# AVS

## COLLEGE OF ARTS & SCIENCE

## (AUTONOMOUS)

**Attur Main Road, Ramalingapuram, Salem - 106.**

**(Recognized under section 2(f) & 12(B) of UGC Act 1956 and**

**Accredited by NAAC with 'A' Grade)**

**(Co - Educational Institution | Affiliated to Periyar University, Salem**

**ISO 9001 : 2015 Certified Institution)**

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Syllabus for

# B. Sc INFORMATION TECHNOLOGY

### CHOICE BASED CREDIT SYSTEM –

### LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK

### (CBCS – LOCF)

### (Applicable to the Candidates admitted from 2023-24 onwards)

# VISION

- To attain excellence in the field of education by creating competent scholars with a touch of human values.

# MISSION

- To accomplish eminence in the academic domain.
- To provide updated infrastructure.
- To educate value based education.
- To impart skills through efficient training programs.
- To cultivate culture and tradition with discipline and determination.

## REGULATIONS

**1. Eligibility for Admission:**

+2 Pass with mathematics or business mathematics or computer science or

statistics (academic or vocational stream) or 10+3 years diploma

**2. Duration:**

 3 YEARS

**3. Eligibility for award of degree:**

A candidate shall be eligible for the award of the degree only if he / she has undergone the

prescribed courses of study in a college affiliated to the university for a period of not less than

three academic years comprising six semesters and passed the examinations prescribed and

fulfilled such conditions as have been prescribed there for.

**4. Course of Study:**

Text Book , Reference book and website Resources

**5. Scheme of Examination:**

The scheme of examinations for the course is given in Annexure. All the practical examinations

/Internship work shall be conducted and evaluated internally by the institution themselves with

internal and external examiners appointed by the university

**6. Passing Rules:**

a) A candidate who secures not less than 40% in the University (external) Examination and

40% marks in the external examination and continuous internal assessment put together in

any course of Part I, II, III & IV shall be declared to have passed the examination in the

Subject (theory or Practical ).

b) A candidate who secures not less than 40% of the total marks prescribed for the subject under

part IV degree programmed irrespective of whether the performance is assessed at the end

Semester examination or by continuous internal assessment shall be declared to have passed in

that subject.

c) A candidate who passes the examination in all the courses of Part I, II, III, IV & V shall be

declared to have passed, the whole examination

**i) Theory**

A candidate who passes the examination in all the courses of Part I, II, III, IV & V shall be

declared to have passed, the whole examination

A candidate who secures not less than 40% of the total marks prescribed for the subject under part IV degree programmed irrespective of whether the performance is assessed at the end Semester examination or by continuous internal assessment shall be declared to have passed in that subject.

Total mark 100  External Max Mark : 75 Internal Mark : 25

**ii) Practical**

A candidate who passes the examination in all the courses of shall be declared to have passed, the whole examination

Total mark 100  External Max Mark : 75 Internal Mark : 25

| | **Programmed Outcomes (POs)** |
|---|---|
| | On successful completion of the B. Sc Information Technology |
| **PO1** | Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate Programmed of study |
| **PO2** | Communication Skills: Ability to express thoughts and ideas effectively in writing and orally; Communicate with others using appropriate media; confidently share one's views and express herself/himself; demonstrate the ability to listen carefully, read and write analytically, and present complex information in a clear and concise manner to different groups |
| **PO3** | Critical thinking: Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development. |
| **PO4** | Problem solving: Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, rather than replicate curriculum content knowledge; and apply one's learning to real life situations. |
| **PO5** | Analytical reasoning: Ability to evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints |
| **PO6** | Research-related skills: A sense of inquiry and capability for asking relevant/appropriate questions, problem arising, synthesizing and articulating; Ability to recognize cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyze, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation |
| **PO7** | Cooperation/Team work: Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group, and act together as a group or a team in the interests of a common cause and work efficiently as a member of a team |
| **PO8** | Scientific reasoning: Ability to analyze, interpret and draw conclusions from |

| | |
|---|---|
| | quantitative/qualitative data; and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective. |
| **PO9** | Reflective thinking: Critical sensibility to lived experiences, with self awareness and reflexivity of both self and society. |
| **PO10** | Information/digital literacy: Capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources; and use appropriate software for analysis of data. |

| Program Specific Outcomes (PSOs) |
|---|
| After the successful completion of B. Sc Information Technology programme the students are expected to |

| | |
|---|---|
| **PSO1** | Self-directed learning: Ability to work independently, identifies appropriate resources required for a project, and manages a project through to completion. |
| **PSO2** | Multicultural competence: Possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups. |
| **PSO3** | Moral and ethical awareness/reasoning: Ability to embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. Capable of demon starting the ability to identify ethical issues related to one's work, avoid unethical behavior such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights; appreciating environmental and sustainability issues; and adopting objective, unbiased and truthful actions in all aspects of work. |
| **PSO4** | Leadership readiness/qualities: Capability for mapping out the tasks of a team or an organization, and setting direction, formulating an inspiring vision, building a team who can help achieve the vision, motivating and inspiring team members to engage with that vision, and using management skills to guide people to the right destination, in a smooth and efficient way. |
| **PSO5** | Lifelong learning: Ability to acquire knowledge and skills, including „learning how to learn", that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to changing trades and demands of work place through knowledge/skill development/reskilling. |

**Programmed Educational Objectives (PEOs)**

The B. Sc Information Technology programmed describe accomplishments that graduates are expected to attain within five to seven years after graduation.

| | |
|---|---|
| **PEO1** | To enable students to apply basic microeconomic, macroeconomic and monetary concepts and theories in real life and decision making |
| **PEO2** | To sensitize students to various economic issues related to Development, Growth, International Economics, Sustainable Development and Environment. |
| **PEO3** | To familiarize students to the concepts and theories related to Finance, Investments and Modern Marketing. |
| **PEO4** | Evaluate various social and economic problems in the society and develop answer to the problems as global citizens |
| **PEO5** | Enhance skills of analytical and critical thinking to analyze effectiveness of economic policies. |

## CREDIT DISTRIBUTION FOR 3 YEARS B. Sc INFORMATION TECHNOLOGY PROGRAMME

| Part | Course Type | Credits per Course | No. of Papers | Total Credits |
|---|---|---|---|---|
| Part I | Language – I (Tamil/Hindi/French) | 3 | 4 | 12 |
| Part II | Language – II (English) | 3 | 4 | 12 |
| Part III | Core Courses- Theory | 4 | 9 | 36 |
| | Core Courses- Practical | 3 | 4 | 12 |
| | Core Courses- Practical | 4 | 2 | 8 |
| | Major Elective Courses- Theory | 3 | 4 | 12 |
| | Major Elective Courses- Practical | | | |
| | Generic Discipline Specific/ Allied Courses – Theory | 6 | 2 | 12 |
| | Generic Discipline Specific/ Allied Courses – Theory | 4 | 2 | 8 |
| | Generic Discipline Specific/ Allied Courses – Practical | 4 | 1 | 4 |
| | | | **Total** | **116** |
| Part IV | Non Major Elective Courses | 2 | 2 | 4 |
| | Skill Enhancement Courses | 2 | 6 | 12 |
| | Skill Enhancement Courses | 1 | 1 | 1 |
| | Professional Competency Skill Enhancement Course | | | |
| | EVS (Environmental Studies) | 2 | 1 | 2 |
| | Value Education | 2 | 1 | 2 |
| | Internship | 2 | 1 | 2 |
| | Project | - | - | - |
| | Research Project ( for PG only) | | | |
| | MOOC/ SWAYAM/ NPTEL Courses | 1 | 1 | 1 |
| | | | **Total** | **24** |
| Part V | Extension Activity (NSS/NCC/Physical Education) | 1 | 1 | 1 |
| Part VI | Naan Mudhalvan Scheme (Online Examination &Project work) | | | |
| | | | **Total Credits** | **141** |

