

**CAUVERY COLLEGE FOR WOMEN(AUTONOMOUS)**

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

**ISO 9001:2015 Certified**

**TIRUCHIRAPPALLI**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**SYLLABUS**

**2024 - 2025**



## CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

Nationally accredited (III Cycle) with “A” Grade

ISO 9001:2015 Certified

Annamalai Nagar, Tiruchirappalli – 18

### DEPARTMENT OF INFORMATION TECHNOLOGY

#### Vision

The Department of Information Technology envisions to create technically competent, skilled intellectual IT professionals, efficient problem solvers, innovators and entrepreneurs to meet the current challenges of the modern computing industry.

#### Mission

- To provide quality education and elevate the students towards higher educational programs
- To encourage and guide the students to improve their competency skills in information technology market

To equip the students to cater the industrial demands through providing advance training



## UG Programme Structure (Science)

Cauvery College for Women (Autonomous)

Department of Information Technology

B.Sc Information Technology

LEARNING OUTCOME BASED CURRICULUM

FRAMEWORK (CBCS – LOCF)

**(For the Candidates admitted from the Academic year 2024-2025 and onwards)**

| Sem          | Part | Course   | Course Title                                       | Course Code                | Inst. Hrs.                        | Credits    | Exam |       |     | Total      |
|--------------|------|--|--|----------------------------|-----------------------------------|------------|------|-------|-----|------------|
|              |      |  |  |                            |                                   |            | Hrs  | Marks |     |            |
|              |      |  |  |                            |                                   |            |      | Int   | Ext |            |
| I            | I    | Language Course -I (LC)                        | பொதுத்தமிழ் - 1                                    | 23ULT1                     | 6                                 | 3          | 3    | 25    | 75  | 100        |
|              |      |  | Hindi Ka Samanya Gyan aur Nibandh                  | 23ULH1                     |                                   |            |      |       |     |            |
|              |      |  | Poetry, Grammar and History of Sanskrit Literature | 23ULS1                     |                                   |            |      |       |     |            |
|              |      |  | Foundation Course: Paper I- French – I             | 23ULF1                     |                                   |            |      |       |     |            |
|              | II   | English Language Course-I(ELC)                 | General English -I                                 | 23UE1                      | 6                                 | 3          | 3    | 25    | 75  | 100        |
|              | III  | Core Course – I(CC)                            | Programming in C                                   | 23UIT1CC1                  | 5                                 | 5          | 3    | 25    | 75  | 100        |
|              |      |  |  | Core Practical - I (CP)    | C Programming (P)                 | 23UIT1CC1P | 3    | 3     | 3   | 40         |
|              |      | First Allied Course-I(AC)                      | Essential Mathematics                              | 22UIT1AC1                  | 4                                 | 3          | 3    | 25    | 75  | 100        |
|              |      |  |  | First Allied Course-II(AC) | Numerical Analysis and Statistics | 22UIT1AC2  | 4    | 3     | 3   | 25         |
|              | IV   | Ability Enhancement Compulsory Course-I (AECC) | Value Education                                    | 23UGVE                     | 2                                 | 2          |      | 100   |     | 100        |
| <b>Total</b> |      |  |  |                            | <b>30</b>                         | <b>22</b>  |      |       |     | <b>700</b> |

| Sem | Part         | Course   | Course Title                                      | Course Code | Inst.<br>Hrs.<br>/ week   | Credits   | Exam      |       |     | Total |            |
|-----|--------------|--|---|-------------|---------------------------|-----------|-----------|-------|-----|-------|------------|
|     |              |  |   |             |                           |           | Hrs       | Marks |     |       |            |
|     |              |  |   |             |                           |           |           | Int   | Ext |       |            |
| II  | I            | Language Course-II(LC)                           | பொதுத்தமிழ்- II                                   | 23ULT2      | 6                         | 3         | 3         | 25    | 75  | 100   |            |
|     |              |  | Hindi Literature & Grammar – II                   | 22ULH2      |                           |           |           |       |     |       |            |
|     |              |  | Prose, Grammar and History of Sanskrit literature | 23ULS2      |                           |           |           |       |     |       |            |
|     |              |  | Basic French – II                                 | 22ULF2      |                           |           |           |       |     |       |            |
|     | II           | English Language Course- II(ELC)                 | General English- II                               | 23UE2       | 6                         | 3         | 3         | 25    | 75  | 100   |            |
|     | III          | Core Course – II (CC)                            | Data Structures and Algorithms                    | 23UIT2CC2   | 4                         | 4         | 3         | 25    | 75  | 100   |            |
|     |              | Core Practical - II (CP)                         | Data Structures using C(P)                        | 23UIT2CC2P  | 2                         | 2         | 3         | 40    | 60  | 100   |            |
|     |              | Core Course-III (CC)                             | Digital Fundamentals                              | 22UIT2CC3   | 4                         | 4         | 3         | 25    | 75  | 100   |            |
|     |              | First Allied Course-III (AC)                     | Operations Research                               | 22UIT2AC3   | 4                         | 3         | 3         | 25    | 75  | 100   |            |
|     | IV           | Ability Enhancement Compulsory Course-II (AECC)  | Environmental Studies                             | 22UGEVS     | 2                         | 2         | -         | 100   | -   | 100   |            |
|     |              | Ability Enhancement Compulsory Course-III (AECC) | Innovation and Entrepreneurship                   | 22UGIE      | 2                         | 1         | -         | 100   | -   | 100   |            |
|     |              | Extra Credit Course                              | SWAYAM  |             | As per UGC Recommendation |           |           |       |     |       |            |
|     | <b>Total</b> |  |   |             |                           | <b>30</b> | <b>22</b> |       |     |       | <b>800</b> |

| Sem | Part         | Course                           | Course Title                                      | Course Code                 | Inst. Hrs. / week                     | Credits    | Exam      |       |     | Total |            |     |
|-----|--------------|----------------------------------|---|-----------------------------|---------------------------------------|------------|-----------|-------|-----|-------|------------|-----|
|     |              |                                  |   |                             |                                       |            | Hrs       | Marks |     |       |            |     |
|     |              |                                  |   |                             |                                       |            |           | Int   | Ext |       |            |     |
| III | I            | Language Course-III (LC)         | பொதுத்தமிழ்-III                                   | 23ULT3                      | 6                                     | 3          | 3         | 25    | 75  | 100   |            |     |
|     |              |                                  | Hindi Literature & Grammar - III                  | 22ULH3                      |                                       |            |           |       |     |       |            |     |
|     |              |                                  | Prose, Grammar and History of Sanskrit Literature | 23ULS3                      |                                       |            |           |       |     |       |            |     |
|     |              |                                  | Intermediate French - I                           | 22ULF3                      |                                       |            |           |       |     |       |            |     |
|     | II           | English Language Course- II(ELC) | Learning Grammar Through Literature- I            | 23UE3                       | 6                                     | 3          | 3         | 25    | 75  | 100   |            |     |
|     | III          | Core Course- IV(CC)              | Relational Database Management Systems            | 23UIT3CC4                   | 6                                     | 5          | 3         | 25    | 75  | 100   |            |     |
|     |              |                                  |   | Core Practical - III(CP)    | RDBMS (P)                             | 22UIT3CC3P | 3         | 3     | 3   | 40    | 60         | 100 |
|     |              |                                  |   | Second Allied Course- I(AC) | Financial Accounting                  | 22UIT3AC4  | 4         | 3     | 3   | 25    | 75         | 100 |
|     |              |                                  |   | Second Allied Course-II(AP) | Computer Applications in Business (P) | 23UIT3AC5P | 3         | 3     | 3   | 40    | 60         | 100 |
|     | IV           | Generic Elective Course- I (GEC) | Web Design  | 22UIT3GEC1                  | 2                                     | 2          | 3         | 25    | 75  | 100   |            |     |
|     |              |                                  |   | Basic Tamil - I             |                                       |            |           |       |     |       | 22ULC3BT1  |     |
|     |              |                                  |   | Special Tamil - I           |                                       |            |           |       |     |       | 22ULC3ST1  |     |
|     |              | Extra Credit Course              | SWAYAM  | -                           | As per UGC Recommendation             |            |           |       |     |       |            |     |
|     | <b>Total</b> |                                  |   |                             |                                       | <b>30</b>  | <b>22</b> |       |     |       | <b>700</b> |     |

| Semester I  | Internal Mark: 25   |                         | External Mark: 75 |         |
|-------------|---------------------|-------------------------|-------------------|---------|
| COURSE CODE | COURSE TITLE        | CATEGORY                | Hrs/Week          | CREDITS |
| 23UIT1CC1   | PROGRAMMING<br>IN C | CORE COURSE – I<br>(CC) | 5                 | 5       |

### Course Objectives

- To familiarize the students with the understanding of code organization
- To improve the programming skills
- Learning the basic programming constructs.

