

# **MANGALORE UNIVERSITY**



## **National Education Policy – 2020 INEP-2020I**

**Scheme of Teaching & Evaluation and Curriculum for  
the 5<sup>th</sup> and 6<sup>th</sup> Semester B.Com (Computer Application)  
for the Academic Year 2023-24**

**CS (I) Model Curricular Framework for Bachelor of Commerce (Computer Application)(Basic/Hons.)Programme with practical)**

| Sem.   | Discipline Core (DSC) (Credits)          | Discipline Elective (DSE) / Open Elective (OE) (Credits) | Ability Enhancement Courses (AECC), Languages (Credits) (L+T+P)             | Compulsory Skill based (Credits) (L+T+P)  | Skill Enhancement Courses (SEC) Value based (Credits) (L+T+P)                          | Total Credits  |
|--|--|--|---|---|--|----------------|
| I  | DSC-A1 (4) B1 (3)<br>B2(3) B3(2)         | OE-1(3)  | L1-1(3), L2-1(3)<br>(4 hrs. each) (3+0+0)                                   | Env. Studies (3)<br>SEC-1: Digital Fluency (2)<br>(2+0+0)                       | Yoga / Sports/Health & Wellness/NCC/NSS/R&R(S&G)/ Cultural/any other (1+1)<br>(0+0+2)  | 25/26<br>26/25 |
| II   | DSC-A2 (4) B4 (3)<br>B5(3) B6(2)         | OE-2(3)  | L1-2(3), L2-2(3)<br>(4 hrs. each) (2+0+0)                                   | SEC 1: Digital Fluency (2)<br>(2+0+0)   | Env. Studies (3)<br>(3+0+0)  | 26/25          |
| Students exiting the programme after securing 46 credits will be awarded UG Certificate in Disciplines provided they secure 4 credits in work based vocational courses during summer term or internship/Apprenticeship in addition to 6 credits from skill-based courses earned during first year. |  |  |   |   |  |                |
| III  | DSC-A3 (4) B7 (3)<br>B8(3) B9(2)         | OE-3 (3)   | L1-3(3), L2-3(3)<br>(4 hrs each) (3+0+0)                                    | Indian Constitution (3)<br>(3+0+0)  | SEC-2: AI/Cyber Security/Financial Edu. & Inv. Aw. (2) (2+0+0)                         | 25             |
| IV   | DSC-A4 (4) B10 (3)<br>B11(3) B12(2)      | Indian Constitution (3) (3+0+0)                          | L1-4(3), L2-4(3)<br>(4 hrs each)  | OE-3 (3)<br>SEC-3: Financial Edu. & Inv. Aw. /AI/ Cyber Security (2)<br>(2+0+0) | Yoga/ Health & Wellness/ Sports/NCC/NSS/R&R(S&G)/C ultural/any Others (1+1)<br>(0+0+2) | 25             |
| Students exiting the programme after securing 92 credits will be awarded UG Diploma in Discipline A and B provided they secure 4 credits in skill based vocational courses offer during first –or –second –year summer term.   |  |  |   |   |  |                |
| V  | DSC-A5 (4) A6(4), B13 (3) B14(3) B15(2)  |  | DSE-1 (3) (related to Com.Appl.)<br>Vocational-B (3) (related to Com.Appl.) |   | SEC-4: (3) (2+0+2)   | 25             |
| VI   | DSC-A7 (4) A8 (4), B16 (3) B17(3) B18(2) |  | DSE-2 (3) (related to Com.Appl.)<br>Vocational-B (3) (related to Com.Appl.) |   | Internship (2)   | 24             |

Students exiting the programme after 3 years will be awarded UG Degree in Disciplines A and B as double majors upon securing 136 credits and satisfying the minimum credit requirements under each category of courses prescribed.