## CONSOLIDATED SEMESTER WISE AND COMPONENT WISE CREDIT DISTRIBUTION FOR 3 YEARS B. Sc INFORMATION TECHNOLOGY PROGRAMME

| Parts | Semester I | Semester II | Semester III | Semester IV | Semester V | Semester VI | Total Credits |
|---|---|---|---|---|---|---|---|
| Part I | 3 | 3 | 3 | 3 | | | 12 |
| Part II | 3 | 3 | 3 | 3 | | | 12 |
| Part III | 13 | 13 | 13 | 13 | 22 | 18 | 92 |
| Part IV | 4 | 4 | 3 | 7 | 4 | 2 | 24 |
| Part V | - | - | | | - | 1 | 1 |
| Part VI | | | | | | - | - |
| Total | 23 | 23 | 22 | 26 | 26 | 21 | 141 |

*Part I, II and Part III components will be separately taken into account for CGPA calculation and classification for the under graduate programmed and the other components IV and V have to completed during the duration of the programmed as per the norms, to be eligible for obtaining the UG degree.

## METHOD OF EVALUATION

| Evaluation | Components | | Marks |
|---|---|---|---|
| Internal Evaluation | Continuous Internal Assessment Test | 15 | 25 Marks |
| | Assignments | 3 | |
| | Class Participation | 2 | |
| | Distribution of marks for Attendance (in percentage) 96 – 100: 5 Marks 91 – 95: 4 Marks 86 – 90: 3 Marks 81 – 85: 2 Marks | 5 | |
| External Evaluation | End Semester Examination | | 75 Marks |
| Total | | | 100 Marks |

**Note:** 1.UG Programmers- A candidate must score minimum 10 marks in Internal and 30 marks in External Evaluation.

2. PG Programmes- A candidate must score minimum 13 marks in Internal and 38 marks in External Evaluation.

## CONTINUOUS INTERNAL ASSESSMENT

Categorizing Outcome Assessment Levels Using Bloom's Taxonomy

| level | Cognitive Domain | Description |
|---|---|---|
| K1 | Remember | It is the ability to remember the previously learned concepts or ideas. |
| K2 | Understand | The learner explains concepts or ideas. |
| K3 | Apply | The learner uses existing knowledge in new contexts. |
| K4 | Analyze | The learner is expected to draw relations among ideas and to compare and contrast. |
| K5 | Evaluate | The learner makes judgments based on sound analysis. |
| K6 | Create | The learner creates something unique or original. |

## Question Paper Blue Print for Continuous Internal Assessment- I& II

| Duration: 2 Hours | | | | | | | Maximum: 50 marks |
|---|---|---|---|---|---|---|---|
| Section | K level | | | | | | Marks |
| | K1 | K2 | K3 | K4 | K5 | K6 | |
| A (no choice) | 10 | | | | | | 10 X 1 =10 |
| B (no choice) | | 1 | 1 | | | | 2 X 5 =10 |
| C (either or choice) | | | | 3 | | | 3 x 10 = 30 |
| Total | | | | | | | 50 marks |

Note: K4 and K5 levels will be assessed in the Model Examination whereas K5 and K6 Levels will be assessed in the End Semester Examinations.

## Question Paper Blue Print for Continuous Internal Assessment- I

Time: 2 Hours                Total Marks: 50 Marks        Minimum Pass: 20 Marks

| Unit | Section - A | Section - B | Section - C |
|------|-------------|-------------|-------------|
| I | Q.N. 1, 2, 3, 4, 5 | Q.N. 11 | Q.N. 13 A, 13 B |
| I or II | - | - | Q.N. 14 A, 14 B |
| II | Q.N. 6, 7, 8, 9, 10 | Q.N. 12 | Q.N. 15 A, 15 B |

**SECTION – A (10 X 1 = 10 Marks)**

ANSWER ALL THE QUESTIONS

**SECTION – B (2 X 5 = 10 Marks)**

ANSWER ALL THE QUESTIONS

**SECTION – C (3 X 10 = 30 Marks)**

ANSWER ALL THE QUESTIONS (Either or Choice)

## Question Paper Blue Print for Continuous Internal Assessment- II

Time: 2 Hours                Total Marks: 50 Marks        Minimum Pass: 20 Marks

| Unit | Section - A | Section - B | Section - C |
|------|-------------|-------------|-------------|
| III | Q.N. 1, 2, 3, 4, 5 | Q.N. 11 | Q.N. 13 A, 13 B |
| III or IV | - | - | Q.N. 14 A, 14 B |
| IV | Q.N. 6, 7, 8, 9, 10 | Q.N. 12 | Q.N. 15 A, 15 B |

**SECTION – A (10 X 1 = 10 Marks)**

ANSWER ALL THE QUESTIONS

**SECTION – B (2 X 5 = 10 Marks)**

ANSWER ALL THE QUESTIONS

**SECTION – C (3 X 10 = 30 Marks)**

ANSWER ALL THE QUESTIONS (Either or Choice)

## Question Paper Blue Print for Model Examination & End Semester Examination

| Duration: 3 Hours | | | | | | | | Maximum: 75 marks |
|---|---|---|---|---|---|---|---|---|

| Section | | K level | | | | | | Marks |
|---|---|---|---|---|---|---|---|---|
| | | K1 | K2 | K3 | K4 | K5 | K6 | |
| A (no choice, three questions from each unit) | | 15 | | | | | | 15 X 1 =15 |
| B (choice, one question from each unit) | | | 1 | 1 | | | | 2 X 5 =10 |
| C (either or choice& two questions from each unit) | Courses with K4 as the highest cognitive level | | | | 4 | 1 | | 5 x 10 = 50 |
| | Course with K5 as the highest cognitive level wherein three K4 questions and two K5 questions are compulsory. | | | | 3 | 2 | | |
| | Course with K6 as the highest cognitive level wherein two questions each on K4, K5 and one question on K6 are compulsory. | | | | 2 | 2 | 1 | |
| Total | | | | | | | | 75 marks |

## Question Paper Blue Print for Model Examination & End Semester Examination

Time: 2 Hours                 Total Marks: 75 Marks         Minimum Pass: 30 Marks

| Unit | Section - A | Section - B | Section - C |
|------|-------------|-------------|-------------|
| I | Q.N. 1, 2, 3 | Q.N. 16 | Q.N. 21 A, 21 B |
| II | Q.N. 4, 5, 6 | Q.N. 17 | Q.N. 22 A, 22 B |
| III | Q.N. 7, 8, 9 | Q.N. 18 | Q.N. 23 A, 23 B |
| IV | Q.N. 10, 11, 12 | Q.N. 19 | Q.N. 24 A, 24 B |
| V | Q.N. 13, 14, 15 | Q.N. 20 | Q.N. 25 A, 25 B |

### SECTION – A (15 X 1 = 15 Marks)

ANSWER ALL THE QUESTIONS

### SECTION – B (2 X 5 = 10 Marks)

ANSWER ANY TWO QUESTIONS

### SECTION – C (5 X 10 = 50 Marks)

ANSWER ALL THE QUESTIONS (Either or Choice)

## Question Paper Blue Print for Model Practical Examination & End Semester Examination (Practical)

Time: 3 Hours          Total Marks: 60 Marks          Minimum Pass: 24 Marks

| Practical Marks | Maximum Mark | Minimum Mark |
|---|---|---|
| Internal | 25 | 10 |
| External | 75 | 30 |
| Total | 100 | 40 |

## Evaluation for End Semester Examinations (Practical)

| | |
|---|---|
| Record | 15 marks |
| Formula with expansion | 05 marks |
| Observation with data | 25 marks |
| Viva-voce | 10 marks |
| Calculation | 15 marks |
| Result with units | 05 marks |
| **TOTAL** | **75 MARKS** |

*Submission of record with due certification is a must for external practical examinations.