### Course Outcomes and Cognitive Level Mapping

| CO Number | Course Outcome   | Cognitive 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              |

### Mapping of CO with PO and PSO

|     | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PO1 | PO2 | PO3 | PO4 | PO5 |
|-----|------|------|------|------|------|-----|-----|-----|-----|-----|
| CO1 | 2    | 2    | 3    | 2    | 1    | 2   | 2   | 2   | 3   | 2   |
| CO2 | 3    | 2    | 3    | 2    | 2    | 3   | 3   | 2   | 3   | 2   |
| CO3 | 3    | 3    | 3    | 2    | 2    | 3   | 3   | 2   | 3   | 3   |
| CO4 | 3    | 2    | 3    | 2    | 3    | 2   | 2   | 2   | 3   | 3   |
| CO5 | 3    | 3    | 3    | 2    | 3    | 3   | 3   | 2   | 2   | 3   |

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

## Syllabus

| UNIT | CONTENT   | HOURS | COs                                 | COGNITIVE LEVEL                |
|------|---|-------|-------------------------------------|--------------------------------|
| I    | <b>Studying Concepts of Programming Languages-</b> 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  | 15    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |
| II   | <b>Decision Making and Branching:</b> Decision making with If, simple IF, IF ELSE, nested IF ELSE , ELSE IF ladder, switch, GOTO statement. <b>Decision Making and Looping:</b> While, Do-While, For, Jumps in loops. Arrays - Character Arrays and Strings   | 15    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |
| III  | <b>User Defined Functions:</b> Elements of User Defined Functions- Definition of Functions- Return Values and their Types- Function Call- Function Declaration- Categories of Functions- Nesting of Functions-Recursion   | 15    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |
| IV   | <b>Structures and Unions:</b> Introduction- Defining a Structure- Declaring Structure Variables Accessing Structure Members- Structure Initialization- Arrays of Structures- Arrays within Structures- Unions- Size of Structures   | 15    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |
| V    | <b>Pointers:</b> 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-Memory model-File Management in C | 15    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |

|    |  |   |                                     |                                |
|----|--|---|-------------------------------------|--------------------------------|
| VI | <p><b>Self Study for Enrichment</b><br/> <b>(Not included for End Semester Examinations)</b></p> <p>Algorithm- Flowchart- Develop algorithms for real time scenario- Simple expressions- Conversion programs- swapping numbers (with and without using temporary variable).</p> <p>Programs for checking eligibility-Triangle formation-Sum of series-Array manipulations (Sorting, searching, insert, delete and merging)-String handling programs- Dynamic memory management using pointers- Employee pay bill preparation, Student mark list using Files.</p> | - | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |
|----|--|---|-------------------------------------|--------------------------------|

### Textbooks

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 Publications.

### References

1. Ashok N. Kamthane, Amit Ashok Kamthane (2015). Programming in C, 3<sup>rd</sup> Edition, Pearson India Education Services Pvt. Ltd.
2. Byron Gottfried, (2010), —Programming with C, Schaums Outline Series, Tata McGraw Hill Publications

### Web References

1. <https://www.learn-c.org/>
2. <https://www.cprogramming.com/>
3. <https://www.tutorialspoint.com/cprogramming/index.html>
4. <http://www.programiz.com/c-programming>
5. <http://www.programmingsimplified.com/c-program-examples>

### Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

### Course Designer

1. Dr. M. Anandhi, Associate Professor, Department of Information Technology.



|                    |                          |                            |                          |                |
|--------------------|--------------------------|----------------------------|--------------------------|----------------|
| <b>Semester I</b>  | <b>Internal Mark: 40</b> |                            | <b>External Mark: 60</b> |                |
| <b>COURSE CODE</b> | <b>COURSE TITLE</b>      | <b>CATEGORY</b>            | <b>Hrs/Week</b>          | <b>CREDITS</b> |
| <b>23UIT1CC1P</b>  | <b>C PROGRAMMING (P)</b> | <b>CORE COURSE- I (CP)</b> | <b>3</b>                 | <b>3</b>       |

### Course Objectives

- The Course aims to provide exposure to problem-solving through C programming
- It aims to train the student to the basic concepts of the C -Programming language
- Apply different concepts of C language to solve the problem

### Course Outcomes and Cognitive Level Mapping

| <b>CO Number</b> | <b>CO Statement</b>  | <b>Cognitive Level</b> |
|------------------|--|------------------------|
| <b>CO1</b>       | Demonstrate the understanding of syntax and semantics of C programs.             | K1                     |
| <b>CO2</b>       | Identify the problem and solve using C programming techniques.                   | K2                     |
| <b>CO3</b>       | Identify suitable programming constructs for problem solving.                    | K3                     |
| <b>CO4</b>       | Analyze various concepts of C language to solve the problem in an efficient way. | K4                     |
| <b>CO5</b>       | Develop a C program for a given problem and test for its correctness.            | K5                     |

### Mapping with Programme Outcomes

| <b>COs\ POs</b> | <b>PSO1</b> | <b>PSO2</b> | <b>PSO3</b> | <b>PSO4</b> | <b>PSO5</b> | <b>PO1</b> | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> |
|-----------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| <b>CO1</b>      | 3           | 3           | 3           | 2           | 2           | 2          | 3          | 1          | 2          | 3          |
| <b>CO2</b>      | 3           | 2           | 3           | 2           | 3           | 3          | 2          | 2          | 2          | 3          |
| <b>CO3</b>      | 3           | 2           | 2           | 2           | 2           | 3          | 3          | 2          | 3          | 2          |
| <b>CO4</b>      | 3           | 3           | 2           | 3           | 2           | 3          | 3          | 2          | 3          | 3          |
| <b>CO5</b>      | 3           | 3           | 3           | 2           | 3           | 3          | 3          | 3          | 2          | 3          |

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation.

## **Syllabus**

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
7. Recursive Functions
8. Programs using Pointers
9. Files
10. Programs using Structures & Unions

## **Text Book**

1. E. Balagurusamy, Programming in ANSI C, Fifth Edition, Tata McGraw-Hill, 2010.

## **Reference Books**

- 1 Byron Gottfried, Schaum's Outline Programming with C, Fourth Edition, Tata McGraw-Hill, 2018.
2. Kernighan and Ritchie, The C Programming Language, Second Edition, Prentice Hall, 1998.
3. Yashavant Kanetkar, Let Us C, Eighteenth Edition, BPB Publications, 2021

## **Web References**

1. <https://www.tutorialspoint.com/cprogramming>
2. <https://www.javatpoint.com/c-programming-language-tutorial>
3. <https://www.w3schools.in/category/c-tutorial>

## **Course Designer**

Dr. M. Anandhi, Associate Professor, Department of Information Technology

| Semester I                            | Internal Marks : 25      |          | External Marks : 75 |         |
|---------------------------------------|--------------------------|----------|---------------------|---------|
| COURSE CODE                           | COURSE TITLE             | CATEGORY | Hrs/Week            | CREDITS |
| 22UCS1AC1/<br>22UCA1AC1/<br>22UIT1AC1 | ESSENTIAL<br>MATHEMATICS | ALLIED   | 4                   | 3       |

### Course Objectives

- **Apply** the basic concepts of Differentiation, Integration and their applications.
- **Compute** mathematical quantities using ordinary and partial differential equations.
- **Explore** fundamental concepts in graph theory.

### Course Outcomes

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

| CO Number | CO Statement   | Cognitive Level |
|-----------|--|-----------------|
| CO1       | Remember and recall the basic concept of essential mathematics.          | K1              |
| CO2       | Illustrate the various notions in the respective streams.                | K2              |
| CO3       | Apply the different terminologies of essential mathematics.              | K3              |
| CO4       | Classify the solution of mathematical problems using various techniques. | K4              |
| CO5       | Examine the solution of mathematical problems.                           | K4              |

### Mapping of CO with PO and PSO

| COs | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PO1 | PO2 | PO3 | PO4 | PO5 |
|-----|------|------|------|------|------|-----|-----|-----|-----|-----|
| CO1 | 3    | 2    | 3    | 3    | 3    | 3   | 3   | 3   | 2   | 3   |
| CO2 | 3    | 3    | 3    | 3    | 3    | 3   | 3   | 3   | 3   | 2   |
| CO3 | 3    | 2    | 3    | 3    | 3    | 3   | 3   | 3   | 2   | 2   |
| CO4 | 3    | 2    | 2    | 3    | 3    | 3   | 3   | 3   | 3   | 2   |
| CO5 | 3    | 2    | 3    | 3    | 3    | 3   | 3   | 3   | 2   | 2   |
| CO5 | 3    | 2    | 3    | 3    | 3    | 3   | 3   | 3   | 2   | 2   |

