**ANNAMALAI UNIVERSITY**

**Affiliated Colleges**

**111. B.Com – Computer Application**

Programme Structure and Scheme of Examination (under CBCS)

(Applicable to the candidates admitted from the academic year 2023 -2024 onwards)

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| --- | --- | --- | --- | --- | --- |
| Course Code | Part | Study Components & Course Title | Credit | Hours/Week | Maximum Marks |
| CIA | ESE | Total |
|  |  | SEMESTER – I |  |  |  |  |  |
| 23UTAML1123UHINL1123UFREL11 | I | Language – I பொது தமிழ்- I Hindi-IFrench-I | 3 | 6 | 25 | 75 | 100 |
| 23UENGL12 | II | General English – I | 3 | 6 | 25 | 75 | 100 |
| 23UCOAC13 | III | Core – I : Financial Accounting I | 5 | 5 | 25 | 75 | 100 |
| 23UCOAC14 | Core –II : Principles of Management | 5 | 5 | 25 | 75 | 100 |
| 23UCOAE15-123UCOAE15-223UCOAE15-3 | Elective - IProgramming in C and Lab/Python Programming and Lab/Computer Fundamentals  | 3 | 4 | 25 | 75 | 100 |
| 23UTAMB16/23UTAMA16 | IV | Skill Enhancement Course – 1(NME-I) /\* Basic Tamil – I / Advanced Tamil – I  | 2 | 2 | 25 | 75 | 100 |
| 23UCOMF17 | Foundation Course:Fundamentals of Business Studies | 2 | 2 | 25 | 75 | 100 |
|  |  | Total | 23 | 30 |  |  | 700 |
|  |  | SEMESTER – II |  |  |  |  |  |
| 23UTAML2123UTAML2123UTAML21 | I | Language – Iபொது தமிழ் -II: தமிழிலக்கிய வரலாறு-2/Hindi-IIFrench-II | 3 | 6 | 25 | 75 | 100 |
| 23UENGL22 | II | General English – II | 3 | 6 | 25 | 75 | 100 |
| 23UCOAC23 | III | Core – I : Financial Accounting II | 5 | 5 | 25 | 75 | 100 |
| 23UCOAC24 | Core –II : Business Law | 5 | 5 | 25 | 75 | 100 |
| 23UCOAE25-123UCOAE25-223UCOAE25-3 | Elective - IOffice Automation and Lab/ (Evaluation Theory Only)Programming in C++ and Lab/Information and Cyber Laws | 3 | 4 | 25 | 75 | 100 |
| 23UTAMB26/23UTAMA26 | IV | Skill Enhancement Course – 2 (NME-II) /\* Basic Tamil – II / Advanced Tamil – II  | 2 | 2 | 25 | 75 | 100 |
| 23USECG27 | Skill Enhancement Course – 3Internet and its Applications (Common Paper) | 2 | 2 | 25 | 75 | 100 |
|  |  | Total | 23 | 30 |  |  | 700 |

**List of Non-Major Elective Courses Offered to Other Departments**

|  |  |  |  |  |  |  |  |
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| **Semester** | **Course Code** | **Course Title** | **H/W** | **C** | **CIA** | **ESE** | **Total** |
| I | 23UCOAN16 | Digital Banking | 2 | 2 | 25 | 75 | 100 |
| II | 23UCOAN26 | Fundamentals of Fintech | 2 | 2 | 25 | 75 | 100 |

\* PART-IV: NME / Basic Tamil / Advanced Tamil (Any one)

Students who have not studied Tamil upto 12th Standardand have taken any Language other than Tamil in Part-I, must choose Basic Tamil-I in First Semester & Basic Tamil-II in Second Semester.

Students who have studied Tamil upto 10th & 12th Standardand have taken any Language other than Tamil in Part-I, must choose Advanced Tamil-I in First Semester and Advanced Tamil-II in Second Semester.

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| **Methods of Evaluation** |
| **Internal Evaluation** | Continuous Internal Assessment Test | 25 Marks |
| Assignments |
| Seminars |
| Attendance and Class Participation |
| **External Evaluation** | End Semester Examination | 75 Marks |
|  | Total | 100 Marks |
| **Methods of Assessment** |
| **Recall (K1)** | Simple definitions, MCQ, Recall steps, Concept definitions |
| **Understand/ Comprehend (K2)** | MCQ, True/False, Short essays, Concept explanations, Short summary oroverview |
| **Application (K3)** | Suggest idea/concept with examples, Suggest formulae, Solve problems,Observe, Explain |
| **Analyze (K4)** | Problem-solving questions, Finish a procedure in many steps, Differentiate |
|  | between various ideas, Map knowledge |
| **Evaluate (K5)** | Longer essay/ Evaluation essay, Critique or justify with pros and cons |
| **Create (K6)** | Check knowledge in specific or offbeat situations, Discussion, Debating orPresentations |

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| **Semester- I** | பொது தமிழ்- I | **L** | **T** | **P** | **C** |
| **23UTAML11-I** | **6** |  |  | **3** |

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| **Semester- I** | **GENERAL ENGLISH - I** | **L** | **T** | **P** | **C** |
| **23UENGL12** | **6** |  |  | **3** |

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| **Semester - I** | **CORE- I****FINANCIAL ACCOUNTING-I** | **L** | **T** | **P** | **C** |
| **23UCOAC13** | **5** |  |  | **5** |

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| Learning Objectives:  |
| LO1:  | To understand the basic accounting concepts and standards. |
| LO2: | To know the basis for calculating business profits. |
| LO3:  | To familiarize with the accounting treatment of depreciation. |
| LO4: | To learn the methods of calculating profit for single entry system. |
| LO5:  | To gain knowledge on the accounting treatment of insurance claims. |

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| Course Outcomes: |
|  | After the successful completion of the course, the students will be able to: |
| CO1: | Remember the concept of rectification of errors and Bank reconciliation statements |
| CO2: | Apply the knowledge in preparing detailed accounts of sole trading concerns  |
| CO3: | Analyse the various methods of providing depreciation |
| CO4: | Evaluate the methods of calculation of profit |
| CO5: | Determine the royalty accounting treatment and claims from insurance companies in case of loss of stock.  |

**Unit I : Fundamentals of Financial Accounting**

Financial Accounting – Meaning, Definition, Objectives, Basic Accounting Concepts and Conventions - Journal, Ledger Accounts– Subsidiary Books –– Trial Balance - Classification of Errors – Rectification of Errors – Preparation of Suspense Account – Need and Preparation - Bank Reconciliation Statement.

**Unit II: Final Accounts**

Final Accounts of Sole Trading Concern- Capital and Revenue Expenditure and Receipts – Preparation of Trading, Profit and Loss Account and Balance Sheet with Adjustments.

**Unit III: Depreciation and Bills of Exchange**

Depreciation - Meaning – Objectives – Accounting Treatments - Types - Straight Line Method – Diminishing Balance method – Conversion method.

Annuity Method – Depreciation Fund Method – Insurance Policy Method – Revaluation Method – Depletion Method – Sum of Digits Method – Machine Hour Rate Method .

**Bills of Exchange** – Definition – Specimens – Discounting of Bills – Endorsement of Bill – Collection – Noting – Renewal – Retirement of

Incomplete Records -Meaning and Features - Limitations - Difference between Incomplete Records and Double Entry System -

**Unit IV: Accounting from Incomplete Records**

Methods of Calculation of Profit - Statement of Affairs Method – Preparation of final statements by Conversion method. Bill under rebate – Insolvency of Acceptor – Accommodation.

Average Due Date and Account Current.

**Unit V: Royalty and Insurance of Claims**

Meaning – Minimum Rent – Short Working – Recoupment of Short Working – Lessor and Lessee – Sublease – Accounting Treatment

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| **Recent Trends in Financial Accounting** |
| Faculty member will impart the knowledge on recent trends in Financial Accounting to the students and these components will not cover in the examination. |

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| **Text Books:** |
| 1. | S. P. Jain and K. L. Narang 2023 Financial Accounting- I, Kalyani Publishers, New Delhi. |
| 2. | S.N. Maheshwari, 2023 Financial Accounting, Vikas Publications, Noida.  |
| 3. | Shukla Grewal and Gupta,2023 “Advanced Accounts”, volume 1, S.Chand and Sons, New Delhi. |
| 4. | Radhaswamy and R.L. Gupta: 2023 Advanced Accounting, Sultan Chand, New Delhi. |
| 5. | R.L. Gupta and V.K. Gupta, 2023 “Financial Accounting”, Sultan Chand, New Delhi. |

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| **Supplementary Readings:** |
| 1. | Dr. Arulanandan and Raman: 2022 Advanced Accountancy, Himalaya Publications, Mumbai. |
| 2. | Tulsian , 2022 Advanced Accounting, Tata McGraw Hills, Noida. |
| 3. | Charumathi and Vinayagam, 2023 Financial Accounting, S.Chand and Sons, New Delhi. |
| 4. | Goyal and Tiwari,2023 Financial Accounting, Taxmann Publications, New Delhi. |
| 5. | Robert N Anthony, David Hawkins, Kenneth A. 2023 Merchant, Accounting: Text and Cases. McGraw-Hill Education, Noida. |