**A student should complete all requires experiments to get 10 marks for the record.

# Scheme of Examination for B. Sc Information Technology

## First Year – Semester - I

| Part | Course Code | Course Title | Ins. Hrs | Credit | CIA | ESE | Total |
|------|-------------|--------------|----------|--------|-----|-----|-------|
| I | 23UFTA01 | Podhu Tamil - I | 3 | 3 | 25 | 75 | 100 |
| II | 23UFEN01 | General English - I | 3 | 3 | 25 | 75 | 100 |
| III | 23UITCC01 | Core Course I -  Programming in C | 4 | 4 | 25 | 75 | 100 |
| | 23UITCCP01 | Core Course II – Practical - C Programming lab | 4 | 3 | 25 | 75 | 100 |
| | 23UMAEGS05 | Elective Course Generic Specific EC I - Introduction to Linear Algebra | 5 | 6 | 25 | 75 | 100 |
| IV | 23UITFC01 | Foundation Course FC - Fundamentals of Computers | 3 | 2 | 25 | 75 | 100 |
| | 23UTANE01 | Non Major Elective Course - Pechikallai Thiran | 2 | 2 | 25 | 75 | 100 |
| **Total** | | | **25** | **23** | | | |

## First Year – Semester - II

| Part | Course Code | Course Title | Ins. Hrs | Credit | CIA | ESE | Total |
|------|-------------|--------------|----------|--------|-----|-----|-------|
| I | 23UFTA02 | Podhu Tamil – II | 3 | 3 | 25 | 75 | 100 |
| II | 23UFEN02 | General English - II | 3 | 3 | 25 | 75 | 100 |
| III | 23UITCC02 | Core Course III -  Java Programming | 5 | 4 | 25 | 75 | 100 |
| | 23UITCCP02 | Core Course  IV – Practical - Java Programming & Data Structures lab | 4 | 3 | 25 | 75 | 100 |
| | 23UMAEGS04 | Elective Course Generic Specific EC II - Optimization Techniques | 3 | 4 | 25 | 75 | 100 |
| | 23UMAGSP03 | Elective Course Generic Specific EC II - Optimization Techniques Practical | 2 | 2 | 25 | 75 | 100 |
| IV | 23UITSE07 | Skill Enhancement Course III  - Web Designing | 3 | 2 | 25 | 75 | 100 |
| | 23UBXNE002 | Non Major Elective Course - Managerial Skill Development | 2 | 2 | 25 | 75 | 100 |
| **Total** | | | **25** | **23** | | | |

## Second Year – Semester - III

| Part | Course Code | Course Title | Ins. Hrs | Credit | CIA | ESE | Total |
|------|-------------|--------------|----------|--------|-----|-----|-------|
| I | 23UFTA03 | Podhu Tamil - III | 3 | 3 | 25 | 75 | 100 |
| II | 23UFEN03 | General English - III | 3 | 3 | 25 | 75 | 100 |
| III | 23UITCC03 | Core Course V - Relational Data Base Management | 5 | 4 | 25 | 75 | 100 |
| | 23UITCCP03 | Core Course VI -  Practical: RDBMS Lab | 4 | 3 | 25 | 75 | 100 |
| | 23UITGE03 | Elective Course Generic Specific EC III - Statistical Methods and its Application - I | 5 | 4 | 25 | 75 | 100 |
| IV | 23UITSE15 | Skill Enhancement Course IV – Enterprise Resource Planning | 2 | 1 | 25 | 75 | 100 |
| | 23UITSE08 | Skill Enhancement Course IV - Software Testing | 2 | 2 | 25 | 75 | 100 |
| | 23EVS02 | Environmental Studies | 1 | | | | |
| | | **Total** | **25** | **20** | | | |

## Second Year – Semester - IV

| Part | Course Code | Course Title | Ins. Hrs | Credit | CIA | ESE | Total |
|------|-------------|--------------|----------|--------|-----|-----|-------|
| I | 23UFTA04 | Podhu Tamil - IV | 3 | 3 | 25 | 75 | 100 |
| II | 23UFEN04 | General English – IV | 3 | 3 | 25 | 75 | 100 |
| III | 23UITCC04 | Core Course  VII - .NET Programming | 5 | 4 | 25 | 75 | 100 |
| | 23UITCCP04 | Core Course  VIII -  Practical - NET Programming Lab | 4 | 3 | 25 | 75 | 100 |
| | 23UITGE04 | Elective Course Generic Specific EC IV - Statistical Methods and its Application - II | 3 | 4 | 25 | 75 | 100 |
| | | Allied Statistical Practical | 2 | 4 | | | |
| IV | 23UADSE15 | Skill Enhancement Course V– Multimedia systems | 2 | 2 | 25 | 75 | 100 |
| | 23UITSE02 | Skill Enhancement Course VI – Basics of Internet | 2 | 2 | 25 | 75 | 100 |
| | 23EVS02 | Environmental Studies | 1 | 2 | 25 | 75 | 100 |
| | | Swayam | | 1 | 25 | 75 | 100 |
| | | **Total** | **25** | **28** | | | |

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## Third Year – Semester – V

| Part | Course Code | Course Title | Ins. Hrs | Credit | CIA | ESE | Total |
|------|-------------|--------------|----------|--------|-----|-----|-------|
| III | 23UITCC05 | Core Course IX - Python Programming | 4 | 4 | 25 | 75 | 100 |
| | 23UITCCP05 | Core Course X - Practical - Python Programming Lab | 4 | 4 | 25 | 75 | 100 |
| | 23UITCC06 | Core Course XI - Operating Systems | 4 | 4 | 25 | 75 | 100 |
| | 23UITDE06 | Elective Course Generic Specific EC V - Human Computer Interaction | 3 | 3 | 25 | 75 | 100 |
| | 23UITDE03 | Elective Course Generic Specific EC VI - Cryptography | 3 | 3 | 25 | 75 | 100 |
| | 23UITCCPR1 | Core Course XII - Project with Viva voce | 3 | 4 | 25 | 75 | 100 |
| IV | | Value Education | 2 | 2 | 25 | 75 | 100 |
| | | Internship / Industrial Training (Summer vacation at the end of IV semester activity) | 2 | 2 | 25 | 75 | 100 |
| **Total** | | | **25** | **26** | | | |