## Model Curriculum Structure for B. Com (Computer Application)

| Sem.      | Course No   | Theory/<br>Practical | Credits | Paper Title  | L-T-P | S.A | L.A |
|-----------|-------------|----------------------|---------|--|-------|-----|-----|
| <b>V</b>  | DSC-A5      | Theory               | 4       | Financial Management   | 3-0-2 | 60  | 40  |
|           | DSC-A6      | Theory               | 4       | Income Tax Law and Practice-I  | 3-0-2 | 60  | 40  |
|           | DSC-B13     | Theory               | 3       | C# and Dot Net Framework   | 3-0-0 | 60  | 40  |
|           | DSC-B14     | Theory               | 3       | Python Programming   | 3-0-0 | 60  | 40  |
|           | DSC-B15 LAB | Practical            | 2       | C# and Python Programming Lab  | 0-0-4 | 25  | 25  |
|           | DSE-E1      | Theory               | 3       | A. Cloud Computing<br>B. Business Intelligence   | 3-0-0 | 60  | 40  |
|           | Voc-1       | Theory               | 3       | Digital Marketing  | 3-0-0 | 60  | 40  |
| <b>VI</b> | DSC-A7      | Theory               | 4       | Advanced Financial Management  | 3-0-2 | 60  | 40  |
|           | DSC-A8      | Theory               | 4       | Income Tax Law and Practice-II   | 3-0-2 | 60  | 40  |
|           | DSC-B16     | Theory               | 3       | PHP and MySQL  | 3-0-0 | 60  | 40  |
|           | DSC-B17     | Theory               | 3       | Statistical Computing and R Programming  | 3-0-0 | 60  | 40  |
|           | DSC-B18 LAB | Practical            | 2       | PHP and MySQL and R Programming Lab  | 0-0-4 | 25  | 25  |
|           | DSE-E2      | Theory               | 3       | <ul style="list-style-type: none"> <li>Fundamentals of Data Science</li> <li>Mobile Application Development</li> </ul> | 3-0-0 | 60  | 40  |
|           | Voc-2       | Theory               | 3       | Web Content Management System  | 3-0-0 | 60  | 40  |
|           | SEC-5       | Theory/<br>Practical | 2       | Internship   | 2-0-2 | 30  | 20  |

|   |                                     |                            |                |
|---|-------------------------------------|----------------------------|----------------|
| Program Name  | <b>B.Com (Computer Application)</b> | Semester                   | <b>V</b>       |
| Course Title  | <b>Financial Management</b>         |                            |                |
| Course Code:  | <b>A-7</b>                          | No. of Credits             | <b>4</b>       |
| Contact hours   | <b>60 Hrs. (5 hrs./week)</b>        | Duration of SEA/Exam       | <b>3 hours</b> |
| Formative Assessment Marks  | <b>40</b>                           | Summative Assessment Marks | <b>60</b>      |
| <b>Pedagogy:</b> Classrooms lecture, Case studies, Tutorial Classes, Group discussion, Seminar & field work etc.,   |                                     |                            |                |
| <b>Course Outcomes: On successful completion of the course, the students' will be able to</b> <ul style="list-style-type: none"> <li>Understand the role of financial managers effectively in an organization.</li> <li>Apply the compounding &amp; discounting techniques for time value of money.</li> <li>Take investment decision with appropriate capital budgeting techniques for investment proposals.</li> <li>Understand the factors influencing the capital structure of an organization.</li> <li>Estimate the working capital requirement for the smooth running of the business</li> </ul> |                                     |                            |                |
| <b>Syllabus</b>   |                                     |                            | <b>Hours</b>   |
| <b>Module No. 1: Introduction to Financial Management</b>   |                                     |                            | <b>12</b>      |
| Introduction –Meaning of Finance, Finance Function, Objectives of Finance function, Organization of Finance function -Meaning and definition of Financial Management; Goals of Financial Management, Scope of Financial Management, Functions of Financial Management, Role of Finance Manager in India. Financial planning-- Meaning –Need – Importance -Steps in financial Planning – Principles of a sound financial plan and Factors affecting financial plan.  |                                     |                            |                |
| <b>Module No. 2: Time Value of Money</b>  |                                     |                            | <b>10</b>      |
| Introduction – Meaning of time value of money-time preference of money- Techniques of time value of money: Compounding Technique-Future value of Single flow, Multiple flow and Annuity -Discounting Technique-Present value of Single flow, Multiple flow – and Annuity. Doubling Period- Rule 69 and 72.  |                                     |                            |                |
| <b>Module No. 3: Financing Decision</b>   |                                     |                            | <b>14</b>      |
| Introduction-Meaning and Definition of Capital Structure, Factors determining the Capital Structure, Concept of Optimum Capital Structure, EBIT-EPS Analysis- Problems. Leverages: Meaning and Definition, Types of Leverages- Operating Leverage, Financial Leverage and Combined Leverages. Problems.   |                                     |                            |                |
| <b>Module No. 4: Investment Decision</b>  |                                     |                            | <b>12</b>      |
| Introduction-Meaning and Definition of Capital Budgeting, Features, Significance – Steps in Capital Budgeting Process. Techniques of Capital budgeting: Traditional Methods – Pay Back Period, and Accounting Rate of Return – DCF Methods: Net Present Value Internal Rate of Return and Profitability Index- Problems.  |                                     |                            |                |
| <b>Module 5: Working Capital Management</b>   |                                     |                            | <b>12</b>      |
| Introduction- Meaning and Definition, types of working capital, Operating cycle, Determinants of working capital needs – Estimation of working capital requirements. Dangers of excess and inadequate working capital, Merits of adequate working capital, Sources of working capital. Cash Management, Receivable Management, and Inventory Management (Concepts only).  |                                     |                            |                |

**Skill Development Activities:**

- Visit the Finance Department of any organization and collect and record the Functions and Responsibilities of Finance Manager.
- As a finance manager of a company advise the management in designing an appropriate Capital Structure.
- Evaluate a capital investment proposal by using NPV method with imaginary figures.
- Illustrate with imaginary figures the compounding and discounting techniques of time value of money.
- Estimate working capital requirements of an organization with imaginary figures.
- Any other activities, which are relevant to the course.