**NOTE: Latest Edition of Textbooks May be Used**

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| **Web Reference:** |
| 1. | <https://www.slideshare.net/mcsharma1/accounting-for-depreciation-1> |
| 2. | <https://www.slideshare.net/ramusakha/basics-of-financial-accounting> |
| 3. | <https://www.accountingtools.com/articles/what-is-a-single-entry-system.html> |

**NOTE: Latest Edition of Textbooks May be Used**

**Outcome Mapping**

|  |  |  |
| --- | --- | --- |
|  | **Programme Outcomes** | **Programme Specific Outcomes** |
| **CO** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **1** | **2** | **3** | **4** | **5** | **6** |
| **CO1** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | 3 | **3** | **3** | **3** | **3** | **3** | **3** | 2 |
| **CO2** | **3** | **3** | 3 | **3** | **3** | **3** | **3** | 3 | **3** | **3** | 2 | 3 | **3** | **3** | **3** | **3** | 3 | 1 |
| **CO3** | **3** | **3** | 3 | **3** | **3** | **3** | **3** | 3 | **3** | **3** | 1 | 3 | **3** | **3** | **3** | **3** | 3 | 2 |
| **CO4** | **3** | **3** | 3 | **3** | **3** | **3** | **3** | 3 | **3** | **3** | 2 | 3 | **3** | **3** | **3** | **3** | 3 | 2 |
| **CO5** | **3** | **3** | 3 | **3** | **3** | **3** | **3** | 3 | **3** | **3** | 2 | 3 | **3** | **3** | **3** | **3** | 3 | 2 |

**\*3**– Strong, **2**- Medium, **1**- Low

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| **Semester - I** | **CORE - II****PRINCIPLES OF MANAGEMENT** | **L** | **T** | **P** | **C** |
| **23UCOAC14** | **5** |  |  | **5** |

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| Learning Objectives:  |
| LO1:  | To understand the basic management concepts and functions |
| LO2: | To know the various techniques of planning and decision making |
| LO3:  | To familiarize with the concepts of organisation structure  |
| LO4: | To gain knowledge about the various components of staffing |
| LO5:  | To enable the students in understanding the control techniques of management |

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| Course Outcomes: |
|  | After the successful completion of the course, the students will be able to: |
| CO1: | Demonstrate the importance of principles of management. |
| CO2: | Paraphrase the importance of planning and decision making in an organization. |
| CO3: | Comprehend the concept of various authorizes and responsibilities of an organization. |
| CO4: | Enumerate the various methods of Performance appraisal |
| CO5: | Demonstrate the notion of directing, co-coordination and control in the management. |

**Unit I: Introduction to Management**

Meaning- Definitions – Nature and Scope - Levels of Management – Importance - Management Vs. Administration – Management: Science or Art –Evolution of Management Thoughts – F. W. Taylor, Henry Fayol,

Peter F. Drucker, Elton Mayo - Functions of Management - Trends and Challenges of Management **-** Duties & Responsibilities.

**Unit II: Planning**

Planning – Meaning – Definitions – Nature – Scope and Functions – Importance and Elements of Planning – Types – Planning Process - Tools and Techniques of Planning – Management by Objective (MBO). Decision Making: Meaning – Characteristics – Types - Steps in Decision Making – Forecasting.

**Unit III: Organizing**

Meaning - Definitions - Nature and Scope – Characteristics – Importance – Types - Formal and Informal Organization – Organization Chart – Organization Structure: Meaning and Types - Departmentalization– Authority and Responsibility – Centralization and Decentralization – Span of Managemen

**Unit IV: Staffing**

Introduction - Concept of Staffing- Staffing Process – Recruitment – Sources of Recruitment – Modern Recruitment Methods - Selection Procedure – Test- Interview– Training: Need - Types– Promotion –Management Games – Performance Appraisal - Meaning and Methods – 360 Performance Appraisal – Work from Home - Managing Work from Home [WFH].

**Unit V: Directing**

Motivation –Meaning - Theories – Communication – Types - Barriers to Communications – Measures to Overcome the Barriers. Leadership – Nature - Types and Theories of Leadership – Styles of Leadership - Qualities of a Good Leader – Successful Women Leaders. Supervision.

**Co-ordination and Control**

Co-ordination – Meaning - Techniques of Co-ordination.

Control - Characteristics - Importance – Stages in the Control Process - Requisites of Effective Control and Controlling Techniques – Management by Exception [MBE].

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| **Recent Trends in Principles of Management** |
| Faculty member will impart the knowledge on recent trends in Principles of Management to the students and these components will not cover in the examination. |

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| **Text Books:** |
| 1. | Gupta.C.B, 2022 Principles of Management-L.M. Prasad, S.Chand & Sons Co. Ltd, New Delhi. |
| 2. | DinkarPagare,2023Principles of Management, Sultan Chand & Sons Publications, New Delhi. |
| 3. | P.C.Tripathi& P.N Reddy, 2022 Principles of Management. Tata McGraw, Hill, Noida. |
| 4. | L.M. Prasad, Principles of Management, 2022 S.Chand &Sons Co. Ltd, New Delhi. |
| 5. | R.K. Sharma, Shashi K. Gupta, Rahul Sharma, 2023 Business Management, Kalyani Publications, New Delhi. |

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| **Supplementary Readings:** |
| 1. | K Sundar, 2022 Principles of Management, Vijay Nichole Imprints Limited, Chennai  |
| 2. | Harold Koontz, Heinz Weirich, 2023 Essentials of Management, McGraw Hill, Sultan Chand and Sons, New Delhi. |
| 3. | Grifffin, 2022 Management principles and applications, Cengage learning, India. |
| 4. | H.Mintzberg 2023 The Nature of Managerial Work, Harper & Row, New York. |
| 5. | Eccles, R. G. & Nohria, N. Beyond the Hype 2023 Rediscovering the Essence of Management. Boston The Harvard Business School Press, India. |
| **Web Reference:** |
| 1. | <https://www.slideshare.net/mcsharma1/accounting-for-depreciation-1> |
| 2. | <https://www.slideshare.net/ramusakha/basics-of-financial-accounting> |
|  | **NOTE: Latest Edition of Textbooks May be Used** |

**Outcome Mapping**

|  |  |  |
| --- | --- | --- |
|  | **Programme Outcomes** | **Programme Specific Outcomes** |
| **CO** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **1** | **2** | **3** | **4** | **5** | **6** |
| **CO1** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | 3 | **3** | **3** | **3** | **3** | **3** | **3** | **3** |
| **CO2** | **3** | **3** | 3 | **3** | **3** | **3** | **3** | 3 | **3** | **3** | 2 | 3 | **3** | **3** | **3** | **3** | 3 | **3** |
| **CO3** | **3** | **3** | 3 | **3** | **3** | **3** | **3** | 3 | **3** | **3** | 1 | 3 | **3** | **3** | **3** | **3** | 3 | **3** |
| **CO4** | **3** | **3** | 3 | **3** | **3** | **3** | **3** | 3 | **3** | **3** | 2 | 3 | **3** | **3** | **3** | **3** | 3 | **3** |
| **CO5** | **2** | 2 | **2** | **2** | **2** | **2** | **3** | **3** | **2** | **2** | **2** | **3** | 3 | **2** | **2** | **2** | **2** | **2** |