## Third Year – Semester - VI

| Part | Course Code | Course Title | Ins. Hrs | Credit | CIA | ESE | Total |
|------|-------------|--------------|----------|--------|-----|-----|-------|
| III | 23UITCC07 | Core Course XIII - Data Communications and Networking | 4 | 4 | 25 | 75 | 100 |
| | 23UITCC08 | Core Course XIV - Data Mining | 5 | 4 | 25 | 75 | 100 |
| | 23UITCCP06 | Core Course XV - Practical: Data Mining Lab | 4 | 4 | 25 | 75 | 100 |
| | 23UITDE12 | Elective Course Generic Specific EC VII - Trends in Computing | 4 | 3 | 25 | 75 | 100 |
| | 23UITDE01 | Elective Course Generic Specific EC VIII - Natural Language Processing | 4 | 3 | 25 | 75 | 100 |
| IV | 23UITSE09 | Skill Enhancement Course VII - Quantitative Aptitude | 4 | 2 | 25 | 75 | 100 |
| V | | Extension Activity | - | 1 | 25 | 75 | 100 |
| **Total** | | | **25** | **21** | | | |

**\*\*Ins. Hrs –** Instructional Hours**, CIA-** Continuous Internal Assessment**, ESE-** End Semester Examination

| Semester: I | Course Code: 23UITCC01 | Hours/Week: 15 | Credit: 4 |
|---|---|---|---|
| **COURSE TITLE :CORE COURSE 1: PROGRAMMING IN C** | | | |

**Course Overview:**

1.  Outline the fundamental concepts of C programming languages, and its features

2.  Demonstrate the programming methodology.

3.  Identify suitable programming constructs for problem solving.

4.  Select the appropriate data representation, control structures, functions and concepts based on the problem requirement.

**Learning Objectives:**

1.  To familiarize the students with the understanding of code organization

2.  To improve the programming skills

3.  Learning the basic programming constructs.

| Unit - I | Studying Concepts of Programming Languages | 15 Hours |
|---|---|---|

Language Evaluation Criteria - Language design - Language Categories - Implementation Methods – Programming Environments - Overview of C: History of C - Importance of C- Basic Structure of C Programs Executing a C Program - Constants, Variables and Data types - Operators and Expressions - Managing Input and Output Operations

| Unit - II | Decision Making and Branching | 15 Hours |
|---|---|---|

Decision Making and Looping - Arrays - Character Arrays and Strings

| Unit - III | User Defined Functions: | 15 Hours |
|---|---|---|

Elements of User Defined Functions Definition of Functions - Return Values and their Types - Function Call Function Declaration - Categories of Functions - Nesting of Functions Recursion

| Unit - IV | Structures and Unions | 15 Hours |
|---|---|---|

Introduction - Defining a Structure - Declaring Structure Variables Accessing Structure Members-Structure Initialization - Arrays of Structures - Arrays within Structures - Unions Size of Structures.

| Unit - V | Pointers | 15 Hours |
|---|---|---|

Understanding Pointers - Accessing the Address of a Variable - Declaring Pointer Variables - Initializing of Pointer Variables Accessing a Variable through its Pointer - Chain of Pointers - Pointer Expressions - Pointer and Scale Factor - Pointer and Arrays - Pointers and Character Strings - Array of Pointers - Pointer as Function Arguments - Functions Returning Pointers - Pointers to Functions - File Management in C

**Text Book(s):**

1. Robert W. Sebesta, (2012), ―Concepts of Programming Languages‖, Fourth Edition, Addison Wesley (Unit I : Chapter – 1)

2. E. Balaguruswamy, (2010), ―Programming in ANSI C‖, Fifth Edition, Tata McGraw Hill Publication0073

3. Byron Gottfried, (2010), ―Programming with C‖, Shamus Outline Series, Tata McGraw Hill Publications

**Reference Books:**

1. Ashok Kathie, (2009), ―Programming with ANSI & Turbo C‖, Pearson Education

2. Byron Gottfried, (2010), ―Programming with C‖, Shamus Outline Series, Tata McGraw Hill Publications

**Web Resources:**

https://archive.org/details/ Select Programming In C

**Teaching Methodology**: Videos, Audios, PPT, Role Play, Field Visit, Seminar, Chalk & Talk, Lecturing, Case Study, Demonstration, Problem Solving, Group Discussion, Flipped Learning

**Learning Outcomes:**
Upon successful completion of this course, the student will be able to

| COs | Statements | Bloom's Level |
|-----|-----------|---------------|
| CO1 | Outline the fundamental concepts of C programming languages, and its features | K1 |
| CO2 | Demonstrate the programming methodology. | K2 |
| CO3 | Identify suitable programming constructs for problem solving. | K3 |
| CO4 | Select the appropriate data representation, control structures, functions and concepts based on the problem requirement. | K4 |
| CO5 | Evaluate the program performance by fixing the errors | K5 |
| K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create | | |

| Mapping (COs vs POs) | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** |
| **CO1** | 3 | 2 | 2 | 3 | 2 | 2 |
| **CO2** | 3 | 3 | 2 | 3 | 2 | 2 |
| **CO3** | 3 | 3 | 3 | 3 | 2 | 2 |
| **CO4** | 3 | 3 | 2 | 3 | 2 | 2 |
| **CO5** | 3 | 3 | 2 | 3 | 2 | 2 |

**3 - Strong, 2– Medium, 1 – Low**

| Semester: I | Course Code: 23UITCCP01 | Hours/Week: 15 | Credit: 3 |
|---|---|---|---|
| COURSE TITLE : CORE COURSE II - C PROGRAMMING PRACTICAL | | | |

**Course Overview:**

1.  Demonstrate the understanding of syntax and semantics of C programs.

2.  Identify the problem and solve using C programming techniques.

3.  Identify suitable programming constructs for problem solving

4.  Identify suitable programming constructs for problem solving.

**Learning Objectives:**

1.  The Course aims to provide exposure to problem-solving through C programming

2.  It aims to train the student to the basic concepts of the C -Programming language

3.  Apply different concepts of C language to solve the problem

| Sl. No | Contents | No.of Hours |
|---|---|---|
| 1. | Programs using Input/ Output functions | |
| 2. | Programs on conditional structures. | |
| 3. | Command Line Arguments | |
| 4. | Programs using Arrays | |
| 5. | String Manipulations. | |
| 6. | Programs using Functions | 60HRS |
| 7. | Recursive Functions | |
| 8. | Programs using Pointers | |
| 9. | Files | |
| 10 | Programs using Structures & Unions. | |

**Teaching Methodology**: Videos, Audios, PPT, Role Play, Field Visit, Seminar, Chalk & Talk, Lecturing, Case Study, Demonstration,  Problem Solving, Group Discussion, Flipped Learning

**Learning Outcomes:**
Upon successful completion of this course, the student will be able to

| COs | Statements | Bloom's Level |
|---|---|---|
| CO1 | Identify the problem and solve using C programming techniques. | K1 |
| CO2 | Identify suitable programming constructs for problem solving. | K2 |
| CO3 | Demonstrate the understanding of syntax and semantics of C programs. | K3 |
| CO4 | Select the appropriate data representation, control structures, functions and concepts based on the problem requirement. | K4 |
| CO5 | Identify the problem and solve using C programming techniques. | K5 |
| K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create | | |

| Mapping (COs vs POs) | | | | | | |
|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 |
| **CO1** | S | M | M | S | M | M |
| **CO2** | S | S | M | S | M | M |
| **CO3** | S | S | S | S | M | M |
| **CO4** | S | S | M | S | M | M |
| **CO5** | S | S | M | S | S | M |

**S - Strong, M – Medium, L – Low**

| Semester: I | Course Code: 23UITFC01 | Hours/Week: 6 | Credit: 2 |
|---|---|---|---|
| **COURSE TITLE : FOUNDATION COURSE FC - FUNDAMENTALS OF COMPUTERS** | | | |

**Course Overview:**

1. Outline the Computer fundamentals and various problem solving concepts in Computers

2. Describe the basic computer organization, software, computer languages, software development life cycle and the need of structured programming in solving a computer problem

3. Identify the types of computer languages, software, computer problems and examine how to set up expressions and equations to solve the problem.