**Books for reference:**

1. I M Pandey, Financial management, Vikas publications, New Delhi.
2. Abrish Guptha, Financial management, Pearson.
3. Khan & Jain, Basic Financial Management, TMH, New Delhi.
4. S N Maheshwari, Principles of Financial Management, Sulthan Chand & Sons, New Delhi.
5. Chandra & Chandra D Bose, Fundamentals of Financial Management, PHI, New Delhi.
6. B.Mariyappa, Financial Management, Himalaya Publishing House, New Delhi.
7. Ravi M Kishore, Financial Management, Taxman Publications
8. Prasanna Chandra, Financial Management, Theory and Practice, Tata McGraw Hill.

**Note: Latest edition of books may be used.**

|                            |  |                            |                |
|----------------------------|--|----------------------------|----------------|
| Program Name               | <b>B.Com (Computer Application)</b>    | Semester                   | <b>V</b>       |
| Course Title               | <b>Income Tax Law and Practice – I</b> |                            |                |
| Course Code:               | <b>A-8</b>                             | No. of Credits             | <b>4</b>       |
| Contact hours              | <b>60 Hrs. (5 hrs./week)</b>           | Duration of SEA/Exam       | <b>3 hours</b> |
| Formative Assessment Marks | <b>40</b>                              | Summative Assessment Marks | <b>60</b>      |

**Pedagogy:** Classrooms lecture, Case studies, Tutorial classes, Group discussion, Seminar & field work etc.,

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

- Comprehend the procedure for computation of Total Income and tax liability of an individual.
- Understand the provisions for determining the residential status of an Individual.
- Comprehend the meaning of Salary, Perquisites, Profit in lieu of salary, allowances and various retirement benefits.
- Compute the income house property for different categories of house property.
- Comprehend TDS & advances tax Ruling and identify the various deductions under section 80.

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|--|--------------|
| <b>Syllabus:</b>   | <b>Hours</b> |
| <b>Module No. 1: Basic Concepts of Income Tax</b>  | <b>12</b>    |
| Introduction –Meaning of tax-, types of taxes, cannons of taxation. Brief history of Indian Income Tax, legal framework of taxation, Important definitions, assessment, assessment year, previous year including exceptions, assesses, person, income, casual income, Gross total income, Total income, Agricultural income, scheme of taxation, – Exempted incomes of individuals under section 10 of the Income Tax Act, 1961. |              |
| <b>Module No. 2: Residential Status and Incidence of Tax</b>   | <b>10</b>    |
| Introduction – Residential status of an individual. Determination of residential status of an individual. Incidence of tax or Scope of Total income. Problems on computation of Gross total Income of an individual.   |              |
| <b>Module No. 3: Income from Salary</b>  | <b>18</b>    |
| Introduction - Meaning of Salary -Basis of charge Definitions–Salary, Perquisites and profits in lieu of salary - Provident Fund –Transferred balance. - Retirement Benefits – Gratuity, pension and Leave salary. Deductions and Problems on Computation of Taxable Salary.   |              |
| <b>Module No. 4: Income from House Property</b>  | <b>10</b>    |
| Introduction - Basis for charge - Deemed owners -House property incomes exempt from tax, composite rent and unrealized rent. Annual Value –Determination of Annual Value - Deductions from Annual Value - Problems on Computation of Income from House Property.   |              |
| <b>Module No. 5: Tax Deduction at Sources &amp; Advance Tax Ruling</b>   | <b>10</b>    |

Introduction - Meaning of TDS - Provisions regarding TDS - TDS to be made from Salaries - Filing of Quarterly statement – Theory and Problems; Advance Tax: Meaning of advance tax - Computation of advance tax - Instalment of advance tax and due dates. **Deductions** under Sections 80C, 80CCC, 80CCD, 80CCG, 80D, 80DD, 80DDB, 80E, 80G, 80GG, 80TTA and 80U as applicable to Individuals.

**Skill Developments Activities:**

- Prepare a slab rates chart for different Individual assesses.
- Visit any Chartered Accountants office, Collect and record the procedure involved in filing the Income tax returns of an Individual.
- List out any 10 Incomes exempt from tax under section 10 of an Individual.
- Prepare the chart of perquisites received by an employee in an organization.
- Identify and collect various enclosures pertaining to Income tax returns of an individual.
- Any other activities, which are relevant to the course.

**Books for Reference:**

1. Mehrotra H.C and T.S.Goyal, Direct taxes, Sahithya Bhavan Publication, Agra.
2. Vinod K. Singhania, Direct Taxes, Taxman Publication Private Ltd, New Delhi.
3. Gaur and Narang, Law and practice of Income Tax, Kalyani Publications, Ludhiana.
4. Bhagawathi Prasad, Direct Taxes.
5. B.Mariyappa, Income tax Law and Practice-I, Himalaya Publishing House. New Delhi.s
6. Dr. Saha, Law and Practice of Income Tax, Himalaya Publishing House.