"1" - Slight (Low) Correlation

"2" - Moderate (Medium) Correlation

"3" - Substantial (High) Correlation

"-" indicates there is no correlation

## Syllabus

| UNIT | CONTENT   | HOURS | COS                     | COGNITIVE LEVEL |
|------|---|-------|-------------------------|-----------------|
| I    | <p><b>Matrices</b><br/>           Matrix - Special types of matrices - Scalar multiplication of a matrix - Equality of matrices - Addition of matrices - Subtraction - Multiplication of Matrices - Inverse matrix- Relation between adjoint and inverse matrices - Solution of simultaneous equations - Rank of a matrix - A system of <math>m</math> homogeneous linear equations in <math>n</math> unknowns - System of non-homogeneous linear equations - Eigen values and Eigenvectors - Similar matrices- Cayley-Hamilton Theorem (proof not needed) - Simple applications only</p> | 12    | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4  |
| II   | <p><b>Differentiation</b><br/>           Maxima and Minima (Problems Only) -Points of inflexion.<br/> <b>Partial differentiation</b><br/>           Functions of function rule - Total Differential Coefficient - A Special case - Implicit Functions - Homogeneous functions - Euler's Theorem- (proof not needed) - Simple problems only.</p>   | 12    | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4  |
| III  | <p><b>Integration</b><br/>           Integration of Rational algebraic functions - Rule (a) - Rule (b): Type <math>\int \frac{ax^2+bx+c}{x^2+px+q} dx</math> Type <math>\int \frac{ax+b}{x^2+px+q} dx</math><br/> <math>\int \frac{ax^2+bx+c}{x^2+px+q} dx</math> - Integration of Irrational functions :<br/>           Case (ii) Integration of the form <math>\int \frac{ax^2+bx+c}{x^2+px+q} dx</math> - Type <math>\int \frac{ax^2+bx+c}{x^2+px+q} dx</math><br/> <math>\int \frac{ax^2+bx+c}{x^2+px+q} dx</math> - Properties of definite integrals.</p>                            | 12    | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4  |
| IV   | <p><b>Differential Equations</b><br/>           Linear Differential Equation with constant coefficients - The Operators <math>D</math> and <math>D^{-1}</math> - Particular Integral - Special methods of finding P.I.: <math>Xis</math> of the form (a) <math>e^{ax}</math> (b) <math>\cos ax</math> or <math>\sin ax</math>, where <math>a</math> is a constant (c) <math>x^m</math> (a power of <math>x</math>), <math>m</math> being a positive integer (d) <math>e^{ax}V</math>, where <math>V</math> is any function of <math>x</math>.</p>   | 12    | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4  |
| V    | <p><b>Graph Theory</b><br/>           Introduction - Definition of Graphs - Applications of Graphs - Finite and infinite graphs - Incidence and Degree - Isolated Vertex, Pendant Vertex and Null Graph.</p>  | 12    | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4  |

|    |  |   |                                     |                         |
|----|--|---|-------------------------------------|-------------------------|
|    | <b>Path and Circuits</b><br>Isomorphism - Subgraphs - Walks, Paths and Circuits - Connected Graphs, Disconnected Graphs and Components - Euler graphs.   |   |                                     |                         |
| VI | <b>Self-Study for Enrichment</b><br><b>(Not included for End Semester Examination)</b><br>Symmetric matrix - Skew symmetric matrix - Hermitian and skew Hermitian matrices Concavity and Convexity- Integration by parts - Linear equation - Hamiltonian Paths and Circuits. | - | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |

### Textbooks

1. T.K.Manicavachagom Pillay, T.Natarajan, K.S.Ganapathy.(2015). Algebra, Volume
2. II. S. Viswanathan (Printers & Publishers) Pvt., Ltd.
3. S.Narayanan, T.K.Manicavachagom Pillay.(2015).Calculus,Volume I.  
S. Viswanathan (Printers & Publishers) Pvt., Ltd.
4. S.Narayanan, T.K.Manicavachagom Pillay.(2015).Calculus,Volume II.  
S. Viswanathan (Printers & Publishers) Pvt., Ltd.
5. S.Narayanan, T.K.Manicavachagom Pillay.(2015).Calculus,Volume III.  
S. Viswanathan (Printers & Publishers) Pvt., Ltd.
6. Narsingh Deo. (2003). *Graph Theory with applications to Engineering and Computer*.  
Prentice Hall of India Private Limited

|          |  |
|----------|--|
| UNIT-I   | Chapter 2: Section 1 to 5, 7, 8, 10 to 16[1]                                   |
| UNIT-II  | Chapter V: Section 1.1 to 1.5[2]<br>Chapter VIII: Section 1.2 to 1.6[2]        |
| UNIT-III | Chapter 1: Section 7.1 to 7.3, 8 (CASE II), 9, 11[3]                           |
| UNIT-IV  | Chapter 2: Section 1 to 4[4]   |
| UNIT-V   | Chapter 1: Section 1.1 to 1.5[5]<br>Chapter 2: Section 2.1, 2.2, 2.4 to 2.6[5] |

### Reference Books

1. A.Singaravelu. (2003). *Allied Mathematics*. AR.Publications
2. P.R.Vittal. (2014). *Allied Mathematics*. Margham Publications, Chennai.
3. S.Arumugam and S.Ramachandran.(2006). *Invitation to Graph Theory*. Sci Tech Publications (India) Pvt Ltd., Chennai

### **Weblinks**

1. <https://youtu.be/rowWM-MiiXU>
2. <https://youtu.be/fOyxWaOnrgl>
3. <https://youtu.be/pvLi1s7S0tk>
4. [https://youtu.be/Gxr3AT4NY\\_0](https://youtu.be/Gxr3AT4NY_0)
5. <https://youtu.be/xlbbefbYLzg>
6. <https://youtu.be/bORJkIBhfEM>
7. <https://youtu.be/s5KZw1EpBEo>

### **Pedagogy**

Assignment, Seminar, Lecture, Quiz, Group discussion, Brain storming, e-content.

### **Course Designers**

1. Dr. V. Geetha
2. Dr. S. Sasikala

| Semester I                            | Internal Marks: 25                      |          | External Marks:75 |         |
|---------------------------------------|---|----------|-------------------|---------|
| COURSE CODE                           | COURSE TITLE                            | CATEGORY | Hrs / Week        | CREDITS |
| 22UCS1AC2/<br>22UCA1AC2/<br>22UIT1AC2 | NUMERICAL<br>ANALYSIS AND<br>STATISTICS | ALLIED   | 4                 | 3       |

### Course Objectives

- **Understand** the implementation of various methods of Numerical Analysis.
- **Organize** and **summarize** the statistical data.
- **Analyze** and **evaluate** the strengths of the conclusions based on data.

### Course Outcomes

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

| CO Number | CO Statement  | Cognitive Level |
|-----------|---|-----------------|
| CO1       | Understand the list of basic ideas of Numerical Methods and Statistics.     | K1, K2          |
| CO2       | Solve the problems using various methods and also classify the given datas. | K2, K3          |
| CO3       | Identify the conceptual collection and classification of variables.         | K3              |
| CO4       | Analyze the accuracy and graphical representation of statistical datas.     | K4              |
| CO5       | Support the implementation of numerical methods and statistical datas.      | K4              |

### Mapping of CO with PO and PSO

| COs | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PO1 | PO2 | PO3 | PO4 | PO5 |
|-----|------|------|------|------|------|-----|-----|-----|-----|-----|
| CO1 | 3    | 3    | 3    | 3    | 3    | 3   | 3   | 2   | 3   | 2   |
| CO2 | 3    | 3    | 2    | 2    | 2    | 3   | 2   | 3   | 2   | 3   |
| CO3 | 2    | 3    | 3    | 2    | 2    | 2   | 3   | 3   | 2   | 3   |
| CO4 | 3    | 2    | 3    | 2    | 2    | 3   | 3   | 2   | 3   | 2   |
| CO5 | 3    | 3    | 2    | 3    | 3    | 3   | 2   | 2   | 3   | 3   |

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –  
“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

## Syllabus

| UNIT | CONTENT   | HOURS | COs                                 | COGNITIVE LEVEL         |
|------|---|-------|-------------------------------------|-------------------------|
| I    | <p><b>Solution of Algebraic &amp; Transcendental Equations:</b></p> <p>Introduction – The Bisection Method – The Iteration Method – Newton-Raphson Method (Problems Only)</p> <p>Interpolation:<br/>Finite Differences: Forward Differences, Backward Differences – Newton’s Formulae for Interpolation – Interpolation with unevenly spaced Points: Lagrange’s Interpolation formula</p> | 12    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| II   | <p><b>Numerical Integration:</b></p> <p>Numerical Integration: Simpson’s 1/3-Rule – Simpson’s 3/8-Rule (proof not needed).</p> <p>Linear Systems of Equations:<br/>Solution of Linear Systems–Direct Methods: Gaussian Elimination Method – Solutions of Linear Systems – Iterative Methods (Problems Only)</p>   | 12    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| III  | <p><b>Numerical solution of Ordinary Differential Equations:</b></p> <p>Introduction – Euler’s Method – Modified Euler’s Method – Runge-Kutta Methods – Predictor - Corrector Methods : Adams-Moulton Method</p>  | 12    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| IV   | <p><b>Measures of Central Tendency:</b></p> <p>Arithmetic Mean – Median – Mode – Geometric Mean – Harmonic Mean.</p> <p>Measures of Dispersion:<br/>Mean Deviation – Standard Deviation (Simple Problems Only)</p>  | 12    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| V    | <p><b>Correlation:</b></p> <p>Introduction – Meaning of Correlation – Scatter Diagram – Karl Pearson’s co-efficient of Correlation – Rank Correlation: Spearman’s Rank Correlation Coefficient (Derivation not needed and Simple Problems Only).</p> <p>Linear Regression:<br/>Introduction – Linear Regression (Derivation not needed and Simple Problems Only)</p>                      | 12    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| VI   | <p><b>Self Study for Enrichment:<br/>(Not included for End Semester Examination)</b></p> <p>The method of False Position &amp; Central Differences - Trapezoidal rule - Solution by Taylor’s Series and Milne’s Method - Range – Quartile Deviation - Rank Correlation (Repeated Ranks).</p>  | -     | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |



### **Text Books**

1. Sastry S. S. (1998). Introductory methods of Numerical Analysis, Third Edition. Prentice Hall of India Private Limited.
2. Gupta. S.C & Kapoor, V.K (2007). Fundamentals of Mathematical Statistics. Sultan Chand & sons, New Delhi.