4. Choose most appropriate programming languages, constructs and features to solve the problems in diversified domains

**Learning Objectives:**

1. To analyze a problem with appropriate problem solving techniques

2. To understand the main principles of imperative, functional and logic oriented programming languages and

3. To increase the ability to learn new programming languages.

| Unit – I | Introduction | 6 Hours |
|---|---|---|

Introduction: Characteristics of Computers - Evolution of Computers Basic Computer Organization: I/O Unit - Storage Unit - Arithmetic Logic Unit - Control Unit - Central Processing Unit

| Unit – II | Computer Software | 6 Hours |
|---|---|---|

Computer Software: Types of Software - System Architecture Computer Languages: Machine Language - Assembly Language - High Level Language - Object Oriented Languages

| Unit – III | Problem Solving Concepts | 6 Hours |
|---|---|---|

Problem Solving Concepts: Problem Solving in Everyday life - Types of Problems - Problem solving with computers - Difficulties with Problem Solving

| Unit – IV | Problem Solving concepts for the computer | 6 Hours |
|---|---|---|

Problem Solving concepts for the computer: Constant Variables - Data Types - Functions -

Operators - Expressions and Equations - Organizing the Solution: Analyzing the problem - Algorithm - Flowchart - Pseudo code

| Unit – V | Programming Structure | 6 Hours |
|----------|----------------------|---------|

Programming Structure: Structuring a solution - Modules and their function - Local and Global variables - Parameters - Return values - Sequential Logic Structure - Problem solving with Decision - Problem Solving with Loops

**Text Book(s):**

1. Pradeep K.Sinha and Priti Sinha, (2004) ― Computer Fundamentals‖, Sixth Edition, BPB Publications. (Unit I : Chapter 1 & 2, Unit II : Chapter 10 & 12)
2. Maureen Sprankle and Jim Hubbard, (2009) ― Problem Solving and Programming Concept, Ninth Edition, Prentice Hall. (Unit III: Chapter 1,2 &3) Unit IV : Chapter 3, Unit V : Chapter 4,5 ,6,7 & 8)

**Reference Books:**

1. R.G. Dromey, (2007), ― How to Solve it by Computer‖, Prentice Hall International Series in Computer Science.
2. C. S. V. Murthy, (2009), ―Fundamentals of Computers‖, Third Edition, Himalaya Publishing House

**Web Resources**

1. http://www.tutorialspoint.com/computer_fundamentals/

| **Teaching Methodology**: Videos, Audios, PPT, Role Play, Field Visit, Seminar, Chalk & Talk, Lecturing, Case Study, Demonstration, Problem Solving, Group Discussion, Flipped Learning |
|---|

**Learning Outcomes:**
Upon successful completion of this course, the student will be able to

| COs | Statements | Bloom's Level |
|-----|-----------|---------------|
| CO1 | Identify the problem and solve using C programming techniques. | K1 |
| CO2 | Choose most appropriate programming languages, constructs and features to solve the problems in diversified domains | K2 |
| CO3 | Outline the Computer fundamentals and various problem solving concepts in Computers | K3 |
| CO4 | Identify the types of computer languages, software, computer problems and examine how to set up expressions and equations to solve the problem. | K4 |
| CO5 | Identify the problem and solve using C programming techniques. | K5 |
| K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create | | |

**Mapping (COs vs POs)**

|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 |
|---|---|---|---|---|---|---|
| **CO1** | M | S | S | M | M | M |
| **CO2** | M | S | S | M | S | S |
| **CO3** | M | M | M | M | M | S |
| **CO4** | M | S | S | S | M | M |
| **CO5** | M | M | S | S | S | S |

**S - Strong, M – Medium, L – Low**

| Semester: II | Course Code: 23UITCC02 | Hours/Week: 15 | Credit: 4 |
|---|---|---|---|
| **COURSE TITLE : CORE COURSE III - JAVA PROGRAMMING** | | | |

**Course Overview:**

1. Outline the basic terminologies of OOP, programming language techniques, JDBC and Internet programming concepts

2. Solve problems using basic constructs, mechanisms, techniques and technologies of Java

3. Analyze and explain the behavior of simple programs involving different techniques such as Inheritance, Packages, Interfaces, Exception Handling and Thread and technologies such as JDBC and Servlets

4. Assess various problem-solving strategies involved in Java to develop a high-level application.

**Learning Objectives:**

1. To provide knowledge on fundamentals of object-oriented programming

2. to have the ability to use the SDK environment to create, debug and run servlet programs

| Unit – I | Introduction | 15 Hours |
|---|---|---|

Data Structure : ADT, List, Stack, Queue, Fundamentals of Object - Oriented Programming: Introduction – Object Oriented Paradigm – Concepts of Object – Oriented Programming – Benefits of OOP – Evolution: Java History - Java Features - Differs from C and C++ - Overview of Java Language: Java Program-Structure – Tokens – Java Statements – Java Virtual Machine – Command Line Arguments

| Unit – II | Constants | 15 Hours |
|---|---|---|

Constants, Variables and Data Types – Operators and Expressions – Decision making and Branching – Looping – Arrays - Strings – Collection Interfaces and classes

| Unit – III | Classes objects and methods | 15 Hours |
|---|---|---|

Classes objects and methods: Introduction – Defining a class – Method Declaration – Constructors - Method Overloading – Static Members – Nesting of methods – Inheritance – Overriding – Final variables and methods – Abstract methods and classes

| Unit – IV | Multiple Inheritance | 15 Hours |
|---|---|---|

Multiple Inheritance: Defining Interfaces – Extending Interfaces – Implementing Interfaces – Packages: Creating Packages – Accessing Packages – Using a Package – Managing Errors and Exceptions - Multithreaded Programming

| Unit – V | Programming Structure | 15 Hours |
|---|---|---|

Programming Structure: Structuring a solution - Modules and their function - Local and Global variables - Parameters - Return values - Sequential Logic Structure - Problem solving with Decision - Problem Solving with Loops

**Text Book(s):**

1. E Balagurusamy (2010), "Programming with Java", Tata McGraw Hill Edition India Private Ltd, 4th Edition
2. C Xavier, "Java Programming – A Practical Approach", Tata McGraw Hill Edition Private Ltd

**Reference Books:**

1. P.Naughton and H. Schildt (1999), "Java 2 The Complete Reference", TMH, 3rd Edition
2. JaisonHunder & William Crawford (2002),"Java Servlet Programming", O'Reilly

**Web Resources**

1. http://javabeginnerstutorial.com/core-java/

**Teaching Methodology**: Videos, Audios, PPT, Role Play, Field Visit, Seminar, Chalk & Talk, Lecturing, Case Study, Demonstration, Problem Solving, Group Discussion, Flipped Learning