**\*3**– Strong, **2**- Medium, **1**- Low

**FIRST YEAR – SEMESTER – I**

**DEPARTMETAL ELECTIVE- I: PROGRAMMING IN C AND LAB**

| **Subject Code** | **L** | **T** | **P** | **S** | **Credits** | **Inst. Hours** | **Marks** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CIA** | **External** | **Total** |
| **23UCOAE15-1** | **4** |  | **2** |  | **3** | **4** | **25** | **75** | **100** |
| **Learning Objectives** |
| **LO1** | Describe the core syntax and semantics of C programming language.  |
| **LO2** | Discover the need for working with the strings and functions.  |
| **LO3** | Illustrate the process of structuring the data using matrix, struct . |
| **Prerequisites: Should have studied Commerce in XII Std** |
| **Unit** | **Contents** | **No. of Hours** |
| I | Introduction to C Language:C Language Introduction-Features of C Language-Benefits of C over other languages-Compilation of C Program-First Program in CPre-processor in CPre-processor directives |  |
| II | Variables, Data Types & Operators:Variables and Keywords in C-Scope rules in C-Data Types in C-Operators & Its Types-Typecasting in C |  |
| III | Control Flow Statements:Decision Making Statements-Switch Statement in C-C Loops & Control Structure Practice problems-Continue Statement , Break StatementArray & String Handling in C:Arrays in C-Strings in C |  |
| IV | Multidimensional Arrays in C-String functions in C- Practice problemsFunctions in C:Function Prototype-Parameter Passing Techniques in C-Storage Classes in C-Recursion Concept -Functions in CPractice problems |  |
| V | Pointers, Structures, and Unions:Pointers in C-Structures- Union - Enumeration (or enum) in C- Pointer vs Array in C – C application programs (Sorting, Matrix manipulations, student’s mark list preparation) |  |
|  | **Total** |  |
| **Course Outcomes** |
| **CO1** | Apply the concept of Control Structures to solve any given problem. |
| **CO2** | Apply the concept of single and multi-dimensional arrays to solve problems related to searching, sorting and matrix operations. |
| **CO3** | Apply the concept of Strings for writing programs related to character array. |
| **CO4** | Write programs using concept of user defined and recursive functions. |
| **CO5** | Apply concept of structures to write programs. |
| **Textbooks** |
| 1 | E. Balaguruswamy, “Programming in ANSI C”, 8th Edition, 2019, McGraw Hill Education, ISBN:978-93-5316-513-0. |
| 2 | Pradip Dey, Manas Ghosh, “Programming in C”, 2nd Edition, 2018, Oxford UniversityPress, ISBN: 978-01-9949-147-6. |
| 3 | Kernighan B.W and Dennis M. Ritchie, “The C Programming Language”, 2nd Edition,2015, Pearson Education India, ISBN: 978-93-3254-944-9. |
| **Reference Books** |
| 1 | Yashavant P. Kanetkar, “Let Us C”, 16th Edition, 2019, BPB Publications, ISBN: 978- 93-8728-449-4. |
| 2 | Jacqueline A Jones and Keith Harrow, “Problem Solving with C”, Pearson Education.ISBN: 978-93-325-3800-9. |
| 3 | Dr. Guruprasad Nagraj, “C Programming for Problem Solving”, Himalaya PublishingHouse. ISBN-978-93-5299-361-1. |
| **NOTE: Latest Edition of Textbooks May be Used** |

| **Web Resources** |
| --- |
| 1 | http://elearning.vtu.ac.in/econtent/courses/video/BS/14CPL16.html |
| 2 | https://nptel.ac.in/courses/106/105/106105171/ |

**FIRST YEAR – SEMESTER – I**

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| **C Programming Lab** |  |
| **Learning Objectives:** (for teachers: what they have to do in the class/lab/field)* Understand problem statements and identify appropriate solutions.
* Demonstrate the use of IDE and C Compiler.
* Develop programs using C Programming Language.
 |
| **Course Outcomes:** (for students: To know what they are going to learn)**CO1:** Apply the concept of Control Structures to solve any given problem.**CO2:** Apply the concept of single and multi-dimensional arrays to solve problems related to searching, sorting and matrix operations.**CO3:** Apply the concept of Strings for writing programs related to character array. **CO4:** Write programs using concept of user defined and recursive functions. **CO5:** Apply concept of structures to write programs. |

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| **List of Programs**  |
| 1. Write a C program to find roots of a Quadratic equation.
2. Write a C program to find the total no. of digits and the sum of individual digits of a positive integer.
3. Write a C program to generate the Fibonacci sequence of first N numbers.
4. Write a C program to sum the series S=1 – x + (x^2/2!) - (x^3/3!) + ---- - (x^n/n!)
5. Write a C program to arrange the elements of an integer array using Bubble Sort algorithm.
6. Write a C program to input two matrices and perform matrix multiplication on them
7. Write a C program to check whether the given string is palindrome or not without using Library functions.
8. Write a C program to count the number of lines, words and characters in a given text.
9. Write a C program to generate Prime numbers in a given range using user defined function.
10. Write a C program to find factorial of a given number using recursive function.
11. Write a C program to maintain a record of n student details using an array of structures with four fields - Roll number, Name, Marks and Grade. Calculate the Grade according to the following conditions.

Marks Grade >=80 A >=60 B >=50 C >=40 D <40 E Print the details of the student, given the student Roll number as input. |

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| Extended Professional Component  | Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC –CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour) |
| Skills acquired from thecourse | Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill |
| **Text Books:**E. Balaguruswamy, “Programming in ANSI C”, 8th Edition, 2019, McGraw Hill Education, ISBN:978-93-5316-513-0.**Reference Books:**1. Pradip Dey, Manas Ghosh, “Programming in C”, 2nd Edition, 2018, Oxford UniversityPress, ISBN: 978-01-9949-147-6.2. Kernighan B.W and Dennis M. Ritchie, “The C Programming Language”, 2nd Edition,2015, Pearson Education India, ISBN: 978-93-3254-944-9.3. Yashavant P. Kanetkar, “Let Us C”, 16th Edition, 2019, BPB Publications, ISBN: 978- 93-8728-449-4.4. Jacqueline A Jones and Keith Harrow, “Problem Solving with C”, Pearson Education.ISBN: 978-93-325-3800-9.5. Dr. Guruprasad Nagraj, “C Programming for Problem Solving”, Himalaya PublishingHouse. ISBN-978-93-5299-361-1.**Weblinks and Video Lectures (e-Resources):**1. http://elearning.vtu.ac.in/econtent/courses/video/BS/14CPL16.html2. https://nptel.ac.in/courses/106/105/106105171/ |

**FIRST YEAR – SEMESTER - I**

**DEPARTMETAL ELECTIVE - I: PYTHON PROGRAMMING AND LAB**

| **Subject Code** | **L** | **T** | **P** | **S** | **Credits** | **Inst. Hours** | **Marks** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CIA** | **External** | **Total** |
| **23UC0AE15-2** | **4** |  | **2** |  | **3** | **4** | **25** | **75** | **100** |
| **Learning Objectives** |
| **LO1** | Describe the core syntax and semantics of Python programming language. |
| **LO2** | Discover the need for working with the strings and functions.  |
| **LO3** | Illustrate the process of structuring the data using lists, dictionaries, tuples and sets. |
| **LO4** | Understand the usage of packages and Dictionaries |
| **Prerequisites: Should have studied Commerce in XII Std** |
| **Unit** | **Contents** | **No. of Hours** |
| I | Introduction: Computer algorithms-Computer Hardware-Computer Software-Python programming language - Literals - Variables and Identifiers - Operators - Expressions and Data types, Input / output |  |
| II | Control Structures: Boolean Expressions - Selection Control - If Statement- Indentation in Python- Multi-Way Selection -- Iterative Control- While Statement- Infinite loops- Definite vs. Indefinite Loops- Boolean Flag. String, List and Dictionary, Manipulations Building blocks of python programs,Understanding and using ranges. |  |
| III | Functions: Program Routines- Defining Functions- More on Functions: Calling Value-Returning Functions- Calling Non-Value-Returning Functions- Parameter Passing - Keyword Arguments in Python - Default Arguments in Python-Variable Scope. Recursion: Recursive Functions |  |
| IV | Objects and their use: Software Objects - Turtle Graphics – Turtle attributes-Modular Design: Modules - Top-Down Design - Python Modules -  |  |
| V | Dictionaries and Sets: Dictionary type in Python - Set Data type. Text Files: Opening, reading and writing text files – Exception Handling |  |
|  | **Total** |  |
| **Course Outcomes** |
| **CO1** | Develop and execute simple Python programs |
| **CO2** | Write simple Python programs using conditionals and looping for solving problems |
| **CO3** | Decompose a Python program into functions |
| **CO4** | Represent compound data using Python lists, tuples, dictionaries etc. |
| **Textbooks** |
| 1 | Charles Dierbach, “Introduction to Computer Science using Python - A computational Problem-solving Focus”, Wiley India Edition, 2015. |
| 2 | Wesley J. Chun, “Core Python Applications Programming”, 3rd Edition , Pearson Education, 2016 |
| 3 | Mark Lutz, “Learning Python Powerful Object Oriented Programming”, O’reilly Media 2018, 5th     Edition.  |
| **Reference Books** |
| 1 | Timothy A. Budd, “Exploring Python”, Tata MCGraw Hill Education Private Limited 2011, 1 st     Edition.  |
| 2 | John Zelle, “Python Programming: An Introduction to Computer Science”, Second edition, Course     Technology Cengage Learning Publications, 2013, ISBN 978- 1590282410 |
| 3 | Michel Dawson, “Python Programming for Absolute Beginers” , Third Edition, Course Technology     Cengage Learning Publications, 2013, ISBN 978-1435455009 |
| **NOTE: Latest Edition of Textbooks May be Used** |
| **Web Resources** |
| 1 | https://onlinecourses.swayam2.ac.in/cec22\_cs20/preview  |

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| **Python Programming Lab** |  |
| **Learning Objectives:** (for teachers: what they have to do in the class/lab/field)* Acquire programming skills in core Python.
* Acquire Object-oriented programming skills in Python.
* Develop the skill of designing graphical-user interfaces (GUI) in Python.
* Develop the ability to write database applications in Python.
* Acquire Python programming skills to move into specific branches
 |
| **Course Outcomes:** (for students: To know what they are going to learn)**CO1:** To understand the problem solving approaches**CO2:** To learn the basic programming constructs in Python**CO3:** To practice various computing strategies for Python-based solutions to real world problems**CO4:** To use Python data structures - lists, tuples, dictionaries. |