UNIT – I Chapter 2: Sections 2.1 - 2.3(Omit 2.3.1), 2.5(Omit 2.5.1) [1]

Chapter 3: Sections 3.3 (Omit 3.3.4), 3.6, 3.9(3.9.1only) [1]

UNIT – II Chapter 5: Sections 5.4(5.4.2 & 5.4.3 only) [1]

Chapter 6: Sections 6.3(6.3.2 only) & 6.4 [1]

UNIT – III Chapter 7: Sections 7.1, 7.4- 7.6 (Omit 7.4.1 & 7.6.2) [1]

UNIT – IV Chapter 2: Sections 2.5 - 2.9, 2.13 (Omit 2.13.1 & 2.13.2) [2]

UNIT –V Chapter 10: Sections 10.1 - 10.4, 10.7(10.7.1 Only) [2]

Chapter 11: Sections 11.1 & 11.2 [2]

### **Reference Books**

1. Jain M. K, Iyengar S. R.K. and Jain R.K. (1999). Numerical Analysis Numerical Methods for Scientific and Engineering Computations. New Age International Private Limited.
2. Froberg C.E. (1979). Introduction to Numerical Analysis. II Edition. Addison Wesley

### **Web Links**

1. <https://youtu.be/qCzUXav5Nk>
2. <https://youtu.be/r6MTvrI8SQ4>
3. <https://youtu.be/s05dONL4xAs>
4. <https://youtu.be/XaHFNhHfXwQ>
5. <https://youtu.be/zPG4NjIkCjc>

### **Pedagogy**

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

### **Course Designers**

1. Dr. R. Buvaneswari
2. Ms. A. Gowri Shankari

|                    |                                       |                              |                          |                |
|--------------------|---------------------------------------|------------------------------|--------------------------|----------------|
| <b>Semester II</b> | <b>Internal Mark: 25</b>              |                              | <b>External Mark: 75</b> |                |
| <b>COURSE CODE</b> | <b>COURSE TITLE</b>                   | <b>CATEGORY</b>              | <b>Hrs/Week</b>          | <b>CREDITS</b> |
| <b>23UIT2CC2</b>   | <b>DATA STRUCTURES AND ALGORITHMS</b> | <b>CORE COURSE – II (CC)</b> | <b>4</b>                 | <b>4</b>       |

### Course Objectives

- To provide the knowledge of basic data structures and their implementations.
- To understand the importance of data structures in the context of writing efficient programs.
- To develop skills to apply appropriate data structures in problem solving.

### Course Outcomes and Cognitive Level Mapping

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

| <b>CO Number</b> | <b>CO Statement</b>   | <b>Cognitive Level</b> |
|------------------|---|------------------------|
| CO1              | Understand the abstract data types and basics of Algorithms   | K1                     |
| CO2              | Demonstrate the performance of basic linear and nonlinear data structures   | K2                     |
| CO3              | Implement the basic data structures and Algorithm design techniques   | K3                     |
| CO4              | Analyze the efficiency of Algorithms  | K4                     |
| CO5              | Assess, evaluate and choose appropriate data structure and algorithmic technique to solve the real-world problems | K5                     |

### Mapping of CO with PO and PSO

|            | <b>PSO1</b> | <b>PSO2</b> | <b>PSO3</b> | <b>PSO4</b> | <b>PSO5</b> | <b>PO1</b> | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> |
|------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| <b>CO1</b> | 3           | 2           | 2           | 1           | 2           | 3          | 2          | 1          | 2          | 2          |
| <b>CO2</b> | 2           | 2           | 3           | 2           | 2           | 1          | 2          | 1          | 2          | 2          |
| <b>CO3</b> | 3           | 3           | 3           | 2           | 3           | 3          | 3          | 1          | 3          | 3          |
| <b>CO4</b> | 3           | 2           | 3           | 2           | 3           | 3          | 3          | 2          | 3          | 3          |
| <b>CO5</b> | 3           | 3           | 3           | 2           | 3           | 3          | 3          | 2          | 3          | 3          |

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

## Syllabus

| UNIT | CONTENT  | HOURS | COs                             | COGNITIVE LEVEL            |
|------|--|-------|---------------------------------|----------------------------|
| I    | Introduction-Basic Terminology-Data Structures-Data Structures Operation-Abstract Data Types (ADT)- Algorithms: Complexity, Time-Space Tradeoff. Arrays: Representation of Arrays- Linear Arrays - Insertion – Deletion and Traversal of a Linear Array - Array as an Abstract Data Type.  | 12    | CO1<br>CO2<br>CO3<br>CO4<br>CO5 | K1<br>K2<br>K3<br>K4<br>K5 |
| II   | Stacks: Array and Linked Representation of Stack-Prefix-Infix and Postfix Arithmetic Expressions-Conversion-Evaluation of Postfix Expressions. Queues: Definition-Linked Representation of Queue - The Queue Abstract Data Type-Circular Queues.   | 12    | CO1<br>CO2<br>CO3<br>CO4<br>CO5 | K1<br>K2<br>K3<br>K4<br>K5 |
| III  | Linked list: Introduction- Linked Lists – Representation of Linked Lists in Memory – Traversing a Linked List – Searching a Linked List – Insertion into and Deletion from a Linked List. Trees: Introduction - Binary Trees – Representing Binary Trees in Memory - Binary Tree Traversals — Binary Search Tree – Searching, Inserting and Deleting in Binary Search Trees. | 12    | CO1<br>CO2<br>CO3<br>CO4<br>CO5 | K1<br>K2<br>K3<br>K4<br>K5 |
| IV   | Sorting and Searching: Sorting: Introduction-Insertion Sort- Selection Sort – Merge Sort - Quick Sort. Searching: Linear Search- Binary Search   | 12    | CO1<br>CO2<br>CO3<br>CO4<br>CO5 | K1<br>K2<br>K3<br>K4<br>K5 |
| V    | Graphs: Introduction – Graph Theory Terminology – Sequential Representation of Graphs- Warshall’s Algorithm – Linked Representation of Graphs – Operations on Graph - Graph Traversals.  | 12    | CO1<br>CO2<br>CO3<br>CO4<br>CO5 | K1<br>K2<br>K3<br>K4<br>K5 |
| VI   | <b>Self Study for Enrichment</b><br><b>(Not included for End Semester Examinations)</b><br>Multi Dimensional Array-Recursion - Traversal Algorithms using Stacks Dequeue- Bubble Sort– Topological Sort.   | -     | CO1<br>CO2<br>CO3<br>CO4<br>CO5 | K1<br>K2<br>K3<br>K4<br>K5 |

### **Textbook**

1. Data Structures with C, Seymour Lipschutz (Schaum's Outlines), 2011, McGraw Hill Education Pvt. Ltd.,

### **Reference Books**

1. Ellis Horowitz, Sartaj Sahni and Susan and Rewson-Freed(2008), Fundamentals of Data Structures in C, 2nd Edition, Universities Press

2. ISRD Group, (2009). Data Structures Using, Tata McGraw Hill Education Pvt. Ltd, New Delhi.

### **Web References**

1. <https://www.geeksforgeeks.org/data-structures>
2. [https://www.tutorialspoint.com/data\\_structures\\_algorithms/index.html](https://www.tutorialspoint.com/data_structures_algorithms/index.html)
3. <https://ocw.mit.edu/courses/6-006-introduction-to-algorithms-spring-2020/>

### **Pedagogy**

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

### **Course Designer**

1. Dr. A. Bhuvaneshwari, Associate Professor, Department of Information Technology.
2. Dr. P. TamilSelvi, Associate Professor, Department of Information Technology

|                    |                                |                                |                          |                |
|--------------------|--------------------------------|--------------------------------|--------------------------|----------------|
| <b>Semester II</b> | <b>Internal Mark: 40</b>       |                                | <b>External Mark: 60</b> |                |
| <b>COURSE CODE</b> | <b>COURSE TITLE</b>            | <b>CATEGORY</b>                | <b>Hrs/Week</b>          | <b>CREDITS</b> |
| 23UIT2CC2P         | DATA STRUCTURES<br>USING C (P) | CORE<br>PRACTICAL – II<br>(CP) | 2                        | 2              |

### Objectives

- To develop and execute C programs for various data structures
- To apply the knowledge of programming features
- To Implement various Algorithms

### Course Outcomes and Cognitive Level Mapping

| CO Number | CO Statement  | Cognitive Level |
|-----------|---|-----------------|
| CO1       | Recall program execution and debugging  | K1              |
| CO2       | Demonstrate the ideas of Data structures  | K2              |
| CO3       | Make use of Operations of Linear and Non- linear data structures                      | K3              |
| CO4       | Develops the ability to analyze a problem and implement an algorithm to solve it.     | K4              |
| CO5       | Acquire logical thinking, Identify the correct and efficient ways of solving problems | K5              |

### Mapping with Programme Outcomes

| COs\POs | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PO1 | PO2 | PO3 | PO4 | PO5 |
|---------|------|------|------|------|------|-----|-----|-----|-----|-----|
| CO1     | 3    | 2    | 2    | 1    | 2    | 3   | 2   | 1   | 2   | 2   |
| CO2     | 3    | 2    | 3    | 1    | 2    | 3   | 2   | 2   | 2   | 2   |
| CO3     | 3    | 3    | 3    | 2    | 3    | 3   | 3   | 2   | 3   | 3   |
| CO4     | 3    | 2    | 2    | 2    | 2    | 3   | 3   | 2   | 2   | 2   |
| CO5     | 3    | 3    | 3    | 2    | 3    | 3   | 3   | 2   | 2   | 2   |

## **Syllabus**

1. Stack implementation
2. Operations on Queue
3. Linked List
4. Binary Tree Traversal
5. Operations of Graph
6. Sorting
7. Searching