**Learning Outcomes:**

Upon successful completion of this course, the student will be able to

| COs | Statements | Bloom's Level |
|---|---|---|
| CO1 | Solve problems using basic constructs, mechanisms, techniques and technologies of Java | K1 |
| CO2 | Analyze and explain the behavior of simple programs involving different techniques such as Inheritance, Packages, Interfaces, Exception Handling and Thread and technologies such as JDBC and Servlets | K2 |
| CO3 | Outline the basic terminologies of OOP, programming language techniques, JDBC and Internet programming concepts | K3 |
| CO4 | Identify the types of computer languages, software, computer problems and examine how to set up expressions and equations to solve the problem. | K4 |
| CO5 | Assess various problem-solving strategies involved in Java to develop a high-level application. | K5 |
| K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create | | |

| Mapping (COs vs POs) | | | | | | |
|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** |
| **CO1** | S | M | M | M | M | M |
| **CO2** | M | S | M | M | M | M |
| **CO3** | M | S | S | S | M | M |
| **CO4** | M | M | M | M | M | M |
| **CO5** | S | M | S | M | M | M |

**S - Strong, M – Medium, L – Low**

| Semester: II | Course Code: 23UITCCP02 | Hours/Week: 15 | Credit: 3 |
|---|---|---|---|
| COURSE TITLE : CORE COURSE IV -  PRACTICAL  -  JAVA PROGRAMMING & DATA STRUCTURES | | | |

**Course Overview:**

1. Identify and explain the way of solving the simple problems

2. Use appropriate software development environment to write, compile and execute object-oriented Java programs

3. Analyze and identify necessary mechanisms of Java needed to solve real-world problem

4. Test for defects and validate a Java program with different inputs

**Learning Objectives:**

1. To design and develop applications using different Java programming language techniques, JDBC & Servlets

2. To organize and manipulate the data with the help of fundamental data structures

3. Apply different concepts of C language to solve the problem

| Sl. No | Contents | No.of Hours |
|---|---|---|
| 1. | Basic Programs | 60HRS |
| 2. | Arrays | |
| 3. | Strings | |
| 4. | Classes and Objects | |
| 5. | Interfaces | |
| 6. | Inheritance | |
| 7. | Exception Handling | |
| 8. | Threads. | |
| 9. | Linked List | |
| 10. | Stacks | |
| 11. | Queue | |
| 12. | Sorting | |
| 13. | Working with Database using JDBC | |
| 14. | Web application using Servlets | |

**Teaching Methodology**: Videos, Audios, PPT, Role Play, Field Visit, Seminar, Chalk & Talk,

Lecturing, Case Study, Demonstration, Problem Solving, Group Discussion, Flipped Learning

**Learning Outcomes:**
Upon successful completion of this course, the student will be able to

| COs | Statements | Bloom's Level |
|------|------------|---------------|
| CO1 | Solve problems using basic constructs, mechanisms, techniques and technologies of Java | K1 |
| CO2 | Analyze and explain the behavior of simple programs involving different techniques such as Inheritance, Packages, Interfaces, Exception Handling and Thread and technologies such as JDBC and Servlets | K2 |
| CO3 | Use appropriate software development environment to write, compile and execute object-oriented Java programs | K3 |
| CO4 | Test for defects and validate a Java program with different inputs | K4 |
| CO5 | Assess various problem-solving strategies involved in Java to develop a high-level application. | K5 |
| K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create | | |

| Mapping (COs vs POs) | | | | | | |
|------|------|------|------|------|------|------|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** |
| **CO1** | S | M | S | S | M | M |
| **CO2** | M | S | S | S | M | M |
| **CO3** | M | S | S | S | M | S |
| **CO4** | M | M | S | S | S | M |
| **CO5** | S | S | M | S | S | M |

**S - Strong, M – Medium, L – Low**

| Semester: II | Course Code: 23UITSE07 | Hours/Week: 6 | Credit: 2 |
|---|---|---|---|
| COURSE TITLE : SKILL ENHANCHMENT COURSE III - WEB DESIGNING | | | |

**Course Overview:**

1. Develop working knowledge of HTML
2. Ability to Develop and publish Web pages using Hypertext Markup Language (HTML)
3. Ability to optimize page styles and layout with Cascading Style Sheets (CSS).
4. Ability to develop a java script

**Learning Objectives:**

1. Understand the basics of HTML and its components
2. To study about the Graphics in HTML
3. Understand and apply the concepts of XML and DHTML

| Unit – I | Introduction | 6 Hours |
|---|---|---|

HTML: HTML – Introduction - tag basics - page structure - adding comments working with texts, paragraphs and line break. Emphasizing test - heading and horizontal rules – list - font size, face and color - alignment links – tables - frames

| Unit – II | Forms& Images Using Html | 6 Hours |
|---|---|---|

Introduction - How to work efficiently with images in web pages, image maps, GIF animation, adding multimedia, data collection with html forms textbox, password, list box, combo box, text area, tools for building web page front page

| Unit – III | XML & DHTML | 6 Hours |
|---|---|---|

Cascading style sheet (CSS) - what is CSS Why we use CSS - adding CSS to your web pages-Grouping styles-extensible markup language (XML).

| Unit – IV | Dynamic HTML | 6 Hours |
|---|---|---|

Document object model (DCOM) - Accessing HTML & CSS through DCOM Dynamic content styles & positioning - Event bubbling-data binding. JavaScript: Client - side scripting, What is JavaScript, How to develop JavaScript, simple JavaScript, variables, functions, conditions, loops and repetition,

| Unit – V | Advance script | 6 Hours |
|----------|----------------|---------|

Advance script, JavaScript and objects, JavaScript own objects, the DOM and web browser environments, forms and validations.

**Text Book(s):**

1. Pankaj Sharma, "Web Technology", Sk Kataria & Sons Bangalore 2011.
2. Mike Mcgrath, "Java Script", Dream Tech Press 2006, 1st Edition.

**Reference Books:**

1. Laura Lemay, Rafe Colburn , Jennifer Kyrnin, "Mastering HTML, CSS & Javascript Web Publishing", 2016
2. DT Editorial Services (Author), "HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery)", Paperback 2016, 2nd Edition.

**Web Resources**

1. NPTEL & MOOC courses titled Web Design and Development.

**Teaching Methodology**: Videos, Audios, PPT, Role Play, Field Visit, Seminar, Chalk & Talk, Lecturing, Case Study, Demonstration, Problem Solving, Group Discussion, Flipped Learning

**Learning Outcomes:**
Upon successful completion of this course, the student will be able to

| COs | Statements | Bloom's Level |
|-----|-----------|---------------|
| CO1 | Ability to Develop and publish Web pages using Hypertext Markup Language (HTML) | K1 |
| CO2 | Ability to optimize page styles and layout with Cascading Style Sheets (CSS). | K2 |
| CO3 | Use appropriate software development environment to write, compile and execute object-oriented Java programs | K3 |
| CO4 | Ability to optimize page styles and layout with Cascading Style Sheets (CSS). | K4 |
| CO5 | Assess various problem-solving strategies involved in Java to develop a high-level application. | K5 |
| K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create | | |

| Mapping (COs vs POs) | | | | | | |
|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** |
| **CO1** | S | M | S | M | M | M |
| **CO2** | M | S | S | M | M | M |
| **CO3** | M | S | S | M | M | S |
| **CO4** | M | M | S | S | S | M |
| **CO5** | S | S | M | S | M | M |

**S - Strong, M – Medium, L – Low**

| Semester: III | Course Code: 23UITCC03 | Hours/Week: 15 | Credit: 4 |
|---|---|---|---|
| **COURSE TITLE : CORE COURSE V: RELATIONAL DATABASE MANAGEMENT SYSTEM** | | | |