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| **List of Programs**  |
| 1. Program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user’s choice.
2. Write a Python program to construct the following pattern, using a nested loop

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*1. Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the five subjects are to be input by user. Assign grades according to the following criteria:

Grade A: Percentage >=80              Grade B: Percentage >=70 and 80Grade C: Percentage >=60 and <70     Grade D: Percentage >=40 and <60Grade E: Percentage < 401. Program, to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
2. Write a Python script that prints prime numbers less than 20.
3. Program to find factorial of the given number using recursive function.
4. Write a Python program to count the number of even and odd numbers from array of N numbers.
5. Write a Python class to reverse a string word by word.
6. Read a file content and copy only the contents at odd lines into a new file.
7. Create a Turtle graphics window with specific size.
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| Extended Professional Component  | Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC –CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour) |
| Skills acquired from thecourse | Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill |
| **Learning Resources:*** **Recommended Texts**

1. Charles Dierbach, “Introduction to Computer Science using Python - A computational Problem-solving Focus”, Wiley India Edition, 2015.2. Wesley J. Chun, “Core Python Applications Programming”, 3rd Edition , Pearson Education, 2016* **Reference Books**
1. Mark Lutz, “Learning Python Powerful Object Oriented Programming”, O’reilly Media 2018, 5th     Edition.
2. Timothy A. Budd, “Exploring Python”, Tata MCGraw Hill Education Private Limited 2011, 1 st     Edition.
3. John Zelle, “Python Programming: An Introduction to Computer Science”, Second edition, Course     Technology Cengage Learning Publications, 2013, ISBN 978- 1590282410
4. Michel Dawson, “Python Programming for Absolute Beginers” , Third Edition, Course Technology     Cengage Learning Publications, 2013, ISBN 978-1435455009
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**FIRST YEAR – SEMESTER – I**

**DEPARTMETAL ELECTIVE - I - Computer Fundamentals**

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| **Subject Code** | **L** | **T** | **P** | **S** | **Credits** | **Inst. Hours** | **Marks** |
| **CIA** | **External** | **Total** |
| **23UCOAE15-3** | **4** |  |  |  | **3** | **4** | **25** | **75** | **100** |
| **Learning Objectives**  |
| **LO1** | To Impart the Knowledge of Fundamentals of Computers. |
| **LO2** | To discover the Knowledge of newly invented devices and Units |
| **LO3** | To compute with the interconnected networks for the linkage of Worldwide Networks. |
| **LO4** | To apply the software and understand the system software |
| **LO5** | To given more information on the Internet |
| **Prerequisite: Should have studied Commerce in XII Std** |
| **Unit** | **Contents** | **No. of Hours** |
| I | Evolution of Computers - Generations, Types of computers, Computer system characteristics, Basic components of a Digital Computer - Control unit, ALU, Input/Output functions and memory, Memory addressing capability of a CPU, Word length of a computer, processing speed of a computer, Computer Classification.  | **12** |
| II | Input/Output Units-: Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Monitors and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Dot Pitch, Video Standard - VGA, SVGA, XGA etc., Printers & types - Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers.  | **12** |
| III | Memory - RAM, ROM, EPROM, PROM and other types of memory, Storage fundamentals - Primary Vs Secondary Data Storage, Various Storage Devices - Magnetic Tape, Magnetic Disks, Cartridge Tape, Hard Disk Drives, Floppy Disks (Winchester Disk), Optical Disks, CD, VCD, CDR, CD-RW, Zip Drive, flash drives Video Disk, Blue Ray Disc, SD/MMC Memory cards, Physical structure of floppy & hard disk, drive naming conventions in PC. DVD, DVD-RW, USB Pen drive. | **12** |
| IV | Software and its Need, Types of Software - System software, Application software, System Software - Operating System, Utility Program, Algorithms, Flow Charts - Symbols, Rules for making Flow chart, Programming languages, Assemblers, Compilers and Interpreter, Computer Applications in Business.  | **12** |
| V | Introduction to Internet, connecting to the Internet Hardware, Software & ISPs, Search Engines, Web Portals, Online Shopping, Email – Types of email, Compose and send a message. Reply to a message, Working with emails. | **12** |
|  | **TOTAL** | **60** |
| **CO** | **Course Outcomes** |
| **CO1** | Illustrate the different types of computers |
| **CO2** | Extracting the nature of Input and Output Devices |
| **CO3** | Differentiate the types of Memory |
| **CO4** | Determine system software and Explain the Structure of Algorithms, Programs and Flowcharts |
| **CO5** | Scholastic Representation of Web Portals, Search Engines |
| **Textbooks** |
| 1 | B. Ram, “Computer Fundamentals, Architecture and Organization”, New Age International Publishers |
| 2 | S.K.Basandra, “Computers Today “, Galgotia Publications. |
| 3 | P.K. Sinha, “Computer Fundamentals – P. K. Sinha – BPB Publication |
| **Reference Books** |
| 1 | T. C.Bartee, “Digital Computer Fundamentals”, Sixth Edition, 1991,TMH. |
| 2 | Anita Goel, Computer Fundamentals, Pearson Publications,  |
| 3 | Ramesh Bangia, Computer Fundamentals and information technology, Firewall Media Publications |
| **NOTE: Latest Edition of Textbooks May be Used** |
| **Web Resources** |
| 1 | https://books.google.co.in/books?id=ICjqr6V9S6UC&printsec=frontcover#v=onepage&q&f=false |
| 2 | <https://www.google.co.in/books/edition/COMPUTER_FUNDAMENTALS_SEMESTER_1/sb>f0wQEACAAJ?hl=en |
| 3 | <https://www.google.co.in/books/edition/Computer_Fundamentals/zyOYs2EqZDgC?hl=en&>gbpv=1&dq=computer%20fundamentals&pg=PR6&printsec=frontcover |

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| **Semester - I** | **SKILL ENHANCEMENT COURSE –1****( NME-I )****DIGITAL BANKING** | **L** | **T** | **P** | **C** |
| **23UCOAN16** | **2** |  |  | **2** |

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| **Learning Objectives:** |
| **LO1:**  | To acquaint students with knowledge of Digital Banking Products. |
| **LO2:** | To enable the students to understand the knowledge of Digital Payment System |
| **LO3:**  | To impart the students to understand the new concepts of Mobile and Internet Banking  |
| **LO4:** | To enables the students to have depth knowledge in point of sale terminals |
| **LO5:**  | To understand the ATM and cash deposit system |
| **Course Outcomes:** |
|  | After the successful completion of the course, the students will be able to: |
| **CO1:** | Explain the need for digital banking products and the usageof cards. |
| **CO2:** | Classify the usage of various payment systems. |
| **CO3:** | Discuss the profitability, risk management and frauds ofmobile and internet banking. |
| **CO4:** | Analyse the approval processes of POS terminals. |
| **CO5:** | Explain the product features and services of ATM and CashDeposit Machine. |

**Unit I: Digital Banking Products**

Digital Banking –Meaning – Features - Digital Banking Products - Features - Benefits – Bank Cards –Features and Incentives of Bank cards - Types of Bank Cards - New Technologies -Europay, Master and Visa Card (EMV) - Tap and Go, Near Field Communication (NFC) etc. - Approval Processes for Bank Cards – Customer Education for Digital Banking Products -Digital Lending –Digital Lending Process- Non-Performing- Asset (NPA.

**Unit II: Payment System**

Overview of Domestic and Global Payment systems -RuPay and RuPay Secure - Immediate Payment Service (IMPS) – National Unified USSD Platform (NUUP) - National Automated Clearing House (NACH) - Aadhaar Enabled Payment System (AEPS) –Cheque Truncation System (CTS) –Real Time Gross Settlement Systems (RTGS)–National Electronic Fund Transfer(NEFT) - Innovative Banking & Payment Systems.

**Unit III**: **Mobile and Internet Banking**

Mobile & Internet Banking - Overview – Product Features and Diversity - Corporate and Individual Internet Banking Integration with e-Commerce Merchant sites, IMPS - Profitability - Risk Management and Frauds - Cyber Crime - Cyber Security - Blockchain Technology - Types - Crypto currency and Bitcoins

**Unit IV**: **Point of Sale Terminals**

Point of Sale (POS) Terminals - Overview - Features - Approval processes for POS Terminals - Key Components of POS - Hardware - Software - User Interface Design - Cloud based Point of Sale – Cloud Computing - Benefits of POS in Retail Business.

**Unit V**: **Automated Teller Machine and Cash Deposit Systems**

Automated Teller Machine(ATM) - Cash Deposit Machine(CDM)& Cash Recyclers - Overview - Features - ATM Instant Money Transfer Systems - National Financial Switch (NFS) -Various Value Added Services - Proprietary, Brown Label and White Label ATMs - ATM & CDM Network Planning - Onsite / Offsite - ATM security, Surveillance and Fraud Prevention.

