computer Design*, PHI, 2001.
4. T.C.Bartee, *Digital Computer Fundamentals*, 6th Edition, Tata McGraw Hill, 1991.

## WEB RESOURCES

1. https://www.britannica.com/technology/digital-computer
2. https://www.javatpoint.com/digital-computers
3. https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials/
4. https://www.tutorialspoint.com/digital_circuits/index.htm

## COURSE OUTCOMES

On completion of this course the students would be able to

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Analyze and Interpret Number System conversions and the basic knowledge about logic gates | **K5** |
| **CO: 2** | Improve knowledge on Boolean Algebra Laws and Theorems and Able to simplify n Boolean functions using theorems and K-Maps | **K6** |
| **CO: 3** | Analyze, design, develop, debug and document combinational circuits. | **K4, K6** |
| **CO: 4** | Analyze and design basic sequential digital circuits such as flip flops and registers | **K4, K6** |
| **CO: 5** | Analyze and design simple systems composed of programmable logic such as ROMs and RAMs | **K4, K6** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | **Relationship** |
| **CO 1** | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.5** |
| **CO 2** | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.7** |
| **CO 3** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.8** |
| **CO 4** | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | **2.6** |
| **CO 5** | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | **2.6** |

Mean Relationship value is **2.64** which is **HIGH**

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# Allied I – Algebra and Calculus

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| I | 4 | 105 | U1R2MCSAC1 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**Objectives:**

- *To solve the Algebraic problems using the knowledge of equations*
- *To introduce the basic concept of Matrices*
- *To understand the basic skills of Successive differentiation*
- *To know the fundamental principles Differential equations*
- *To introduce the basic concept of Integration*

**Unit I: Theory of Equations (20 HOURS)**

Introduction- In equation with rational coefficients irrational roots occur in pairs- Relations between roots and coefficients of equations- transformation of equations- To increase or decrease the roots of a given equation by a quantity- Form of the quotient and remainder when a polynomial is divided by a binomial. [Simple problems only]

**Unit II: Matrices (20 HOURS)**

Introduction to Matrices – Scalar multiplication of a matrix- Equality of matrices- Addition and Subtraction – Symmetric matrix- Multiplication- Inverse matrix – Solution of simultaneous equation – Rank of Matrix – Consistency – Characteristic equation, Eigen Values, Eigen Vectors – Cayley Hamilton's Theorem (Proof not needed) – Simple applications only.

**UNITIII: Differentiation and Successive Differentiation (22 HOURS)**

Definitions – Differential Co-efficient - product rule – Quotient rule – Function of function rule – Inverse Functions – Hyperbolic functions – Successive Differentiation: $n^{th}$ derivative – Trigonometrical Transformations –Leibnitz formula for $n^{th}$ derivative [Formulas and simple applications only.

**UNITIV: Differential Equations (23 HOURS)**

Differential equations of first order - Second order of types $(aD^2+bD+c)\ y = f(x)$, where a, b, c are constants and f(x) is one of the following types: (i)$e^{kx}$ (ii)Sinkx (or) Coskx, where k be a constant (iii) $x^n$, n being integer.

**UNIT V: Integration (20 HOURS)**

Integration – Definite integral – Integrals of function containing linear functions of x - Integration of Rational Algebraic Functions - Rule (a), (b) and (c).

**Text Books:**


1. **Algebra vol. I**,T.K.ManicavachagamPillai and Others, S.V. Publications 2011.
2. **Algebra vol. II**, S. Narayanan &T.K.ManicavachagamPillai and Others, S.V. Publications 2011.
3. **Calculus, Vol. I**,T.K.ManicavachagamPillai and Others, S.V. Publications 2011.
4. **Calculus, Vol. III**, S. Narayanan &T.K.ManicavachagamPillai and Others, S.V. Publications 2011.
5. **Calculus, Vol. II**, S. Narayanan &T.K.ManicavachagamPillai and Others, S.V. Publications 2011.

**UnitI**: Chapter 6 (Sec 10, 11, 15, 17, 18) [1]
**Unit II:** Chapter 2 (Sec 1 – 8 and 10 – 16) [2]
**UnitIII**: Chapter 2 (Sec 2.1 – 3.14) and Chapter 3 Fully [3]
**Unit IV**: Chapter 1 (Sec 1.1 – 1.3 formulas only), Chapter 2(Sec 1, 3 and 4) [4]
**Unit V**: Chapter 1 (Sec 1.1 - 7.4) [5]

**Reference Books:**

1. **Differential Calculus,** M.L.Kanna, Jai Prakashnath& Co.,
2. **Allied Mathematics**, S.G.Venkatachalapathy, Margham Publications 2007.

**e – Resources:**

1. https://youtu.be/wgD50fKbcJ8
2. https://www.vedantu.com/maths/leibnitz-theorem

**Outcomes:**

**The learners would have the ability to,**

| | | |
|---|---|---|
| CO1 | Access students in making the transition from the arithmetic to the symbolic form. | K4 |
| CO2 | Obtain the knowledge of Characteristic equation, Eigen Values and Eigen Vectors. | K1 |
| CO3 | Obtain expressions for higher order derivatives of a function using the rules of differentiation. | K5 |
| CO4 | Compute the expression for the differential equations of first order. | K1 |
| CO5 | Interpret the indefinite integral as a definite integral with variable limits. | K3 |

**K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create**

**PROGRAM SPECIFIC OUTCOMES**

| **Course Outcome (CO)** | **Programme Outcomes (PO)** | | | | | **Programme Specific Outcomes (PSO)** | | | | | **Mean Relationship** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CO/PO | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO1** | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | **2.7** |
| **CO2** | 2 | 2 | 3 | 3 | 1 | 2 | 2 | 1 | 2 | 1 | **1.9** |
| **CO3** | 3 | 2 | 2 | 1 | 3 | 3 | 3 | 3 | 3 | 2 | **2.5** |
| **CO4** | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | **2.1** |
| **CO5** | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 1 | 3 | 3 | **2.6** |

**3-Strong; 2-Medium; 1-Low**

Mean Overall Relationship is 2.34 which is **HIGH**

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# Language Course II

| | | | |
|---|---|---|---|
| **தலைப்பு** | **: இடைக்கால இலக்கியம், இலக்கணம்** | **வரிசைஎண் :** | **c2** |
| **பருவம்** | **: இரண்டாம் பருவம்** | **தாள் குறியீடு** | **: U2R2TL2** |
| **பிரிவு** | **: பகுதி ஐ தமிழ்** | **மதிப்புப் புள்ளி:** | **3** |
| **மதிப்பெண்** | **: CIA -25, EA -75** | **கற்றல் நேரம்** | **: 60 மணி** |

**நோக்கம் :**

1. இடைக்கால இலக்கியம் கூறும் தத்துவங்களைமீட்டறியச் செய்தல்
2. சமயக்கல்வி மூலம் ஏற்படும் நல்லிணக்கநெறிகளைப் புரிந்துகொள்ளச் செய்தல்
3. வைணவ இலக்கியத்தைவாழ்வியலோடுஒப்பிட்டுஅறிய தூண்டுதல்
4. சிற்றிலக்கியத்திலுள்ள இலக்கியச் சுவையைஎதார்த்தவாழ்வியலோடுபொருத்திப் பார்க்கச் செய்தல்
5. புதினம் உணர்த்தும் மனிதஉளவியல் கூறுகளைமதிப்பீடுசெய்தல்

**கூறு : 1 இலக்கியவரலாறு, இலக்கணம் (13hrs)**

பக்தி இலக்கியங்கள் - பன்னிருதிருமுறைகள்,நாலாயிரதிவ்யபிரபந்தம்,சிற்றிலக்கியங்கள், இலக்கணம் - வழு,வழாநிலை,வழுவமைதி, இரட்டைக்கிளவி.

**கூறு : 2 சைவ இலக்கியம் (13hrs)**

திருஞானசம்பந்தர் தேவாரம் - திருச்சாய்க்காடுபதிகம் (பாடல் : 100 -110),திருநாவுக்கரசர் - திருமழப்பாடிபதிகம் (பாடல் : 2567 - 2576),திருவாசகம் - அன்னைப்பத்து

**கூறு : 3 வைணவ இலக்கியம் (12hrs)**

திருமங்கைஆழ்வார் - பெரியதிருமொழி–பெரியதிருமந்திரத்தின் மகிமை,(பாடல் :948 –957) நாச்சியார் திருமொழி–குயிற்பத்து (பாடல் 545 -556) பூதத்தாழ்வார் - இரண்டாம் திருவந்தாதி (பாடல்: 2182 - 2191)

**கூறு : 4 சிற்றிலக்கியங்கள்,சித்தர் இலக்கியம் (12hrs)**

முத்துக்குமாரசாமிபிள்ளைத் தமிழ் - முத்தப்பருவம் (4ஆவது பாடல்),வருகைப்பருவம் (2ஆவது பாடல்) திரிகூடராசப்பக் கவிராயர் - குறவஞ்சிவசந்தவள்ளிபந்தாடியது (முதல் நான்குபாடல்கள்,தமிழ் விடுதூது –151-160 கண்ணிகள்,பட்டினத்தார் பாடல்கள் - நெஞ்சொடுபுலம்பல் (1 – 10 பாடல்கள்)

**கூறு : 5 நாவல் (10hrs)**

பனையடி–ஆசிரியர் இரா.செல்வம்

**பாடநூல்கள் :**

| | | |
|---|---|---|
| பக்தி இலக்கியவரலாறு | - | துறைவெளியீடு |
| பனையடி (நாவல்) | - | இரா.செல்வம்<br>வேடியர் சென்னை. |

**இப்பாடத்தினைக் கற்பதின் மூலம் மாணவர்கள் பெறும் பயன்கள்**

| Sl.No | Course Outcomes | Knowledge Level |
|---|---|---|
| **CO1** | பக்தி இலக்கியத் தோற்றத்தின் அவசியத்தைமீட்டுணர்வர் | **K2** |
| **CO2** | சைவ இலக்கியங்களில் காணலாகும் உயிர்ப்பரவல் உயிர் தோற்றம் போன்றவற்றைஅறிவியல் கருத்துகளோடுபொருத்திகாண்பர் | **K4** |
| **CO3** | வைணவம் கூறும் மனிதத்தைப் போற்றிபின்பற்றுவர் | **K3** |
| **CO4** | சிற்றிலக்கியச் சுவையறிந்துசெய்யுள் நலம் பாராட்டுவர் | **K6** |
| **CO5** | புதினம் காட்டும் புனிதத்தைஉணர்ந்துபாத்திரப் பண்புகளைத் திறனாய்வுச் செய்வர் | **K4** |

| **இடைக்கால இலக்கியம், இலக்கணம்** | | | | | | **U2R2TL2** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Out comes | **Programme Outcomes (POs)** | | | | | **Programme Specific Outcomes(PSOs)** | | | | | **Mean Score** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| CO1 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | **2.5** |
| CO2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | **2.5** |
| CO3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | **2.3** |
| CO4 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | **2.5** |
| CO5 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | **2.7** |
| **Mean Overall Score** | | | | | | | | | | | **2.5** |
| **Result** | | | | | | | | | | | **High** |

# English Language Course II

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| II | 3 | 60 | U1R2EL2 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**OBJECTIVES**

| | |
|---|---|
| **1** | To give the learner a feel of poetry |
| **2** | To promote a perception of the aesthetic use of language |
| **3** | To revise a few aspects of grammar from a communicative angle |
| **4** | To provide reading and writing practice |
| **5** | To give practice in free writing. |

**UNIT - I** **(Inst. Hrs :13)**

Shakespeare : All the World's a Stage...(lines 139-166) (The seven stages of Man)
As You Like It(Act II Scene VII)Henry Wordsworth Longfellow :A Psalm Of Life
Oliver Goldsmith : The Village Schoolmaster Rabindranath Tagore : Where the mind is without FearJohn Masefield Laugh and Be Merry

**UNIT – II** **(Inst. Hrs :12)**

Rupert Brooke The Soldier
P.B. Shelley Ozymandias
Judith Wright The Company of Lovers
Sarojini Naidu The Queen's Rival

**UNIT – III** **(Inst. Hrs:15)**

Verbs –Infinitives and Gerunds - Modals - Tenses – Active &Passive - Direct and Indirect - Clauses – Analysis and Transformation of sentences – Concord and Governance– Word order.

**UNIT - IV** **(Inst. Hrs :10)**

Note making – Arguments for and against Issues - Summarizing

**UNIT - V** **(Inst. Hrs :10)**

Developing outlines into paragraphs - Report Writing – Writing Curriculum Vitae

**Web Resources**

https://poemanalysis.com/william-shakespeare/all-the-worlds-a-stage/ https://poemanalysis.com/henry-wadsworth-longfellow/a-psalm-of-life/#:~:text=Henry%20Wadsworth%20Longfellow-,Summary,matter%20of%20number%20and%20figures
https://www.toppr.com/guides/english/english-literature/ozymandias-summary/https://www.litcharts.com/poetry/rupert-brooke/the-soldier
http://sumanabala.blogspot.com/2012/10/queens-rival-sarojini-naidu.html?m=1

**COURSE OUTCOMES :**

| **Course Name - Poetry and English for Communication** | **Course Code - U2R2EL2** | **Knowledge Level** |
|---|---|---|
| **On completion of the course, students will be able to** | | |
| **CO1** | interpret and appreciate simple poems. | **K5** |
| **CO2** | categorise and respond to aspects of poetic language like deviance, figures of speech, etc. | **K4** |
| **CO3** | perceive features like tense and time reference, polysemy, ambiguity and paraphrase relations. | **K5** |
| **CO4** | construct ordinary dialogues , conversations and group discussions to suit real life situations. | **K6** |
| **CO5** | design communications in writing on ordinary matters like narrating an incident, describing a process, etc. | **K6** |

**Relationship Matrix for CO, PO, PSO**

| Title of the Course : **Poetry and English for Communication** | | | | | | **Course code : U2R2EL2** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcome (CO)** | **Programme Outcome (PO)** | | | | | **Programme Specific Outcome (PSO)** | | | | | **Mean Score of COs** |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO – 1** | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2.6 |
| **CO – 2** | 3 | 3 | 1 | 2 | 3 | 2 | 3 | 2 | 3 | 1 | 2.3 |
| **CO – 3** | 2 | 1 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2.2 |
| **CO – 4** | 3 | 2 | 1 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 2.1 |
| **CO – 5** | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 1 | 3 | 2.4 |
| | **Mean Overall Score** | | | | | | | | | | **2.32** |
| | **Result** | | | | | | | | | | **HIGH** |

## Core Course IV – Data Structures and Algorithms

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| II | 5 | 60 | U2R2CSCC4 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**COURSE OBJECTIVES:**

- To introduce various data structures such as Arrays, Stacks and Queues and their implementations.
- To introduce Linked List and its Applications
- To understand and apply algorithmic problems including tree traversals, graph traversals and shortest path.
- To understand Symbol Tables , hashing Tables and different sorting methods
- To study various sorting algorithms

**UNIT–I: Introduction of Basic Data Structures HOURS: 12**

Introduction of algorithms, analyzing algorithms, Arrays : Representation of Arrays, Implementation of Stacks and queues, Application of Stack: Evaluation of Expression - Infix to postfix Conversion - Multiple stacks and Queues, Sparse Matrices.

**UNIT–II: Linked list HOURS: 12**

Linked list : Singly Linked list - Linked stacks and queues - polynomial addition - More on linked Lists - Doubly linked List and Dynamic Storage Management - Garbage collection and compaction.

**UNIT–III: Trees and Graphs HOURS: 12**

Trees: Basic Terminology - Binary Trees - Binary Tree representations - Binary trees - Traversal - More on Binary Trees - Threaded Binary trees - counting Binary trees. Graphs: Terminology and Representations - Traversals, connected components and spanning Trees, Single Source Shortest path problem.

**UNIT–IV: Symbol Tables HOURS: 12**

Symbol Tables : Static Tree Tables - Dynamic Tree Tables - Hash Tables : Hashing Functions - overflow Handling. External sorting : Storage Devices - sorting with Disks : K-way merging - sorting with tapes.

**UNIT–V: Internal sorting HOURS: 12**

Internal sorting: Insertion sort - Quick sort - 2 way Merge sort - Heap sort - shell sort - sorting on keys. Files: Files, Queries and sequential organizations - Index Techniques - File organization.

## TEXT BOOKS

1. Ellis Horowitz, Sartaj Shani, Data Structures, Galgotia publication.

## REFERENCE BOOKS

1. Data structures Using C Aaron M. Tenenbaum, Yedidyah Langsam, Moshe J.Augenstein, Kindersley (India) Pvt. Ltd.,
2. Data structure and Algorithms, Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman, Pearson Education Pvt. Ltd.,

## WEB REFERENCES

1. https://www.programiz.com/dsa
2. https://www.geeksforgeeks.org/data-structures/
3. https://www.tutorialspoint.com/data_structures_algorithms/index.htm

## COURSE OUTCOMES

On completion of this course the students would be able to

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Improve knowledge on various data structures such as Arrays, Stacks and Queues and their implementations | **K6** |
| **CO: 2** | Develop knowledge on Boolean Algebra Laws and Theorems and Able to simplify n Boolean functions using theorems and K-Maps | **K6** |
| **CO: 3** | Understand and apply algorithmic problems including tree traversals, graph traversals and shortest path | **K3** |
| **CO: 4** | Understand and Analyze problems using Symbol Tables , hashing Tables and different sorting methods | **K4** |
| **CO: 5** | Demonstrate various sorting algorithms and files management | **K2** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| **CO 2** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| **CO 3** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.9** |
| **CO 4** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **2.9** |
| **CO 5** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **2.9** |

Mean Relationship value is **2.78** which is **HIGH**

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# Core Course V – Data Structures Using C Practical

| SEMESTER | CREDITS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|
| | | | INT | EXT | TOTAL | |
| II | 3 | U2R2CSCC5P | 40 | 60 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To understand and analyze problems related to basic data structures such as arrays and stacks
- To understand various operations on Queues
- To understand and apply problems related to Linked list
- To demonstrate Binary Search and tree traversal methods
- To understand sorting using divide and conquer technique

1. Write a C program to create two array lists of integers. Sort and store the elements of both of them in third list.
2. Write a C program to multiply two matrices A and B and store the resultant matrix in C using arrays.
3. Write a C program to experiment the operation of STACK using array.
4. Write a C program to create menu driven options to implement QUEUE to perform the following

   (i) Insertion (ii) Deletion (iii) Modification (iv) Listing of elements
5. Write a C program to create Linked list representations of employee records and do the following operations using pointers.

   (i) To add a new record.

   (ii) To delete an existing record.

   (iii) To print the details about an employee.

   (iv) To find the number of employees in the structure.
6. Write a C Program to count the total nodes of the linked list.
7. Write a C program to insert an element at the end of the linked list.
8. Write a C program to insert an element at the beginning of a doubly linked list.
9. Write a program to demonstrate Binary Search.
10. Write a C program to traverse the given binary tree using all traversal methods.
11. Write a C program to arrange a set of numbers in ascending order using QUICK SORT.

## COURSE OUTCOMES

On completion of this course the students would be able to

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Understand and analyze problems related to basic data structures such as arrays and stacks | **K4** |
| **CO: 2** | Interpret various operations on Queues | **K5** |
| **CO: 3** | Apply problems related to Linked list | **K3** |
| **CO: 4** | Demonstrate Binary Search and tree traversal methods | **K2** |
| **CO: 5** | Develop knowledge on sorting using QUICK SORT | **K6** |

| **RELATIONSHIP MATRIX FOR CO,PO & PSO** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Program Outcomes** | | | | | **Program Specific Outcomes** | | | | | **Mean Relationship** |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| **CO 2** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.7** |
| **CO 3** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| **CO 4** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| **CO 5** | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | **2.8** |

Mean Relationship value is **2.48** which is **HIGH**

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# Allied II – Operations Research

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| II | 4 | 75 | U1R2MCSAC2 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**Objectives:**

- *To understand Operation Research, Linear programming formation and role of Computer in OR*
- *To improve the skills of solving very common problems which we come across in various fields like transportation.*
- *To introduce concepts of Assignment Problems*
- *To develop Sequencing Problems in industries with machines*
- *To introduce Network and to find critical path*

**Unit I: Introduction to OR (16 Hours)**

Introduction - basics of OR - OR & decision making - Role of computers in OR - Linear programming formulations & graphical solution of two variables - canonical & standard forms of LPP - Introduction - concepts of slack & surplus variables - simplex method for $\leq$ constraints.

**Unit II: Transportation Problem (14 Hours)**

Introduction - Transportation algorithm - concepts of feasibility basicness, methods used to find the solution to a TP - Unbalanced transportation problem.