**Course Overview:**

1. Outline the fundamental RDBMS concepts and PL/SQL

2. Apply database operations, mapping, normalization, SQL and PL/SQL

3. Analyze the requirements to implement relational database concepts

4. Evaluate the database based on various models and normalization

**Learning Objectives:**

1. To understand the basic DBMS models and architecture

2. To study the data base design, transaction Processing and Management and Security Issues.

| Unit – I | Introduction to Databases | 15 Hours |
|---|---|---|

Introduction to Databases: Introduction – Characteristics of the Database Approach – Actors on the Scene – Workers behind the scene – Advantages of using DBMS Approach. Overview of database and Architectures: Data Models, Schemas, and Instances – Three-schema Architecture and Data Independence – Database languages & Interfaces – Database System Environment – Centralized & Client Server Architecture for DBMS - Classification of DBMS.

| Unit – II | Basic Relational Model | 15 Hours |
|-----------|------------------------|----------|

Basic Relational Model: Relational Model Concepts – Relational Model Constraints and Relational Database Schemas – Update Operations, Tractions, Dealing with Constraint Violations – Formal Relational Languages: Unary Relational Operations: SELECT and PROJECT – Relational Algebra Operations from Set Theory – Binary Relational Operations: JOIN and DIVISION – Examples of Queries in Relational Algebra.

| Unit – III | Conceptual Data Modeling using the ER Model | 15 Hours |
|------------|---------------------------------------------|----------|

Conceptual Data Modeling using the ER Model: Using High - Level Conceptual Data Models for Database Design – An example DB application – Entity Types, Entity Sets, Attributes, and Keys – Relationship Types, Relationship sets, Roles, and Structural Constraints‖ – Weak entity types – Example - Mapping a Conceptual Design into Logical Design: Relational Database Design using ER- Relational Mapping , Mapping EER Model Constructs to Relations

| Unit – IV | Functional Dependencies and Normalization for Relational Database | 15 Hours |
|-----------|-------------------------------------------------------------------|----------|

Functional Dependencies and Normalization for Relational Database: Functional Dependencies – Definition of Functional Dependency – Normal Forms based on Primary Keys – Normalization of Relations – First Normal Form – Second Normal Form – Third Normal Form – BCNF- Fourth Normal Form- Fifth Normal Form.

| Unit – V | SQL | 15 Hours |
|----------|-----|----------|

SQL: The Relational Database Standard: Data definition, Constraints, and schema changes in SQL – Basic Queries in SQL – More complex SQL Queries – Insert, delete and update statements in SQL – Views in SQL. PL/SQL: Introduction to PL/SQL – More on PL/SQL – Error Handling in PL/SQL – Oracle's Named Exception Handlers – Stored Procedures and Functions – Execution of Procedures and Functions – Advantages – Procedures Vs. Functions – Syntax for Creating Procedures and Functions – Deleting a Stored Procedure or Function – Oracle Packages – Database Triggers – Types Of Triggers – Deleting a Trigger – Raise-Application Error Procedure

**Text Book(s):**

1. Ramez Elmasri, Shamkant B. Navathe (2014), ―Database Systems‖, Sixth edition, Pearson Education, New Delhi.

2. Ivan Bayross (2003 Reprint), SQL, PL/SQL-The Programming Language of Oracle,

   Second Revised Edition, BPB Publications, New Delhi.

**Reference Books:**

1. Abraham Silberschatz, Henry F. Korth, S.Sudarshan, Database System Concepts, Tata McGraw Hill Publication, 4th Edition.

**Web Resources**

1. . http://srikanthtechnologies.com/books/orabook/ch1.pdf

| **Teaching Methodology**: Videos, Audios, PPT, Role Play, Field Visit, Seminar, Chalk & Talk, Lecturing, Case Study, Demonstration, Problem Solving, Group Discussion, Flipped Learning |
| --- |

**Learning Outcomes:**
Upon successful completion of this course, the student will be able to

| COs | Statements | Bloom's Level |
| --- | --- | --- |
| CO1 | Evaluate the database based on various models and normalization | K1 |
| CO2 | Analyze the requirements to implement relational database concepts | K2 |
| CO3 | Apply database operations, mapping, normalization, SQL and PL/SQL | K3 |
| CO4 | Outline the fundamental RDBMS concepts and PL/SQL | K4 |
| CO5 | Assess various problem-solving strategies involved in Java to develop a high-level application. | K5 |
| K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create | | |

| **Mapping (COs vs POs)** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** |
| **CO1** | S | M | M | S | M | S |
| **CO2** | S | S | M | S | M | S |
| **CO3** | S | S | S | M | M | M |
| **CO4** | S | S | M | S | S | S |
| **CO5** | S | S | M | S | S | M |

**S - Strong, M – Medium, L – Low**

| Semester: III | Course Code: 23UITCCP03 | Hours/Week: 15 | Credit: 3 |
|---|---|---|---|
| COURSE TITLE : CORE COURSE VI : RDBMS LAB | | | |

**Course Overview:**

1. Choose appropriate SQL queries and PL/SQL blocks for the database.

2. Implement SQL and PL/SQL blocks for the given problem effectively.

3. Analyze the problem and Exceptions using queries and PL/SQL blocks.

4. Validate the database for normalization using SQL and PL/SQL blocks.

**Learning Objectives:**

1. The Course aims to provide exposure to problem-solving through C programming

2. It aims to train the student to the basic concepts of the C -Programming language

3. Apply different concepts of C language to solve the problem

| Sl. No | Contents | No.of Hours |
|---|---|---|
| 1. | DDL Commands | |
| 2. | DML Commands | |
| 3. | DCL Commands | |
| 4. | SQL Built-in functions | |
| 5. | Using Sub Queries | |
| 6. | Simple programs using PL/SQL | 60HRS |
| 7. | Procedures | |
| 8. | User-defined functions | |
| 9. | Exception Handling | |
| 10 | Triggers. | |

**Teaching Methodology**: Videos, Audios, PPT, Role Play, Field Visit, Seminar, Chalk & Talk, Lecturing, Case Study, Demonstration, Problem Solving, Group Discussion, Flipped Learning

**Learning Outcomes:**
Upon successful completion of this course, the student will be able to

| COs | Statements | Bloom's Level |
|---|---|---|
| CO1 | Implement SQL and PL/SQL blocks for the given problem effectively. | K1 |
| CO2 | Validate the database for normalization using SQL and PL/SQL blocks. | K2 |
| CO3 | Analyze the problem and Exceptions using queries and PL/SQL blocks. | K3 |
| CO4 | Outline the fundamental RDBMS concepts and PL/SQL | K4 |
| CO5 | Choose appropriate SQL queries and PL/SQL blocks for the database. | K5 |
| K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create | | |

| Mapping (COs vs POs) | | | | | | |
|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** |
| **CO1** | S | M | M | S | M | S |
| **CO2** | S | S | M | S | M | S |
| **CO3** | S | S | S | M | M | M |
| **CO4** | S | S | M | S | S | S |
| **CO5** | S | S | M | S | S | M |

**S - Strong, M – Medium, L – Low**

| Semester: III | Course Code: 23UITSE08 | Hours/Week: 15 | Credit: 2 |
|---|---|---|---|
| COURSE TITLE : SKILL ENHANCEMENT COURSE : SOFTWARE TESTING | | | |

**Course Overview:**

1. Students learn to apply software testing knowledge and engineering methods

2. Have an ability to identify the needs of software test automation, and define and develop a test tool to support test automation.