## **Course Designer**

1. Dr. A. Bhuvaneshwari, Associate Professor, Department of Information Technology.
2. Dr. P. Tamil Selvi, Associate Professor, Department of Information Technology.

|                    |                             |                               |                          |                |
|--------------------|-----------------------------|-------------------------------|--------------------------|----------------|
| <b>Semester II</b> | <b>Internal Mark: 25</b>    |                               | <b>External Mark: 75</b> |                |
| <b>COURSE CODE</b> | <b>COURSE TITLE</b>         | <b>CATEGORY</b>               | <b>Hrs/Week</b>          | <b>CREDITS</b> |
| <b>22UIT2CC3</b>   | <b>DIGITAL FUNDAMENTALS</b> | <b>CORE COURSE – III (CC)</b> | <b>4</b>                 | <b>4</b>       |

### **COURSE OBJECTIVES**

- To provide knowledge on various number systems
- To inculcate the concepts of Boolean algebra
- To make the students learn combinational circuits
- To make the students learn combinational circuits

### **COURSE OUTCOMES**

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

| <b>CO Number</b> | <b>CO Statement</b>                                    | <b>Knowledge Level</b> |
|------------------|--|------------------------|
| <b>CO1</b>       | Understand the basics of digital logic                 | <b>K1</b>              |
| <b>CO2</b>       | Apply the conversion of number system                  | <b>K3</b>              |
| <b>CO3</b>       | Apply the Boolean algebra to generate digital circuits | <b>K3</b>              |
| <b>CO4</b>       | Design combinational circuits using gates              | <b>K5</b>              |
| <b>CO5</b>       | Construct sequential circuits using registers          | <b>K4</b>              |

### **Mapping with Programme Specific Outcomes and Programme Outcomes**

| <b>COs\ PSOs</b> | <b>PSO1</b> | <b>PSO2</b> | <b>PSO3</b> | <b>PSO4</b> | <b>PSO5</b> | <b>PO1</b> | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> |
|------------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| <b>CO1</b>       | <b>3</b>    | <b>2</b>    | <b>3</b>    | <b>2</b>    | <b>3</b>    | <b>2</b>   | <b>2</b>   | <b>2</b>   | <b>3</b>   | <b>2</b>   |
| <b>CO2</b>       | <b>3</b>    | <b>2</b>    | <b>3</b>    | <b>2</b>    | <b>3</b>    | <b>3</b>   | <b>3</b>   | <b>3</b>   | <b>3</b>   | <b>2</b>   |
| <b>CO3</b>       | <b>3</b>    | <b>3</b>    | <b>3</b>    | <b>3</b>    | <b>3</b>    | <b>3</b>   | <b>3</b>   | <b>2</b>   | <b>3</b>   | <b>3</b>   |
| <b>CO4</b>       | <b>3</b>    | <b>2</b>    | <b>3</b>    | <b>2</b>    | <b>3</b>    | <b>2</b>   | <b>2</b>   | <b>2</b>   | <b>3</b>   | <b>3</b>   |
| <b>CO5</b>       | <b>3</b>    | <b>3</b>    | <b>3</b>    | <b>2</b>    | <b>3</b>    | <b>3</b>   | <b>3</b>   | <b>2</b>   | <b>2</b>   | <b>3</b>   |

**“1” – Slight (Low) Correlation**

**“3” – Substantial (High) Correlation**

**“2” – Moderate (Medium) Correlation**

**“-” indicates there is no correlation.**

## Syllabus

| UNIT | CONTENT  | HOURS | COs                     | COGNITIVE LEVEL    |
|------|--|-------|-------------------------|--------------------|
| I    | <p><b>NUMBER SYSTEMS AND CODES:</b></p> <p>Binary Number System – Binary to Decimal Conversion – Decimal to Binary Conversion – Binary Addition and Subtraction – Binary subtraction by 1's and 2's complement – 9's and 10's complement Binary Multiplication and Division – Octal Numbers – Hexadecimal Numbers – Binary Codes – 8421 code - Error Detecting and Correcting Codes.</p> | 12    | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4, K5 |
| II   | <p><b>BOOLEAN ALGEBRA AND LOGIC GATES:</b></p> <p>Boolean Algebra – Laws and Theorems – Minterms and Maxterms — DeMorgan's Theorems. Logic Gates: AND, OR, NOT, NAND, NOR and Exclusive OR Gates – Exclusive NOR Gate – Universal Building Blocks (UBB) – NAND Gate as UBB – NOR Gate as UBB- Simplifying logic circuits- Sum of products and products of sum form</p>                   | 12    | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4, K5 |
| III  | <p><b>K MAP TECHNIQUES:</b></p> <p>Simplification of Boolean expression using Karnaugh Map with 2, 3 and 4 variables -Sum of Products - Product of Sum – Don't Care Conditions – Overlapping Groups – Rolling the Map – Eliminating Redundant Group</p>  | 12    | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4, K5 |
| IV   | <p><b>COMBINATIONAL LOGIC CIRCUITS:</b></p> <p>Half and Full Adders – BCD Adder - Half and Full Subtractors – Multiplexers (4:1 line) – 1 to 4 line Demultiplexers – Decoders, Encoders</p>  | 12    | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4, K5 |
| V    | <p><b>SEQUENTIAL LOGIC CIRCUITS:</b></p> <p>Flip Flops – RS Flip Flop – Clocked RS Flip Flop – D Flip Flop – JK Flip Flop – T Flip Flop – Triggering of Flip Flops – Master Slave Flip Flop – Clock – Counters and Shift Registers: Counters – Asynchronous or Ripple Counter – Ring Counter. Shift Registers.</p>   | 12    | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4, K5 |
| VI   | <p><b>Self Study for Enrichment</b></p> <p><b>Gray Code – Excess – 3 Code</b></p> <p>NAND and NOR Implementation — AND-OR-INVERT Implementation – OR-AND-INVERT Implementation - SISO – SIPO – PIPO – PISO</p>   | -     | CO1, CO2, CO3, CO4, CO5 | K1, K2, K3, K4, K5 |



### **Text Book**

Digital Logic and Computer Design. (2017). M. Morris Mano, India: Pearson India.

### **Reference Books**

1. Principles of Digital Electronics, Dr. K. Meena, PHI Learning Private Limited, New Delhi, 2009.
2. Malvino and Leach –Digital Principles and Application, 2014

### **Web References**

1. <https://archive.org/details/digitalcomputerf00bart 9>.
2. <https://www.pdfdrive.com/digital-computer-fundamentals-computerarchitecture-e5719965.html>
3. <https://ocw.mit.edu/courses/6-042j-mathematics-for-computer-science-spring-2015/resources/digital-logic/>

### **Course Designer**

**Dr. P. Tamilselvi, Associate Professor, Department of Information Technology**

| Semester II  | Internal Marks : 25 |            | External Marks : 75 |         |
|--|---------------------|------------|---------------------|---------|
| COURSE CODE  | COURSE TITLE        | CATEGORY   | Hrs/Week            | CREDITS |
| 22UCS2AC3/<br>22UCG2AC3/<br>22UCA2AC3/<br>22UIT2AC3/ | OPERATIONS RESEARCH | ALLIED III | 4                   | 3       |

### Course Objectives

- **Understand** the various features of Operations research.
- **Analyze** the optimum solutions using Operations research.
- **Explore** the concepts of Operations research in real life problems.

### Course Outcomes

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

| CO Number | CO Statement   | Cognitive Level |
|-----------|--|-----------------|
| CO1       | Define the various techniques of Operations research.                    | K1              |
| CO2       | Illustrate the various notions in the respective streams.                | K2              |
| CO3       | Identify the different terminologies of Operations research              | K3              |
| CO4       | Analyze the solutions of mathematical problem using specific techniques. | K4              |
| CO5       | Simplify the optimum solutions of a mathematical problem.                | K4              |

### Mapping of CO with PO and PSO

| Cos | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PO1 | PO2 | PO3 | PO4 | PO5 |
|-----|------|------|------|------|------|-----|-----|-----|-----|-----|
| CO1 | 3    | 2    | 3    | 3    | 2    | 3   | 3   | 3   | 2   | 3   |
| CO2 | 3    | 2    | 3    | 3    | 2    | 3   | 3   | 3   | 3   | 2   |
| CO3 | 3    | 2    | 3    | 3    | 2    | 3   | 2   | 3   | 2   | 2   |
| CO4 | 3    | 2    | 2    | 2    | 2    | 3   | 3   | 2   | 3   | 2   |
| CO5 | 3    | 2    | 3    | 2    | 2    | 3   | 3   | 3   | 2   | 2   |