**Note: Latest edition of text books may be used.**

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|----------------------------|---|----------------------------|----------------|
| Program Name               | <b>B.Com (Computer Application)</b>     | Semester                   | <b>V</b>       |
| Course Title               | <b>C# and Dot Net Framework(Theory)</b> |                            |                |
| Course Code:               | <b>DSC-B13</b>                          | No. of Credits             | <b>3</b>       |
| Contact hours              | <b>42 Hours</b>                         | Duration of SEA/Exam       | <b>2 hours</b> |
| Formative Assessment Marks | <b>40</b>                               | Summative Assessment Marks | <b>60</b>      |

**Pedagogy:** Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe- Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

### **Course Outcomes (COs):**

After the successful completion of the course, the student will be able to:

- Understand programming algorithm, process, and structure; Design/develop programs with GUI interfaces.BL (L1, L2)
- Understand and identify the fundamental concepts of object-oriented programming. BL (L1, L2, L3)
- Assemble multiple forms, modules, and menus into working .NET solutions.BL (L1, L2, L3, L4)
- Prepare various projects, Manage and analyses prepared projects, interpret and report results.BL (L1, L2, L3, L4)
- Understand the impact of .NET on real world business applications.BL (L1, L2, L3)

**Note:** Blooms Level (BL): L1=Remember, L2=Understand, L3=Apply, L4=Analyze, L5= Evaluate, L6= Create

| <b>Module</b> | <b>Syllabus</b>  | <b>Hours</b> |
|---------------|--|--------------|
| <b>1</b>      | <b>Introduction to .Net Technologies:</b> Introduction to Web Technologies. HTML Basics, Scripts. Sample Programs. Advantages and Disadvantages of Client-side and Server-side Scripts. Overview of Client-side Technologies and Server-side Technologies.<br><b>Introduction to C#:</b> Overview of C#, Literals, Variables, Data types, Operators, Expressions, Control Structures-Methods, Arrays, Strings, Structures, Enumerations. | 11           |
| <b>2</b>      | <b>OOPS with C#:</b> Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading   | 11           |
| <b>3</b>      | <b>Delegates &amp; Events:</b> Delegates – Declaration, Methods, Instantiation, Invocation; Events<br><b>Managing Errors and Exceptions:</b> Types of Errors, exceptions, catch, Finally, Try, checked and unchecked operators.  | 10           |
| <b>4</b>      | <b>Multithreading in C#: Threading</b> – Namespace, creating, scheduling, synchronizing, pooling<br><b>Windows Forms and Web based Application Development:</b> Creating Windows Forms, customizing a Form, understanding Microsoft Visual Studio 2005, creating and running a sampleWinApp Windows Application, Web based Application in .NET   | 10           |



**Text Books:**

- "Programming C#: A Primer"–E.Balagurusamy,3<sup>rd</sup>Edition,TMH publications

**Reference Books:**

- "Computing with C# and the .NET Framework", Arthur Gittleman, 2nd Edition, Jones & Bartlett Publishers, 2011
- C# 7.0 in a Nutshell (7th Edition), the Definitive Reference, Joseph Albahari & Ben Albahari, O'Reilly.
- Microsoft Visual C# Step by Step (9th Edition), John Sharp, Pearson Education.
- C# 7.0 All-in-One for Dummies (1st Edition), John Paul Mueller, Bill Sempf, Chuck Sphar, John Wiley & Sons, Inc.
- Professional C# 7 and .NET Core 2.0 (7th Edition), Christian Nagel, John Wiley & Sons, Inc.

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|--|-------------------------------------|----------------------------|----------------|
| Program Name   | <b>B.Com (Computer Application)</b> | Semester                   | <b>V</b>       |
| Course Title   | <b>Python Programming (Theory)</b>  |                            |                |
| Course Code:   | <b>DSC-B14</b>                      | No. of Credits             | <b>3</b>       |
| Contact hours  | <b>42 Hours</b>                     | Duration of SEA/Exam       | <b>2 hours</b> |
| Formative Assessment Marks   | <b>40</b>                           | Summative Assessment Marks | <b>60</b>      |
| <b>Pedagogy:</b> Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.  |                                     |                            |                |
| <b>Course Outcomes (COs):</b><br>After the successful completion of the course, the student will be able to: <ul style="list-style-type: none"> <li>CO1. Understand Python Programming Basics, Python Control Flow, Exception Handling. BL (L1 , L2)</li> <li>CO2. Understand and identify the fundamental concepts of object-oriented programming. BL (L1 , L2)</li> <li>CO3. Understand usage of strings, lists, tuples and sets. BL (L1 , L2, L3, L4)</li> <li>CO4. Understand file handling, design of GUI. BL (L1 , L2, L3, L4)</li> <li>CO5. Understand SQLite database, data analysis, data visualization using Python. BL (L1 , L2, L3)</li> </ul> Note: Blooms Level (BL); L1=Remember, L2=Understand, L3=Apply, L4=Analyze, L5= Evaluate, L6= Create |                                     |                            |                |