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| **Recent Trends in Digital Banking**  |
| Faculty member will impart the knowledge on recent Developments in Digital Banking to the students and these components will not cover in the examination. |

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| **Text Books:** |
| 1. | IIBF, 2019.Digital Banking. Taxmann Publications, New Delhi |
| 2. | Gordon E. &Natarajan S. 2017 Banking Theory, Law and Practice. 24th Revised Edition. Himalaya Publishing House, New Delhi |
| 3. | Ravindra Kumar and Manish Deshpande. 2016 E-Banking. Pacific Books International, 2016. |
| 4. | Uppal R.K. 2017 E-Banking: The Indian Experience. Bharti Publications, 2017. |

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| **Supplementary Readings:** |
| 1. | Arunajatesan S 2017 Technology in Banking Margham Publications Chennai.. |
| 2. | Digital Banking 2016 Indian Institute of Banking and Finance, Pvt Limited New Delhi. |
| 3. | Indian Institute of Banking and Finance, 2016 ,General Bank Management, McMillan, Mumbai |
| 4. | SubbaRao S and Khanna. P.L 2014 Principles and Practice of Bank Management, Himalya Publishing House, Mumbai. |
| **Web Reference:** |
| 1 | [https://ebooks.lpude.in/commerce/bcom/term\_4/DCOM208\_BANKING\_THEORY\_AND\_PRACTI](https://ebooks.lpude.in/commerce/bcom/term_4/DCOM208_BANKING_THEORY_AND_PRACTICE.pdf) [CE.pdf](https://ebooks.lpude.in/commerce/bcom/term_4/DCOM208_BANKING_THEORY_AND_PRACTICE.pdf) |
| 2 | <http://www.himpub.com/documents/Chapter1859.pdf>. |

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| **Semester-I** | **FOUNDATION COURSE** **FUNDAMENTALS OF BUSINESS STUDIES** | **L** | **T** | **P** | **C** |
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A bridge course for the students of commerce faculty is conducted every year to get the students the knowledge of commerce faculty. The main objective of the course is to bridge the gap between subjects studied at School level and subjects they would be studying in commerce faculty. A Bridge course aims to cover the gap between the understanding level of the higher secondary school courses and higher educational courses. Bridge course is preparative course for college level course with an academic curriculum that is offered to enhance the knowledge of the students by means of preparing for the intellectual challenges of commerce subject and to know basic information about core subject.

Bridge courses are the tool to help students to success in their graduate level studies. It is also a pre requisite and foundational course to know the basic information about commerce subjects.

 **FUNDAMENTALS OF BUSINESS STUDIES**

**Objective**

The bridge course aims to act as a buffer for the new entrants with an objective to provide adequate time for the transition to hard core of degree courses. This gives them a breather, to prepare themselves before the onset of courses for first year degree programme.

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| **Course Outcomes:** |
|  | After the successful completion of the course, the students will be able to: |
| **CO1:** | To make the students familiar with the basic concepts of commerce, and Management Fields. |
| **CO2:** | To encourage and motivate the Students for the commerce Education. |
| **CO3:** | To make the students aware towards the various branches of commerce for Example, Accounts, Banking and Auditing. |

**Unit I Commerce-Introduction**

Definition of Commerce - Importance’s of Commerce -Meaning of barter system --business-industry-trade- hindrances of trade-branches of Commerce.

**Unit II Accounting-Introduction**

Book-Keeping-Meaning -Definition –Objectives- Accounting-Meaning –Definition-Objectives-Importance-Functions-Advantages- Limitations-Methodsof Accounting-Single Entry Double Entry-Steps involved in double entry system-Advantages of double entry system-Meaning of Debit and Credit-Types of Accounts and its rules-Personal Accounts-Real Accounts-Nominal Accounts.

**Unit III Marketing and Advertising**

Meaning of Marketing-Definition-Functions of Marketing- Meaning of Consumer –Standardization and Grading -Pricing –Kinds of Pricing - AGMARK-ISI-Advertising: Meaning, Characteristics, Advertising Objectives, Advertising Functions Advantages of advertising, Kinds of Advertising, Advertising Media, Kinds of media

**Unit IV Auditing & Entrepreneurial Development**

Introduction of Auditing -Origin and Evolution –Definition - Features of Auditing -Objectives of Auditing Advantages of Audit -Limitations of Auditing -Distinction between Auditing & Investigation -Distinction between Accounting &Auditing -Basic Principles of Audit -Classification of Audit- Entrepreneurial Development-Characteristics of an entrepreneur-Functions of an entrepreneur-Types of an entrepreneur -Problems of Women entrepreneur- Concept of Women Entrepreneurs

**Unit V: Income Tax Law and Practice**

Tax history-Types –Various Terms in Tax- Exempted Income U/S 10-Canons of Taxation-Income Tax Authority and Administration-Slab Rate -Filing of Returns-Residential Status.

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| **Text Books:** |
| 1. | L.M. Prasad, Principles of Manaement, 2022 S.Chand &Sons Co. Ltd, New Delhi. |
| 2. | S. P. Jain and K. L. Narang 2023 Financial Accounting- I, Kalyani Publishers, New Delhi. |
| 3. | Dr. N. Rajan Nair, 2023 Marketing, Sultan Chand & Sons. New Delhi |
| 4. | Jayashree Suresh, (Reprint 2017) Entrepreneurial Development, Margham Publications. Chennai |
| 5. | Sundar K. and Paari, 2016 Auditing Vijay Nicole, Imprints Private Ltd, Chennai. |
| 6. | T. Srinivasan 2024 Income Tax & Practice –Vijay Nicole Imprints Private Limited, Chennai. |

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| **Semester - II** | பொது தமிழ்- II | **L** | **T** | **P** | **C** |
| **23UTAML21** | **6** |  |  | **3** |

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| **Semester - II** | **GENERAL ENGLISH - II** | **L** | **T** | **P** | **C** |
| **23UENGL22** | **6** |  |  | **3** |

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| **Semester - II** | **CORE- I : FINANCIAL ACCOUNTING -II** | **L** | **T** | **P** | **C** |
| **23UCOAC23** | **5** |  |  | **5** |

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| Learning Objectives:  |
| LO1:  | The students are able to prepare different kinds of accounts such Higher purchase and Instalments System. |
| LO2: | To understand the allocation of expenses under departmental accounts |
| LO3:  | To gain an understanding about partnership accounts relating to Admission and retirement |
| LO4: | Provides knowledge to the learners regarding Partnership Accounts relating to dissolution of firm |
| LO5:  | To know the requirements of international accounting standards |

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| Course Outcomes: |
|  | After the successful completion of the course, the students will be able to: |
| CO1: | To evaluate the Hire purchase accounts and Instalment systems |
| CO2: | To prepare Branch accounts and Departmental Accounts |
| CO3: | To understand the accounting treatment for admission and retirement in partnership |
| CO4: | To know Settlement of accounts at the time of dissolution of a firm. |
| CO5: | To elaborate the role of IFRS |

**Unit I:** **Hire Purchase and Instalment System**

Hire Purchase System – Accounting Treatment – Calculation of Interest - Default and Repossession - Hire Purchase Trading Account Instalment System - Calculation of Profit

**Unit II: Branch and Departmental Accounts**

Branch – Dependent Branches: Accounting Aspects - Debtors system -Stock and Debtors system – Distinction between Wholesale Profit and Retail Profit – Independent Branches (Foreign Branches excluded) - Departmental Accounts: Basis of Allocation of Expenses – Inter- Departmental Transfer at Cost or Selling Price**.**

**Unit III: Partnership Accounts - I**

Partnership Accounts: –Admission of a Partner – Treatment of Goodwill - Calculation of Hidden Goodwill –Retirement of a Partner – Death of a Partner.

**Unit IV: Partnership Accounts - II**

 Dissolution of Partnership - Methods – Settlement of Accounts Regarding Losses and Assets – Realization account – Treatment of Goodwill – Preparation of Balance Sheet - Insolvency of a Partner – One or more Partners insolvent – All Partners insolvent - Garner Vs Murray – Accounting Treatment - Piecemeal Distribution – Surplus Capital Method – Maximum Loss Method.

 **Unit V:** **Accounting Standards for financial reporting**

Objectives and Uses of Financial Statements for Users-Role of Accounting Standards - Development of Accounting Standards in India- Requirements of International Accounting Standards - Role of Developing IFRS- IFRS Adoption or Convergence in India- Implementation Plan in India- Ind AS- An Introduction - Difference between Ind AS and IFRS.