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation →

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

## Syllabus

| UNIT | CONTENT   | HOURS | COs                                 | COGNITIVE LEVEL         |
|------|---|-------|-------------------------------------|-------------------------|
| I    | <p><b>Operations Research</b></p> <p>Introduction-Origin and Development of O.R.- Nature and Features of O.R.- Scientific Method in O.R.- Modelling in Operations Research - Advantage and Limitation of Models- General Solution Methods for O.R. Models- Methodology of Operations Research- Operations Research and Decision Making</p> <p><b>Linear Programming Problem-Mathematical Formulation</b></p> <p>Introduction-Linear programming Problem-Mathematical Formulation of the problem - Illustrations on Mathematical Formulation of LPPs. (simple problems only)</p> <p><b>Linear programming problem-graphical Solution and Extension</b></p> <p>Introduction- Graphical Solution Method-General Linear Programming Problem- Canonical and Standard Forms of LPP.</p> | 12    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| II   | <p><b>Linear Programming Problem-Simplex Method</b></p> <p>Introduction-Fundamental Properties of Solutions- The computational Procedure- The Simplex Algorithm-Use of Artificial Variables-Big M method.(simple problems only).</p>  | 12    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| III  | <p><b>Transportation problem</b></p> <p>Introduction-LP Formulation of the Transportation Problem- Existence of Solution in T.P-The Transportation Table-Loops in Transportation Table-Solution of a Transportation Problem-Finding an Initial Basic Feasible Solution-Test for Optimality-Economic interpretation of <math>u_j</math>'s and <math>v_j</math>'s - Degeneracy in Transportation Problem-Transportation Algorithm (MODI method), (simple problems only).</p>  | 12    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |

|    |   |    |                                     |                         |
|----|---|----|-------------------------------------|-------------------------|
|    | <b>Assignment Problem</b><br>Introduction-Mathematical Formulation of the Problem- Solution Methods of Assignment Problem- Special Cases in Assignment Problems(simple problems only).  |    |                                     |                         |
| IV | <b>Sequencing problem</b><br>Introduction-Problem of Sequencing-Basic Terms Used in Sequencing- Processing $n$ Jobs through Two Machines- Processing $n$ Jobs through $k$ Machines(problems only).  | 12 | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| V  | <b>Network Scheduling by PERT/CPM</b><br>Introduction- Network: Basic Components- Logical Sequencing- Rules of Network Construction- Concurrent Activities - Critical Path Analysis -Probability Considerations in PERT.  | 12 | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| VI | <b>Self-Study for Enrichment</b><br><b>(Not included for End Semester Examination)</b><br>Application of Operations Research.<br>– Two-Phase method – The Travelling Salesman problem – Processing 2 Jobs through $k$ Machines – .Inventory Models (without shortage) | -  | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |

### Text Books

1. Kanti Swarup, P.K. Gupta, Manmohan.(2019). *Operations research, Sultan Chand Publications.*

### Chapters and Sections

|          |   |
|----------|---|
| UNIT-I   | Chapter 1: Sections 1:1 – 1:9<br>Chapter 2: Sections 2:1 – 2:4<br>Chapter 3: Sections 3:1 – 3:5 |
| UNIT II  | Chapter 4: Sections 4:1 – 4:4   |
| UNIT-III | Chapter 10: Sections 10:1 – 10:3, 10:5, 10:6, 10:8 – 10:13<br>Chapter 11: Sections 11:1 – 11:4  |
| UNIT-IV  | Chapter 12: Sections 12:1 – 12:5  |
| UNIT-V   | Chapter 25: Sections 25:1 – 25:7  |

### **Reference Books**

1. Hamdy A.Taha (2017), *Operations Research An Introduction*, Pearson India Education services PVT Ltd.
2. Premkumar Gupta, Hira D.S.(2004), *Operations Research*, S.Chand & Company Ltd, New Delhi.
3. Chandrasekhara Rao.K,Shanti Lata Mishra(2008), *Operations Research*, Narosa Publishing House PVT Ltd, New Delhi.

### **Web References**

1. <https://www.britannica.com/topic/operations-research>
2. <https://byjus.com/maths/linear-programming/>
3. <https://www.gatexplore.com/transportation-problem-study-notes/>
4. <https://youtu.be/rowWM-MijXU>
5. <https://youtu.be/TQvxWaQnrqI>
6. [https://youtu.be/RTX-ik\\_8i-k](https://youtu.be/RTX-ik_8i-k)
7. <https://youtu.be/s5KZw1EpBEo>

### **Pedagogy**

PowerPoint presentation, Group discussion, Seminar, Assignment.

### **Course Designers**

1. Dr. V. Geetha
2. Dr. S. Sasikala

|                     |   |                               |                          |                |
|---------------------|---|-------------------------------|--------------------------|----------------|
| <b>Semester III</b> | <b>Internal Mark: 25</b>                      |                               | <b>External Mark: 75</b> |                |
| <b>COURSE CODE</b>  | <b>COURSE TITLE</b>                           | <b>CATEGORY</b>               | <b>Hrs/Week</b>          | <b>CREDITS</b> |
| <b>23UIT3CC4</b>    | <b>Relational Database Management Systems</b> | <b>CORE COURSE – III (CC)</b> | <b>6</b>                 | <b>5</b>       |

### Course Objectives

- To provide a sound introduction to DBMS
- To present SQL and Procedural interfaces to SQL comprehensively
- To present the concepts and techniques related to query processing by SQL engines
- To provide an overview of the concepts of NoSQL

### Course Outcomes and Cognitive Level Mapping

On the successful completion of the course. students will be able to

| <b>CO Number</b> | <b>CO Statement</b>   | <b>Knowledge level</b> |
|------------------|---|------------------------|
| CO1              | Outline the terminology, features, classifications, characteristics and benefits embodied in database systems | K1                     |
| CO2              | Formulate using relational algebra solutions to a broad range of query problems                               | K2                     |
| CO3              | Demonstrate a broad range of SQL query and its application  | K3                     |
| CO4              | Design an information model expressed in the form of an Entity relation diagram                               | K3                     |
| CO5              | Apply normalization in relational database design and demonstrate PL/SQL program interfaces                   | K3                     |

### Mapping of CO with PO and PSO

|            | <b>PSO1</b> | <b>PSO2</b> | <b>PSO3</b> | <b>PSO4</b> | <b>PSO5</b> | <b>PO1</b> | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> |
|------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| <b>CO1</b> | 3           | 2           | 2           | 2           | 2           | 3          | 2          | 2          | 3          | 2          |
| <b>CO2</b> | 2           | 2           | 3           | 2           | 3           | 3          | 3          | 2          | 3          | 2          |
| <b>CO3</b> | 3           | 3           | 3           | 2           | 3           | 3          | 3          | 2          | 3          | 3          |
| <b>CO4</b> | 3           | 3           | 3           | 2           | 3           | 2          | 3          | 2          | 3          | 3          |
| <b>CO5</b> | 3           | 3           | 3           | 2           | 3           | 3          | 3          | 2          | 2          | 3          |

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

## SYLLABUS

| UNIT | CONTENT  | HOURS | COs                                 | COGNITIVE LEVEL                |
|------|--|-------|-------------------------------------|--------------------------------|
| I    | <p><b>Introduction to Databases:</b> Databases and Database Users - Database System Concepts and Architecture-<br/> <b>Conceptual Data Modeling and Database Design -</b> Data Modeling Using the Entity–Relationship (ER) Model-The Enhanced Entity–Relationship (EER)-Subclasses, Superclasses, and Inheritance- Specialization and Generalization- Constraints and Characteristics of Specialization and Generalization Hierarchies</p>   | 18    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |
| II   | <p><b>The Relational Data Model and Relational Database Constraints</b><br/>           Relational Model Concepts -Relational Model Constraints and Relational Database Schemas - Update Operations, Transactions, and Dealing with Constraint Violations -<b>The Relational Algebra and Relational Calculus</b>-Unary Relational Operations: SELECT and PROJECT-Relational Algebra Operations from Set Theory-Binary Relational Operations: JOIN and DIVISION - Additional Relational Operation.</p>   | 18    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |
| III  | <p><b>Basic SQL:</b> SQL Data Definition and Data Types - Specifying Constraints in SQL - Basic Retrieval Queries in SQL -INSERT, DELETE, and UPDATE Statements in SQL -Additional Features of SQL<br/> <b>More SQL:</b> Complex Queries, Triggers, Views and Schema Modification - More Complex SQL Retrieval Queries- Specifying Constraints as Assertions and Actions as Triggers -Views (Virtual Tables) in SQL - Schema Change Statements in SQL</p>  | 18    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |
| IV   | <p><b>Database Design Theory and Normalization :</b> Basics of Functional Dependencies and Normalization for Relational Databases- Informal Design Guidelines for Relation Schemas- Functional Dependencies - Normal Forms Based on Primary Keys - General Definitions of Second and Third Normal Forms - Boyce-Codd Normal Form-Multivalued Dependency and Fourth Normal Form -Join Dependencies and Fifth Normal Form<br/> <b>Relational Database Design Algorithms and Further Dependencies</b></p> | 18    | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |

|    |   |    |                                     |                                |
|----|---|----|-------------------------------------|--------------------------------|
|    | <b>Further Topics in Functional Dependencies:</b> Inference Rules, Equivalence, and Minimal Cover - Properties of Relational Decompositions- Algorithms for Relational Database Schema Design - About Nulls, Dangling Tuples, and Alternative Relational Designs  |    |                                     |                                |
| V  | <b>PL/SQL Concepts:</b> Cursors, Stored Procedures, Stored Function, Database Triggers-<br><b>Introduction to NOSQL Systems</b>   | 18 | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |
| VI | <b>Self Study for Enrichment</b><br><b>(Not included for End Semester Examinations)</b> <ul style="list-style-type: none"> <li>• Design a ER model for Banking transactions</li> <li>• Write query to Create schemas related to bank</li> <li>• Normalize the schema with applying the normal forms</li> <li>• Perform transactions such as Deposit, Withdraw using sub queries</li> <li>• Apply PL/SQL concept to validate the data</li> </ul> | -  | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4,<br>K5 |

### Textbooks

1. Elamsri and Navathe,(2016).Fundamentals of database systems, Pearson Education
2. Ivan Bayross ,SQL & PL/SQL, BPB publications.