3. Have an ability understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.

4. Have basic understanding and knowledge of contemporary issues in software testing, such as component-based software testing problems

**Learning Objectives:**

1. To study fundamental concepts in software testing

2. To discuss various software testing issues and solutions in software unit test, integration and system testing.

3. To study the basic concept of Data flow is testing and Domain testing.

4. To Acquire knowledge on path products and path expressions.

5. To learn about Logic based testing and decision tables

| Unit - I | Introduction | 6 Hours |
|---|---|---|

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 | 6 Hours |
|---|---|---|

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

| Unit - III | Data Flow Testing Strategies | 6 Hours |
|---|---|---|

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

| Unit – IV | Linguistic | 6 Hours |
|---|---|---|

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

Formats–Test Cases

| Unit – V | Logic Based Testing | 6 Hours |
|---|---|---|

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

**Text Book(s):**

1. B. Beizer, "Software Testing Techniques", II Edn., Dream Tech India, NewDelhi, 2003.

2. K.V.K.Prasad,"SoftwareTestingTools",DreamTech.India,NewDelhi,2005

**Reference Book** :

1. Burnstein, 2003, ― Practical Software Testing‖, Springer International Edn.

2. E. Kit, 1995, ― Software Testing in the Real World: Improving the Process‖,

3. R. Rajani, and P.P. Oak, 2004, ― Software Testing‖, Tata Mc graw Hill, New Delhi.

**Web Resources:**

1. . https://www.javatpoint.com/software-testing-tutorial

2. . https://www.guru99.com/software-testing.html

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**Teaching Methodology**: Videos, Audios, PPT, Role Play, Field Visit, Seminar, Chalk & Talk,

Lecturing, Case Study, Demonstration, Problem Solving, Group Discussion, Flipped Learning

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**Learning Outcomes:**
Upon successful completion of this course, the student will be able to

| COs | Statements | Bloom's Level |
|---|---|---|
| CO1 | Have an ability understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods. | K1 |
| CO2 | Students learn to apply software testing knowledge and engineering methods | K2 |
| CO3 | Analyze the problem and Exceptions using queries and PL/SQL blocks. | K3 |
| CO4 | Have basic understanding and knowledge of contemporary issues in software testing, such as component-based software testing problems | K4 |
| CO5 | Have an ability to identify the needs of software test automation, and define and develop a test tool to support test automation. | K5 |
| K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create | | |

| **Mapping (COs vs POs)** | | | | | | |
|:---:|:---:|:---:|:---:|:---:|:---:|:---:|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** |
| **CO1** | S | S | S | S | S | S |
| **CO2** | S | S | M | S | S | S |
| **CO3** | M | S | S | S | S | M |
| **CO4** | S | M | S | S | S | S |
| **CO5** | S | S | S | M | S | S |

**S - Strong, M – Medium, L – Low**

| Semester: III | Course Code: 23UITSE15 | Hours/Week: 2 | Credit: 1 |
|:---:|:---:|:---:|:---:|
| **COURSE TITLE : SKILL ENHANCEMENT COURSE - ENTERPRISE RESOURCE PLANNING** | | | |

**Course Overview:**

1. To understand the basic concepts, Evolution and Benefits of ERP.

2. To know the need and Role of ERP in logical and Physical Integration

3. Identify the important business functions provided by typical business software such as enterprise resource planning and customer relationship management

4. To train the students to develop the basic understanding of how ERP enriches the business organizations in achieving a multidimensional growth

**Learning Objectives:**

1. To aim at preparing the students technological competitive and make them ready to self-upgrade with the higher technical skills

2. Identify the important business functions provided by typical business software

3. Enterprise resource planning and customer relationship management

| Unit - I | ERP Introduction, Benefits, Origin, Evolution and Structure | 15 Hours |
|:---:|:---:|:---:|

ERP Introduction, Benefits, Origin, Evolution and Structure: Conceptual Model of ERP, the

Evolution of ERP, the Structure of ERP, Components and needs of ERP, ERP Vendors; Benefits &

Limitations of ERP Packages

| Unit - II | Enterprise Integration/ERP | 15 Hours |
|---|---|---|

Need to focus on Enterprise Integration/ERP; Information mapping; Role of common shared Enterprise database; System Integration, Logical vs. Physical System Integration, Benefits & limitations of System Integration, ERP's Role in Logical and Physical Integration. Business Process Reengineering, Data ware Housing, Data Mining, Online Analytic Processing (OLAP), Product Life Cycle Management (PLM), LAP, Supply chain Management.

| Unit - III | ERP Marketplace and Marketplace Dynamics | 15 Hours |
|---|---|---|

ERP Marketplace and Marketplace Dynamics: Market Overview, Marketplace Dynamics, the Changing ERP Market. ERP - Functional Modules: Introduction, Functional Modules of ERP Software, Integration of ERP, Supply chain and Customer Relationship Applications. Cloud and Open Source, Management, Material Management, Financial Module, CRM and Case Study.

| Unit - IV | ERP Implementation Basics | 15 Hours |
|---|---|---|

ERP Implementation Basics, ERP implementation Strategy, ERP Implementation Life Cycle ,Pre-Implementation task, Role of SDLC/SSAD, Object Oriented Architecture, Consultants, Vendors and Employees.

| Unit - V | ERP & E-Commerce, Future Directives | 15 Hours |
|---|---|---|

ERP & E-Commerce, Future Directives - in ERP, ERP and Internet, Critical success and failure factors, Integrating ERP into organizational culture. Using ERP tool: either SAP or ORACLE format to case study

**Text Book(s):**

1. Enterprise Resource Planning – Alexis Leon, Tata McGraw Hill.

**Reference Books:**

1. Enterprise Resource Planning – Diversified by Alexis Leon, TMH
2. Enterprise Resource Planning – Ravi Shankar & S. Jaiswal , Galgotia

**Web Recourses:**

1. https://www.tutorialspoint.com/management_concepts/enterprise_resource_planning.htm
2. https://www.saponlinetutorials.com/what-is-erp-systems-enterprise-resource-planning/
3. https://www.guru99.com/erp-full-form.html
4. https://www.oracle.com/in/erp/what-is-erp/

**Teaching Methodology**: Videos, Audios, PPT, Role Play, Field Visit, Seminar, Chalk & Talk, Lecturing, Case Study, Demonstration,  Problem Solving, Group Discussion, Flipped Learning

**Learning Outcomes:**
Upon successful completion of this course, the student will be able to

| COs | Statements | Bloom's Level |
|-----|-----------|---------------|
| CO1 | Understand the basic concepts of ERP. | K1 |
| CO2 | Identify different technologies used in ERP. | K2 |
| CO3 | Understand and apply the concepts of ERP Manufacturing Perspective and ERP Modules | K3 |
| CO4 | Discuss the benefits of ERP | K4 |
| CO5 | Apply different tools used in ERP | K5 |
| K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create | | |

| Mapping (COs vs POs) | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 |
| **CO1** | 2 | | 1 | | | 2 |
| **CO2** | 2 | 3 | | | 1 | 2 |
| **CO3** | | 2 | 2 | | | |
| **CO4** | | | | 2 | | 1 |
| **CO5** | 2 | | 1 | | 2 | |

**3 - Strong, 2– Medium, 1 – Low**