**Unit III: Assignment Problem (15 Hours)**

Introduction - - assignment algorithm - General model of the assignment problem - unbalanced assignment problem - solution to the assignment problem – maximization – Travelling Salesman.

**Unit IV: Sequencing Problems (15 Hours)**

Problems of sequencing - Processing of n jobs through two machines - processing of n jobs through 3 machines.

**Unit V: Networks (15 Hours)**

Introduction to Network - Fulkerson's rule - measures of activity - CPM - Finding the critical path - calculating TF, FF, IF, PERT computation.

**Text Books:**

1. **Problems in Operations Research,** Manmohan &P. .K Gupta, Sultan Chand Publishers, New Delhi, 1999.

   **Unit I**: Chapter 1 - 4

   **Unit II**:Chapter 15

   **Unit III**:Chapter 16 –Pg. No. 399 – 432.

   **Unit IV**: Chapter 17

   **Unit V**: Chapter 27

**Reference Books:**

1) **AnIntroduction of Operations Research,**Prem Kumar Gupta and D.S.Hira, S.Chand and co., Ltd. New Delhi, 1995.
2) **Operations Research,**HumdyA.Taha,(7$^{th}$Edn.), Mcmillan Publishing Company, New Delhi, 1982.

**e- Resources:**

1. https://youtu.be/nLjopro7H7k
2. **https://www.notes4free.in/admin/postimages/OR%20NOTES.pdf**

**Outcomes:**

**The learners would have the ability to,**

| | | |
|---|---|---|
| CO1 | Identify and develop OR models from the verbal description of the real system | K1 |
| CO2 | Develop the solving technique and analyse the concepts of feasibility | K3 |
| CO3 | Solve specialized linear programming problems like the transportation and assignment problems. | K5 |
| CO4 | Identity the resources required for a project and generate a plan and work schedule. | K1 |
| CO5 | Develop computational skill and logical thinking in formulating industry oriented problems as a mathematical problem and finding solutions to these problems | K6 |

**K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create**

**PROGRAM SPECIFIC OUTCOMES**

| **Course Outcome (CO)** | **Programme Outcomes (PO)** | | | | | **Programme Specific Outcomes (PSO)** | | | | | **Mean Score** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CO/PO | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO1** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| **CO2** | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | **2.6** |
| **CO3** | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | **2.4** |
| **CO4** | 3 | 1 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 1 | **2.5** |
| **CO5** | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **2.8** |

**3-Strong; 2-Medium; 1-Low**

Mean Overall Relationship is **2.62** which is **HIGH**

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# Allied III – Numerical Methods and Statistics

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| II | 4 | 105 | U1R2MCSAC3 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**Objectives:**

- *To understand the concept of transcendental and polynomial equations*
- *To Know how to use numerical methods to solve Simultaneous Linear Equations*
- *To understand how to find Numerical interpolation with equal and unequal intervals*
- *To know the techniques of Numerical Differentiation and Numerical Integration*
- *To understand Mean, Median, Mode, Standard Deviation, Correlation and Regression*

**Unit I: Solution of Algebraic and Transcendental Equations (23 Hours)**

Bisection Method, Method of False Position, Iteration Method, Newton Raphson Method - Problems only.

**Unit II: Solution of Simultaneous Linear Equations (22 Hours)**

Gauss Elimination Method, Gauss Jacobi Method, Gauss Jordan Method, Gauss Seidel Method- (no proof needed).

**Unit III: Numerical Interpolation (18 Hours)**

Lagrange's Interpolation Formula – Divided differences –Newton's Formula - Newton's Forward and Backward Interpolation Formulae(No proof needed problems only).

**Unit IV: Numerical Differentiation and Integration (20 Hours)**

Newton's Forward and Backward Differentiation Formula – Trapezoidal, Simpson's1/3$^{rd}$ and 3/8$^{th}$ Rule. (Problems only)

**Unit V: Statistics (22 Hours)**

Mean, Median, Mode, Standard Deviation, Correlation and Regression – Simple Numerical Problems Only.

**Text books:**

1. **Introductory methods of numerical analysis**,S.S. Sastry, Prentical Hall India, 1994.
2. **Statistical methods,** S.P.Gupta ,S.Chand& Company, New Delhi.
3. **Numerical Methods**, N. Subramaniam, Scm Publishers, Erode.

**Unit I:** Chapter II sec 2.1to 2.5 [1]

**Unit II:**Chapter I, Sec 1.2 fully [3]

**Unit III:**Chapter II sec2 {Page No. 87 – 92, 99 - 110 and 128 – 145} [3]

**Unit IV:**Chapter V 5.2, 5.4.1,5.4.2, 5.4.3[1]

**Unit V:**Chapter II, Sec 2.5, 2.6, 2.7 [2]

**e – Resources:**

1. https://youtu.be/pUDeeE-ugyc
2. https://www.maths.dur.ac.uk/users/anthony.yeates/na17.pdf

**Reference Books:**

1. **Numerical Methods**,P.Kandasamy,S.Chand& Co., New Delhi, .1998
2. **Statistics**,R.S.N. Pillai and Bagavathi S, Chand & Co Ltd., New Delhi, 1999.

**Outcomes:**

**The learners would have the ability to,**

| | | |
|---|---|---|
| CO1 | Acquire the knowledge of transcendental and polynomial equations. | K2 |
| CO2 | Choose the suitable computational method among existing methods. | K3 |
| CO3 | Understand the nature and operations of Numerical analysis with theories & concepts. | K2 |
| CO4 | Know about numerical methods to solve Numerical differentiation and Integration. | K1 |
| CO5 | Compute Correlation coefficients and Regression Analysis. | K5 |

**K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create**

**PROGRAM SPECIFIC OUTCOMES**

| **Course Outcome (CO)** | **Programme Outcomes (PO)** | | | | | **Programme Specific Outcomes (PSO)** | | | | | **MEAN SCORE** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CO/PO | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO1** | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | **2.6** |
| **CO2** | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | **2.6** |
| **CO3** | 3 | 2 | 2 | 1 | 2 | 3 | 3 | 3 | 2 | 2 | **2.3** |
| **CO4** | 3 | 1 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | **2.6** |
| **CO5** | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | **2.7** |

**3-Strong; 2-Medium; 1-Low**

Mean Overall Relationship is **2.56** which is **HIGH**

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## Ability Enhancement Compulsory Course – I Environmental Studies

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| II | 2 | 24 | U1R2AECC1 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**COURSE OBJECTIVES**

- To impart basic knowledge of various natural resources
- To understand the importance of ecosystem and biodiversity in Earth
- To be effective in Pollution & waste water management of our nation.
- To acquire knowledge on environmental issues & social issues.
- To gain the knowledge about population management.

**UNIT I The Multidisciplinary nature of environmental studies Inst. Hrs: 5**

**The Multidisciplinary nature of environmental studies:** Definition, scope and importance - Need of public awareness. **Natural Resources:** Renewable and non-renewable resource, Natural resources and associated problems.

a) Forest resources: Use and over-exploitation, Deforestation, Case studies.Timber extraction, mining, Dams and their effects on forests and tribal people.
b) Water resources: use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams - benefits of and related problems.
c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
d) Food resources: World food problems, changes caused by agriculture and overgrazing, Effects of modern agriculture, fertilizer and pesticide problems, Water logging, salinity, case studies.
e) Energy resources: Growing energy needs,Renewable and non-renewable energy resources, use of alternate energy sources,case studies
f) Land resources: land as a resource, land degradation, man induced landslides, soil erosion desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyle.

**UNIT - II Ecosystem & Biodiversity Inst. Hrs: 5**

**Ecosystem:** Concept of an ecosystem - Structure and functions of an ecosystem – Producers, Consumers and Decomposers - Energy flow in the ecosystem - Ecological succession - food chains, food webs and ecological pyramids.Types, characteristic feature, structure and functions of the following ecosystem:

Forest ecosystems, Grassland ecosystems, Desert ecosystems and Aquatic ecosystems ( Ponds, streams, lakes, rivers, oceans, estuaries).

**Biodiversity:**

Introduction - Definition: Genetic, species and ecosystem diversity. Biogeographical classification of India, Value of biodiversity: Consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, national and local levels, India as a mega-diversity nation,Hot-spots of biodiversity, Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, Endangered and endemic species of India, Conservation of biodiversity: *In-situ* conservation and *ex-situ* conservation.

**UNIT - III Environmental pollution: Inst.Hours: 5**

Definition, causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Radioactive pollution.

Solid waste management:

Causes, effects and control measures of urban and industrial waste, Role of an individual in the prevention of pollution - pollution case studies - disaster management: floods, earthquakes, cyclones, landslides.

**Effects of Fireworks**:

Firework and celebrations, Health Hazards, Types of Fire, Firework and safety.

**UNIT - IV Social issues and Environment: Inst. Hrs: 5**

From unsustainable to sustainable development, urban problems related to energy,water conservation, rainwater harvesting, watershed management. Resettlement and rehabilitation of people: Its problems and concerns - case studies, Environment ethics; issues and possible solutions. Climate change, Global Warming, Acid Rain, Ozone Layer Depletion, Nuclear Accidents and Holocaust - Case studies.

Wasteland reclamation, Consumerism and waste products, Environment Protection Act - Air (prevention and control of pollution) Act, Water (prevention and control of pollution) Act - Wildlife Protection Act, Forest Conservation AcT, Issues involved in the enforcement of environmental legislation.Public awareness.

**UNIT - V Human Population and the Environment: Inst. Hrs: 5**

Population growth, variation among nations

Population explosion - Family Welfare Programmes;

Environment and human health

Human Rights and Value Education;

HIV/AIDS ,Women and Child Welfare;

Role of Information Technology in Environment and Human Health;

Case Studies

**Field work:**

- Visit to a local area to document environmental assets: river / forest / grasslands/ hill / mountain.

- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes, etc.

**REFERENCE:**


- Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
- Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd.,Ahmedabad – 380 013, India, Email:mapin@icenet.net (R)
- Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
- Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
- Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
- Manigandan G . 2020 Environmental Studies, PoGo publications, Trichy ISBN: 978-93-83069-36-1


**COURSE OUTCOMES**

| Environmental Studies Course Code **: U2R2AECC1** | | |
|---|---|---|
| **S. No.** | **Course Outcome** | **Knowledge Level** |
| **Upon completion of course, the students will be able to** | | |
| **CO - 1** | Understand the resources of environment and its importance in detail. | **K2** |
| **CO - 2** | Get an in-depth knowledge about the nature of biodiversity. | **K3** |
| **CO - 3** | Apply their knowledge about solid waste management. | **K3** |
| **CO - 4** | Analyze various social issues & determining the solution from this. | **K4** |
| **CO - 5** | Acquire knowledge on Human Population from case studies | **K6** |

**Relationship matrix for CO,PO and PSO**

| **Course Outcome** | **Programme Outcome (PO)** | | | | | **Programme Specific Outcome (PSO)** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO-1** | **PO-2** | **PO-3** | **PO-4** | **PO-5** | **PSO-1** | **PSO-2** | **PSO-3** | **PSO-4** | **PSO5** | **Mean** |
| **CO-1** | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 1 | **2.5** |
| **CO-2** | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | **2.4** |
| **CO-3** | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | **2.7** |
| **CO-4** | 3 | 3 | 3 | 1 | 2 | 3 | 2 | 3 | 2 | 2 | **2.4** |
| **CO-5** | 3 | 3 | 1 | 3 | 3 | 3 | 1 | 3 | 3 | 3 | **2.6** |
| Mean Overall Score | | | | | | | | | | | **2.52** |
| Result | | | | | | | | | | | **High** |

# Language Course – III

| | | | |
|---|---|---|---|
| **தலைப்பு** | **: காப்பிய இலக்கியம், இலக்கணம்** | **வுரிசை எண் :** | **c3** |
| **பருவம்** | **: மூன்றாம் பருவம்** | **தாள் குறியீடு** | **: U3R2TL3** |
| **பிரிவு** | **: பகுதிஇ தமிழ்** | **மதிப்புப் புள்ளி** | **:3** |
| **மதிப்பெண்** | **: CIA -25, EA -75** | **கற்றல் நேரம்** | **: 60 மணி** |

**நோக்கம்**

1. தமிழில் காப்பியங்களைஅறிமுகப் படுத்துதல்.
2. காப்பியங்கள் கூறும் வாழ்வியல் அறங்களைஉயர்த்துதல் .
3. புராணங்கள் வழி வாழ்வியல் தத்துவத்தைமதிப்பீடுசெய்தல்.
4. சமயக் காப்பியத்தின் மூலம் வாழ்வின் பன்முகத் தன்மையைவரையறுத்துக் கூறுதல்.
5. காப்பிய,நாடக இலக்கியங்களுக்கு இடையிலானஒற்றுமை வேற்றுமைகளைப் பகுப்பாயச் செய்தல்.

**கூறு : 1 இலக்கியவரலாறு, இலக்கணம்** **(12hrs)**

இலக்கியவரலாறு - ஐம்பெருங்காப்பியங்கள்,ஐஞ்சிறுகாப்பியங்கள் - பிறகாப்பியங்கள் நாடகத்தின் தோற்றமும் வளர்ச்சியும், இன்றையநிலை. இலக்கணம் – மூவிடப் பெயர்கள் தன்மை,முன்னிலை,படரக்கை

**கூறு : 2 காப்பியங்கள்** **(12hrs)**

சிலப்பதிகாரம் - கனாத்திறம் உரைத்தகாதை,மணிமேகலை கந்திற்பாவை வருவது உரைத்தகாதை, சீவகசிந்தாமணி - சுரமஞ்சரியார் இலம்பகம் - 42 பாடல்கள் (1-7, 14, 17 - 36, 44 - 47,57 - 62, 64 - 68).

**கூறு :3 இதிகாசம், புராணம்** **(12hrs)**

கம்பராமாயணம் - குகப்படலம் (1 - 23 பாடல்கள்) பெரிபுராணம் - சண்டேசுவரநாயனார் புராணம் (1, 8 - 12, 30 - 42, 51 - 59) வில்லிபாரதம் - உலூகன் தூது சருக்கம் (1 - 21 பாடல்கள்)

**கூறு : 4 பிறகாப்பியங்கள்** **(12hrs)**

இராவணக் காவியம் - விந்தக்காண்டம் - தசரதப்படலம் (1-27 பாடல்கள்). சீறாப்புராணம் - ஈத்தங்குலைவரவழைத்தப் படலம் (1-17 பாடல்கள்),தேம்பாவணி - நீர்வரம் அடைந்தபடலம் (1-19 பாடல்கள்)

**கூறு : 5 நாடகம்** **(12hrs)**

பதினெட்டாம் போர் (கூவாகத்தில் கொலுவிருக்கும் அரவான் புகழ் கூறும் நாடகம்), ஆசிரியர் முத்துவேலழகன்.

**பாடநூல்கள் :**

| | | |
|---|---|---|
| சிலப்பதிகாரம் மூலமும் உரையும | - | ச.வே.சுப்பிரமணியன்,கங்கைபுத்தகநிலையம் |
| மணிமேகலை மூலமும் உரையும் | - | ஸ்ரீசந்திரன்,வர்த்தமானன் பதிப்பகம்,சென்னை |
| சீவகசிந்தாமணி மூலமும் உரையும் | - | ஞா.மாணிக்கவாசகம்,மாணிக்கவாசகர் பதிப்பகம், |
| இராவணகாவியம் | - | புலவர் குழந்தை,வேலாபதிப்பகம்,ஈரோடு |
| பதினெட்டாம் போர் | - | முத்துவேலழகன்,சீதைபதிப்பகம்,சென்னை |

**இப்பாடத்தினைக் கற்பதின் மூலம் மாணவர்கள் பெறும் பயன்கள்**

| Sl.No | Course Outcomes | Knowledge Level |
|---|---|---|
| **CO1** | காப்பிய இலக்கியத்தின் தலைமைப் பண்புகளைஅறிவர் | **K2** |
| **CO2** | காப்பியக் கதைகள் வழி அறச்சிந்தனைகளைஉணர்வர் | **K2** |
| **CO3** | பல்வேறுவகையானகாப்பியவடிவங்களில் இடம்பெறும் பொருண்மையைப் பாகுபடுத்திஅறிவர் | **K3** |
| **CO4** | சமூகவளர்ச்சிக்குச் சமயக் காப்பியங்களின் பங்களிப்பைமதிப்பீடுசெய்வர். | **K5** |
| **CO5** | தமிழ்ச் சமூகவளர்ச்சியோடுநாடகக்கலைதொடர்ந்துவரும் காலச்சூழலைஆராய்ந்துணர்வர் | **K6** |

| காப்பிய இலக்கியம், இலக்கணம் | | | | | | U3R2TL3 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Out comes** | **Programme Outcomes (POs)** | | | | | **Programme Specific Outcomes(PSOs)** | | | | | **Mean Score** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO1** | **3** | **2** | **3** | **3** | **2** | **3** | **3** | **2** | **3** | **2** | **2.6** |
| **CO2** | **3** | **3** | **3** | **2** | **2** | **3** | **3** | **2** | **2** | **2** | **2.5** |
| **CO3** | **3** | **2** | **3** | **2** | **3** | **2** | **3** | **3** | **3** | **2** | **2.6** |
| **CO4** | **3** | **3** | **2** | **2** | **3** | **3** | **3** | **3** | **2** | **2** | **2.6** |
| **CO5** | **3** | **2** | **3** | **2** | **2** | **3** | **3** | **2** | **2** | **2** | **2.4** |
| | | | | | | | | | **Mean Overall Score** | | **2.54** |
| | | | | | | | | | | **Result** | **High** |

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# English Language Course - III

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| III | 3 | 60 | U3R2EL3 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**OBJECTIVES:**

| | |
|---|---|
| 1 | To introduce the learner to living language in dramatic situations |
| 2 | To enable the student to see the special features of dramatic language |
| 3 | To give the class practice in proper reading with correct stress and intonation |
| 4 | To enable the learner to perceive the structure of paragraphs and passages |
| 5 | To promote skills in dialogue writing and precise writing and make them see the elements of sentence and paragraph structure |

**UNIT I** **(Inst. Hrs :15)**

Shakespeare
1. Trial for a Pound of Flesh (The Merchant of Venice )
2. Forum scene (Julius Caesar) His Majesty Masquerades

Edith M Barling

**UNIT II** **(Inst. Hrs :15)**

Fritz Karinthy — The Refund

Anton Chekov — The Bear

Ella Adkins — The Expected

**UNIT III** **(Inst. Hrs :14)**

Note making - Precis Writing – Rhetorical features – The dynamics of communication –Field – Mode – Interpersonal context – Greetings, Partings, Fillers and Tonal variations

**UNIT IV** **(Inst. Hrs :06)**

Dialogue Writing - Writing Interviews -Group Discussions

**UNIT V** **(Inst. Hrs :10)**

Writing Speeches – Welcome – Introductory and thanks giving – Constructing arguments for and against propositions for debates.

**Web Resources**

https://www.literaturewise.in/mdl/mod/page/view.php?id=269
https://www.sparknotes.com/shakespeare/juliuscaesar/section7/
http://sujarithasaravanan.blogspot.com/2019/10/refund-fritz-karinthy-summary.html?m=1
https://educationallodge.com/2021/01/the-bear-by-anton-chekhov-summary-characters-questions-answers.html.

**OUTCOME:**

| Course Name – Drama and Englishfor Competitive Examinations | Course Code - U3R2EL3 | Knowledge Level |
|---|---|---|
| **On completion of the course, students will be able to** | | |
| **CO1** | analyse the force of dramatic language, improve their histrionic abilities and pronunciation skills. | **K5** |
| **CO2** | perceive subtle differences in language use and their tonal implications. | **K5** |
| **CO3** | develop skills of logical reasoning and become capable of identifying markers of coherence and concord. | **K6** |
| **CO4** | construct ordinary dialogues and conversations in real life. | **K6** |
| **CO5** | estimate ideas and situations and ways of expressions to construct written messages. | **K5** |

**Relationship Matrix for CO, PO, PSO**

| Title of the Course : DRAMA AND ENGLISH FOR COMPETITIVE EXAMINATIONS | | | | | | Course code : U3R2EL3 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcome (CO)** | **Programme Outcome (PO)** | | | | | **Programme Specific Outcome (PSO)** | | | | | **Mean Scoreof COs** |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO – 1** | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | **2.5** |
| **CO – 2** | 2 | 2 | 3 | 1 | 2 | 2 | 3 | 2 | 3 | 3 | **2.3** |
| **CO – 3** | 2 | 3 | 1 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | **2.5** |
| **CO – 4** | 3 | 2 | 1 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | **2.1** |
| **CO – 5** | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | **2.6** |
| | | | | | | | | | **Mean Overall Score** | | **2.40** |
| | | | | | | | | | **Result** | | **HIGH** |

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# Core Course VI – Java Programming

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| III | 5 | 60 | U3R2CSCC6 | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To provide an introduction to object oriented programming (OOP) using the Java programming language
- To understand the basic programming constructs of Java Language using Class and Objects.
- To understand how to develop programs using package, interface, exception handling and Multi-threading
- To understand and construct simple applets.
- To design and develop GUI applications using Abstract Windowing Toolkit (AWT)

**UNIT–I: Genesis of Java** **HOURS: 12**

Genesis of Java: Creation of Java – why java is important to internet – The Java Buzz words – An overview of Java Object Oriented Programming. Data types – Variables – Type conversion and casting – Automatic type promotion in Expressions – Strings. Arrays: One Dimensional Array – Multi Dimensional Array – Operators – Control statements.