| Module   | Syllabus   | Hours |
|----------|--|-------|
| <b>1</b> | <b>Introduction to Features and Applications of Python;</b> Python Versions; Installation of Python; Python Command Line mode and Python IDEs; Simple Python Program.<br><b>Python Basics:</b> Identifiers; Keywords; Statements and Expressions; Variables; Operators; Precedence and Association; Data Types; Indentation; Comments; Built-in Functions- Console Input and Console Output, Type Conversions; Python Libraries; Importing Libraries with Examples.<br><b>Python Control Flow:</b> Types of Control Flow; Control Flow Statements- if, else, elif, while loop, break, continue statements, for loop Statement; range () and exit () functions.<br><b>Exception Handling:</b> Types of Errors; Exceptions; Exception Handling using try, except and finally.<br><b>Python Functions:</b> Types of Functions; Function Definition- Syntax, Function Calling, Passing Parameters/arguments, the return statement; Default Parameters; Command line Arguments; Key Word Arguments; Recursive Functions; Scope and Lifetime of Variables in Functions | 11    |
| <b>2</b> | <b>Strings:</b> Creating and Storing Strings; Accessing Sting Characters; the str() function; Operations on Strings- Concatenation, Comparison, Slicing and Joining, Traversing; Format Specifies; Escape Sequences; Raw and Unicode Strings; Python String Methods.<br><b>Lists:</b> Creating Lists; Operations on Lists; Built-in Functions on Lists; Implementation of Stacks and Queues using Lists; Nested Lists.   | 11    |

|   |   |    |
|---|---|----|
|   | <p><b>Dictionaries:</b> Creating Dictionaries; Operations on Dictionaries; Built-in Functions on Dictionaries; Dictionary Methods; Populating and Traversing Dictionaries.</p> <p><b>Tuples and Sets:</b> Creating Tuples; Operations on Tuples; Built-in Functions on Tuples; Tuple Methods; Creating Sets; Operations on Sets; Built-in Functions on Sets; Set Methods.</p>   |    |
| 3   | <p><b>File Handling:</b> File Types; Operations on Files– Create, Open, Read, Write, Close Files; File Names and Paths; Format Operator.</p> <p><b>Object Oriented Programming:</b> Classes and Objects; Creating Classes and Objects; Constructor Method; Classes with Multiple Objects; Objects as Arguments; Objects as Return Values; Inheritance- Single and Multiple Inheritance, Multilevel and Multipath Inheritance; Encapsulation- Definition, Private Instance Variables; Polymorphism- Definition, Operator Overloading.</p> <p><b>GU Interface:</b> The tkinter Module; Window and Widgets; Layout Management- pack, grid and place</p>                      | 10 |
| 4   | <p><b>Python SQLite:</b> The SQLite3 module; SQLite Methods- connect, cursor, execute, close; Connect to Database; Create Table; Operations on Tables Insert, Select, Update. Delete and Drop Records.</p> <p><b>Data Analysis:</b> NumPy- Introduction to NumPy, Array Creation using NumPy, Operations on Arrays; Pandas- Introduction to Pandas, Series and DataFrames, Creating Data Frames from Excel Sheet and .csv file, Dictionary and Tuples. Operations on Data Frames.</p> <p><b>Data Visualization:</b> Introduction to Data Visualization; Matplotlib Library; Different Types of Charts using Pyplot- Line chart, Bar chart and Histogram and Pie chart</p> | 10 |
| <p><b>References:</b></p> <ul style="list-style-type: none"> <li>Think Python How to Think Like a Computer Scientist, Allen Downey et al., 2<sup>nd</sup> Edition, Green Tea Press. Freely available online @ <a href="https://www.greenteapress.com/thinkpython/thinkCSpy.pdf">https://www.greenteapress.com/thinkpython/thinkCSpy.pdf</a>, 2015.</li> <li>Introduction to Python Programming, Gowrishankar S et al., CRC Press, 2019.</li> <li>Python Data Analytics: Data Analysis and Science Using Pandas, matplotlib, and the Python Programming Language, Fabio Nelli, Apress®, 2015</li> <li>Advance Core Python Programming, MeenuKohli, BPB Publications, 2021.</li> <li>Core PYTHON Applications Programming, Wesley J. Chun, 3rd Edition, Prentice Hall, 2012.</li> <li>Data Structures and Program Design Using Python, D Malhotra et al., Mercury Learning and Information LLC, 2021.</li> <li><a href="https://docs.python.org/3/tutorial/index.html">https://docs.python.org/3/tutorial/index.html</a></li> </ul> |   |    |

|                            |                                      |                            |                |
|----------------------------|--------------------------------------|----------------------------|----------------|
| Program Name               | <b>B.Com (Computer Application)</b>  | Semester                   | <b>V</b>       |
| Course Title               | <b>C# and Python Programming Lab</b> |                            |                |
| Course Code:               | <b>DSC-B15 LAB</b>                   | No. of Credits             | <b>02</b>      |
| Contact hours              | <b>04 Hours per week</b>             | Duration of SEA/Exam       | <b>3 hours</b> |
| Formative Assessment Marks | <b>25</b>                            | Summative Assessment Marks | <b>25</b>      |