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| **Recent Trends in Financial Accounting** |
| Faculty member will impart the knowledge on recent trends in Financial Accounting to the students and these components will not cover in the examination. |
| **Note: Question Paper shall cover 20%Theory and 80% Problems.**

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| **Text Books:** |
| 1. | S. P. Jain and K. L. Narang 2023 Financial Accounting- I, Kalyani Publishers, New Delhi. |
| 2. | S.N. Maheshwari, 2023 Financial Accounting, Vikas Publications, Noida.  |
| 3. | Shukla Grewal and Gupta,2023 “Advanced Accounts”, volume 1, S.Chand and Sons, New Delhi. |
| 4. | Radhaswamy and R.L. Gupta: 2023 Advanced Accounting, Sultan Chand, New Delhi. |
| 5. | R.L. Gupta and V.K. Gupta, 2023 “Financial Accounting”, Sultan Chand, New Delhi. |

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| **Supplementary Readings:** |
| 1. | Dr. Arulanandan and Raman: 2022 Advanced Accountancy, Himalaya Publications, Mumbai. |
| 2. | Tulsian , 2022 Advanced Accounting, Tata McGraw Hills, Noida. |
| 3. | Charumathi and Vinayagam, 2023 Financial Accounting, S.Chand and Sons, New Delhi. |
| 4. | Goyal and Tiwari,2023 Financial Accounting, Taxmann Publications, New Delhi. |
| 5. | Robert N Anthony, David Hawkins, Kenneth A. 2023 Merchant, Accounting: Text and Cases. McGraw-Hill Education, Noida.**NOTE: Latest Edition of Textbooks May be Used** |

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| **Web Reference:** |
| 1. | <https://www.slideshare.net/mcsharma1/accounting-for-depreciation-1> |
| 2. | <https://www.slideshare.net/ramusakha/basics-of-financial-accounting> |
| 3. | <https://www.accountingtools.com/articles/what-is-a-single-entry-system.html> |

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**Outcome Mapping**

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|  | **Programme Outcomes** | **Programme Specific Outcomes** |
| **CO** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **1** | **2** | **3** | **4** | **5** | **6** |
| **CO1** | **3** | **3** | **3** | **3** | **2** | **3** | **3** | **3** | **3** | **2** | 2 | 1 | 2 | **3** | **2** | 2 | 2 | 1 |
| **CO2** | **3** | **3** | 3 | **3** | **2** | **3** | **3** | 3 | **3** | **2** | 2 | 1 | 2 | **3** | **2** | 2 | 2 | 1 |
| **CO3** | **3** | **3** | 3 | **3** | **2** | **3** | **3** | 3 | **3** | **2** | 1 | 1 | 2 | **3** | **2** | 1 | 1 | 1 |
| **CO4** | **3** | **3** | 3 | **3** | **2** | **3** | **3** | 3 | **3** | **2** | 2 | 2 | 2 | **3** | **2** | 2 | 2 | 2 |
| **CO5** | **2** | **2** | **2** | **2** | **3** | **2** | **2** | **2** | **2** | **3** | 1 | 1 | 2 | **2** | **3** | 1 | 1 | 1 |

**\*3**– Strong, **2-** Medium, **1**- Low

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| **23UCOAC24** | **CORE-II: BUSINESS LAW** | **L** | **T** | **P** | **C** |
| **Semester - II** | **5** |  |  | **5** |

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| Learning Objectives:  |
| LO1:  | To know the nature and objectives of Mercantile law |
| LO2: | To understand the essentials of valid contract |
| LO3:  | To gain knowledge on performance contracts |
| LO4: | To define the concepts of Bailment and pledge |
| LO5:  | To understand the essentials of contract of sale |

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| Course Outcomes: |
|  | After the successful completion of the course, the students will be able to: |
| CO1: | Explain the Objectives and significance of Mercantile law |
| CO2: | Understand the clauses and exceptions of Indian Contract Act. |
| CO3: | Explain concepts on performance, breach and discharge of contract.  |
| CO4: | Outline the contract of indemnity and guarantee  |
| CO5: | Explain the various provisions of Sale of Goods Act 1930 |

**Unit I : Introduction**

An introduction – Definition – Objectives of Law - Law: Meaning and its Significance, Mercantile Law: Meaning, Definition, Nature, Objectives, Sources, Problems of Mercantile Law

**Unit II : Elements of Contract**

**Indian Contract Act 1872:** Definition of Contract, Essentials of Valid Contract, Classification of Contract, Offer and Acceptance – Consideration – Capacity of Contract – Free Consent - Legality of Object – Contingent Contracts – Void Contract

**Unit III: Performance Contract**

Meaning of Performance, Offer to Perform, Devolution of Joint liabilities & Rights, Time and Place of Performance, Reciprocal Promises, Assignment of Contracts - Remedies for  Breach of contract - Termination and Discharge of Contract - Quasi Contract

**Unit IV : Contract of Indemnity and Guarantee**

Contract of Indemnity and Contract of Guarantee - Extent of Surety’s Liability, Kinds of Guarantee, Rights of Surety, Discharge of Surety – Bailment and Pledge – Bailment – Concept – Essentials and Kind - Classification of Bailments, Duties and Rights of Bailor and Bailee – Law of Pledge – Meaning – Essentials of Valid Pledge, Pledge and Lien, Rights of Pawner and Pawnee.

**Unit V: Sale of Goods Act 1930**

Definition of Contract of Sale – Formation - Essentials of Contract of Sale - Conditions and Warranties - Transfer of Property – Contracts involving Sea Routes - Sale by Non-owners - Rights and duties of buyer - Rights of an Unpaid Seller

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| **Recent Amendements in Business Law** |
| Faculty member will impart the knowledge on recent Amendments in Business Law to the students and these components will not cover in the examination. |

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| **Text Books:** |
| 1. | N.D. Kapoor , 2023 Business Laws Sultan Chand and Sons, New Delhi. |
| 2. | R.S.N. Pillai 2023 Business Law, S.Chand, New Delhi. |
| 3. | M C Kuchhal & Vivek Kuchhal, 2023 Business law, S Chand Publishing, New Delhi |
| 4. | M.V. Dhandapani,2023 Business Laws, Sultan Chand and Sons, New Delhi. |
| 5. | Shusma Aurora, 2023 Business Law, Taxmann, New Delhi. |

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| **Supplementary Readings:** |
| 1. | Preethi Agarwal, 2023 Business Law, CA foundation study material, Chennai. |
| 2. | Saravanavel, Sumathi, Anu, 2023 Business Law Himalaya Publications, Mumbai. |
| 3. | Kavya and Vidhyasagar, 2023 Business Law, Nithya Publication, New Delhi. |
| 4. | D.Geet, Business Law 2023 Nirali Prakashan Publication, Pune. |
| 5. | M.R. Sreenivasan , 2023 Business Laws, Margham Publications, Chennai. |

**NOTE: Latest Edition of Textbooks May be Used**

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| **Web Reference:** |
| 1. | [www.cramerz.comwww.digitalbusinesslawgroup.com](http://www.cramerz.comwww.digitalbusinesslawgroup.com) |
| 2. | <http://swcu.libguides.com/buslaw> |
| 3. | <http://libguides.slu.edu/businesslaw> |

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**Outcome Mapping**

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|  | **Programme Outcomes** | **Programme Specific Outcomes** |
| **CO** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **1** | **2** | **3** | **4** | **5** | **6** |
| **CO1** | 3 | **3** | **3** | **3** | **3** | **2** | **3** | **3** | **3** | **3** | **2** | 2 | 1 | 2 | **3** | **2** | **2** | 2 |
| **CO2** | **2** | **3** | **3** | 3 | **3** | **2** | **3** | **3** | 3 | **3** | **2** | 2 | 1 | 2 | **3** | **2** | **2** | 2 |
| **CO3** | **2** | **3** | **3** | 3 | **3** | **2** | **3** | **3** | 3 | **3** | **2** | 1 | 1 | 2 | **3** | **2** | 1 | 2 |
| **CO4** | **2** | **3** | **3** | 3 | **3** | **2** | **3** | **3** | 3 | **3** | **2** | 2 | 2 | 2 | **3** | **2** | **2** | 2 |
| **CO5** | **2** | **2** | **2** | **2** | **2** | **3** | **2** | **2** | **2** | **2** | **3** | 1 | 1 | 2 | **2** | **3** | **2** | 2 |

**\*3**– Strong, **2-** Medium, **1**- Low

**FIRST YEAR – SEMESTER – II**

**DEPARTMENTAL Elective– II :**

**OFFICE AUTOMATION AND LAB (Evaluation Theory Only)**

| **Subject Code** | **L** | **T** | **P** | **S** | **Credits** | **Inst. Hours** | **Marks** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CIA** | **External** | **Total** |
| **23UCOAE25-1** | **2** |  | **2** |  | **3** | **4** | **25** | **75** | **100** |
| **Learning Objectives** |
| **LO1** | The major objective in introducing the Computer Skills course is to impart training for students in Microsoft Office which has different components like MS Word, MS Excel and Power point. |
| **LO2** | The course is highly practice oriented rather than regular class room teaching. |
| **LO3** | To acquire knowledge on editor, spread sheet and presentation software. |
| **Prerequisites: Should have studied Commerce in XII Std** |

| **Unit** | **Contents** | **No. of Hours** |
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| I | Introductory concepts: Hardware and Software - Memory unit – CPU-Input Devices: Key board, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating systems - Introduction to Programming Languages. |  |
| II | Word Processing: File menu operations - Editing text – tools, formatting, bullets and numbering - Spell Checker - Document formatting – Paragraph alignment, indentation, headers and footers, printing – Preview, options, merge. |  |
| III | Spreadsheets: Excel – opening, entering text and data, formatting, navigating; Formulas – entering, handling and copying |  |
| IV | Charts – creating, formatting and printing, analysis tables, preparation of financial statements, introduction to data analytics. |  |
| V | Power point: Introduction to Power point - Features – Understanding slide typecasting & viewing slides – creating slide shows. Applying special object – including objects & pictures – Slide transition – Animation effects, audio inclusion, timers. |  |
|  | **Total** |  |
| **Course Outcomes** |
| **CO1** | Understand the basics of computer systems and its components. |
| **CO2** | Understand and apply the basic concepts of a word processing package. |
| **CO3** | Understand and apply the basic concepts of electronic spreadsheet software. |
| **CO4** | Understand and apply the basic concepts of database management system. |
| **CO5** | Understand and create a presentation using PowerPoint tool. |
| **Textbooks** |
| 1 | Peter Norton, “Introduction to Computers” –Tata McGraw-Hill. |
| **Reference Books** |
| 1 | Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, “Microsoft 2003”, Tata McGraw- Hill. |
| **NOTE: Latest Edition of Textbooks May be Used** |
| **Web Resources** |
| 1 | Web content from NDL / SWAYAM or opensource web resources |