**UNIT–II: Class Fundamentals** **HOURS: 12**

Class Fundamentals – Declaring objects – Assigning object Reference variables – Introducing Methods – Constructors – Garbage collection – Finalize () Method – Stack class. A Closer Look at Methods and classes: Overloading Methods – Argument passing – Nested and Inner classes – String class – Using command line arguments. Inheritance Basics & Types - Method overriding – Dynamic Method Dispatch – Using Abstract class – Using final with inheritance.

**UNIT–III: Packages, Interface, Exception Handling & Multi-thread HOURS: 12**

Packages & Interface - Exception Handling - Creating your own Exception subclasses. Multithreaded Programming: Java Thread Model – Main Thread – Creating a Thread - Creating Multiple Threads–Using is Alive () and join () – Thread priorities – Synchronization – Inter thread Communication.

**UNIT–IV: I/O & Applets** **HOURS: 12**

I/O & Applets : I/O Basics Reading console Input – writing console output – The Print Writer class – Reading and Writing Files. The Applet class: - Applet Architecture – Applet Skeleton – Applet Display method – RequestingRepainting – HTML APPLET tag- Passing Parameters to Applet – Audio Clip Interface. Event Handling Mechanisms – Delegation Event Model – Event classes – Sources of Events – Event Listener Interfaces – Adapter Classes.

**UNIT–V: AWT Classes** **HOURS: 12**

AWT Classes – Window fundamentals – working with Frame Windows - working with Graphic Using AWT controls: Controls fundamentals – Labels – using Buttons – Applying check Boxes – Check Box group – Choice controls – Using a Text field – Using a Text Area – Understanding Layout Managers (Flow Layout only) – Menu Bars and Menus.

## TEXT BOOK


1. Herbert Schildt, "Java - The Complete Reference", Ninth Edition, McGraw- Hill Education, 2014


## REFERENCE BOOKS


1. E. Balagurusamy, "Programming with Java", Tata McGraw-Hill EducationIndia, 2014
2. Sachin Malhotra & Saurabh Choudhary, "Programming in JAVA", 2nd Ed, Oxford Press
3. Sagayaraj, Denis, Karthik and Gajalakshmi, "JAVA Programming for Core and Advanced Learners", 2018


## WEB REFERENCES

1. https://www.programiz.com/java-programming
2. https://www.javatpoint.com/java-tutorial
3. https://www.geeksforgeeks.org/java/
4. https://www.tutorialspoint.com/java/index.htm

## COURSE OUTCOMES

On completion of this course the students would be able to

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Interpret object oriented programming (OOP) Concepts | **K5** |
| **CO: 2** | Develop the basic programming constructs of Java Language using Class and Objects | **K6** |
| **CO: 3** | Develop programs using package, interface, exception handling and Multi-threading | **K6** |
| **CO: 4** | Understand and construct simple applets | **K3** |
| **CO: 5** | Design and develop GUI applications using Abstract Windowing Toolkit (AWT) | **K6** |

**RELATIONSHIP MATRIX FOR CO,PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| **CO 1** | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | **2.8** |
| **CO 2** | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | **2.7** |
| **CO 3** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **3.0** |
| **CO 4** | 3 | 3 | 3 | 1 | 2 | 3 | 3 | 3 | 2 | 2 | **2.5** |
| **CO 5** | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | **2.8** |

Mean Relationship value is **2.76** which is **HIGH**

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# Core Course VII – Java Programming Practical

| SEMESTER | CREDITS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|
| | | | INT | EXT | TOTAL | |
| III | 3 | U3R2CSCC7P | 40 | 60 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To be knowledgeable enough about basic Java language syntax and semantics to be able to successfully read and write Java computer programs
- To invoke the knowledge of classes and objects by practice and understanding
- To implement interfaces, inheritance, and polymorphism as programming techniques and apply exceptions handling.
- To Apply method Overloading and Overriding concepts
- To Handle Multi-Threads for executing multiple tasks simultaneously
- To inculcate practical experience of applets.

1. Define a class called Student with the attributes name, reg_number and marks obtained in four subjects(m1,m2,m3,m4).Write a suitable constructor and methods to find the total mark obtained by the student and display the details of the student.
2. Write a Java program to find the area of a square, rectangle and triangle by
   (i) Overloading Constructor (ii) Overloading Method.
3. Write a java program to add two complex numbers. [Use passing object as argument and return object].
4. Define a class called Student_super with data members name, roll number and age. Write a suitable constructor and a method output () to display the details.
5. Derive another class Student from Student_super with data members height and weight. Write a constructor and a method output () to display the details which overrides the super class method output().[Apply method Overriding concept].
6. Write a java program to create an interface called Demo, which contains a double type constant, and a method called area () with one double type argument. Implement the interface to find the area of a circle.
7. Write a java program to create a thread using Thread class.
8. Demonstrate Java inheritance using extends keyword.
9. Create an applet with four Checkboxes with labels MARUTI-800, ZEN, ALTO and ESTEEM and a Text area object. The program must display the details of the car while clicking a particular Checkbox.
10. Write a Java program to throw the following exception,
    1) Negative Array Size 2) Array Index out of Bounds
11. Write a java program to create a file menu with option New, Save and Close, Edit menu with option cut, copy, and paste.
12. Write a java programming to illustrate Mouse Event Handling

**COURSE OUTCOMES**

On successful completion of the course students would be able to

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Improve coding knowledge through JAVA programming | **K6** |
| **CO: 2** | Analyse and understand basic concepts of classes and objects by practice | **K4** |
| **CO: 3** | Experiment the oop concepts such Inheritance, polymorphism etc | **K3** |
| **CO: 4** | Create and run threads to handle multiple tasks simultaneously | **K6** |
| **CO: 5** | Know the importance of applets and event handling methods of AWT controls | **K5** |

**RELATIONSHIP MATRIX FOR CO,PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **3.0** |
| **CO 2** | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | **2.5** |
| **CO 3** | 3 | 2 | 3 | 3 | 2 | 3 | 1 | 3 | 3 | 3 | **2.6** |
| **CO 4** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | **2.6** |
| **CO 5** | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | **2.7** |

Mean Relationship value is **2.68 which is HIGH**

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# Allied IV – Applied Physics

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| III | 4 | 60 | U3R2APHAC4 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**Course Objectives:**

**C-Obj 1.**To study the static characteristics of electric charges,

**C-Obj 2.** To understand the concepts of capacitors and applications.

**C-Obj 3.** To understand the electromagnetic effect

**C-Obj 4.** To understand the AC circuits

**C-Obj 5.** To understand the concepts of magnetic properties of materials

**UNIT-I: ELECTROSTATICS** **15-Hours**

Coulumb's law- Gauss theorem and its application (Assignment)–Intensity due to a charged sphere– Intensity at a point due to uniformly charged cylinder- Principles of a capacitor–Capacity of Spherical and cylindrical capacitors– Energy store in capacitor–Energy loss due to sharing of charges.

**UNIT-II: MAGNETOSTATICS** **15-Hours**

Intensity of magnetization– Susceptibility– Types of magnetic materials– Properties Para, dia and Ferro magnetic materials– Cycle of magnetization (ICT)– Hysteresis– B-H curve–application of B-H curve– Magnetic energy per unit volume.

**UNIT-III: CURRENT ELECTRICIT** **15-Hour**

Kirchhoff's Law (Seminar)—Wheatstone network–Carey Foster's Bridge–Potentiometer- Measurement of current, resistance and low voltage–Theory of Ballistic Galvanometer–Figure of merit– Damping Correction.

**UNIT-IV: ELECTRO MAGNETICINDUCTION** **15-Hours**

Laws of electromagnetic induction–Relation between induced E.M.F and mutual inductance – Eddy Current – Determination of self inductance by Anderson method (Assignment) – Coefficient of mutual inductance –Determination of mutual inductance by B.G. – coefficient of coupling – transformer theory.(ICT)

**UNIT-V: ALTERNATING CURRENT** **15-Hours**

A/C Circuits with single components–Double components–Measurement of current and voltage–Power in A.C Circuit–Power factor derivation– Wattless current–Choke-series and parallel resonance circuits– Impedance –Q factor–Selectivity and Sharpness of resonance circuits

**BOOKS FORSTUDY:**


1. Brijlal and Subramaniyam– Electricityand Magnetism– S.Chand&Co.-2000.
2. R. Murugesan, Electricityand Magnetism, S.Chand&Co.-2015.
3. A.Sundaravelusamy _Applied physicsI- _priya publications-2018.


**BOOKS FORREFERENCE:**


**1.** D.L sehgal,K.L.choproa and N.K sehal, Electricityand Magnetism– S.Chand&Co.-1996

**ONLINE RESOURCES:**

1. https://www.google.com/url?sa=t&source=web&rct=j&url=https://instrumentationtools.com/transformer-theory-of-operation/amp/&ved=2ahUKEwiB0LT0wbH3AhXiHbkGHTEvASUQFnoECA0QBQ&sqi=2&usg=AOvVaw2A5JjAOH-6XvIuh6jik-8a.

2. https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.vedantu.com/physics/magnetometer&ved=2ahUKEwjj5dnrwrH3AhUm6nMBHRyjCSAQFnoECFQQAQ&usg=AOvVaw0OrZCfFTqeqKOAfHsA0j0q

**COURSE OUT COME:**

On completion of this course, the students will be able to

**CO1.** Apply knowledge of electricity and magnetism to explain natural physical processes and related technological advances. **K3**

**CO2.** Apply Gauss's law of electrostatics to solve a variety of problems. **K3**

**CO3.** Apply the Kirchhoff's law to analyses the Wheatstone bridge. **K4**

**CO4.** Have an ability to determine and describe static and dynamic electric and magnetic fields. **K5**

**CO5.** Acquired the knowledge of magnetic materials. **K2**

**Relationship Matrix for Course Outcome, Programme Outcomes and Programme Specific Outcomes**

| **Title of the Course : Allied-Applied Physics-I** | | | | | | **Course Code: U3R2APHAC3** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcomes (COs)** | **Programme Outcomes (POs)** | | | | | **Programme Specific Outcomes (PSOs)** | | | | | **Mean Score of COs** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO1** | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 1 | 2.4 |
| **CO2** | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 2.0 |
| **CO3** | 3 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 2.0 |
| **CO4** | 3 | 2 | 1 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 2.0 |
| **CO5** | 3 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1.7 |
| | | | | | | | | | **Mean Overall Score** | | 2.22 |
| | | | | | | | | | **Result** | | High |

# Ability Enhancement Compulsory Course –2 Value Education

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| III | 2 | 24 | U3R2AECC2 | 25 | 75 | 100 | SKILL DEVELOMENT |

**OBJECTIVES:**

| | |
|---|---|
| 1 | To sensitize learners to the need for values in human life. |
| 2 | To make them aware of the need for values in all roles of life. |
| 3 | To make them see the need for value-education. |
| 4 | To make them realize the noble values as basis of all religions. |
| 5 | To sensitize them to the need for gender equity and social justice. |

**UNIT I PHILOSOPHY OF LIFE (Inst.Hrs:05)**

Life - Principles of Living - Laws of Nature - Protection of all living organisms -Conservation of natural resources - Individual qualities and Social Welfare.(Thirukural No:- 629, 46, 131, 374, 322, 16)

**UNIT II PERSONAL VALUES (Inst.Hrs:05)**

Culture – Self -Analysis – Right Desires – Avoidance of Worries – Benefits of Blessings – Merits of Friendship – Love and Compassion – Personal Harmony and Peace. (Thirukural No:- 72, 158, 629, 786, 76, 318)

**UNIT III SOCIAL VALUES (Inst.Hrs:05)**

Family – Family Peace – Society –Way of Living – Principles of Brotherhood – Status of Woman - Five types of Duties towards Family, Society, Country, World and Environment –Business and Economic roles – Social hygiene - Education – Politics – Duties and Responsibilities of Citizens – World Peace.(Thirukural No:-45, 1025, 446, 952, 807, 56, 43, 754, 298, 400, 691, 37, 572)

**UNIT IV TAPPING AND CULTIVATING THE MIND (Inst.Hrs:05)**

Potential of Mind - Personality – Mind and Body – Creativity and Positivity – The Centrality of the Mind – Astral and Physical Bodies – Knowledge of the divine and quest for perfection - Life Force – Tapping the Life Force – Perceiving the Kernel- Realization of Self- Stream of Consciousness – Hierarchy of Self motivation- Meditation – Spiritual Values.(Thirukural No:-457, 261, 423)

**UNIT V – PRESERVING THE BODY HEALTH (Inst.Hrs:04)**

Sructure of human body – Three States of Living – Relationship between body and spirit – Natural Causes for Bodily Diseases – Man-made causes for diseases – Preventive and Curative methods – Five elements and their balance –Simple Exercises and Yoga.(Thirukural No:- 941, 948)

**Book for Reference:**

Value Education Vethathiri Publications

**OUTCOME:**

| Course Name: VALUE EDUCATION | Course Code: U3R2EGAECC2 | Knowledge Level |
|---|---|---|
| **On completion of the course, students will be able to** | | |
| **1** | develop into balanced individuals. | **K6** |
| **2** | function as responsible members in society. | **K4** |
| **3** | apply physical and psychological energy in creative living. | **K3** |
| **4** | take up leadership roles in confidence. | **K3** |
| **5** | judge right and wrong with perspicacity. | **K5** |

## Relationship Matrix for CO, PO, PSO

| **Title of the Course :** | | | | | | **Course code :** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcome (CO)** | Programme Outcome (PO) | | | | | Programme Specific Outcome (PSO) | | | | | **Mean Score of COs** |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO – 1** | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2.6 |
| **CO – 2** | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 1 | 2.2 |
| **CO – 3** | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2.3 |
| **CO – 4** | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 1 | 2.4 |
| **CO – 5** | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2.5 |
| | **Mean Overall Score** | | | | | | | | | | **2.40** |
| | **Result** | | | | | | | | | | **HIGH** |

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# Language Course -- IV

| | | | |
|---|---|---|---|
| **தலைப்பு** | **: சங்க இலக்கியம், இலக்கணம்,அறிவியல் தமிழ்** | **வரிசைஎண் :c4** | |
| **பருவம்** | **: நான்காம் பருவம்** | **தாள் குறியீடு : U4R2TL4** | |
| **பிரிவு** | **: பகுதி ஐ தமிழ்** | **மதிப்புப் புள்ளி: 3** | |
| **மதிப்பெண்** | **: CIA -25, EA -75** | **கற்றல் நேரம் : 60 மணி** | |

**நோக்கம்**

1. சங்க இலக்கியங்களின் பின்னணிச் சூழலை அறியச் செய்தல்
2. தமிழர்களின் வாழ்வியல் கூறுகளைப் புரிந்துகொள்ளல்
3. அகவாழ்வியலில் கடைபிடிக்கவேண்டியநெறிமுறைகளைவகுத்துக் கொள்ளல்
4. தமிழ் இலக்கியத்தோடுஅறிவியல் தமிழைஒப்பிட்டும் வேறுபடுத்தியும் பார்க்கும் திறன் வளர்த்தல்
5. ஆக்கத்திறனைக் கண்டறியும் வழிமுறைகளைஉருவாக்குதல்

**கூறு: 1 இலக்கியவரலாறு, இலக்கணம் (12hrs)**

சங்க இலக்கியவரலாறு–பதினெண் மேற்கணக்கு நூல்கள்˙- செம்மொழி இலக்கிய வரலாறு– செம்மொழிப் பண்புகளஇ செம்மொழி நூல்கள் இலக்கணம் - வழுஇ வழுவமைதி,வழாநிலை

**கூறு: 2 அகஇலக்கியம் (12hrs)**

குறுந்தொகை–ஐந்துபாடல்கள் – (பாடல்-38,54,68,74,82)
நற்றிணை - இரண்டுபாடல்கள் ( பாடல் 156, 228)
ஐங்குநூறு - இளவேனிற் பத்து
அகநானூறு- இரண்டுபாடல்கள் (23,31) பாலைத்திணைத் தலைவிக்கூற்று
கலித்தொகை– இரண்டுபாடல்கள் (126,132) தோழிக்கூற்று

**கூறு: 3 புறமும் பாட்டும் (12hrs)**

பத்துப்பாட்டு–மதுரைக்காஞ்சி 58 வரிகள் (ghly; 725 – 782)
புறநானூறு - 10 பாடல்கள் 201, 202,236,237,247,308,373,382,386,400

**கூறு: 4 அறிவியல் தமிழ் - செயல்முறை (12hrs)**

அறிவியல் தமிழ் - கலைச்சொல்லாக்கம் - ஒலிபெயர்ப்பு–சீர்மையாக்கம் - தரப்படுத்தம்

**கூறு: 5 அறிவியல் தமிழ் - பயன்முறை (12hrs)**

அறிவியல் கட்டுரைகள் - துறைச் சார்ந்தக் கருத்துகளைத் தமிழில் உருவாக்கப் பயிற்சிஅளித்தல் (கலைச்சொற்களுடன்)

**பாடநூல்கள் :**

| | | |
|---|---|---|
| சங்கத் தமிழ் | - | தஞ்சைதமிழ்ப் பல்கலைக்கழகவெளியீடு |
| அறிவியல் தமிழ் கலைச்சொல்லாக்கம் | - | முனைவர் இராதாசெல்லப்பன் |

**இப்பாடத்தினைக் கற்பதின் மூலம் மாணவர்கள் பெறும் பயன்கள்**

| Sl.No | Course Outcomes | Knowledge Level |
|---|---|---|
| **CO1** | இலக்கியங்களின் மூலம் வாழ்வியல் நெறிமுறைகளைஅறிவர் | **K2** |
| **CO2** | ஐந்திணையின் பாகுபாட்டுத் தன்மையை இனங்காண்பர் | **K2** |
| **CO3** | தனிமனிதஒழுக்கம் பண்பாட்டுநெறிமுறைகளைவளர்த்துக் கொள்வர் | **K3** |
| **CO4** | அறிவியல் தமிழின் அவசியத்தைஉய்த்துணரும் ஆற்றல் பெறுவர் | **K5** |
| **CO5** | படைப்பாளனுக்குரியத் தகுதியைவளர்த்துக் கொள்வதற்கானப் பயிற்சிகளைமேற்கொள்வர் | **K6** |

| சங்க இலக்கியம், இலக்கணம், அறிவியல் தமிழ் | | | | | | U4R2TL4 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Out comes | Programme Outcomes (POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean Score |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO1 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 2.4 |
| CO2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2.5 |
| CO3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2.4 |
| CO4 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2.5 |
| CO5 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2.6 |
| | | | | | | | | | Mean Overall Score | | 2.48 |
| | | | | | | | | | Result | | High |

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# English Language course – IV

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| IV | 3 | 60 | U4R2EL4 | 25 | 75 | 100 | SKILL DEVELOPING |

**OBJECTIVES**

| | |
|---|---|
| **1** | To enable the learner to respond to short fiction. |
| **2** | To sensitize the learner to identify the elements of fiction. |
| **3** | To enable the learner to write short reviews paragraph and essays. |
| **4** | To give them practice in contextualized letter writing, making presentations and writing reports. |
| **5** | To enable them to identify error zones and correct sentences. |

**UNIT – I** **(Inst. Hrs :10)**

| | |
|---|---|
| Tagore | Suba |
| R.K. Narayan | An Astrologer's Day |
| Anita Desai | A Devoted Son |

**UNIT - II** **(Inst. Hrs :10)**

| | |
|---|---|
| O' Henry | A Retrieved Reformation |
| Arthur Conan Doyle | The Blue Carbuncle |
| Maupassant | Simon's Pa |

**UNIT - III** **(Inst. Hrs :10)**

Paragraph Writing - General Essay, Book review , Film review

**UNIT – IV** **(Inst. Hrs :15)**

Replying to Letters - Letter Chains - Presentations –Visuals and their interpretations - Reports

**UNIT - V** **(Inst. Hrs :15)**

Error Zone Identification - Correction of Sentences ,Speech Writing – Expository Argumentative, Descriptive and Narrative – Fallacies and their avoidance.