**Evaluation Scheme for Lab Examination:**

| <b>Assessment Criteria</b> |  |                 |
|----------------------------|--|-----------------|
| <b>Program-1</b>           | <b>PART-A</b><br><b>Writing:5 Marks Execution:5Marks</b> | <b>10 Marks</b> |
| <b>Program-2</b>           | <b>PART-B</b><br><b>Writing:5 Marks Execution:5Marks</b> | <b>10 Marks</b> |
| <b>Practical Record</b>    |  | <b>05 Marks</b> |
| <b>Total</b>               |  | <b>25 Marks</b> |

|                            |                                     |                            |                |
|----------------------------|-------------------------------------|----------------------------|----------------|
| Program Name               | <b>B.Com (Computer Application)</b> | Semester                   | <b>V</b>       |
| Course Title               | <b>Cloud Computing (Theory)</b>     |                            |                |
| Course Code:               | <b>DSE-E1</b>                       | No. of Credits             | <b>03</b>      |
| Contact hours              | <b>42 Hours</b>                     | Duration of SEA/Exam       | <b>2 hours</b> |
| Formative Assessment Marks | <b>40</b>                           | Summative Assessment Marks | <b>60</b>      |

**Pedagogy:** Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

**Course Outcomes (COs):**

**After the successful completion of the course, the student will be able to:**

- Explain the core concepts of the cloud computing paradigm such as how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing.
- Apply the fundamental concepts in data centers to understand the trade-offs in power, efficiency and cost.
- Identify resource management fundamentals like resource abstraction, sharing and sandboxing and outline their role in managing infrastructure in cloud computing.
- Analyze various cloud programming models and apply them to solve problems on the cloud.

| Module   | Syllabus  | Hours     |
|----------|---|-----------|
| <b>1</b> | <b>Introduction:</b> Different Computing Paradigms- Parallel Computing, Distributed Computing, Cluster Computing, Grid Computing, Cloud Computing etc., Comparison of various Computing Technologies; Cloud Computing Basics- What is Cloud Computing? History, Characteristic Features, Advantages and Disadvantages, and Applications of Cloud Computing; Trends in Cloud Computing; Leading Cloud Platform Service Providers.  | <b>10</b> |
| <b>2</b> | <b>Cloud Architecture:</b> Cloud Service Models- Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS), Comparison of different Service Models; Cloud Deployment Models- Public Cloud; Private Cloud, Hybrid Cloud, Community Cloud; Cloud Computing Architecture- Layered Architecture of Cloud. Virtualization- Definition, Features of Virtualization; Types of Virtualizations- Hardware Virtualization, Server Virtualization, Application Virtualization, Storage Virtualization, Operating System Virtualization; Virtualization and Cloud Computing, Pros and Cons of | <b>10</b> |

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|---|--|----|
|   | Virtualization, Technology Examples- Xen: Paravirtualization, VMware: Full Virtualization, Microsoft Hyper-V.  |    |
| 3   | <b>Cloud Application Programming and the Aneka Platform:</b> Aneka Cloud Application Platform- Framework Overview, Anatomy of the Aneka Container; Building Aneka Clouds (Infrastructure Organization, Logical Organization, Private Cloud Deployment Mode, Public Cloud Deployment Mode, Hybrid Cloud Deployment Mode); Cloud Programming and Management- Aneka SDK (Application Model and Service Model); Management Tools (Infrastructure, Platform and Application management).  | 10 |
| 4   | <b>Cloud Platforms in Industry:</b> Amazon Web Services- Compute Services, Storage Services, Communication Services, Additional Services; Google AppEngine- Architecture and Core Concepts, Application Life-Cycle, Cost Model, Observations; Microsoft Azure- Azure Core Concepts (Compute, Storage, Core Infrastructure and Other Services), SQL Azure, Windows Azure Platform Appliance.<br><b>Cloud Applications:</b> Scientific Applications- Healthcare (ECG Analysis in the Cloud) Biology (Protein Structure Prediction and Gene Expression Data Analysis for Cancer Diagnosis), Geoscience (Satellite Image Processing); Business and Consumer Applications- CRM and ERP, Productivity, Social Networking, Media Applications, Multiplayer Online Gaming. | 12 |
| <b>Text Books:</b> <ul style="list-style-type: none"> <li>Rajkumar Buyya, Christian Vecchiola, S. ThamaraiSelvi: "Mastering CloudComputing- Foundations and Applications Programming", Elsevier, 2013</li> </ul> <b>References Books:</b> <ul style="list-style-type: none"> <li>Barrie Sosinsky: "Cloud Computing Bible", Wiley-India, 2010</li> <li>K Chandrashekar: "Essentials of Cloud Computing", CRC Press, 2015</li> <li>Derrick Rountree, Ileana Castrillo: "The Basics of Cloud Computing", Elsevier, 2014</li> </ul> |  |    |