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| **Office Automation Lab** |  |
| **Learning Objectives:** (for teachers: what they have to do in the class/lab/field)Office tools course would enable the students in crafting professional word documents, excel spread sheets, power point presentations using the Microsoft suite of office tools. To familiarize the students in preparation of documents and presentations with office automation tools. |
| **Course Outcomes:** (for students: To know what they are going to learn)**CO1:** to perform documentation **CO2:** to perform accounting operations **CO3:** to perform presentation skills  |

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| **List of Programs**  |
| **Word****Word Orientation** : The instructor needs to give an overview of Microsoft word & Importance of MS Word as word Processor, Details of the four tasks and features that would be covered Using word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter. **Task 1 : Using word** to create project certificate. Features to be covered:-Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in Word. **Task 2 : Creating project** abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check , Track Changes. **Task 3 : Creating a Newsletter** : Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes and Paragraphs **Excel****Excel Orientation :**The instructor needs to tell the importance of MS Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered Excel – Accessing, overview of toolbars, saving excel files, Using help and resources {Comdex Information Technology course tool kit Vikas } **Task1: Creating a Scheduler -** Features to be covered: Gridlines, Format Cells, Summation, auto fill, Formatting Text **Task 2 : Calculations** - Features to be covered:- Cell Referencing, Formulae in excel – average, standard deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP **Task 3 : Performance Analysis** - Features to be covered:- Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting**MS Power Point****Task1 :**Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows **Task 2 :**This session helps students in making their presentations interactive. Topics covered includes: Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts **Task 3 :**Concentrating on the in and out of Microsoft power point. Helps them learn best practices in designing and preparing power point presentation. Topics covered includes :- Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background, textures, Design Templates, Hidden slides.Auto content wizard, Slide Transition, Custom Animation, Auto Rehearsing  |

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| Extended Professional Component  | Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC –CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour) |
| Skills acquired from thecourse | Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill |
| 1. Comdex Information Technology course tool kit Vikas Gupta, WILEY Dreamtech,2005 2. The Complete Computer upgrade and repair book,3rd edition Cheryl A Schmidt, WILEY Dreamtech 3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education. 4. PC Hardware and A + Handbook – Kate J. Chas PHI (Microsoft) |

**FIRST YEAR – SEMESTER - II**

**DEPARTMENTAL Elective– II: PROGRAMMING IN C++ AND LAB**

| **Subject Code** | **L** | **T** | **P** | **S** | **Credits** | **Inst. Hours** | **Marks** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CIA** | **External** | **Total** |
| **23UCOAE25-2** | **2** |  | **2** |  | **3** | **4** | **25** | **75** | **100** |
| **Learning Objectives** |
| **LO1** | To engender an appreciation for the need and characteristics of Object-orientation. |
| **LO2** | To impart knowledge of the C++ language grammar in order to design and implement programming solutions to simple problems by applying Object-oriented thinking. |
| **Prerequisites: Should have studied Commerce in XII Std** |
| **Unit** | **Contents** | **No. of Hours** |
| I | Object Oriented Programming Concepts: Complexity in software - The need for object-orientation – Abstraction – Encapsulation – Modularity – Hierarchy.Basic Elements of C++: Classes – Objects – Data members and member functions – private and public access specifiers - Static members - Constructors – Singleton class - Destructors  |  |
| II | Friend Functions and Friend Classes - Array of objects – Pointer to objects - this pointer – References – Dynamic memory allocation - Namespaces.Function Overloading: Overloading a function - Default arguments – Overloading Constructors. Operator Overloading: Overloading an operator as a member function – Overloading an operator as a friend function  |  |
| III | Overloading the operators [], (), -> and comma operators – Conversion Functions.Inheritance: Types of inheritance – protected access specifier –Virtual Base Class – Base class and derived class constructors. Run-time Polymorphism: Virtual Functions  |  |
| IV | Function overriding - Pure virtual function – Abstract base class.Templates: Function templates – Overloading a function template – Class templates. |  |
| V | Exception Handling: Exceptions – try, catch, throw – Rethrowing an exception – Restricting exceptions - Handling exceptions in derived classes - terminate(), abort(), unexpected(), set\_terminate().I/O Streams: Formatted I/O with ios class functions - Manipulators – Creating own manipulator – Overloading << and >> operators. |  |
|  | **Total** |  |
| **Course Outcomes** |
| **CO1** | Explain the various basic concepts of Object-orientation. |
| **CO2** | Write programs to implement static binding |
| **CO3** | Write programs to implement inheritance and dynamic binding |
| **CO4** | Write programs to implement templates and exception handling and learn how to use STL class library. |
| **CO5** | Write programs implementing File and Stream I/O. |
| **Textbooks** |
| 1 | Herbert Schildt, *C++ - The Complete Reference*, Third Edition, TMH, 1999. |
| 2 | Grady Booch, *Object Oriented Analysis and Design*, Pearson Education, 2008. (For Unit I) |
| **Reference Books** |
| 1 | Bjarne Strousstrup, *The C++ Programming Language*, Addison Wesley, 2000. |
| 2 | J. P. Cohoon and J. W. Davidson, *C++ Program Design – An Introduction to Programming and Object-Oriented Design*, Second Edition, McGraw Hill, 1999. |
| 3 | C. J. Lippman, *C++ Primer*, Third Edition, Addison Wesley, 2000. |
| **NOTE: Latest Edition of Textbooks May be Used** |

**FIRST YEAR – SEMESTER - II**

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| **Object Oriented Programming with C++** |  |
| Learning Objectives: (for teachers: what they have to do in the class/lab/field)* Design classes for the given problems.
* Write programs in C++.
* Code, debug and execute a C++ program to solve the given problems using an IDE.
 |
| Course Outcomes: (for students: To know what they are going to learn)CO1: Design and create classes.Implement Stream I/O as appropriate.CO2: Design appropriate data members and member functions.CO3: Implement functions, friend functions, static members, constructors and compile-time polymorphism.CO4: Implement inheritance, run-time polymorphism and destructors.CO5: Implement templates and exceptions. Use STL class library.Implement File I/O. |

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| **List of Programs** |
| 1. 1. Write a class to represent a complex number which has member functions to do the following
2. Set and show the value of the complex number
3. Add, subtract and multiply two complex numbers
4. Multiplying the complex number with a scalar value
5. Write a Point class that represents a 2-d point in a plane. Write member functions to
6. Set and show the value of a point
7. Find the distance between two points
8. Check whether two points are equal or not
9. Design and implement a class to represent a Solid object.
10. Apart from data members to represent dimensions, use a data member to specify the type of solid.
11. Use functions to calculate volume and surface area for different solids.
12. Design a class representing time in hh:mm:ss. Write functions to
13. Set and show the time
14. Find the difference between two time objects
15. Adding a given duration to a time
16. Conversion of the time object to seconds
17. Design a 3x3 matrix class and demonstrate the following:
18. Addition and multiplication of two matrices using operator overloading
19. Maintaining a count of the number of matrix object created
20. Design a class called cString to represent a string data type. Create a data member in the class to represent a string using an array of size 100. Write the following functionality as member functions:
21. Copy Constructor
22. Concatenate two strings
23. Find the length of the string
24. Reversing a string
25. Comparing two strings
26. Design a class called cString to represent a string data type. Create a data member in the class to represent a string whose size is dynamically allocated. Write the following as member functions:
27. Copy Constructor
28. Destructor
29. Concatenate two strings
30. Find the length of the string
31. Reversing a string
32. Comparing two strings
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| Extended Professional Component  | Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC –CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour) |
| Skills acquired from theCourse | Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill |
| Learning Resources:**Learning Resources:****Recommended Texts**1. Herbert Schildt, *C++ - The Complete Reference*, Third Edition, TMH, 1999.
2. Grady Booch, *Object Oriented Analysis and Design*, Pearson Education, 2008. (For Unit I)

**Reference Books**1. Bjarne Strousstrup, *The C++ Programming Language*, Addison Wesley, 2000.
2. J. P. Cohoon and J. W. Davidson, *C++ Program Design – An Introduction to Programming and Object-Oriented Design*, Second Edition, McGraw Hill, 1999.