**Web Resources**

https://bookishloom.wordpress.com/2018/10/01/subha-by-rabindranath-tagore-my-read/#:~:text=Tagore%20portrayed%20the%20everyday%20agonies,central%20character%2C%20%27Subha%27

https://smartenglishnotes.com/2019/05/31/the-white-flower-by-r-k-narayan-summary-explanations-and-question-solutions/

https://digestablewords.wordpress.com/short-story-a-devoted-son-by-anita-desai/
https://www.toppr.com/guides/english/english-literature/ozymandias-summary/
https://americanliterature.com/author/guy-de-maupassant/short-story/simons-papa

**OUTCOME:**

| **Course Name- Fiction and English for Competitive Examinations.** | **Course Code - U4R2EL4** | **Knowledge Level** |
|---|---|---|
| **On completion of the course, students will be able to** | | |
| **CO1** | adapt study habits to face competitive examinations with confidence. | **K6** |
| **CO2** | appraise the themes and structure of fiction through independent reading . | **K5** |
| **CO3** | justify their perceptions on characters ,themes and aspects of fiction. | **K5** |
| **CO4** | categorize and correct errors in usage. | **K4** |
| **CO5** | design the style of communication as needed. | **K6** |

## Relationship Matrix for CO, PO, PSO

| Title of the Course : **Fiction and English for Competitive Examinations.** | | | | | | Course code : U4R2EL4 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcome (CO)** | Programme Outcome (PO) | | | | | Programme Specific Outcome (PSO) | | | | | **Mean Score of COs** |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO – 1** | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | **2.6** |
| **CO – 2** | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | **2.5** |
| **CO – 3** | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | **2.6** |
| **CO – 4** | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | **2.4** |
| **CO – 5** | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | **2.4** |
| | **Mean Overall Score** | | | | | | | | | | **2.50** |
| | **Result** | | | | | | | | | | **HIGH** |

# Core Course VIII – Relational Database Management Systems

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| I | 5 | 72 | U4R2CSCC8 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**COURSE OBJECTIVES**

- To analyze the difference between traditional file system and DBMS
- To enable learning about Relational database model
- To handle with different database languages
- To write queries mathematically
- To design database and normalize data

**UNIT – I: Introduction to Database System** **HOURS: 15**

Introduction: Database System Applications-DBMS Vs. File System - View of Data-Data Model Database Languages - Database users and Administrators - Transaction Management - Database System Structure - Application Architecture. Data Models: Basic Concepts - Constraint- Keys- ER Diagram - Weak Entity - Extended ER Features - UML; Relational Model: Structure of Relational Databases - Relational Algebra - Views.

**UNIT – II: Introduction to SQL** **HOURS: 14**

SQL: Background-Basic Structure-Set Operation-Aggregate Function-Null Values-Nested Sub Queries - Views - Modification of the Database - Data Definition Language - Embedded SQL - Dynamic SQL.

**UNIT – III: Advance SQL** **HOURS: 14**

Advance SQL : Integrity and Security: Domain - Constraint - Referential Integrity - assertions - Triggers - Security and Authorization - Authorization in SQL - Encryption and Authentication.

**UNIT – IV: Relational Database Design** **HOURS: 15**

Relational Database Design: First Normal Form - Pitfalls in Relational Database Design-Functional Dependencies (Second Normal Form) - Boyce-Codd Normal Form - Third Normal Form - Fourth Normal Form - Overall Database Design Process.

**UNIT – V: Transaction Management** **HOURS: 14**

Transaction Management: Transaction concepts - States - Serializability. Lock based concurrency control: Locks - Granting - Two-Phase Locking protocol. Time stamp based protocol: Timestamps - Timestamp ordering protocol - Deadlock handling.

## TEXT BOOK:

1. A Silberschatz, H Korth, S Sudarshan, "Database System and Concepts", 5th Edition McGraw-Hill, 2005.

## REFERENCE BOOKS

1. Alexix Leon & Mathews Leon, "Essential of DBMS", 2nd reprint, Vijay Nicole Publications, 2009.
2. Alexix Leon & Mathews Leon, "Fundamentals of DBMS", 2nd Edition, Vijay Nicole Publications, 2014.

## WEB REFERENCES

1. https://data-flair.training/blogs/sql-rdbms/#:~:text=RDBMS%20stands%20for%20Relational%20Database,relational%20models%20and%20their%20principles.
2. https://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm
3. https://www.techtarget.com/searchdatamanagement/definition/RDBMS-relational-database-management-system
4. https://www.learnpick.in/prime/documents/notes/details/4422/rdbms-concepts

## COURSE OUTCOMES

On successful completion of the course students would be able to

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Distinguish traditional file system and DBMS and have Knowledge on Relational database model | **K4** |
| **CO: 2** | Evaluate DDL and DML using simple Queries | **K5** |
| **CO: 3** | Create advanced queries mathematically | **K6** |
| **CO: 4** | Understand how to use different normalization forms | **K1** |
| **CO: 5** | Design and Analyze transaction management concepts | **K4. K6** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | **2.8** |
| **CO 2** | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | **2.8** |
| **CO 3** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.7** |
| **CO 4** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.8** |
| **CO 5** | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 3 | 3 | 3 | **2.8** |

Mean Relationship value is **2.78** which is **HIGH**

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# Core Course IX – SQL and PL/SQL Practical

| SEMESTER | CREDITS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|
| | | | INT | EXT | TOTAL | |
| IV | 5 | U4R2CSCC8P | 40 | 60 | 100 | EMPLOYABILITY |

## COURSE OBJECTIVES

- To inculcate knowledge on RDBMS concepts and Programming with SQL.
- To learn to use DDL commands
- To learn to use DML commands
- To demonstrate SQL queries
- To understand to write Code using PL/SQL

Demonstrate the following SQL commands and can take any back end RDBMS system for implementation purpose.

1. Data Definition of Base Tables.

2. DDL with Primary key constraints

3. DDL with constraints and verification by insert command

4. Data Manipulation of Base Tables and Views

5. Demonstrate the Query commands

6. Write a PL/SQL code block that will accept an account number from the user and debit an amount of Rs. 2000 from the account if the account has a minimum balance of 500after the amount is debited. The Process is to fired on the Accounts table.

7. Write a PL/SQL code block to calculate the area of the circle for a value of radius varying from 3 to 7. Store the radius and the corresponding valuesof calculated area in a table Areas. Areas – radius, area.

8. Write a PL/SQL block of code for reversing a number. (Example : 1234 as 4321).

9. Create a transparent audit system for a table Client_master (client_no, name, address, Bal_due). The system must keep track of the records that are being deleted or updated. The functionality being when a record is deleted or modified

the original record details and the date of operation are stored in the audit client (client_no, name, bal_due, operation, userid, opdate) table, then the delete or update is allowed to go through.

**COURSE OUTCOMES**

On successful completion of the course students would be able to

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Interpret knowledge on RDBMS concepts and Programming with SQL | **K2** |
| **CO: 2** | Experiment with DDL commands | **K3** |
| **CO: 3** | Analyse and apply various DML commands | **K4** |
| **CO: 4** | Demonstrate SQL Queries | **K2** |
| **CO: 5** | Analyse and write block of code using PL/SQL | **K4** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | **2.7** |
| **CO 2** | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | **2.7** |
| **CO 3** | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | **2.7** |
| **CO 4** | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | **2.7** |
| **CO 5** | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | **2.8** |

Mean Relationship value is **2.72** which is **HIGH**

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# Allied V – Applied Physics Practical

| SEMESTER | CREDITS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|
| | | | INT | EXT | TOTAL | |
| IV | 3 | U4R2PHAC5P | 25 | 75 | 100 | SKILL DEVELOPMENT |

**Course Objectives:**

**C-Obj 1.** To understand the types of semiconductors

**C-Obj 2.** To understand the characteristics of transistor and FET configuration.

**C-Obj 3.** Acquire the knowledge in the potentiometer and carey foster bridge

**C-Obj 4.** To study the Optoelectronic devices

**C-Obj 5.** To understand the characteristics of operational amplifier and its applications

**LIST OF EXPERIMENT (Any Fourteen )**

1. Semi conductor diode–Characteristics
2. Zener Diode–Characteristics
3. FET–Characteristics
4. Transistor Characteristics–CE configuration
5. Transistor Characteristics–CB configuration
6. Bridge Rectifier
7. Zener controlled regulated power supply
8. Field along the axis of a coil–M
9. Field along the axis of a coil–H
10. Potentiometer- Measurement of current
11. Potentiometer– Calibration of low range voltmeter
12. Carey Foster's bridge–specific resistance
13. Series resonance circuit
14. Mathematical operators–Addition, Subtraction using op-amp
15. AND,OR and NOT logic gates–verification of truth table using Discrete components.

**BOOKS FOR REFERENCE:**


1. A text book of practical Physics–M.N. Srinivasan and others–Sultan Chand & Sons, New Delhi.
2. Practical Physics, S. Somasundaram, V. Balachandran, S. Padmanathan, Apsara Publications, Tiruchirapalli.
3. Practical Physics – A. Dhana Lakshmi and K.R. Paramasivam – Apsara Publication, Tiruchirapalli.

**Online Resource:**

1. https://www.google.com/search?q=A+text+book+of+practical+Physics%E2%80%93M.N.+Srinivasan+and+others%E2%80%93Sultan+Chand+%26+Sons%2C+New+Delhi&rlz=1C1VDKB_enIN954IN954&oq=A+text+book+of%09practical+Physics%E2%80%93M.N.+Srinivasan+and+others%E2%80%93Sultan+Chand+%26+Sons%2C+New+Delhi&aqs=chrome..69i57.4840j0j9&sourceid=chrome&ie=UTF-8

**COURSE OUT COME:**

On completion of this course, the students will be able to

**CO-1.** Acquire the basic trouble shooting skills and appreciate physics concepts through experiments. **K4**

**CO-2.** Acquire basic knowledge of p-n junction diode and Zener diode. **K3**

**CO 3.** Acquiring the Knowledge of a different configuration, Biasing, h parameters and applications of FET and BJT. **K3**

**CO-4.** Acquire the basic knowledge of operational amplifiers optoelectronics devices.**K4**

**CO-5.** Understand the basic concept of gates **K2**

**Relationship Matrix for Course Outcome, Programme Outcomes and Programme Specific Outcomes**

| **Title of the Course :Allied-Applied Physics Practical-II** | | | | | | **Course Code: U4R2APHAC2P** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcomes (COs)** | **Programme Outcomes (POs)** | | | | | **Programme Specific Outcomes (PSOs)** | | | | | **Mean Score of COs** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO1** | 2 | 2 | 1 | 2 | 2 | 3 | 3 | 2 | 2 | 1 | **2.0** |
| **CO2** | 3 | 2 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 1 | **2.3** |
| **CO3** | 3 | 2 | 1 | 1 | 2 | 2 | 3 | 3 | 2 | 1 | **2.0** |
| **CO4** | 3 | 3 | 1 | 1 | 2 | 3 | 3 | 2 | 1 | 1 | **2.0** |
| **CO5** | 3 | 3 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 1 | **2.1** |
| | **Mean Overall Score** | | | | | | | | | | **2.1** |
| | **Result** | | | | | | | | | | **High** |

# Allied VI – Applied Physics

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| IV | 5 | 96 | U4R2PHAC6 | 25 | 75 | 100 | SKILL BASED ELECTIVE |

**Course Objectives:**

**C-Obj 1.** To understand the types of semiconductors

**C-Obj 2.** To understand the characteristics of transistor and FET configuration.

**C-Obj 3.** To study the basic concepts of MASER and LASER

**C-Obj 4.** To study the Optoelectronic devices

**C-Obj 5.** To understand the characteristics of operational amplifier and its applications

**UNIT-I: SEMICONDUCTOR PHYSICS** **15-Hours**

Intrinsic and extrinsic semiconductor – P and N type semiconductors – PN junction diode – V-I characteristics of junction diode (Assignment) – Zener diode – V-I Characteristics of Zener diode – Zener diode as the voltage regulator.

**UNIT-II: TRANSISTORS** **15-Hours**

PNP and NPN transistors- DC characteristics of CE and CB configuration–Hybrid parameters – Functions of transistors as an amplifier – FET (ICT)- V-I characteristics of FET- comparison between FET and BJT

**UNIT-III: LASERS AND MASERS** **15-Hours**

Basic concepts of stimulated emission–Population inversion and Metastable state–Ammonia maser(ICT)–Ruby laser and He-Ne Laser -Production–Advantages of laser

**UNIT-IV: OPTO-ELECTRONIC DEVICES** **15-Hours**

LED: Construction - V-I charecteristics of the LED– photodiode(Seminar)–Phototransistor–electronicwatches–Sevensegmentdisplays–LCD – LASER Diode photo multiplier.

**UNIT–V: OPERATIONAL AMPLIFIERS** **15-Hours**

The basic concept of operational amplifier – Inverting and Non-inverting operational amplifier – Differential Operational amplifier – CMRR–operational amplifier applications assign and scale changer, adder, subtractor, integrator and differentiator (Assistant)

**BOOKS FOR STUDY:**

1. FunctionalElectronics–Ramanan–TMH,1994
2. A.Sundaravelusamy _Applied physicsII- _priya publications-2018.

**BOOKSFORREFERENCE**

1. Metha V.K. principles of electronics s. chand and company Ltd.2015.
2. PulseandDigitalelectronics–G.KMithalandVanvasi–KhannaPublication–Delhi-2012.
3. ElectronicdevicesandCircuits–Millman&Halkias–TMH1991.

**Online resources:**

1. https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.feynmanlectures.caltech.edu/III_09.html&ved=2ahUKEwjOoYK7yrH3AhWys5UCHQ29CdcQFnoECAUQAQ&sqi=2&usg=AOvVaw0th5CwauDM2huelMi6XDV0

**COURSE OUTCOMES:**

On completion of this course,the students will be able to

**CO-1.** Acquire basic knowledge of p-n junction diode and Zener diode. **K3**

**CO-2.** Understanding Thevenin's theorem and procedure for finding Thevenin's equivalent circuit and to gain knowledge of Maximum Power theorem. **K2**

**CO 3.** Acquiring the Knowledge of a different configuration, Biasing, h parameters and applications of FET and BJT. **K3**

**CO-4.** Acquire the basic knowledge of optoelectronics devices . **K4**

**CO-5.** Undersand the types of LASER and MASER. **K2**

**Relationship Matrix for Course Outcome, Programme Outcomes and Programme Specific Outcomes**

| **Title of the Course :Allied-Applied Physics-III** | | | | | | **Course Code: U4R2APHAC3** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcomes (COs)** | **Programme Outcomes (POs)** | | | | | **Programme Specific Outcomes (PSOs)** | | | | | **Mean Score of COs** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO1** | 3 | 3 | 2 | 1 | 2 | 2 | 3 | 2 | 2 | 3 | **2.3** |
| **CO2** | 3 | 2 | 2 | 1 | 3 | 2 | 3 | 3 | 2 | 3 | **2.4** |
| **CO3** | 3 | 2 | 1 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | **2.0** |
| **CO4** | 3 | 2 | 3 | 1 | 3 | 3 | 2 | 3 | 1 | 2 | **2.3** |
| **CO5** | 3 | 2 | 3 | 1 | 2 | 1 | 3 | 2 | 2 | 3 | **2.2** |
| | | | | | | | | | | **Mean Overall Score** | **2.2** |
| | | | | | | | | | | **Result** | High |

## Skill Enhancement Course – I (U4R2CSSEC1:1/1:2)

# 1. HTML and Web Design

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| IV | 2 | 24 | U4R2CSSEC1:1 | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To know about internet
- To develop an ability to design and implement static and dynamic websites
- To understand HTML and design webpages using it
- To learn about HTML Frames
- To design web pager through coding using HTML and DHTML.

**UNIT– I: Introduction to Internet HOURS: 05**

Computers in Business – Networking – E-Mail – Resource Sharing – WWW – Usenet – Telnet – Bulleting Board Service – Wide Area Information Service. Internet Technologies: Modem – Internet addressing – Physical Connections – Telephone Lines. Internet Browsers: Internet Explorer – Netscape Navigator.

**UNIT– II Introduction to HTML HOURS: 05**

Designing a home page – History of HTML – HTML generations – HTML document – Anchor Tag – Hyper Links – Sample HTML documents. Head and Body Sections: Header section – Title – Prologue – Links – Colorful web Page – Comment lines.

**UNIT– III Designing the Body Section HOURS: 05**

Header printing – Aligning the heading – Horizontal rule – Paragraph – Tab Settings – Images and Pictures – Embedding PNG format images. Ordered and Unordered Lists: Lists – Unordered Lists – Heading in a list – Ordered Lists – Nested Lists. Table Handing: Table creation in HTML – Width of the Table and cells – Cells – Spanning Multiple Rows / Columns – Coloring cells – Column specification.

**UNIT– IV DHTML and Style Sheets HOURS: 05**

Designing Styles – Elements of Styles – Linking a style sheet to an HTML Document – Inline Styles – External Style Sheets – Internal Style Sheets – Multiple Styles.

**UNIT–V Frames HOURS: 04**

Frame definition – Frameset definition – Nested Framesets. Web Page designing and forms.

**TEXTBOOK**

4. "World Wide Web Design with HTML", C Xavier, TMH, 2000.
   [Unit-1 (Chapters - 1, 2, 3); Unit-2 (Chapters – 4, 5); Unit-3 (Chapters – 6, 7, 8); Unit-4 (Chapters – 9); Unit-5 (Chapters – 10, 11)]

**REFERENCE BOOK**

1. Web Design in a Nutshell" – Jennifer Niederst – O'Reilly first Edition – Shroff Publishers and Distributors Pvt. Ltd.

**WEB REFERENCES**

1. https://www.tutorialspoint.com/html/html_frames.htm
2. https://www.w3schools.com/css/css_list.asp
3. http://staff.um.edu.mt/mros1/wwww/basic_web_concepts.html

**COURSE OUTCOMES**

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Demonstrate the basics of internet | **K2** |
| **CO: 2** | Explain HTML and DHTML as scripting languages | **K5** |
| **CO: 3** | Design web applications using HTML and DHTML | **K6** |
| **CO: 4** | Efficiently experiment with HTML frames | **K3** |
| **CO: 5** | Analyze and interpret on web applications, internet tools and other web services | **K4,K6** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.8** |
| **CO 2** | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.5** |
| **CO 3** | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.7** |
| **CO 4** | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.5** |
| **CO 5** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **3.0** |

Mean Relationship value is **2.7** which is **HIGH**

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# 2. MOBILE APPLICATION DEVELOPMENT

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| IV | 2 | 24 | U4R2CSSEC1:2 | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To facilitate students to understand android SDK
- To help students to gain a basic understanding of Android application development
- To inculcate working knowledge of Android Studio development tool
- To study managing Application resources
- To know how to use Common Android APIs

**UNIT–I : Introduction to Android HOURS: 12**

Introduction to Android: The Android Platform, Android SDK, Eclipse Installation, Android Installation, Building you First Android application, Understanding Anatomy of Android Application, Android Manifest file.

**UNIT– II : Android Application Design Essentials HOURS: 12**

Android Application Design Essentials: Anatomy of an Android applications, Android terminologies, Application Context, Activities, Services, Intents, Receiving and Broadcasting Intents, Android Manifest File and its common settings, Using Intent Filter, Permissions.

**UNIT– III : Android User Interface Design Essentials HOURS: 12**

Android User Interface Design Essentials: User Interface Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation.

**UNIT– IV : Testing Android applications HOURS: 12**

Testing Android applications, Publishing Android application, Using Android preferences, Managing Application resources in a hierarchy, working with different types of resources.

**UNIT– V : Using Common Android APIs HOURS: 12**

Using Common Android APIs: Using Android Data and Storage APIs, Managing data using Sqlite,Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs, Using Android Telephony APIs, Deploying Android Application to the World.

**TEXT BOOK**

1. T1. Lauren Darcey and Shane Conder, "Android Wireless Application Development", Pearson Education, 2nd ed. (2011)

**REFERENCE BOOKS**

1. Reto Meier, "Professional Android 2 Application Development", Wiley India Pvt Ltd
2. Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd
3. Android Application Development All in one for Dummies by Barry Burd, First Edition.