### References

1. C.J.Date,(2003). An Introduction To Database Systems, Pearson.
2. J.D.Ullaman,(2010).Principles of Database Systems, Mc-Graw Hill Education, Galgotia Publishers
3. Abraham Silberschatz, Henry F. Korth & S. Sudarshan (2011).Database System Concepts Mc-Graw Hill Education.

### Web References

1. <https://beginnersbook.com/2015/04/rdbms-concepts>
2. <https://www.javatpoint.com/dbms-tutorial>
3. <https://www.tutorialspoint.com/dbms/>

### Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

### Course Designer

1. Dr. S. Suguna Devi, Associate Professor, Department of Information Technology.





## **Syllabus**

1. Draw ER diagram for Banking transaction

### **Using MYSQL execute the following**

2. Creation of college database and establish relationships between tables
3. Create a view to extract details from two or more tables
4. To demonstrate Joins
5. To demonstrate Aggregate functions
6. To implement String functions.
7. To demonstrate various nested queries.

### **With the help of PL/SQL**

8. Write a stored procedure and Function to process student's results.
9. Write a program to implement Trigger.
10. Write a program to generate employee pay slip using PL/SQL.

## **Web References**

- <https://www.w3schools.com/mysql/>
- <https://towardsdatascience.com/practical-sql-create-and-query-a-relational-database-8bac84d78703>

## **Course Designer**

1. Dr. S. Suguna Devi, Associate Professor, Department of Information Technology.

|                     |                             |                           |                    |                 |
|---------------------|-----------------------------|---------------------------|--------------------|-----------------|
| <b>Semester III</b> | <b>Internal Marks:25</b>    | <b>External Marks: 75</b> |                    |                 |
| <b>COURSE CODE</b>  | <b>COURSE TITLE</b>         | <b>CATEGORY</b>           | <b>Hrs. / Week</b> | <b>CREDIT S</b> |
| <b>22UIT3AC4</b>    | <b>FINANCIAL ACCOUNTING</b> | <b>ALLIED</b>             | <b>4</b>           | <b>3</b>        |

### Course Objective

- To equip the students with fundamental knowledge and acquire analytical skills on the accounting concepts.

### Course Outcome and Cognitive Level Mapping

| <b>CO Number</b> | <b>CO Statement</b>  | <b>Cognitive Level</b> |
|------------------|--|------------------------|
|                  | On the successful completion of the course, students will be able to     |                        |
| <b>CO1</b>       | Define the basic concepts of Accounting                                  | <b>K1</b>              |
| <b>CO2</b>       | Explain the accounting rules required for business enterprise            | <b>K2</b>              |
| <b>CO3</b>       | Make use of accounting concepts to interpret the performance of business | <b>K3</b>              |
| <b>CO4</b>       | Analyze the financial statement of the firm                              | <b>K4</b>              |

### Mapping of CO with PO and PSO

| <b>COs/ PSOs</b> | <b>PSO1</b> | <b>PSO2</b> | <b>PSO3</b> | <b>PSO4</b> | <b>PSO5</b> | <b>PO1</b> | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> |
|------------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| <b>CO1</b>       | 2           | 3           | 3           | 3           | 3           | 3          | 2          | 3          | 3          | 2          |
| <b>CO2</b>       | 2           | 3           | 3           | 3           | 3           | 3          | 2          | 3          | 3          | 2          |
| <b>CO3</b>       | 3           | 3           | 3           | 3           | 2           | 3          | 2          | 3          | 3          | 2          |
| <b>CO4</b>       | 2           | 3           | 3           | 3           | 3           | 3          | 2          | 3          | 3          | 2          |
| <b>CO5</b>       | 2           | 3           | 3           | 3           | 3           | 3          | 2          | 3          | 3          | 2          |

“1”–Slight(Low)Correlation □

“2”–Moderate(Medium)Correlation □

“3”–Substantial (High)Correlation

“-”indicate there is no correlation.

**Syllabus**

| <b>UNIT</b> | <b>CONTENT</b>  | <b>HOURS</b> | <b>COs</b>                            | <b>COGNITIVE LEVEL</b>            |
|-------------|---|--------------|---------------------------------------|-----------------------------------|
| <b>I</b>    | Accounting Meaning – Definition of Accounting- Need for Accounting – Meaning of Book Keeping – Book Keeping Vs Accounting- Accounting Principles – Accounting Cycle – Accounting Equation. Double Entry: Meaning – Nature and Principle of Double Entry. Journal: Meaning and Need – Steps in Journalizing. | <b>12</b>    | <b>CO1,<br/>CO2,<br/>CO3,<br/>CO4</b> | <b>K1,<br/>K2,<br/>K3,<br/>K4</b> |
| <b>II</b>   | Ledger: Meaning – Utility – Format – Posting – Balancing an Account – Preparation of Trial Balance – Total Method – Balance Method.   | <b>12</b>    | <b>CO1,<br/>CO2,<br/>CO3,<br/>CO4</b> | <b>K1,<br/>K2,<br/>K3,<br/>K4</b> |
| <b>III</b>  | Subsidiary Books – Meaning – Cash Book – Simple cash book – Two Column cash book with Bank and Discount Columns – Three Column cash book – Petty Cash Book – Imprest System – Analytical petty cash book.   | <b>12</b>    | <b>CO1,<br/>CO2,<br/>CO3,<br/>CO4</b> | <b>K1,<br/>K2,<br/>K3,<br/>K4</b> |
| <b>IV</b>   | Pass Book – need for Bank Reconciliation statement – Methods of Preparation of Bank Reconciliation Statement – Favorable and Unfavorable Balances.<br><br>Depreciation – Meaning –Straight Line Method, Diminishing Balance Method and Annuity Method.<br><br>(Simple Problems only)                        | <b>12</b>    | <b>CO1,<br/>CO2,<br/>CO3,<br/>CO4</b> | <b>K1,<br/>K2,<br/>K3,<br/>K4</b> |
| <b>V</b>    | Meaning – Need for Preparation – Components of Final Accounts – Trading Account – Profit and Loss Account – Balance sheet – Adjustments.  | <b>12</b>    | <b>CO1,<br/>CO2,<br/>CO3,<br/>CO4</b> | <b>K1,<br/>K2,<br/>K3,<br/>K4</b> |

|           |   |  |             |            |
|-----------|---|--|-------------|------------|
| <b>VI</b> | Self Study for Enrichment (Not to be included for External Examination)   |  |             |            |
|           | Distinction between Journal and Ledger –  |  | <b>CO1,</b> | <b>K1,</b> |
|           | Objective of Preparing Trial Balance –  |  | <b>CO2,</b> | <b>K2,</b> |
|           | Benefits of subsidiary book System –  |  | <b>CO3,</b> | <b>K3,</b> |
|           | Causes for the differences between cash book and pass book- Differences Between Trial Balance and Balance sheet – Need for Providing Depreciation |  | <b>CO4</b>  | <b>K4</b>  |

### **Text Book**

1. S.P.Jain and K.L.Narang (2016), Fundamentals of Accounting, Kalyani Publishers, 2017
2. T.S. Reddy & Murthy (2020), Financial Accounting, Margham Publications, 2017

### **Reference Books**

1. Dalston L. Cecil and Jenitra L.Merwin. (2015). Business Accounting. 4th Edition, Learn Tech Publishers.
2. R.L. Gupta & Radhaswamy M. (2018). Financial Accounting. 8th Edition, Sultan Chand Sons
3. Shukla & Grewal. (2018). Advanced Accountancy. Sultan Chand Sons.

### **Web References**

1. [www.accountingcoach.com](http://www.accountingcoach.com)
2. [www.accountingstudyguide.com](http://www.accountingstudyguide.com)
3. [www.futureaccountant.com](http://www.futureaccountant.com)
4. [www.onlinelibrary.wiley.com](http://www.onlinelibrary.wiley.com)

### **Pedagogy**

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

### **Course Designer**

Ms. G. Kanagavalli

|                     |  |                           |                    |                |
|---------------------|--|---------------------------|--------------------|----------------|
| <b>Semester III</b> | <b>Internal Marks:40</b>                     | <b>External Marks: 60</b> |                    |                |
| <b>COURSE CODE</b>  | <b>COURSE TITLE</b>                          | <b>CATEGORY</b>           | <b>Hrs. / Week</b> | <b>CREDITS</b> |
| <b>23UIT3AC5P</b>   | <b>COMPUTER APPLICATIONS IN BUSINESS (P)</b> | <b>ALLIED</b>             | <b>3</b>           | <b>3</b>       |

### Course Objective

- The primary objective of this course is to expose the students with the Accounting Software Tally ERP9 with GST

### Course Outcome and Cognitive Level Mapping

| <b>CO Number</b> | <b>CO Statement</b>   | <b>Cognitive Level</b> |
|------------------|---|------------------------|
|                  | On the successful completion of the course, students will be able to                                    |                        |
| <b>CO1</b>       | Recall the basic concepts of components of computer   | <b>K1</b>              |
| <b>CO2</b>       | Understand the basic features of Tally ERP 9  | <b>K2</b>              |
| <b>CO3</b>       | Prepare different types of financial reports  | <b>K3</b>              |
| <b>CO4</b>       | Analyze stock group, stock category, stock item and compare stock category summary with godown summary. | <b>K4</b>              |
| <b>CO5</b>       | Explain the procedure for GST Registration  | <b>K5</b>              |

### Mapping of CO with PO and PSO

| <b>COs/<br/>PSOs</b> | <b>PSO1</b> | <b>PSO2</b> | <b>PSO3</b> | <b>PSO4</b> | <b>PSO5</b> | <b>PO1</b> | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> |
|----------------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|
| <b>CO1</b>           | 3           | 3           | 3           | 3           | 2           | 3          | 2          | 3          | 3          | 2          |
| <b>CO2</b>           | 3           | 3           | 3           | 3           | 2           | 3          | 2          | 3          | 3          | 2          |
| <b>CO3</b>           | 3           | 3           | 3           | 3           | 3           | 3          | 2          | 3          | 3          | 2          |
| <b>CO4</b>           | 3           | 3           | 3           | 3           | 2           | 3          | 2          | 3          | 3          | 2          |
| <b>CO5</b>           | 3           | 3           | 3           | 3           | 3           | 3          | 2          | 3          | 3          | 2          |

“1”–Slight (Low) Correlation “2”– Moderate (Medium) Correlation

“3”–Substantial (High) Correlation “-”indicates there is no correlation.