C. J. Lippman, *C++ Primer*, Third Edition, Addison Wesley, 2000. |

**FIRST YEAR – SEMESTER – II**

**DEPARTMENTAL Elective– II – Information and Cyber Laws**

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| **Subject code** | **L** | **T** | **P** | **S** | **Credits** | **Inst. Hours** | **Marks** |
| **CIA** | **External** | **Total** |
| **23UCOAE25-3** | 4 |  |  |  | 3 | 4 | 25 | 75 | 100 |
| **Learning Objectives** |
| **LO1** | To review the basic concepts and fundamental knowledge in the field of informatics. |
| **LO2** | To create awareness about the nature of the emerging digital knowledge society and the impact of informatics on business decisions. |
| **LO3** | To enlighten the social informatics in IT & Society |
| **LO4** | To instil the importance of cyber world |
| **LO5** | To create an awareness about the cyber world and cyber regulations |
| **Prerequisite: Should have studied Commerce in XII Std** |
| **Unit** | **Contents** | **No. of Hours** |
| I | Overview of Informatics- meaning, feature and importance - Computer networks & Internet, wireless technology, cellular wireless networks, introduction to mobile phone technology, Purchase of technology, license, guarantee, and warranty. New development in informatics  | **12** |
| II | Knowledge Skills for Higher Education- Data, information and knowledge, knowledge management, Internet access methods –Dial-up, DSL, Cable, ISDN, Wi-Fi. Internet as a knowledge repository, academic search techniques, creating cyber presence. Academic websites, open access initiatives, opens access publishing models, Introduction to use of IT in teaching and learning - Educational software, Academic services – INFLIBNET, NICNET, BRNET. | **12** |
| III | Social Informatics- IT & Society– issues and concerns– digital divide, IT & development, IT for national integration, overview of IT application in medicine, healthcare, business, commerce, industry, defence, law, crime detection, publishing, communication, resource management, weather forecasting, education, film and media, IT in service of disabled, Futuristic IT – artificial intelligence, Virtual reality, bio computing. Health issues – guide lines for proper usage of computers, internet and mobile phones E-wastes and green computing, impact of IT on language & culture-localization issues | **12** |
| IV | CYBER WORLD - Cyber space, information overload, cyber ethics, cyber addictions, cybercrimes – categories – person, property, Government – types - stalking, harassment, threats, security & privacy issues | **12** |
| V | CYBER REGULATIONS – Scope of cyber laws, - Provisions under IT Act 2000, cyber related Provisions under IPC | **12** |
|  | **TOTAL** | **60** |
| **CO** | **Course Outcomes** |
| **CO1** | Apply Information Security Standards compliance during software design and development  |
| **CO2** | Analyze the knowledge skills in informatics |
| **CO3** | Implication of social informtics in IT & society and various consequences in social informatics  |
| **CO4** | Understand the concept of cybercrime and its effect on outside world |
| **CO5** | Interpret and apply IT law in various legal issues |
| **Textbooks** |
| 1 | Ramesh Bangia. Learning Computer Fundamentals, Khanna Publishers, New Delhi |
| 2 | Rajaraman, Introduction to information Technology, PHI, New Delhi. |
| 3 | Alexis Leon & Mathews Leon. Fundamentals of Information Technology, Vikas Publishing House, New Delhi. |
| 4 | Ramachandran et.al , Informatics and Cyber laws, Green Tech Books, Thiruvananthapuram |
| **Reference Books** |
| 1 | Barbara Wilson. Information Technology: The Basics, Thomson Learning |
| 2 | George Beekman, Eugene Rathswohl. Computer Confluence, Pearson Education, New Delhi. |
| 3 | IT Act 2000, 8. RohasNagpal, IPR & Cyberspace – Indian Perspective |
| **NOTE: Latest Edition of Textbooks May be Used** |
| **Web Resources** |
| 1 | <https://www.google.co.in/books/edition/INFORMATICS/jKd2BAAAQBAJ?hl=en&gbpv=1&>dq=informatics%20and%20cyber%20laws&pg=PP1&printsec=frontcover |
| 2 | <https://www.google.co.in/books/edition/Cybercrime_and_Information_Technology/mZhF>EAAAQBAJ?hl=en&gbpv=1&dq=informatics%20and%20cyber%20laws&pg=PP1&printsec=Frontcover |
| 3 | <https://www.youtube.com/watch?v=NG2KAtL_QtQ&list=PLb_GOtSrdPpDpqXiMApZw>265y35dm4QKe |

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| **Semester-II** | **SKILL ENHANCEMENTCOURSE-2** **(NME –II)****FUNDAMENTALS OF FINTECH** | **L** | **T** | **P** | **C** |
| **23UCOAN26** | **2** |  |  | **2** |

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| **Learning Objectives:** |
| **LO1:**  | To educate the students to introduce Fintech |
| **LO2:** | To gain knowledge in Financial Technology and Digital payments |
| **LO3:** | To acquire knowledge in Cryptocurrencies |
| **LO4:** | To know the knowledge in Block Chain Technology |
| **LO5:** | To understand the effects of fintech on various sectors |
| **Course Outcomes:** |
|  | After the successful completion of the course, the students will be able to: |
| **CO1:** | Identify the benefits of FinTech industry; |
| **CO2:** | Enable a better understanding of Financial Technology and Digital Payments |
| **CO3:** | Analyse the functioning of Cryptocurrency |
| **CO4:** | Explain the impact of Block Chain Technology |
| **CO5:** | Evaluate the effects of Fintech on various sectors |

**Unit I: Introduction to Fintech**

Introduction – Meaning of FinTech - Definitions - The History And Evolution Of The Fintech Industry - FinTech Ecosystem **-** Recent Developments - FinTech In India - FinTech Market Trends In India - Types Of FinTech or Transformation of Financial Services - Benefits Of FinTech - Drawbacks Of FinTech - Key Growth Drivers  **-**Challenges

**Unit II: Financial Technology and Digital Payments**

Introduction -Artificial Intelligence (AI) in FinTech-Machine Learning in FinTech - Machine Learning in Accounting and Finance - Robotic Process Automation (RPA) –**-** Financial Data Analytics **-** Data Science and Big Data in FinTech - Digital Payments **-** Cashless Society - DFS Eco System -Developing Countries and DFS: The Story of Mobile Money - RTGS networks;

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| **Unit III: Cryptocurrencies**Cryptocurrencies - benefits - disadvantages **-** Examples of cryptocurrencies - Outline of cryptocurrency – types- wallet - Legal and Regulatory Implications - legal position of cryptocurrencies in India - Impact on cryptocurrencies  |

**Unit IV: Blockchain Technology**

Blockchain Technology in FinTech – An understanding of Blockchain technology, its potential, and applications - BCT in Banking – Benefits of BCT in banking - BCT in Indian Banking Sector **-** BCT insupply chain management

**Unit V: Effects of Fin-Tech on** **Various** **Sectors**

Effects of Fin-tech on Payment Innovations – The Implications of Fintech On Real Estate, Insurance, Health, And Payment Innovations - The effects of Fin-tech on Payment Innovations – Health- Real-Estate- Insurance Sector- Capital Market - Key Fin-tech trends - FinTech Around the Globe: Asia, Middle East, South America, Europe, Southeast Asia / Australia and Africa

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| **Recent Trends in Fintech** |
| Faculty member will impart the knowledge on recent trends in Fintech to the students and these components will not cover in the examination. |

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| **Text Books:** |
| 1. | Dheenadhayalan V and Vijay C, 2022 Fintech, Vijay Nicole Imprints Pvt. Ltd, Chennai  |
| 2. | Sanjay Phadke., 2020 Fintech Future : The Digital Dna Of Finance Paperback –  |
| 3. | Agustin Rubini, 2021 Fintech in a Flash: Financial Technology Made Easy (new edition) Kindle Edition |

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| **Supplementary Readings:** |
| 1. | Aravind Narayanan 2022 Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction |
| 2. | Joseph Bonneau, Edward Felten, Andrew Miller, Steven Goldfeder, 2022 Princeton University  |
| 3. | SlavaGomzin 2020 Bitcoin for Non-Mathematicians: Exploring the foundations of Crypto, Universal Publishers, USA |
| 4. | The Robotics Process Automation, Handbook: A Guide to Implementing, Tom Taulli/ Apress, Latest 1 ST Edition 2020 Website Reference: <https://www.ibm.com/industries/banking-financial-markets/resources/omnichannelbanking-paper/>.  https://thefinancialbrand.com/111080/evolution-future-digital-banking-baas |
| 5. | Diamandis, P. H., & Kotler, S. 2020. The Future Is Faster Than You Think: HowConverging Technologies Are Disrupting Business, Industries, and Our Lives. New York: Simon &Schuster |