**WEB REFERENCES**

1. https://www.tutorialspoint.com/android/index.htm
2. https://www.tutorialspoint.com/android/android_ui_design.htm
3. https://www.softwaretestinghelp.com/android-app-testing/

**COURSE OUTCOMES**

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Identify various concepts of mobile programming that make it unique from programming for other platforms | **K3** |
| **CO: 2** | Interpret mobile applications on their design pros and cons | **K5** |
| **CO: 3** | Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces | **K3** |
| **CO: 4** | Experiment with mobile applications for the Android operating system that use basic and advanced phone features | **K3** |
| **CO: 5** | Make use of applications to the Android marketplace for distribution | **K3** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **3.0** |
| **CO 2** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.7** |
| **CO 3** | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.6** |
| **CO 4** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| **CO 5** | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **2.9** |

Mean Relationship value is **2.8** which is **HIGH**

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# Core Course X – Operating System

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| V | 5 | 84 | U5R2CSCC10 | 25 | 75 | 100 | SKILL DEVELOPMENT |

## COURSE OBJECTIVES

- To understand the underlying principles, techniques and approaches which constitute a coherent body of knowledge in operating system
- To introduce basic concepts and functions of operating systems and understand the concept of process, thread and resource management
- To understand various Memory, I/O and File management techniques.
- To master various process management concepts including scheduling, synchronization and deadlocks.
- To understand File management techniques.

**UNIT–I: Introduction to Operating System HOURS: 17**

Introduction – History of operating system – Different kinds of operating system – Operating system concepts – System calls – Operating system structure.

**UNIT–II: Processes and Threads HOURS: 17**

Processes and Threads: Processes - threads - thread model and usage - inter process communication.

**UNIT–III: Scheduling and Memory Management HOURS: 17**

Scheduling - Memory Management: Memory Abstraction - Virtual Memory - Page replacement algorithms.

**UNIT–IV: Deadlocks and Multiple Processor System HOURS: 17**

Deadlocks: Resources- introduction to deadlocks - deadlock detection and recovery - deadlocks avoidance - deadlock prevention. Multiple processor system: multiprocessors - multi computers.

**UNIT–V Input / Output HOURS: 16**

Input / Output: principles of I/O hardware - principles of I/O software. Files systems: Files - directories - files systems implementation - File System Management and Optimization.

## TEXT BOOK

1. Andrew S. Tanenbaum, "Modern Operating Systems", 2nd Edition, PHI private Limited, New Delhi, 2008.

## REFERENCE BOOKS


1. William Stallings, "Operating Systems - Internals & Design Principles", 5th Edition, Prentice - Hall of India private Ltd, New Delhi, 2004.
2. Sridhar Vaidyanathan, "Operating System", 1st Edition,Vijay Nicole Publications, 2014.


## WEB REFERENCES

1. https://www.tutorialspoint.com/operating_system/index.htm
2. https://www.techtarget.com/whatis/definition/operating-system-OS
3. https://www.geeksforgeeks.org/introduction-of-operating-system-set-1/
4. https://www.guru99.com/operating-system-tutorial.html

## COURSE OUTCOMES

After completion of this course, the students would be able to

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Demonstrate different types of operating systems along with concept of file systems and CPU scheduling algorithms used in operating system | **K2** |
| **CO: 2** | Analyze knowledge on memory management and deadlock handling algorithms | **K4** |
| **CO: 3** | Experiment with various algorithms required for management, scheduling, allocation and communication used in operating system | **K3** |
| **CO: 4** | Apply and Interpret the design issues associated with operating system | **K3 ,K2** |
| **CO: 5** | Explain different types of operating systems along with concept of file systems | **K5** |

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.8** |
| CO 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **2.8** |
| CO 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **3.0** |
| CO 4 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | **2.8** |
| CO 5 | 3 | 2 | 3 | 3 | 2 | 3 | 1 | 3 | 3 | 2 | **2.5** |

Mean Relationship value is **2.78** which is **HIGH**

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## Core Course XI – Open Source Technology

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| V | 5 | 84 | U5R2CSCC11 | 25 | 75 | 100 | EMPLOYABILITY |

### COURSE OBJECTIVES

- To know about the open source and free software
- To understand the principles of copy rights and patents
- To construct communities using open source
- To know the implementation and usage of HTTP and WAMP servers
- To realize the Importance of Governance and ethics of open source

**UNIT–I: Introduction to Open Source HOURS: 17**

Introduction: Open Source, Free Software, Free Software vs. Open Source software, Public Domain Software, FOSS does not mean no cost. History: BSD, The Free Software Foundation and the GNU Project.

**UNIT–II: Open Source Principle and methodologies HOURS: 17**

Open Source History, Initiatives, Principle and methodologies. Philosophy : Software Freedom, Open Source Development Model Licences and Patents: What Is A License, Important FOSS Licenses (Apache,BSD,GPL, LGPL), copyrights and copylefts, Patents Economics of FOSS : Zero Marginal Cost, Income-generation opportunities, Problems with traditional commercial software, Internationalization

**UNIT–III: Community Building HOURS: 17**

Community Building: Importance of Communities in Open Source Movement- JBoss Community- Starting and Maintaining an Open Source Project - Open Source Hardware

**UNIT– IV: Apache and WAMP Servers HOURS: 17**

Apache HTTP Server and its flavors- WAMP server (Windows, Apache, MySQL, PHP)- Apache, MySQL, PHP, JAVA as development platform.

**UNIT–V: Open source vs. closed source HOURS: 16**

Open source vs. closed source Open source government, Open source ethics. Social and Financial impacts of open source technology, Shared software, Shared source.

## TEXT BOOKS


1. Sumitabha Das "Unix Concepts and Applications, Tata McGraw Hill Education 006
2. The Official Ubuntu Book, 8th Edition
3. Kailash Vedera, Bhavyesh Gandhi, "Open Source Technology", UniversityScience press, ker


## REFERENCE BOOKS


1. Paul Kavanagh, "Open Source Software: Implementation and Management", Elsevier Digital Press
2. The Linux Documentation Project : http://www.tldp.org
3. Docker Project Home : http://www.docker.com


## WEB REFERENCES

1. https://opensource.com/resources/what-open-source
2. https://www.tutorialspoint.com/basics_of_computers/basics_of_computers_open_source_software.htm
3. https://www.synopsys.com/glossary/what-is-open-source-software.html
4. https://www.hostinger.in/tutorials/what-is-wamp

## COURSE OUTCOMES

Upon completion of the course the students will be able to:

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Elaborate on open source and free software | **K6** |
| **CO: 2** | Analyze the principles of copy rights and patents | **K4** |
| **CO: 3** | Construct and follow communities using open source | **K3** |
| **CO: 4** | Make use of HTTP and WAMP servers efficiently | **K3** |
| **CO: 5** | Interpret the ethics and Governance of open source | **K2** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | Relationship |
| CO 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **3.0** |
| CO 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | **2.8** |
| CO 3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | **2.7** |
| CO 4 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 1 | 2 | **2.6** |
| CO 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **3.0** |

Mean Relationship value is **2.82** which is **HIGH**

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# Core Course XII – Open Source Technology Practical

| SEMESTER | CREDITS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|
| | | | INT | EXT | TOTAL | |
| V | 5 | U5R2CSCC12P | 25 | 75 | 100 | EMPLOYABILITY |

## COURSE OBJECTIVES

- To learn programming in PHP
- To install WAMP server
- To develop technical solutions for problems using the open source software's readily available at free of cost
- To write PHP programs using Loop statements and string functions
- To create web pages using date and time functions

1. Create a simple HTML form and accept the user name and display the name through PHP echo statement.
2. Write a PHP script to redirect a user to a different page.
3. Write a PHP function to test whether a number is greater than 30, 20 or10 using ternary operator.
4. Create a PHP script which display the capital and country name from the given array. Sort the list by the name of the country
5. Write a PHP script to calculate and display average temperature, fivelowest and highest temperatures.
6. Create a script using a for loop to add all the integers between 0 and 30and display the total**.**
7. Write a PHP script using nested for loop that creates a chess board.
8. Write a PHP function that checks if a string is all lower case.
9. Write a PHP script to calculate the difference between two dates**.**
10. Write a PHP script to display time in a specified time zone.

## COURSE OUTCOMES

Upon completion of the course the students would be able to:

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Demonstrate the programming concepts of PHP programming | **K2** |
| **CO: 2** | Adapt to WAMP server | **K6** |
| **CO: 3** | Make use of open source software | **K3** |
| **CO: 4** | Experiment with loop statements and string functions | **K3** |
| **CO: 5** | Develop web pages with date and time functions | **K3** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.9** |
| **CO 2** | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | **2.9** |
| **CO 3** | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | **2.9** |
| **CO 4** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.9** |
| **CO 5** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.7** |

Mean Relationship value is **2.86** which is **HIGH**

## Discipline Specific Elective Course –I (U5R2CSDSE 1:1/1:2/1:3)

# 1. Software Engineering

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| V | 5 | 60 | U5R2CSDSE1:1 | 25 | 75 | 100 | SKILL DEVELOPMENT |

### COURSE OBJECTIVES

- To define software engineering and explain its importance.
- To discuss the concepts of software products and software processes.
- To design Function-Oriented Software.
- To understand the coding, testing and user interface design
- To design, develop the software projects and software reliability and quality management

**UNIT–I: Introduction to Software Engineering HOURS: 12**

Introduction - Software Engineering Discipline - Evolution and Impact - Programs Vs Software Products. Software Life Cycle Models: Use of a Life Cycle Models - Classical Waterfall Model -Iterative Waterfall Model - Prototyping Model - Evolutionary Model - Spiral Model. Software Project Management: Responsibilities of a Software Project Manager - Project Planning - Metrics for Project Size Estimation - Project Estimation Techniques -Risk Management.

**UNIT–II: Requirements Analysis and Specification HOURS: 12**

Requirements Analysis and Specification: Requirements Gathering and Analysis - Software Requirements Specification (SRS) - Formal System Development Techniques. Software Design: Characteristics of a Good Software Design - Cohesion and Coupling -Neat Arrangement - Software Design Approaches.

**UNIT–III: Function-Oriented Software Design HOURS: 12**

Function-Oriented Software Design: Overview of SA/SD Methodology - Structured Analysis - Data Flow Diagrams (DFDs).Object Modeling Using UML: Overview of Object-Oriented Concepts - UML Diagrams - Use Case Model -Class Diagrams - Interaction Diagrams - Activity Diagrams - State Chart Diagram.

**UNIT–IV: User Interface Design HOURS: 12**

User Interface Design: Characteristics of a Good User Interface - BasicConcepts - Types of User Interfaces - Component-Based GUI Development; Coding and

Testing: Coding - Testing - UNIT Testing - Black-Box Testing - White-Box Testing - Debugging -Integration Testing - System Testing.

**UNIT–V: Software Reliability and Quality Management HOURS: 12**

Software Reliability and Quality Management: Software Reliability - Statistical Testing -Software Quality - Software Quality Management System - ISO 9000.Computer Aided Software Engineering: CASE Environment - CASE support in Software Life Cycle - Characteristics of CASE Tools - Architecture of a CASE Environment. Software Maintenance: Characteristics of Software Maintenance - Software Reverse Engineering - Software Maintenance Process Models - Estimation of Maintenance Cost. Software Reuse: Issues in any Reuse Program - Reuse Approach.

## TEXT BOOK

1. Rajib Mall, "Fundamentals of Software Engineering",3rd Edition, PrenticeHall of India Private Limited, 2008.

## REFERENCE BOOKS

1. Rajib Mall, "Fundamentals of Software Engineering", 4thEdition, PrenticeHall of India Private Limited, 2014.
2. Richard Fairley, "Software Engineering Concepts", TMGH Publications, 2004.

## WEB REFERENCES

1. **https://www.w3schools.in/sdlc/software-development-life-cycle-sdlc**
2. **https://www.javatpoint.com/software-engineering-tutorial**
3. **https://www.geeksforgeeks.org/software-engineering/**

## COURSE OUTCOMES

Upon completion of the course the students would be able to:

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Define software engineering and explain its importance | **K2** |
| **CO: 2** | Solve specific problems alone or in teams | **K3** |
| **CO: 3** | Apply the concepts of software products | **K3** |
| **CO: 4** | Plan a project from beginning to end | **K3** |
| **CO: 5** | Explain verification and validation techniques efficiently | **K5** |

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.8** |
| CO 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.7** |
| CO 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | **2.8** |
| CO 4 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **2.8** |
| CO 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 1 | **2.7** |

Mean Relationship value is **2.76** which is **HIGH**

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# 2. Software Testing

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| V | 5 | 60 | U5R2CSDSE1:2 | 25 | 75 | 100 | SKILL DEVELOPMENT |

## COURSE OBJECTIVES

- To study fundamental concepts in software testing
- To know about testing techniques
- To understand the Data flow testing strategies
- To learn and acquire knowledge on software metrics
- To study the concepts of logic based testing and Transition testing

**UNIT–I: Introduction** **HOURS: 12**

Introduction: Purpose – Productivity and Quality in Software – Testing Vs Debugging – Model for Testing – Bugs – Types of Bugs – Testing and Design Style.

**UNIT–II: Flow / Graphs and Path Testing** **HOURS: 12**

Flow / Graphs and Path Testing – Achievable paths – Path instrumentation – Application – Transaction Flow Testing Techniques.

**UNIT–III: Data Flow Testing Strategies** **HOURS: 12**

Data Flow Testing Strategies - Domain Testing: Domains and Paths – Domains and Interface Testing.

**UNIT–IV: Linguistic** **HOURS: 12**

Linguistic –Metrics – Structural Metric – Path Products and Path Expressions. Syntax Testing – Formats – Test Cases.

**UNIT–V: Logic Based Testing** **HOURS: 12**

Logic Based Testing – Decision Tables – Transition Testing – States, State Graph, State Testing.

## TEXT BOOKS


1. B. Beizer, "Software Testing Techniques", II Edn., DreamTech India, New Delhi, 2003.
2. K.V.K. Prasad , "Software Testing Tools", DreamTech. India, New Delhi, 2005.


## REFERENCE BOOKS


1. Burnstein, 2003, "Practical Software Testing", Springer International Edn.

2. E. Kit, 1995, "Software Testing in the Real World: Improving the Process", Pearson Education, Delhi.
3. R.Rajani, and P.P.Oak, 2004, "Software Testing", Tata Mcgraw Hill, NewDelhi.

## WEB REFERENCES

1. **https://www.w3schools.in/software-testing/tutorials/**
2. https://www.tutorialspoint.com/software_testing/index.htm
3. https://www.javatpoint.com/software-testing-tutorial

## COURSE OUTCOMES

Upon completion of the course the students would be able to:

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Elaborate on the fundamental concepts in software testing | **K6** |
| **CO: 2** | Design and develop project test plan and design test cases | **K6,K3** |
| **CO: 3** | Apply recent automation tools for various testing | **K3** |
| **CO: 4** | Analyze and Interpret on software metrics | **K4,K6** |
| **CO: 5** | Apply the concepts of logic based testing and transition testing in real time applications | **K3** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | Relationship |
| CO 1 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| CO 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.9** |
| CO 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | **2.7** |
| CO 4 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | **2.7** |
| CO 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **3.0** |

Mean Relationship value is **2.82** which is **HIGH**

## 3. System Administration and Maintenance

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| V | 5 | 60 | U5R2CSDSE1:3 | 25 | 75 | 100 | SKILL DEVELOPMENT |

### COURSE OBJECTIVES

- To study the basic concepts of Computer systems and operating system
- To configure the system installation, maintenance and trouble shooting
- To know about GUI based environment
- To understand about the types and uses of I/O devices
- To learn about the LAN topologies and Architecture

### UNIT–I: Introduction to Personal Computer HOURS: 12

Introduction to Personal Computer: Computer System – Purposes & Characteristics of Cases - Power Supplies - Internal Components - Ports - Cables - Input devices - Output devices. Safe Lab Procedures and Tool Use: Safe Working Conditions and Procedures - Tools and Software used with PC components.

### UNIT–II: Computer Assembly HOURS: 12

Computer Assembly: Open Case - Install Power Supply - Attach Components to Motherboard - Installation: Motherboard - Internal Drives - Drives in External Bayes -Adapter Cards. Internal cables connections -Reattach side panels - Connection of external cables - Boot the Computer. Preventive Maintenance and Troubleshooting: Purpose of Preventing Maintenance - Steps of Troubleshooting Process.

### UNIT–III: Fundamental Operating System HOURS: 12

Fundamental Operating System: Purposes - Characteristics of Modern Operating Systems – Concepts Comparisons, Limitations, and Compatibilities - Determination of Operating System based on Customer Needs - Installation of Operating System - Navigate a GUI (Windows) - Common Preventive Maintenance Techniques- Troubleshoot.

### UNIT–IV: Fundamental Laptops and Portable Devices HOURS: 12

Fundamental Laptops and Portable Devices: Common Uses - Components of Laptop - Comparison of the components of Desktop and Laptops - Configure Laptops - Mobile Phone Standards - Preventive Maintenance Techniques - Troubleshoot Laptop and Portable Devices. Fundamental Printers and Scanners: Types of

Printers and Scanners - Installation and Configuration Process of Printers and Scanners - Preventive Maintenance Techniques - Troubleshoot.

**UNIT–V: Fundamental Networks HOURS: 12**

Fundamental Networks: Principles - Types - Concepts and Technologies - Physical Components - LAN Topologies and Architectures- Standard Organizations - Ethernet Standards - OSI and TCP/IP Models - Configurationof NIC and Modem - Establishing Connectivity - Preventive Maintenance Techniques - Troubleshoot. Fundamental Security: Security Threats - Security Procedures - Preventive Maintenance Techniques - Troubleshoot Security.

## TEXTBOOK


1. David Anfinson & Ken Quamme, "IT Essentials: PC Hardware and Software Companion Guide", 3rd Edition, Pearson Publications, 2008.


## REFERENCE BOOK


1. Quentin Docter, Emmett Dulaneyand Toby Skandier, "CompTIA A+ Complete Review Guide: Exam 220-901, Exam 220 - 902", 3rd Edition, Wiley Publications, 2015.


## WEB REFERENCES

1. https://www.tutorialspoint.com/computer_fundamentals/index.htm
2. https://www.tutorialspoint.com/operating_system/os_overview.htm
3. https://www.tutorialspoint.com/basics_of_computer_science/basics_of_computer_science_mobile.htm
4. https://www.tutorialspoint.com/computer_concepts/computer_concepts_basics_of_computer_networks.htm

## COURSE OUTCOMES

Upon completion of the course the students would be able to:

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Analyze and interpret the basic concepts of Computer systems and operating system | **K4,K6** |
| **CO: 2** | Construct and design system installation, maintenance and trouble shooting | **K3,K6** |
| **CO: 3** | Build GUI based environment more efficiently | **K6** |
| **CO: 4** | Explain about the types and uses of I/O devices | **K5** |
| **CO: 5** | Elaborate LAN topologies and Architecture | **K6** |

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | **2.6** |
| CO 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.7** |
| CO 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | **2.6** |
| CO 4 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| CO 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.9** |

Mean Relationship value is **2.72** which is **HIGH**

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## Skill Enhancement Course – II (U4R2CSSEC 2:1/2:2)

# 1. Photoshop and Flash

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| V | 2 | 24 | U5R2CSSEC2:1 | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- Identify the major regions of the Photoshop workspace and explain the function of each, Menu bar and context menus, Options bar, Toolbox, palettes, and document window(s).
- Demonstrate knowledge of image resolution, editing, file formats and selection tools.
- Get the experience by using tools and mastering layers in Photoshop.
- Understand how to use Flash workspace and its tools.
- Draw, Edit the objects and make skills on flash layers.

**UNIT–I : Getting familiar with Photoshop** **HOURS: 05**

Introducing and Launching Photoshop – Exploring the New Interface – Working with Commonly Used Photoshop Tools – Getting familiar with Palettes – Opening an Existing File of Photoshop Document – Creating a New Document – Saving Files – Reverting Files – Closing Files.

**UNIT – II : Working with Images and Selections** **HOURS: 05**

Comparing Bitmap and Vector Images – Understanding Image Resolution – Editing Images – Making Color adjustments – Exploring File Formats in Photoshop – Working with Selections Tools – Making a Selection Based on Color Range.

**Unit – III : Using Tools and Mastering layers** **HOURS: 05**

Drawing, Painting and Retouching Tools : Setting the Current Foreground and Background Colors – Exploring Color Picker Dialog Box – Using Eyedropper Tool – The COLOR Palette – Using Color Replacement Tool – Using Retouching Tools. Mastering Layers in Photoshop : Exploring the LAYERS Palette – Working with Layers – Creating a New Layer – Hiding and Showing Layers – Deleting Layers – Applying Blend Modes – Using Type Masking – Using Shape Masking.

**UNIT – IV : Introduction to Flash and its Tools** **HOURS: 05**

Introduction to Flash CS5 – Tools of Flash CS5 – Working with Text in Flash CS5

**UNIT – V : Working with Objects, Artworks and Layers** **HOURS: 04**

Drawing and Editing Objects in Flash CS5 – Creating and Editing Artworks in Flash CS5 – Working with Layers in Flash CS5

**TEXT BOOK**

1. Comdex 9-in-1 DTP Course Kit, Vikas Gupta, Edition 2015, Dreamtech press.
   (Unit I : chapter 1, Unit II : chapter 2, Unit III : Chapter 3,4)
2. Learning Flash CS5, Ramesh Bangia 1st Edition 2010, Khanna Publishers.