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|---|---------------------------------------|----------------------------|----------------|
| Program Name  | <b>B.Com (Computer Application)</b>   | Semester                   | <b>V</b>       |
| Course Title  | <b>Business Intelligence (Theory)</b> |                            |                |
| Course Code:  | <b>DSE-E1</b>                         | No. of Credits             | <b>03</b>      |
| Contact hours   | <b>42 Hours</b>                       | Duration of<br>SEA/Exam    | <b>2 hours</b> |
| Formative Assessment Marks  | <b>40</b>                             | Summative Assessment Marks | <b>60</b>      |
| <b>Pedagogy:</b> Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc. |                                       |                            |                |
| <b>Course Outcomes (COs):</b><br><b>After the successful completion of the course, the student will be able to:</b> <ul style="list-style-type: none"> <li>Describe the Decision Support systems and Business Intelligence framework.</li> <li>Explore knowledge management, explain its activities, approaches and its implementation.</li> <li>Describe business intelligence, analytics, and decision support systems</li> </ul>                           |                                       |                            |                |

| Module   | Syllabus  | Hours     |
|----------|---|-----------|
| <b>1</b> | Information Systems Support for Decision Making, An Early Framework for Computerized Decision Support, The Concept of Decision Support Systems, A Framework for Business Intelligence, Business Analytics Overview, Brief Introduction to Big Data Analytics  | <b>10</b> |
| <b>2</b> | Introduction and Definitions, Phases of the Decision, Making Process, The Intelligence Phase, Design Phase, Choice Phase, Implementation Phase, Decision Support Systems Capabilities, Decision Support Systems Classification, Decision Support Systems Components.  | <b>10</b> |
| <b>3</b> | Basic Concepts of Neural Networks, Developing Neural Network-Based Systems, Illuminating the Black Box of ANN with Sensitivity, Support Vector Machines, A Process Based Approach to the Use of SVM, Nearest Neighbor Method for Prediction, Sentiment Analysis Overview, Sentiment Analysis Applications, Sentiment Analysis Process,, Sentiment Analysis, Speech Analytics.   | <b>10</b> |
| <b>4</b> | Decision Support Systems modeling, Structure of mathematical models for decision support, Certainty, Uncertainty, and Risk, Decision modeling with spreadsheets, Mathematical programming optimization, Decision Analysis with Decision Tables and Decision Trees, Multi-Criteria Decision Making With Pairwise Comparisons. Automated Decision Systems, The Artificial Intelligence field, Basic concepts of Expert Systems, Applications of Expert Systems, | <b>12</b> |

|  |  |  |
|--|--|--|
|  | Structure of Expert Systems, Knowledge Engineering, and Development of Expert Systems. |  |
| <b>Text Books:</b> <ul style="list-style-type: none"> <li>Ramesh Sharda, Dursum Delen, Efraim Turban, J.E. Aronson, Ting-Peng Liang, David King, "Business Intelligence and Analytics: System for Decision Support", 10<sup>th</sup> Edition, Pearson Global Edition.</li> </ul> <b>Reference books</b> <ul style="list-style-type: none"> <li>Data Analytics: The Ultimate Beginner's Guide to Data Analytics Paperback-12 November 2017 by Edward Miz</li> </ul> |  |  |



|                            |                                     |                            |                |
|----------------------------|-------------------------------------|----------------------------|----------------|
| Program Name               | <b>B.Com (Computer Application)</b> | Semester                   | <b>V</b>       |
| Course Title               | <b>Digital Marketing (Theory)</b>   |                            |                |
| Course Code:               | <b>Voc-1</b>                        | No. of Credits             | <b>03</b>      |
| Contact hours              | <b>42 Hours</b>                     | Duration of SEA/Exam       | <b>2 hours</b> |
| Formative Assessment Marks | <b>40</b>                           | Summative Assessment Marks | <b>60</b>      |

**Pedagogy:** Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

**Course Outcomes (COs):**

**After the successful completion of the course, the student will be able to:**

- Understand the fundamental concepts and principles of digital marketing.
- Develop practical skills to implement various digital marketing strategies and techniques
- Analyze and evaluate the effectiveness of digital marketing campaigns.
- Apply critical thinking and problem-solving skills to real-world digital marketing scenarios.
- Create comprehensive digital marketing plans and strategies.