## Syllabus

| UNIT | CONTENT  | HOURS | COs                   | COGNITIVE LEVEL    |
|------|--|-------|-----------------------|--------------------|
| I    | Introduction to computerized Accounting – Features – Advantages – Manual Accounting Vs .Computerized Accounting – Accounting transaction.  | 9     | CO1,CO2, CO3,CO4, CO5 | K1, K2, K3, K4, K5 |
| II   | Introduction to Tally ERP 9 – Features of Tally – Creation of Company – Selecting a Company – Altering / Modifying existing company – Configuration of Tally – Tally screen and Menu – Accounting Features – Accounting Groups – User defined groups – Ledger creation, alteration and deletion              | 9     | CO1,CO2, CO3,CO4, CO5 | K1, K2, K3, K4, K5 |
| III  | Accounting vouchers – inventory vouchers – invoicing – optional & non-accounting voucher – order processing – advanced Voucher entry.  | 9     | CO1,CO2, CO3,CO4, CO5 | K1, K2, K3, K4, K5 |
| IV   | Introduction to Cost – Creation of cost Categories – Creation of Cost Centre– Editing – Deleting – Usage of Cost Category and Cost Centres in voucher entry – Inventory Information: Stock Groups – StockCategories – Godowns – Unit Of Measure – Stock Items – Purchase orders and Sales orders processing. | 9     | CO1,CO2, CO3,CO4, CO5 | K1, K2, K3, K4, K5 |
| V    | Goods and Service Tax (GST): GST Concepts – Enabling GST – Configuring Master with GST Details – GST Reports   | 9     | CO1,CO2, CO3,CO4, CO5 | K1, K2, K3, K4, K5 |
| VI   | <b>Self-Study for Enrichment (Not to be included for End Semester Examination)</b><br>Journal Entry – Ledgers – Trial Balance – Balance Sheet - Adjustments  | -     | CO1,CO2, CO3,CO4, CO5 | K1, K2, K3, K4, K5 |

### LIST OF PRACTICALS

1. Creation, alteration and deletion of companies and user defined accounting groups.
2. Creation, alteration and deletion of ledger Accounts.
3. Preparation of Final Accounts with adjustments.
4. Voucher entries in double entry mode.
5. Creation, alteration and deletion of inventory masters.
6. Creation of Inventory Reports
7. Creation of GST Registration

### **Text Books**

1. V. SrinivasaVallabhan (2014). *Computer Applications in Business*, SultanChand & Sons
2. A.K. Nadhani(2015), *Computer Application by Implementing Tally ERP*, BPB Publications,Chennai.
3. Mohan Kumar K, Rajkumar.S.(2019). *Computer applications in business*. Revised Edition. Tata McGraw Hill Education

### **Reference Books**

1. Ashok K. Nadhani, “TALLY ERP 9 TRAINING GUIDE - 4TH REVISED & UPDATED EDITION”, January 2018.
2. Official guide to financial accounting using TALLY ERP 9 with GST, TallyEducation P. Ltd.
3. Chadwick, L, “The Essence of Financial Accounting”, PHI, 2nd Edition.

### **Web References**

1. <https://gstcentre.in/gst-in-tally-erp-9.php#collapseOne>
2. <http://www.tallysolutions.com>
3. [https://help.tallysolutions.com/docs/te9rel66/Job\\_Work/#gref](https://help.tallysolutions.com/docs/te9rel66/Job_Work/#gref)
4. <https://www.tallyofficialbooks.com/>
5. <https://ncsmindia.com/wp-content/uploads/2012/04/TALLY-9.0-PDF.pdf>.

### **Pedagogy**

Lecture and Lab demonstration

### **Course Designer**

Ms. S. Praveena



| Semester III | Internal Marks: 25 |          | External Marks:75 |         |
|--------------|--------------------|----------|-------------------|---------|
| COURSE CODE  | COURSE TITLE       | CATEGORY | HRS /WEEK         | CREDITS |
| 22UITGEC1    | WEB DESIGN         | GEC      | 2                 | 2       |

### Course Objectives

- To get familiar of basics and commands of HTML
- To acquire knowledge and skills for creation of web page
- To gain ability to develop responsive web applications

### Course Outcomes

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

| CO Number | CO Statements   | Cognitive Level |
|-----------|---|-----------------|
| CO1       | Understand the basic commands of HTML   | K1              |
| CO2       | Illustrate the basic structure of HTML document and the methods to create, save and open it.                  | K2              |
| CO3       | Apply HTML commands to use various events and elements like Text, Media, Tables, Lists, Images in a web page  | K3              |
| CO4       | Analyze the method of creating a web page with different events and elements including images and hyperlinks. | K4              |
| CO5       | Inspect a web page with various commands and interactive elements of HTML                                     | K4              |

### Mapping of CO with PO and PSO

| Cos | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PO1 | PO2 | PO3 | PO4 | PO5 |
|-----|------|------|------|------|------|-----|-----|-----|-----|-----|
| CO1 | 3    | 1    | 2    | 2    | 2    | 2   | 2   | 2   | 1   | 1   |
| CO2 | 3    | 2    | 2    | 3    | 3    | 2   | 3   | 2   | 2   | 2   |
| CO3 | 3    | 2    | 3    | 2    | 3    | 3   | 3   | 3   | 3   | 3   |
| CO4 | 3    | 3    | 3    | 2    | 3    | 3   | 3   | 3   | 3   | 3   |
| CO5 | 3    | 3    | 3    | 2    | 3    | 3   | 3   | 2   | 3   | 3   |

“1” - Slight (Low) Correlation

“3” - Substantial (High) Correlation

“2” - Moderate (Medium) Correlation

“-” – Indicates there is no Correlation

## Syllabus

| UNIT | CONTENT   | HOURS | COs                                 | COGNITIVE LEVEL         |
|------|---|-------|-------------------------------------|-------------------------|
| I    | <b>Getting started with HTML 5:</b> Defining HTML Markup – Basic Structure of an HTML Document – Creating and Saving a HTML document – opening the HTML document in a web browser – Modifying the background of HTML web page.  | 6     | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| II   | <b>Introduction to New Elements in HTML 5:</b> The Markup Elements – The Media Elements – The Canvas Element – The Form Element - The Input Type Attributes Values – The Window Event Attributes – The Form Events – The Mouse Events – The Media Events.   | 6     | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| III  | <b>Working with Text:</b> Adding Plain Text to an HTML Web page – Adding Text in a New line – Creating Headings – Creating Paragraph – Creating Horizontal Rule –Creating Subscript and Superscript – Aligning, Formatting and Grouping the Text - <b>Working with Lists, Tables and Frames:</b> Working with Lists:- Unordered – Ordered – Definition Lists. | 6     | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| IV   | <b>Working with Lists, Tables and Frames:</b> Working with Tables: Creation – Specifying a Caption to a Table – Adding Table Heading – Table Border – Aligning a Table and Cell content – Setting the Width of a Table and Table Columns – Changing the Background Color of a Table - Cell Padding – Cell Spacing – Spanning Rows and Columns.                | 6     | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |

|    |   |   |                                     |                         |
|----|---|---|-------------------------------------|-------------------------|
| V  | <b>Working with Hyperlinks, Images and Multimedia:</b> – Hyper links: Creating a Hyperlink – Setting the Hyperlink Color – Linking different Sections of a Web page - Working with Images: Inserting an Image – Displaying Alternate Text from an Image – Aligning an Image – Using Images as Links – Image Maps. | 6 | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |
| VI | <b>Self Study for Enrichment</b><br><b>(Not included for End Semester Examinations)</b><br>Internet, Uses of Internet, Web pages and Website.   | - | CO1,<br>CO2,<br>CO3,<br>CO4,<br>CO5 | K1,<br>K2,<br>K3,<br>K4 |

### **Text Book**

1. Kogent Learning Solutions , *HTML 5 in Simple Steps*, Dream Tech Press, 2010

### **Reference Book**

1. O. H. U. Heathcote, Basics Of Internet 3rd Edition; Payne Gallway Publisher Limited, 2003

### **Web References**

- <https://www.w3schools.com/html/>
- <https://www.tutorialspoint.com/html/index.htm>

### **Pedagogy**

Chalk and talk, Power Point Presentation, E-Content

### **Course Designer**

Dr. S. Latha, Associate Professor, Department of Information Technology.