**REFERENCE BOOKS**

1. Adopbe Photoshop, Bittu Kumar, 1st Edition, V & S Publicaions.
2. Adobe Photoshop CC 2018 Release, Andrew Faulkner & Cornad Vhavez, Pearson Education India.
3. Photoshop CC in Simple Steps 1st Edition 2019, DT Editorial Services, Dreamtech Press.
4. Adobe Flash Professional CS5 Bible, Todd Perkins, Wiley India Pvt Ltd.
5. Flash CS6 in Simple Steps, Kogent Learning Solutions Inc, Dreamtech Press India Pvt Ltd.

**WEB REFERENCES**

1. **https://www.javatpoint.com/photoshop**
2. **https://w3schools.sinsixx.com/flash/default.asp.htm**
3. **http://edutechwiki.unige.ch/en/Flash_tutorials**

**COURSE OUTCOMES**

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Develop technical skills to make effects on the images and experience with selection tools | **K6** |
| **CO: 2** | Experiment with PhotoShop tools and layers | **K3** |
| **CO: 3** | Construct different graphic design projects like book cover, brochure, pamphlet, newspaper ads, banners, posters | K6 |
| **CO: 4** | Develop animation knowledge from Flash tools | **K3** |
| **CO: 5** | Demonstrate on animated banners and character animations | **K2** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.7** |
| **CO 2** | 3 | 1 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.5** |
| **CO 3** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.7** |
| **CO 4** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | **2.7** |
| **CO 5** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **2.9** |

Mean Relationship value is **2.7** which is **HIGH**

## 2. Corel Draw and Page Maker

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| V | 2 | 24 | U5R2CSSEC2:2 | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To know the PageMaker workspace and its tools.
- Impart the efficient workflow of preparing and placing text.
- To acquire the knowledge of how to prepare Graphics with text.
- Learn how to use the primary tools of CorelDraw.
- Receive the technical knowledge on text, vector and Bitmap image effects.

**UNIT – I: Introduction to PageMaker HOURS: 05**

PageMaker for Windows – Word Processing and Page Makeup –New features of PageMaker 5 for Windows. Quick Start : Placing Text and Graphics – A Step-By-Step Trip Through a Simple Page. The Work Area : Making a Page – Master Pages – Toolbox

**UNIT – II: Working with Text HOURS: 05**

Preparing and Placing Text : Word processing to Page Makeup – Text Troubles – Placing Stories – Format options – Text Flow – Working the Flow – Drag Placing. Working with Placed Text : Window shade Handles – Text Blocks – The Text Tool - Adjusting Text.

**UNIT –III: Graphics in PageMaker HOURS: 05**

Graphics : Placing Graphic Files – Preparing Graphics – Text Wrap and Graphics – Independent and Inline Graphics in Text – PageMaker Graphic Tools.

**UNIT – IV: Introduction to CorelDraw HOURS: 05**

Introduction to CorelDraw : Understanding CorelDraw X4 – Getting Started with CorelDraw X4 – Exploring the Workspace of CorelDraw X4 – Drawing Basic Geometric Figures – Saving the Drawing – Opening an Existing Document – Working with Page Layout – Closing the Drawing and Quitting CorelDraw. Working with Lines : About Lines in CorelDraw – About Outline Tool.

**UNIT – V: Working With Text and Bitmaps HOURS: 05**

Working with Text : Types of Text – Changing the Appearances of Text – Applying effects to the Text – Wrapping Paragraph Text Around Objects – Fitting Text to an Object's Path. Working with Bitmaps : About Vector and Bitmap Images – Changing Vector images into Bitmap images – Importing a Bitmap into a Drawing – Cropping, Resampling and Resizing a Bitmap – Using Special Effects to Bitmaps.

**TEXT BOOK**

1. PageMaker 5 for Windows, William B. Sanders, Galgotia Publications pvt Ltd, New Delhi. ( Unit I – Chapter 1,3,4. Unit II – Chapter 5, 6. Unit III – 9)
2. Comdex 9-in-1 DTP Course Kit, Vikas Gupta, Edition 2015, Dreamtech press. (Unit IV – Chapter 1, 2. Unit V – Chapter 4,5)

**REFERENCE BOOKS**

1. Learning Pagemaker 7, Ramesh Bangia, 1st Edition 2015, Khanna Publishers
2. The Complete Reference Pagemaker 7, Carolyn M. Connally, McGraw-Hill Education.
3. First Lesson in Corel Draw X4 Edition 2009, Lawpoint Publisher.
4. Corel Draw Graphics Suite X4, M.C. Sharma, BPB Publications,

**WEB REFERENCES**

1. **https://www.coreldraw.com/en/learn/tutorials/**
2. **https://www.javatpoint.com/coreldraw**
3. **https://www.abcsa.co.in/2016/08/page-maker-tutorial.html?m=1**

**COURSE OUTCOMES**

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Design web pages | **K6** |
| **CO: 2** | Elaborate on professional quality business documents or publication | **K2** |
| **CO: 3** | Construct designs from scratch and gets the freedom to express ideas whatever one wants with CorelDraw | **K3** |
| **CO: 4** | Experiment with original art works using vector can be done in CorelDraw which puts logo designing | **K3** |
| **CO: 5** | Demonstrate on text, vector and Bitmap image effects | **K2** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| **CO 2** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **3.0** |
| **CO 3** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | **2.8** |
| **CO 4** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| **CO 5** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |

Mean Relationship value is **2.76** which is **HIGH**

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## Generic Elective Course – I (U5R2**GEC 1:1/1:2)

## 1. Introduction to Internet Concepts

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| V | 2 | 24 | U5R2**GEC1:1 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**COURSE OBJECTIVES**

- To describe the fundamentals of computer system.
- To acquire knowledge about the peripherals and storage devices of a computer.
- To provide an understanding of the networking concepts like e-mail and e-marketing
- To inculcate knowledge on the basics of browsers
- To achieve knowledge about HTML.

**UNIT – I Introduction to Computers HOURS: 05**

Introduction to Computers Programming Language types History of Internet Personal Computers History of World Wide Web- Micro software .NET Java-Web resources.

**UNIT – II Browsers HOURS: 05**

Web Browsers - Internet Explorer- connecting to Internet Features of Internet explorer6 Searching the Internet- online help and tutorials- File Transmission Protocol (FTP) Browser settings.

**UNIT – III E-Mail HOURS: 05**

Attaching a file, Electronic mail Creating an E-mail id Sending and Receiving mails-attaching a file- Instance messaging - other web browsers

**UNIT – IV HTML HOURS: 05**

Introduction to HTML headers - Linking- Images-special characters and line breaks- unordered lists- simple HTML programs.

**UNIT – V E-Marketing HOURS: 04**

E-marketing consumer tracking Electronic advertising search engine-CRM- credit card payments Digital cash and e-wallets micro payments-smart card

**TEXTBOOK**

1. Internet and World Wide Web Third edition H.M.Deital, P.J. Deital and A.B.Goldberg-PHI

**REFERENCE BOOK**

1. The Internet- Complete Reference Harley hahn, Tata McGraw hill

**WEB REFERENCES**

1. https://www.tutorialspoint.com/internet_technologies/e_mail_overview.htm
2. https://www.tutorialspoint.com/internet_technologies/web_browsers.htm
3. https://www.guru99.com/free-digital-marketing-tutorial.html

**COURSE OUTCOMES**

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

| | **COURSE OUTCOMES** | **KNOWLEDGE LEVEL** |
|---|---|---|
| **CO: 1** | Demonstrate fundamentals of internet and describe the internet infrastructures and internet issues | **K2** |
| **CO: 2** | Explain the basics of browsers | **K2** |
| **CO: 3** | Elaborate on the networking concepts like e-mail | K6 |
| **CO: 4** | Design web pages | **K6** |
| **CO: 5** | Experiment with online services through e-marketing | **K3** |

| **RELATIONSHIP MATRIX FOR CO, PO & PSO** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Program Outcomes** | | | | | **Program Specific Outcomes** | | | | | **Mean Relationship** |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.7** |
| **CO 2** | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | **2.5** |
| **CO 3** | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| **CO 4** | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | **2.5** |
| **CO 5** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **2.9** |

Mean Relationship value is **2.64** which is **HIGH**

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# 2. OFFICE AUTOMATION

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| V | 2 | 24 | U5R2**GEC1:2 | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To understand how to format, edit, and print text documents and prepare for desktop publishing.
- To work with the worksheet, linking worksheets, sorting, auto – filling function and creating charts.
- To Create a Presentation, adding Video and Audio effects and Customizing layout design
- To Create a table and perform operations such as Adding, Editing, deleting records & printing reports
- To create various documents newsletters, brochures, making document using photographs, charts, presentation, documents, drawings and other graphic images.

**UNIT – I : MS-Word HOURS: 12**

MS-Word -Working with Files – Working with Text – Formatting, Moving, copying and pasting text Styles – Lists – Bulleted and numbered lists, Nested lists, Formatting lists. Table Manipulations. Graphics – Adding clip Art, add an image from a file, editing graphics, Spelling and Grammar, AutoCorrect - Page formatting - Header and footers, page numbers, Protect the Document, Mail Merge, Macros - Creating& Saving web pages, Hyperlinks.

**UNIT – II: MS-Excel HOURS: 12**

MS-Excel - Modifying a Worksheet – Moving through cells, adding worksheets, rows and columns Resizing rows and columns, selecting cells, Moving and copying cells, freezing panes - Macros – recording and running. Formatting cells – Formatting toolbar, Dates and times, Auto formatting. Formula and Functions. Linking worksheets - Sorting and Filling, Alternating text and numbers with Auto fill, Auto filling functions. Graphics – Adding clip art, add an image from a file, Charts – Using chart Wizard, Copy a chart to Microsoft Word.

**UNIT – III: MS-Power Point HOURS: 12**

MS-Power Point - Create a Presentation from a template- Working with Slides – Insert a new slide, applying a design template, changing slide layouts -Slides: Reordering slides, hide slides, Create a Custom slide show. Adding Content – Resizing a text box, Text box properties, delete a text box - Video and Audio effects, Color Schemes & Backgrounds Adding clip art, adding an image from a file, Save as a web page.

**UNIT – IV: MS-Access HOURS: 12**

MS- Access – Using Access database wizard, pages and projects. Creating Tables – Create a Table in design view. Datasheet Records – Adding, Editing, deleting records, Adding and deleting columns

Resizing rows and columns, finding data in a table & replacing, Print a datasheet. Queries - MS-Access Forms – Create a form using the wizard, Create a form in Design View. Form Controls. Sub forms-Create a form and sub form at once, Sub form wizard, Drag and drop method. Reports – Using the wizard, Create in Design View, Printing reports. Importing, Exporting, Linking

**UNIT – V: Open Office Writer HOURS: 12**

Open Office Writer: Introduction to Writer application – Working with documents – Formatting documents – Creating and formatting tables – Mail merge - Open Office Calc: Introduction to Spreadsheet – Creating worksheet & workbook – Managing workbook - Insert functions and formulas – Creating and printing Charts – Pivot table

**TEXT BOOKS**


1. Sanjay Saxena, A First Course in Computers (Based on Windows 8 And MS Office 2013) Vikas Publishing 2015.


**REFERENCE BOOKS**:


1. Jennifer fulton, Sherri Kinkoph, and Joe Kraynak, The Big Basics Book of Microsoft Office 1997, PHI, 1998.
2. Laura Acklen et al, Microsoft Office 97 Professional Essentials,EEE Que E&T, PHI (1998).
3. Andy Channelle, Beginning OpenOffice 3, APress 2009
4. R. Gabriel Gurley, A Conceptual Guide to OpenOffice.Org 2 for Windows and Linux


**WEB REFERENCES**

1. **https://study.com/academy/lesson/what-is-office-automation-system-tools.html**
2. **https://www.javatpoint.com/ms-word-tutorial**
3. **https://khpditweebly.weebly.com/office-automation-notes.html**

**COURSE OUTCOMES**:

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Construct, edit, save and print documents with list tables, header, footer, graphic, spellchecker, mail merge and grammar checker | **K3** |
| **CO: 2** | Demonstrate on spreadsheet with formula, macros spell checker etc | **K2** |
| **CO: 3** | Explain the basics of computers and prepare small presentations with audio, video and graphs and would be acquainted with internet | K5 |
| **CO: 4** | Know the importance of creating database and manipulating data | **K5** |
| **CO: 5** | Develop various documents newsletters, brochures, making document using photographs, charts, presentation, documents, drawings and oth graphic images | **K6** |

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | **2.7** |
| CO 2 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | **2.5** |
| CO 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | **2.6** |
| CO 4 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.8** |
| CO 5 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.7** |

Mean Relationship value is **2.66** which is **HIGH**

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# Core Course XIII – MINI PROJECT

| SEMESTER | CREDITS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|
| | | | INT | EXT | TOTAL | |
| VI | 5 | U6R2CSDSE3:1 | - | 100 | 100 | SKILL DEVELOPMENT |

**COURSE OBJECTIVES**

- To introduce the concepts and methods required for the construction of large software intensive systems.
- To develop a broad understanding of the discipline of software engineering and management of software systems.
- To provide an understanding of both theoretical and methodological issues involve in modern software engineering project management and focuses strongly on Practical techniques.
- To apply the concepts of project management & planning.
- To understand various Software testing methods and apply appropriate testing approaches for software development.

**COURSE OUTCOMES:**

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Apply the process to be followed in the software development life-cycle models | **K3** |
| **CO: 2** | Interpret the communication, modeling, and construction & deployment practices in software development | **K5** |
| **CO: 3** | Analyze & design the software models using unified modeling language (UML) | **K4,K6** |
| **CO: 4** | Explain the concepts of various software testing methods & be able to apply appropriate testing approaches for development of software | **K2** |
| **CO: 5** | Explain the quality management & different types of metrics used in software development | **K2** |

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.7** |
| CO 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **2.9** |
| CO 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.7** |
| CO 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **3.0** |
| CO 5 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.7** |

Mean Relationship value is **2.8** which is **HIGH**

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# Core Course XIV – Web Technology

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| VI | 5 | 60 | U6R2CSCC14 | 25 | 75 | 100 | EMPLOYABILITY |

## COURSE OBJECTIVES

- To design web pages using various HTML tags
- To write programs in java scripts
- To develop forms using java scripts
- To create forms using controls such as list box, drop down list box
- To implement event handling methods

**UNIT – I Structuring Documents for the Web HOURS: 12**

Structuring Documents for the Web: Introducing HTML and XHTML, Basic Text Formatting, Presentational Elements, Phrase Elements, Lists, Editing Text, Core Elements and Attributes, Attribute Groups. Links and Navigation: Basic Links, Creating Links with the <a> Element, Advanced E- mail Links. Images, Audio, and Video: Adding Images Using the <img> Element, Using Images as Links Image Maps, Choosing the Right Image Format, Adding Flash, Video and Audio to your web pages.

**UNIT– II: Tables and Frames HOURS: 12**

Tables: Introducing Tables, Grouping Section of a Table, Nested Tables, Accessing Tables. Forms: Introducing Forms, Form Controls, Sending Form Data to the Server. Frames: Introducing Frameset, <frame> Element, Creating Links Between Frames, Setting a Default Target Frame Using <base> Element, Nested Framesets, Inline or Floating Frames with <iframe>.

**UNIT– III: Cascading Style Sheets HOURS: 12**

Cascading Style Sheets: Introducing CSS, Where you can Add CSS Rules. CSS Properties: Controlling Text, Text Formatting, Text Pseudo Classes, Selectors, Lengths, Introducing the Box Model. More Cascading Style Sheets: Links, Lists, Tables, Outlines, The :focus and :activate Pseudo classes Generated Content, Miscellaneous Properties, Additional Rules, Positioning and Layout wit, Page Layout CSS , Design Issues.

**UNIT– IV: Introduction to Java Script HOURS: 12**

Java Script: How to Add Script to Your Pages, Variables and Data Types – Statements and Opera tors, Control Structures, Conditional Statements, Loop Statements – Functions - Message box, Dialog Boxes, Alert Boxes, Confirm Boxes, Prompt Boxes.

**UNIT – V: Working with JavaScript HOURS: 12**

Working with JavaScript: Practical Tips for Writing Scripts, JavaScript Objects: Window Object - Document object - Browser Object - Form Object - Navigator

object Screen object - Events, Event Handlers, Forms – Validations, Form Enhancements, JavaScript Libraries.

## TEXT BOOKS

1. Jon Duckett, Beginning HTML, XTML, CSS and Java script , WileyPublishing

## REFERENCE BOOKS

1. Chris Bates, "Web Programming", Wiley Publishing 3d Edition.
2. M. Srinivasan, "Web Technology: Theory and Practice", Pearson Publication

## WEB REFERENCES

1. **https://www.tutorialspoint.com/html/index.htm**
2. **https://www.tutorialspoint.com/javascript/index.htm**
3. **https://www.w3schools.com/css/**
4. **https://docs.oracle.com/javaee/5/tutorial/doc/bnafe.html**

## COURSE OUTCOMES

Upon completion of the course the students would be able to:

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Design a complete HTML document | **K6** |
| **CO: 2** | Develop programs in java scripts using all the constructs | **K6** |
| **CO: 3** | Develop forms using java scripts with the entire set of I/O controls | **K6** |
| **CO: 4** | Experiment with animated pages using dynamic effects | **K3** |
| **CO: 5** | Make use of Java scripts for real time applications | **K3** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.7** |
| CO 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| CO 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | **2.5** |
| CO 4 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | **2.5** |
| CO 5 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **2.8** |

Mean Relationship value is **2.62** which is **HIGH**

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# Core Course XV – Web Technology Practical

| SEMESTER | CREDITS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|
| | | | INT | EXT | TOTAL | |
| VI | 3 | U6R2CSCC15P | 40 | 60 | 100 | EMPLOYABILITY |

## COURSE OBJECTIVES

- To design web pages using various HTML tags
- To write programs in java scripts
- To develop forms using java scripts
- To create forms using controls such as list box, drop down list box
- To implement event handling methods

1. Create a form having number of elements (Textboxes, Radio buttons, Checkboxes, and so on). Write JavaScript code to count the number of elements in a form.

2. Create a HTML form that has number of Textboxes. When the form runs in the Browser fill the textboxes with data. Write JavaScript code that verifies that all textboxes has been filled. If a textboxes has been left empty, popup an alert indicating which textbox has been left empty.

3. Develop a HTML Form, which accepts any Mathematical expression. Write JavaScript code to Evaluates the expression and Displays the result.

4. Create a page with dynamic effects. Write the code to include layers andbasic animation.

5. Write a JavaScript code to find the sum of N natural Numbers. (Use user- defined function)

6. Write a JavaScript code block using arrays and generate the current date in words, this should include the day, month and year.

7. Create a form for Student information. Write JavaScript code to find Total, Average, Result and Grade.

8. Create a form for Employee information. Write JavaScript code to find DA, HRA, PF, TAX, Gross pay, Deduction and Net pay.

9. Create a form consists of a two Multiple choice lists and one single choicelist

   (a) The first multiple choice list, displays the Major dishes available

(b) The second multiple choice list, displays the Starters available.
(c) The single choice list, displays the Soft drinks available.

10. Create a web page using two image files, which switch between one another as the mouse pointer moves over the image. Use the on Mouse Over and on Mouse Out event handlers.

**COURSE OUTCOMES**

Upon completion of the course the students will be able to:

**COURSE OUTCOMES**

Upon completion of the course the students would be able to:

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Create a form using HTML tags | **K6** |
| **CO: 2** | Create programs in java scripts using all the constructs | **K6** |
| **CO: 3** | Develop forms using java scripts with the entire set of I/O controls | **K6** |
| **CO: 4** | Construct animated pages with dynamic effects | **K6** |
| **CO: 5** | Design Java scripts for real time applications | **K6** |

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.7** |
| CO 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.7** |
| CO 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.7** |
| CO 4 | `3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **2.7** |
| CO 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **3.0** |

Mean Relationship value is **2.76** which is **HIGH**

## Discipline Specific Elective Course – II (U5R2CSDSE 2:1/2:2/2:3)

# 1. Object Oriented Programming Using C++

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| VI | 5 | 60 | U6R2CSDSE2:1 | 25 | 75 | 100 | SKILL DEVELOPMENT |

### COURSE OBJECTIVES

- To learn how to design C++ classes for code reuse
- To learn how to implement copy constructors and class member functions.
- To understand the abstract properties of various data structures such as stacks, queues, lists, trees and graphs.
- To understand various sorting algorithms
- To understand and apply algorithmic problems including tree traversals, graph traversals and shortest path.

**UNIT–I: Principles of Object- Oriented Programming HOURS: 12**

Principles of Object- Oriented Programming – Beginning with C++ - Tokens, Expressions and Control Structures – Functions in C++

**UNIT–II: Classes and Objects HOURS: 12**

Classes and Objects – Constructors and Destructors – New Operator – Operator Overloading and Type Conversions

**UNIT–III : Inheritance HOURS: 12**

Inheritance: Extending Classes – Pointers- Virtual Functions and Polymorphism

**UNIT–IV: Console I/O & File Handling HOURS: 12**

Managing Console I/O Operations – Working with Files – Templates – Exception Handling

**UNIT–V : Library functions and strings HOURS: 12**

Standard Template Library – Manipulating Strings – Object Oriented Systems Development

## TEXT BOOK

1. Balagursamy E, Object Oriented Programming with C++, Tata McGraw Hill Publications, Sixth Edition, 2013.

## REFERENCE BOOK

1. Ashok Kamthane, Programming in C++, Pearson Education, 2013.

## WEB REFERENCES

1. https://www.w3schools.com/cpp/cpp_oop.asp
2. https://www.geeksforgeeks.org/object-oriented-programming-in-cpp/amp/
3. https://www.javatpoint.com/cpp-oops-concepts

## COURSE OUTCOMES

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Design C++ classes for code reuse | **K6** |
| **CO: 2** | Experiment with copy constructors and class member functions | **K3** |
| **CO: 3** | Analyze and apply various data structures such as stacks, queues, lists, trees and graphs | **K4,K3** |
| **CO: 4** | Experiment with various sorting algorithms | **K3** |
| **CO: 5** | Understand and apply algorithmic problems including tree traversals, graph | **K3** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.8** |
| **CO 2** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.7** |
| **CO 3** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.7** |
| **CO 4** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| **CO 5** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **2.8** |

Mean Relationship value is **2.72** which is **HIGH**

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## 2. PHP Programing

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| VI | 5 | 60 | U6R2CSDSE2:2 | 25 | 75 | 100 | SKILL DEVELOPMENT |

### COURSE OBJECTIVES

- To understand the basic Concepts of PHP.
- To Impart Practical Training in PHP Programming Language using control structures and loops.
- To work with arrays , handle exceptions, and validate data.
- To successfully build interactive, data-driven sites and learn the features of OOP and advanced OOP in PHP
- To learn and use open source database management system MySQL

**UNIT–I: Basic Development Concepts HOURS: 12**

Basic development Concepts – Creating first PHP Scripts – Using Variable and Operators – Storing Data in variable – Understanding Data types – Setting and Checking variables Data types – Using Constants – Manipulating Variables with Operators.

**UNIT–II: Conditional Statements and Loops HOURS: 12**

Writing Simple Conditional Statements - Writing More Complex Conditional Statements – Repeating Action with Loops – Working with String and Numeric Functions.

**UNIT–III: Arrays HOURS: 12**

Storing Data in Arrays – Processing Arrays with Loops and Iterations – Using Arrays with Forms - Working with Array Functions – Working with Dates and Times.

**UNIT–IV: User-Defined Functions and Files HOURS: 12**

Creating User-Defined Functions - Creating Classes – Using Advanced OOP Concepts. Working with Files and Directories: Reading Files- Writing Files- Processing Directories.

**UNIT–V: Database Connection and XML HOURS: 12**

Introducing Database and SQL- Using MySQL-Adding and modifying Data- Handling Errors – sing SQLite Extension and PDO Extension. Introduction XML - Simple XML and DOM Extension.

## TEXT BOOK

1. VIKRAM VASWANI- PHP A Beginner's Guide, Tata McGraw-Hill

## REFERENCE BOOKS

1. The PHP Complete Reference – Steven Holzner – Tata McGraw-Hill Edition.
2. Spring into PHP5 – Steven Holzer, Tata McCraw Hill Edition

## WEB REFERENCES

1. https://www.w3schools.com/php/php_intro.asp
2. https://www.tutorialspoint.com/php/index.htm
3. https://www.phparch.com/training/advanced-php-development/

## COURSE OUTCOMES:

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Clearly use fundamental Concepts of PHP | **K3** |
| **CO: 2** | Make use of functions , arrays and control structures in PHP | **K3** |
| **CO: 3** | Construct interactive, data-driven sites | K3 |
| **CO: 4** | Analyze features of OOP and advanced OOP in PHP | **K4** |
| **CO: 5** | Experiment with Database connectivity of PHP | **K3** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.9** |
| **CO 2** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.8** |
| **CO 3** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.8** |
| **CO 4** | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | **2.7** |
| **CO 5** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **2.8** |

Mean Relationship value is **2.8** which is **HIGH**

# 3. Internet Programming

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| VI | 5 | 60 | U6R2CSDSE2:3 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**COURSE OBJECTIVES:**

- To understand different internet technologies
- To acquire knowledge on Java script
- To learn about Java Servlet architecture
- To analyze and interpret about the Database connectivity and Cookies
- To learn about Ajax and web services

**UNIT–I: Web Essentials** **HOURS: 12**

Web Essentials: Clients, Servers and Communication – The Internet – Basic Internet protocols – World wide web – HTTP Request Message – HTTP Response Message – Web Clients – Web Servers – HTML5 – Tables – Lists – Image – HTML5 control elements – Semantic elements – Drag and Drop – Audio – Video controls – CSS3 – Inline, embedded and external style sheets – Rule cascading – Inheritance – Backgrounds – Border Images – Colors – Shadows – Text – Transformations – Transitions – Animations.

**UNIT–II: Java Scripts** **HOURS: 12**

Java Script: An introduction to JavaScript–JavaScript DOM Model-Date and Objects,-Regular Expressions- Exception Handling-Validation-Built-in objects-Event Handling- DHTML with JavaScript- JSON introduction – Syntax – Function Files – Http Request – SQL.

**UNIT–III Servlets** **HOURS: 12**

Servlets: Java Servlet Architecture- Servlet Life Cycle- Form GET and POST actions- Session Handling- Understanding Cookies- Installing and Configuring Apache Tomcat Web Server- DATABASE CONNECTIVITY: JDBC perspectives, JDBC program example – JSP: Understanding Java Server Pages-JSP Standard Tag Library (JSTL)-Creating HTML forms by embedding JSP code.

**UNIT–IV: An introduction to PHP** **HOURS: 12**

An introduction to PHP: PHP- Using PHP- Variables- Program control- Built-in functions- Form Validation- Regular Expressions – File handling – Cookies – Connecting to Database. XML: Basic XML- Document Type Definition- XML Schema DOM and Presenting XML, XML Parsers and Validation, XSL and XSLT Transformation, News Feed (RSS and ATOM).

**UNIT–V: AJAX** **HOURS: 12**

AJAX: Ajax Client Server Architecture-XML Http Request Object-Call Back Methods; Web Services: Introduction- Java web services Basics – Creating, Publishing, Testing and Describing a Web services (WSDL)-Consuming a web service, Database Driven web service from an application –SOAP.

## TEXT BOOK

1. Deitel and Deitel and Nieto, Internet and World Wide Web – How to Program‖, Prentice Hall, 5th Edition, 2011.

## REFERENCES BOOKS

1. Stephen Wynkoop and John Burke ―Running a Perfect Website‖, QUE, 2nd Edition,1999.
2. Chris Bates, Web Programming – Building Intranet Applications, 3rd Edition, Wiley Publications, 2009.
3. Jeffrey C and Jackson, ―Web Technologies A Computer Science Perspective‖,Pearson Education, 2011.
4. Gopalan N.P. and Akilandeswari J., ―Web Technology‖, Prentice Hall of India, 2011.

## WEB REFERENCES

1. https://www.edureka.co/blog/web-development-tutorial/
2. https://www.tutorialspoint.com/php/index.htm
3. https://www.phparch.com/training/advanced-php-development/
4. https://www.javatpoint.com/servlet-tutorial
5. https://www.tutorialspoint.com/ajax/index.htm

## COURSE OUTCOMES

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Analyze the requirements for and create and implement the principles of web page development | **K4** |
| **CO: 2** | Demonstrate knowledge of DOM objects that interacts with server-based programs | **K2** |
| **CO: 3** | Construct Apache Tomcat web server | K3 |
| **CO: 4** | Make use of features of XML efficiently | **K3** |
| **CO: 5** | Experiment with Ajax and web services | **K3** |

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **2.8** |
| CO 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | **2.6** |
| CO 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | **2.6** |
| CO 4 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.8** |
| CO 5 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | **2.7** |

Mean Relationship value is **2.7** which is **HIGH**

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## Discipline Specific Elective Course – III (U6R2CSDSE 3:1/3:2/3:3)

# 1. Computer Networks

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| VI | 5 | 60 | U6R2CSDSE3:1 | 25 | 75 | 100 | SKILL DEVELOPMENT |

### COURSE OBJECTIVES

- To explain how communication works in data networks through OSI Model.
- To learn about Multiplexing, Switching and internetworking
- To understand various data link layer protocols
- To understand various routing algorithms
- To impart knowledge about networking and security

**UNIT– I: Introduction to Networks** **HOURS: 12**

Introduction – Network Hardware – Software – Reference Models – OSI and TCP/IP Models – Example Networks: Internet, ATM, Ethernet and Wireless LANs - Physical Layer – Theoretical Basis for Data Communication - Guided Transmission Media

**UNIT–II: Physical Layer** **HOURS: 12**

Wireless Transmission - Communication Satellites – Telephone System: Structure, Local Loop, Trunks and Multiplexing and Switching. Data Link Layer: Design Issues – Error Detection and Correction.

**UNIT–III Data Link Layer** **HOURS: 12**

Elementary Data Link Protocols - Sliding Window Protocols – Data Link Layer in the Internet - Medium Access Layer – Channel Allocation Problem – Multiple Access Protocols – Bluetooth.

**UNIT–IV Network Layer** **HOURS: 12**

Network Layer - Design Issues - Routing Algorithms - Congestion Control Algorithms – IP Protocol – IP Addresses – Internet Control Protocols.

**UNIT–V: Transport Layer** **HOURS: 12**

Transport Layer - Services - Connection Management - Addressing, Establishing and Releasing a Connection – Simple Transport Protocol – Internet Transport Protocols (ITP) - Network Security: Cryptography.

## TEXT BOOK

1. A. S. Tanenbaum, "Computer Networks", 4th Edition, Prentice-Hall of India, 2008.

## REFERENCE BOOKS

1. B. A. Forouzan, "Data Communications and Networking", Tata McGrawHill, 4th Edition, 2007.
2. F. Halsall, "Data Communications, Computer Networks and Open Systems", Pearson Education, 2008.
3. D. Bertsekas and R. Gallagher, "Data Networks", 2nd Edition, PHI, 2008.
4. Lamarca, "Communication Networks", Tata McGraw- Hill, 2002

## WEB RESOURCES

1. **https://www.javatpoint.com/computer-network-tutorial**
2. **https://www.geeksforgeeks.org/basics-computer-networking/**
3. **https://www.tutorialspoint.com/computer_fundamentals/computer_networking.htm**

## COURSE OUTCOMES

Upon completion of the course the students would be able to:

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Define the OSI/ISO reference model | **K1** |
| **CO: 2** | Identify the various Transmission media | **K2** |
| **CO: 3** | Illustrate the concepts of Data link layer | **K2** |
| **CO: 4** | Explain efficiently the Routing and Congestion Control algorithms | **K5** |
| **CO: 5** | Analyze and interpret the IP | **K4,K5** |

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.7** |
| CO 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | **2.7** |
| CO 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.7** |
| CO 4 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| CO 5 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | **2.7** |

Mean Relationship value is **2.72** which is **HIGH**

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## 2. Data Mining and Warehousing

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| VI | 5 | 60 | U6R2CSDSE3:2 | 25 | 75 | 100 | SKILL DEVELOPMENT |

### COURSE OBJECTIVES

- To introduce the basic concepts and techniques of Data Mining
- To understand the Architecture of Data mining systems
- To learn mining association rules
- To study the basic concepts of classification and prediction
- To study a set of typical clustering methodologies, algorithms, and applications

**UNIT–I: Introduction to Data Mining** **HOURS: 12**

Introduction: Data mining – Functionalities – Classification – Introduction to Data Warehousing – Data Preprocessing : Preprocessing the Data – Data cleaning – Data Integration and Transformation – Data Reduction

**UNIT–II: Architecture of Data mining** **HOURS: 12**

Data Mining, Primitives, Languages and System Architecture: Data Mining – Primitives – Data Mining Query Language, Architecture of Data mining Systems. Concept Description, Characterization and Comparison: Concept Description, Data Generalization and Summarization, Analytical Characterization, Mining Class Comparison – Statistical Measures.

**UNIT–III: Mining Association Rules** **HOURS: 12**

Mining Association Rules: Basic Concepts – Single Dimensional Boolean Association Rules From Transaction Databases, Multilevel Association Rules from transaction databases – Multi dimension Association Rules from Relational Database and Data Warehouses.

**UNIT–IV: Classification and Prediction** **HOURS: 12**

Classification and Prediction: Introduction – Issues – Decision Tree Induction– Bayesian Classification – Classification of Back Propagation. Classification based on Concepts from Association Rule Mining – Other Methods.Prediction – Introduction – Classifier Accuracy.

**UNIT–V: Cluster Analysis** **HOURS: 12**

Cluster Analysis: Introduction – Types of Data in Cluster Analysis, Petitioning Methods – Hierarchical Methods-Density Based Methods – GRID Based Method – Model based Clustering Method

## TEXT BOOK

1. J.Han and M. Kamber, "Data Mining Concepts and Techniques", 2001, Harcourt India Pvt. Ltd, New Delhi.

## REFERENCE BOOK

1. K.P. Soman , Shyam Diwakar, V.Ajay "Insight into Data Mining Theory and Practice ", Prentice Hall of India Pvt. Ltd, New Delhi

## COURSE OUTCOMES

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Develop and gain in-depth knowledge about the basic concepts and techniques of Data Mining | **K6** |
| **CO: 2** | Explain about the Architecture of Data mining systems | **K5** |
| **CO: 3** | Understand and apply mining association rules | K3 |
| **CO: 4** | Experiment with the basic concepts of classification and prediction | **K3** |
| **CO: 5** | Apply and interpret typical clustering methodologies, algorithms, andapplications | **K3,K6** |

| **RELATIONSHIP MATRIX FOR CO, PO & PSO** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Program Outcomes** | | | | | **Program Specific Outcomes** | | | | | **Mean** |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | **Relationship** |
| **CO 1** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| **CO 2** | 3 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.6** |
| **CO 3** | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | **2.7** |
| **CO 4** | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| **CO 5** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.9** |

Mean Relationship value is **2.76** which is **HIGH**

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# 3. Multimedia Systems

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| VI | 5 | 60 | U6R2CSDSE3:3 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**COURSE OBJECTIVES:**

- To have a thorough knowledge about editing and design tools
- To understand the standards available for different audio, video and text applications
- To know about the making of animations
- To learn various multimedia authoring systems in multimedia production team
- To acquire knowledge on Planning and Costing

**UNIT–I: Introduction to Multimedia HOURS: 12**

Multimedia Definition - Use Of Multimedia - Delivering Multimedia - Text: About Fonts and Faces - Using Text in Multimedia - Computers and Text - Font Editing and Design Tools - Hypermedia and Hypertext.

**UNIT–II: Images and Sound HOURS: 12**

Images: Plan Approach - Organize Tools - Configure Computer Workspace - Making Still Images - Color - Image File Formats. Sound: The Power of Sound - Digital Audio - Midi Audio - Midi vs. Digital Audio - Multimedia System Sounds - Audio File Formats -Vaughan's Law of Multimedia Minimums - Adding Sound to Multimedia Project.

**UNIT–III: Animation and Video HOURS: 12**

Animation: The Power of Motion - Principles of Animation - Animation by Computer - Making Animations that Work. Video: Using Video - Working with Video and Displays - Digital Video Containers - Obtaining Video Clips - Shooting and Editing Video.

**UNIT–IV: Making Multimedia HOURS: 12**

Making Multimedia: The Stage of Multimedia Project - The Intangible Needs - The Hardware Needs - The Software Needs - An Authoring Systems Needs- Multimedia Production Team.

**UNIT–V: Planning and Costing HOURS: 12**

Planning and Costing: The Process of Making Multimedia - Scheduling - Estimating - RFPs and Bid Proposals. Designing and Producing - Content and Talent: Acquiring Content - Ownership of Content Created for Project - Acquiring Talent.

## TEXT BOOK

1. Tay Vaughan, "Multimedia: Making It Work", 8th Edition, Osborne/McGraw-Hill, 2001.

## REFERENCE BOOK

1. Ralf Steinmetz & Klara Nahrstedt "Multimedia Computing, Communication & Applications", Pearson Education, 2012.

## WEB REFERENCES

1. **https://www.tutorialspoint.com/multimedia/multimedia_introduction.htm#:~:text=Definition%20of%20Multimedia,%2C%20video%2C%20graphics%20and%20animation.**
2. **https://www.tutorialspoint.com/multimedia/multimedia_images_graphics.htm**
3. **https://www.yumpu.com/en/document/read/38759498/fundamental-concepts-in-video**

## COURSE OUTCOMES

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Develop a well-designed, interactive Web site with respect to current standards and practices | **K3** |
| **CO: 2** | Demonstrate in-depth knowledge in an industry-standard multimedia development tool and its associated scripting language | **K2** |
| **CO: 3** | Determine the appropriate use of interactive verses standalone Web applications | **K5** |
| **CO: 4** | Create time-based and interactive multimedia components | **K3** |
| **CO: 5** | Identify issues and obstacles encountered by Web authors in deploying Web-based applications | **K3** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| **CO 2** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **2.9** |
| **CO 3** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **2.8** |
| **CO 4** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | **2.8** |
| **CO 5** | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **2.9** |

Mean Relationship value is **2.8** which is **HIGH**

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## Skill Enhancement Course – III

# 1. Perl Programming

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| VI | 2 | 24 | U6R2CSSEC3:1 | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To know about text formatting and operators in Perl
- To understand the concepts of arrays and Functions
- To know about Regular expression and Debugging commands
- To analyze and interpret about pattern operators and anchors
- To learn and acquire knowledge on control structures and files

**UNIT – I*:* Introduction to Perl** **HOURS: 05**

Introduction to Perl: Scalars: Introduction - Learning Perl: A Functional Approach - Constructing atgc.pl - The tr /// Function - Text Formatting - Formatting Numerical Output with printf-Trapping Errors at Run-time - The s Operators - The chop and chomp Operators.

**UNIT – II: Arrays** **HOURS: 05**

Arrays: Introduction - jobs.pl - The split Function - The foreach Loop Using Standard Perl Modules: Introduction to Perl Modules - The Getopt::Long Module - The LWP::Simple Module-Capturing Data with Regular Expressions - The Perl Dot(.) Character - Filtering Job Description with regexs-Case-insensitive Regular Expressions Matching.

**UNIT – III: Perl regular expressions** **HOURS: 05**

Perl regular expressions I: Regular expression – special character (+) - special character (*) special character (?)Special character ([])-multiline regexs: The s Option. The Perl Bebugger: Debugging Perl Code-The Perl Debugger –The $#array Variable-Setting Conditional Break- Points.Usefull Debugger Commends.

**UNIT – IV: Perl Regular Expressions–II** **HOURS: 05**

Perl Regular Expressions–II:Introduction – a summary of regex operation – pattern modifier operators – conditional matching operators – special characters – using the range of operators to exclude the alternatives – regex pattern comments – match quantifiers – beginning of the pattern and end of the pattern anchors – s///Revisited –tr///revisited- escape sequences for special characters.

**UNIT – V: Perl control statements** **HOURS: 05**

Perl control statements: Perl control structures – syntax and operation of if statements – if statements – if_else statements – if_else if statement – if_elseif_else – unless modifier – the

while loop – the until loop – the for loop – the for each loop. File I/O:opening files: The file varialble – file mode – file test operators –accessing file with <> - accessing file with the @ARGV variable - Accessing file with perl modules: getopt::Long &getopt::std – extracting file information with file:: Basename – deleting files – accessing directories – the CWD module.

**TEXT BOOK:**

1. Harshawardhan P Bal, "Perl Programming for Bioinformatics", Tata McGraw Hill publication, 2003

**REFERENCE BOOKS**

1. James Tisdall, "Beginning Perl for Bioinformatics", O'Reilly, 2014
2. James Tisdall, "Mastering Perl for Bioinformatics", O'Reilly, 2010
3. James Lee, "Beginning Per", Apress, 2004

**WEB REFERENCES**

1. **https://www.tutorialspoint.com/perl/index.htm**
2. **https://www.guru99.com/perl-tutorials.html**
3. **https://learn.perl.org/tutorials/**

**COURSE OUTCOMES**

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Experiment with text formatting and operators in Perl | **K3** |
| **CO: 2** | Elaborate on the concepts of arrays and Functions | **K6** |
| **CO: 3** | Understand and apply the Debugging commands in real time applications | **K3** |
| **CO: 4** | Easily use the pattern operators and anchors | **K3** |
| **CO: 5** | Analyze and interpret on Control structures and files | **K4,K5** |

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | **2.5** |
| CO 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | **2.5** |
| CO 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| CO 4 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| CO 5 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.7** |

Mean Relationship value is **2.58** which is **HIGH**

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## 2. Python Programming

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| VI | 2 | 24 | U6R2CSSEC3:2 | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To Understand the Overview of python.
- To Gain the Knowledge about Functions, conditional and Recursion
- To Get the Knowledge about List.
- To Understand the Concept of Dictionaries and Tuples.
- To Understand the Concept of Files

**UNIT–I : Way of The Program** **HOURS: 05**

Define Program – Running Python – The First Program – Arithmetic Operators - Values And Types - Formal And Natural Language – Debugging Variables, Expression And Statements: Assignment Statements - Variables Names – Expression And Statements – Script Mode - Order Of Operations – String Operations – Comments.

**UNIT - II: Functions** **HOURS: 05**

Function call – Math Functions – Composition - Adding new Function – Definition and Uses – Flow of Execution – Parameters and Arguments – Variables and Parameters are Local – Fruitful Functions and Void Functions – Define Functions - Conditionals and Recursion: Floor Division and Modulus – Boolean Expressions – Logical Operators - Conditional Execution – Alternative Execution – Chained Conditionals – Nested Conditionals. Recursion, Fruitful Functions: Return values – Incremental Development – Composition - Boolean Functions.

**UNIT - III: Iterations** **HOURS: 05**

Reassignment – Updating Variables - The While Statement – Break – Algorithms, Strings: A String is a Sequence – Len – String Slices – String are Immutable –Searching – String Methods – In Operator – String Comparison, Lists: A List is a Sequence – List are Mutable – Traversing a List – List Operations – List Slices – List Methods – Map, Filter, Reduce – Deleting Elements – List and Strings – Objects and Values – Aliasing.

**UNIT - IV: Dictionaries** **HOURS: 05**

A Dictionary Is A Mapping - Dictionary As A Collection Of Counters – Looping And Dictionaries – Reverse Lookup – Dictionaries And Lists - Memos – Global Variables Tuples: Tuples Are Immutable – Tuple Assignment – Tuple As Return Values – Variable-Length Argument Tuples – List And Tuples – Dictionaries And Tuples – Sequences Of Sequences.

**UNIT - V: Files** **HOURS: 04**

Persistence – Reading and Writing – Format Operator – Filenames and Paths – Databases - Pickling – Pipes Classes and Objects: Programmer Defined Types - Attributes – Rectangles – Instance and Return Values – Objects Are Mutable Copying Classes and Functions: Time – Pure Functions– Modifiers Classes and Methods: Printing Objects - The init Method – The str Method.

**TEXT BOOK**

1. Allen B. Downey, "Think Python: How to Think Like a Scientist" Updated for Python 3 O"Reilly Media, 2nd Edition -2015.
   **Unit – I: Chapter 1, 2;**
   **Unit – II: Chapter 3, 5, 6;**
   **Unit – III: Chapter 7, 8, 10;**
   **Unit – IV: Chapter 11, 12;**
   **Unit – V: Chapter 14, 15, 16, 17.**

**REFERENCE BOOKS**

1. Ajay ohri, "Python for R Users: A Data Science Approach" Wiley Publications-2018.
2. K.Nageswararao , "Problem Solving and Python Programming" Scientific Publisher - 2018.

**WEB REFERENCES**

1. **https://www.w3schools.com/python/**
2. **https://docs.python.org/3/tutorial/**
3. **https://www.programiz.com/python-programming**

**COURSE OUTCOMES**

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

| | **COURSE OUTCOMES** | **KNOWLEDGE LEVEL** |
|---|---|---|
| **CO: 1** | Apply a solution clearly and accurately in a program using Python | **K3** |
| **CO: 2** | Apply the best features of mathematics, engineering and natural sciences to program real life problems | **K3** |
| **CO: 3** | Design the real life situational problems and think creatively about solutions to them | K6 |
| **CO: 4** | Experiment with Dictionaries and Tuples | **K3** |
| **CO: 5** | Demonstrate the concept of Files | **K2** |

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| CO 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | **2.7** |
| CO 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **2.8** |
| CO 4 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | **2.5** |
| CO 5 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | **2.5** |

Mean Relationship value is **2.62** which is **HIGH**

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# Generic Elective Course – II (U6R2**GEC2:1/2:2)

## 1. Web Services

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| V | 2 | 24 | U6R2**GEC2:1 | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To learn the architecture of web services
- To understand about XML
- To know about SOAP protocol
- To analyze and interpret about WSDL
- To know about the concepts of UDDI and RPC

**UNIT – I : Introduction to Web Services** **HOURS: 05**

Introduction: Services – Web Services – web services application opportunities – emergence of web service: server – side Architecture and web services.

**UNIT – II: Web services Application scenario** **HOURS: 05**

Web services Application scenario: Web services Hype and the Industry – web services and the Industry acceptance – Extensible Markup language: History of Markup languages – what is XML?

**UNIT –III: XML and SOAP** **HOURS: 05**

Validation of XML Data – Advanced XML – Document constraining – simple object access protocol: Background – what is SOAP? – SOAP interaction – SOAP modeling – SOAP Encoding – SOAP Binding.

**UNIT –IV: Web services Description language** **HOURS: 05**

Web services Description language: What is WSDL – web service Invocation and WSDL – web services description details – service description through WSDL Registries: Universal description, discovery and integration: What is UDDI –UDDI nomenclature.

**UNIT –V: UDDI** **HOURS: 05**

Core UDDI – service publication – service discovery – remote procedure call and messaging: synchronous web services – asynchronous web services – remote procedure call or messaging.

**TEXT BOOK**

1. Web services: An Introduction by B.V. Kumar and S.V. Subrahmanya, Tata McGraw Hill publications,2007.

**REFERENCE BOOKS**

1. Sandeep Chatterjee, James Webber, "Developing Enterprise web services", Pearson Education, 2004.
2. Frank. P. Coyle, XML,Web Services and The Data Revolution, Pearson Education, 2002.

**WEB REFERENCES**

1. **https://www.tutorialspoint.com/webservices/index.htm**
2. **https://www.javatpoint.com/web-services-tutorial**
3. **https://www.javatpoint.com/java-web-services-tutorial**

**COURSE OUTCOMES**

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Explain the architecture of web services | **K2** |
| **CO: 2** | Experiment with XML | **K3** |
| **CO: 3** | Understand and apply SOAP protocol in real time applications | **K2,K3** |
| **CO: 4** | Interpret on WSDL | **K5** |
| **CO: 5** | Demonstrate the concepts of UDDI and RPC | **K2** |

| **RELATIONSHIP MATRIX FOR CO, PO & PSO** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Program Outcomes** | | | | | **Program Specific Outcomes** | | | | | **Mean Relationship** |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | **2.5** |
| **CO 2** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| **CO 3** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| **CO 4** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |
| **CO 5** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | **2.6** |

Mean Relationship value is **2.58** which is **HIGH**

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# 2. Web Programming

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| VI | 2 | 24 | U6R2**GEC2:2 | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES**

- To study fundamental concepts of web
- To know about HTML and XHTML
- To understand the basics of Java script
- To learn and acquire knowledge on DOM
- To study the concepts of XML and CSS

**UNIT – I: Fundamentals of Web** **HOURS: 12**

Fundamentals of Web: Internet, WWW, Web Browsers, and Web Servers, URLs, MIME, HTTP, Security, The Web Programmers Toolbox. XHTML: Origins and evolution of HTML and XHTML, Basic syntax, Standard XHTML document structure, Basic text markup, Images, Hypertext Links, Lists, Tables.

**UNIT – II: HTML and XHTML** **HOURS: 12**

HTML and XHTML: Forms, Frames in HTML and XHTML, Syntactic differences between HTML and XHTML. CSS: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The Box model, Background images, The  and  tags, Conflict resolution.

**UNIT – III: Java Script** **HOURS: 12**

Java Script: Overview of JavaScript; Object orientation and JavaScript; General syntactic characteristics; Primitives, Operations, and expressions; Screen output and keyboard input; Control statements; Object creation and Modification; Arrays; Functions; Constructor; Pattern matching using expressions; Errors in scripts; Examples

**UNIT – IV: Java Script and HTML Documents** **HOURS: 12**

Java Script and HTML Documents: The JavaScript execution environment; The Document Object Model; Element access in JavaScript; Events and event handling;Handling events from the Body elements, Button elements, Text box and Password elements; The DOM 2 event model; The navigator object; DOM tree traversal andmodification.

**UNIT – IV: Dynamic Documents with JavaScript** **HOURS: 12**

Dynamic Documents with JavaScript: Introduction to dynamic documents; Positioning elements; Moving elements; Element visibility; Changing colors and fonts; Dynamic content; Stacking elements; Locating the mouse cursor; Reacting to a mouse click; Slow movement of elements;

Dragging and dropping elements. XML: Introduction; Syntax; Document structure; Document Type definitions; Namespaces; XML schemas; Displaying raw XML documents; Displaying XML documents with CSS; XSLT style sheets; XML Processors; Web services.

**TEXT BOOKS**


1. "Building Web Applications" NIIT, Prentice –Hall of India (P) Ltd., New Delhi – 2008.
2. "World Wide Web design with HTML", C.Xavier, Tata McGraw – Hill Publishing Company Limited, New Delhi.
3. "Web Technology - A Developer's Perspective", N.P.Gopalan and J.Akilandeswari, PHI Learning Private Limited.


**WEB REFERENCES**

1. https://www.w3schools.com/whatis/
2. https://www.edureka.co/blog/web-development-tutorial/
3. https://www.geeksforgeeks.org/web-development/

**COURSE OUTCOMES**

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Describe fundamental concepts of Web and Design web pages | **K6** |
| **CO: 2** | Experiment with HTML and XHTML | **K2** |
| **CO: 3** | Design web pages using Java script | **K6** |
| **CO: 4** | Access and Utilize DOM in real time applications | **K3** |
| **CO: 5** | Demonstrate on the concepts of XML and CSS | **K2** |

**RELATIONSHIP MATRIX FOR CO, PO & PSO**

| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | **2.7** |
| **CO 2** | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | **2.5** |
| **CO 3** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **2.8** |
| **CO 4** | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | **2.5** |
| **CO 5** | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | **2.5** |

Mean Relationship value is **2.60** which is **HIGH**

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## GENDER STUDIES

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| VI | 2 | 24 | U6R2ACC3 | 25 | 75 | 100 | SKILL DEVELOPMENT |

**UNIT I**

Concept of Gender: Sex Gender – biological Determinism – Patriarchy – Feminism – Gender Discrimination – Gender Division of Labour – Gender stereotyping – Gender sensitivity Gender Equality – Gender mainstreaming – empowerment.

**UNIT II**

Women's studies Vs Gender studies: UGC's Guidelines – VIII to XI Plans, Gender studies Beijing conference and CEDAW – Exclusiveness and inclusiveness.

**UNIT III**

Areas of Gender discrimination: Family, Sex ratio literacy, Health, Governance, religion Work Vs employment – Market, Media, Politics, Law, Domestic violence, Sexual Harassment, State politics and planning.

**UNIT IV**

Women development and gender empowerment: initiatives, International Women's decade, International women's year, National policy for Empowerment of women, women Empowerment year 2011, Mainstreaming global policies.

**UNIT V**

Women's Movements: In India National / State Commission for Women (NCW), all women police station, Family court, Domestic violence Act, Prevention of Sexual Harassment at work place supreme court guidelines, Maternity Benefit Act, PNDT Act, Hindu Succession Act 2005, Eve teasing prevention Act, Self help groups, 73$^{rd}$ and 74$^{th}$ amendment for PRIS.

**REFERENCES**


1. Bhasin kamala, Understanding Gender: Gender basics, New Delhi: Women Unlimited, 2004.
2. Rajadurai ,S.v, Geetha V, Themes in caste Gender and Religion, Trichy, Bharathidasan University, 2007.
3. Pauldi, A Michele (ed...) Prager guide to the Psychology of Gender.

**COURSE OUTCOMES**

| Sl. No. | Course Outcome | Knowledge Level |
|---|---|---|
| **Upon the completion of course, the students will be able to** | | |
| **CO - 1** | Understand interrelatedness of gender, race, ethnicity, class, disability, religion and other social categories. | **K2** |
| **CO - 2** | Get sound knowledge about Gender and Women's Studies which includes UGC guidelines and plans. | **K3** |
| **CO - 3** | Investigate issues and debates around gender, particularly in relation to Indian society as well as the global perspective. | **K3** |
| **CO - 4** | Gain knowledge to access income and asset and power to make decision. | **K4** |
| **CO - 5** | Evaluate the relationship to women's experiences and to human rights, with an awareness of the importance of context. | **K6** |

**Relationship Matrix for CO,PO and PSO**

| **Course Outcome** | **Programme Outcome (PO)** | | | | | **Programme Specific Outcome (PSO)** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO-1** | **PO-2** | **PO-3** | **PO-4** | **PO-5** | **PSO-1** | **PSO-2** | **PSO-3** | **PSO-4** | **PSO5** | **Mean** |
| **CO-1** | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 2.7 |
| **CO-2** | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2.4 |
| **CO-3** | 3 | 3 | 3 | 1 | 3 | 2 | 3 | 2 | 3 | 2 | 2.5 |
| **CO-4** | 3 | 2 | 3 | 1 | 2 | 3 | 3 | 1 | 2 | 2 | 2.2 |
| **CO-5** | 2 | 3 | 2 | 3 | 3 | 3 | 1 | 3 | 3 | 2 | 2.5 |
| **Mean Overall Score** | | | | | | | | | | | **2.46** |
| **Result** | | | | | | | | | | | **High** |

## Allied Course Offered to the UG Programme - Department of Management

## Computer Applications in Business

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| III | 3 | 48 | U3R2BAAC4 | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES:**

- To inculcate the knowledge of MS-Office Package
- To induce critical thinking to independently design and create Spread sheets
- To help the student creating Word documents
- To impart knowledge about Tally
- To teach to create, import and manipulate on Accounting

**UNIT – I Introduction to Computers HOURS: 08**

Meaning of Computer – Characteristics of Computer – Areas of application – I – P – O cycle – Component of Computer – Memory and control Unit — Input and Output device – Hardware and Software Operation Systems – Introduction to Windows 98 Logging on Desktop & Taskbar Icons on desktop – Start menu options Creation of files and folders. Windows explorer. Find options Shortcuts – Briefcase Running applications and customization.

**UNIT – II Introduction to Word 2000 HOURS: 10**

Starting word 2000- Creating short cut for word 2000 – creating word documents – creating business letters using wizards – editing word documents – inserting objects formatting documents – spelling and grammar check – word count – thesaurus auto correct working with tables – saving, opening and closing documents – mail merge.

**UNIT – III Spread Sheets HOURS: 10**

Introduction to spread sheets – spread sheet programmes and applications - - Ms Excel and its features - Building work sheets – entering data in work sheets, editing and formatting work sheets – creating and formatting different types of charts – application of financial and statistical function – creating a – Analyzing and organizing data using Automatic rule total saving, opening and closing work books.

**UNIT – IV Tally** **HOURS: 10**

Fundamentals of Computerized accounting – Computerized accounting vs manual accounts. Architecture and customization of tally – Features of tally – Configuration of Tally screens and menus – Creation of company – Creating of groups – Editing and deleting groups - Caution of ledgers - Editing and deleting ledgers – Introduction to vouchers – Vouchers entry payment voucher – Receipt voucher - Sales vouchers – Purchase vouchers – contra voucher - Journal vouchers – Editing and deleting vouchers.

**UNIT – V Accounting** **HOURS: 10**

Introduction to Inventories – Creation of stock categories – Creation of Stock groups – Creation of Stock items – Configuration and features of stock item – Editing and deleting stocks – Usage of stocks in Vouchers entry. Purchase orders – stock vouchers – Sales orders – stock vouchers – Introduction to cost – Creation of cost category – Creation cost centres - Editing and deleting cost centres & categories – Usage of cost category and cost centres in vouchers entry - Budgetary controls – Creation of budgets – Editing and deleting budgets – Generating and printing reports in detailed and condensed format. Day books – Balanced sheets – Trial balance – Profit and Loss Account – Ratio analysis Cash flow statement – Found flow statement - Cost centre report – Inventory report Bank reconciliation statement conclusion.

**REFERENCE BOOKS:**


1. Microsoft office for Windows 95 Bible Author Ed. Jones and Derek Sulton Publications Comdex Computer Publication TIAL Smart Accountant Book SMW Deva Publication, AVC Deva Publication
2. Computerized Accounting under Tally Publication, Deva Publication
3. Implementing Tally 5-4 Author K.K. Nadhani Publication BPB Publication.


**WEB REFERENCES**

1. **https://www.tutorialspoint.com/computer_fundamentals/computer_applications.htm**
2. **https://www.tutorialspoint.com/word/index.htm**
3. **https://www.tutorialspoint.com/excel/index.htm**
4. **https://www.javatpoint.com/tally**

**COURSE OUTCOMES**

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| **CO: 1** | Demonstrate on MS-Office Package efficiently | **K2** |
| **CO: 2** | Develop letters, e mails for official communication of their own | **K6** |
| **CO: 3** | Create and Design Spread sheets | **K6** |
| **CO: 4** | Develop required skill and can be employed as tally data entry operator | **K6** |
| **CO: 5** | Apply and manipulate text and graphics to create attractive, appealing and effect documents | **K2** |

| **RELATIONSHIP MATRIX FOR CO, PO & PSO** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Program Outcomes** | | | | | **Program Specific Outcomes** | | | | | **Mean Relationship** |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PSO 1** | **PSO 2** | **PSO 3** | **PSO 4** | **PSO 5** | |
| **CO 1** | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | **2.7** |
| **CO 2** | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | **2.6** |
| **CO 3** | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | **2.7** |
| **CO 4** | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | **2.8** |
| **CO 5** | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | **2.7** |

Mean Relationship value is **2.70** which is **HIGH**

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# Computer Applications in Business Practical

Allied Course offered to the UG Programme - Department of Management

| SEMESTER | CREDITS | INSTRUCTION HOURS | COURSE CODE | MARKS | | | PURPOSE OF THE COURSE |
|---|---|---|---|---|---|---|---|
| | | | | INT | EXT | TOTAL | |
| III | 3 | 48 | U3R2BAAC5P | 25 | 75 | 100 | EMPLOYABILITY |

**COURSE OBJECTIVES:**

- To learn MSWord so as to prepare letters, e mails for official communication
- To gain practical experience in excel work sheets and its operations
- To study Scaling of worksheets in excel
- To learn and use accounting pakag
- To practice preparing power point presentation

1. **MS word (Unit –II)**
   a. Creating Business Letters
   b. Creating an application for the job with Bio-data
   c. Creating circular letter with Mail Merge options
   d. Creating a Table by using the split and merge options

2. **MS – Excel (Unit –III)**
   a. Creating a work sheet like Mark Sheet, Pay Slip, PF Contribution list etc.
   b. Creating Charts
   c. Creating a list for the enclosures
   d. Filtering the date using Auto filter custom filters using comparison operations.

3. **Accounting Package (Unit –IV & V)**
   a. Preparing voucher entries for the given transactions
   b. Preparing final accounts from the Trial Balance given with any ten adjustments

**COURSE OUTCOMES**

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

| | COURSE OUTCOMES | KNOWLEDGE LEVEL |
|---|---|---|
| CO: 1 | Develop letters, e mails for official communication of their own | K3 |
| CO: 2 | Experiment on worksheets in excel and can independently design and create Spread sheets | K3 |
| CO: 3 | Create and design company profile and ledger entries and other transactions in accounting package | K6 |
| CO: 4 | Develop accounting reports for the requirement | K6 |
| CO: 5 | Analyze and Interpret on tally | K4,K6 |

| RELATIONSHIP MATRIX FOR CO, PO & PSO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program Outcomes | | | | | Program Specific Outcomes | | | | | Mean Relationship |
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | |
| CO 1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | **2.7** |
| CO 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | **2.6** |
| CO 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | **2.7** |
| CO 4 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | **2.7** |
| CO 5 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | **2.6** |

Mean Relationship value is **2.66** which is **HIGH**

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