| Module   | Syllabus   | Hours     |
|----------|--|-----------|
| <b>1</b> | <b>Introduction to Digital Marketing:</b> Overview of digital marketing, Evolution of digital marketing, Importance and benefits of digital marketing, Digital marketing channels and platforms Digital Marketing Strategy and Planning: Developing a digital marketing strategy, Setting goals and objectives, Budgeting and resource allocation. Campaign planning and execution, Monitoring and adjusting digital marketing campaigns | <b>10</b> |
| <b>2</b> | <b>Social Media Marketing:</b> Overview of social media marketing, Social media platforms and their features, Creating and optimizing social media profiles, Social media content strategy, Social media advertising and analytics   | <b>10</b> |
| <b>3</b> | <b>Email Marketing:</b> Introduction to email marketing, Building an email list, Creating effective email campaigns, Email automation and segmentation, Email marketing metrics and analytics Content Marketing: Understanding content marketing, Content strategy and planning, Content creation and distribution, Content promotion and amplification, Content marketing metrics and analytics   | <b>11</b> |

|  |   |    |
|--|---|----|
| 4  | <p>Mobile Marketing: Mobile marketing overview, Mobile advertising strategies, Mobile app marketing, Location-based marketing, Mobile marketing analytics</p> <p>Analytics and Reporting: Importance of analytics in digital marketing, Setting up web analytics tools (e.g., Google Analytics), Tracking and measuring key performance indicators (KPIs), Conversion tracking and optimization, Reporting and data visualization</p> | 11 |
| <p><b>Text Books:</b></p> <ul style="list-style-type: none"> <li>• "Digital Marketing Strategy: An Integrated Approach to Online Marketing" by Simon Kingsnorth.</li> </ul> <p><b>References</b></p> <ul style="list-style-type: none"> <li>• "Email Marketing Rules: How to Wear a White Hat, Shoot Straight, and Win Hearts" by Chad S. White</li> <li>• "Content Inc.: How Entrepreneurs Use Content to Build Massive Audiences and Create Radically Successful Businesses" by Joe Pulizzi</li> <li>• "Mobile Marketing: How Mobile Technology is Revolutionizing Marketing, Communications and Advertising" by Daniel Rowles</li> <li>• "Web Analytics 2.0: The Art of Online Accountability and Science of Customer Centricity" by Avinash Kaushik</li> </ul> |   |    |

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| Program Name   | <b>B.Com (Computer Application)</b>  | Semester                   | <b>VI</b>      |
| Course Title   | <b>Advanced Financial Management</b> |                            |                |
| Course Code:   | <b>A-7</b>                           | No. of Credits             | <b>04</b>      |
| Contact hours  | <b>60 Hours (5 hrs./week)</b>        | Duration of<br>SEA/Exam    | <b>2 hours</b> |
| Formative Assessment Marks   | <b>40</b>                            | Summative Assessment Marks | <b>60</b>      |
| <b>Pedagogy:</b> Classrooms lecture, Case studies, Tutorial Classes, Group discussion, Seminar & field work etc.   |                                      |                            |                |
| <b>Course Outcomes:</b><br><b>On successful completion of the course, the students' will be able to</b> <ul style="list-style-type: none"> <li>• Understand and determine the overall cost of capital.</li> <li>• Comprehend the different advanced capital budgeting techniques.</li> <li>• Understand the importance of dividend decisions.</li> <li>• Evaluate mergers and acquisition.</li> <li>• Enable the ethical and governance issues in financial management.</li> </ul> |                                      |                            |                |

| <b>Syllabus:</b>   | <b>Hours</b> |
|--|--------------|
| <b>Module No. 1: Cost of Capital and Capital Structure Theories</b>  | <b>14</b>    |
| Cost of Capital: Meaning and Definition – Significance of Cost of Capital – Types of Capital – Computation of Cost of Capital – Specific Cost – Cost of Debt – Cost of Preference Share Capital – Cost of Equity Share Capital – Weighted Average Cost of Capital – Problems. Theories of capital structures: The Net Income Approach, The Net Operating Income Approach, Traditional Approach and MM Hypothesis – Problems. |              |
| <b>Module No. 2: Risk Analysis in Capital Budgeting</b>  | <b>14</b>    |
| Risk Analysis – Types of Risks – Risk and Uncertainty – Techniques of Measuring Risks – Risk adjusted Discount Rate Approach – Certainty Equivalent Approach – Sensitivity Analysis – Probability Approach – Standard Deviation and Co-efficient of Variation – Decision Tree Analysis – Problems.   |              |
| <b>Module No. 3: Dividend Decision and Theories</b>  | <b>14</b>    |
| Introduction - Dividend Decisions: Meaning - Types of Dividends – Types of Dividends Policies – Significance of Stable Dividend Policy - Determinants of Dividend Policy; Dividend Theories: Theories of Relevance – Walter's Model and Gordon's Model and Theory of Irrelevance – The Miller-Modigliani (MM) Hypothesis - Problems.   |              |
| <b>Module No. 4: Mergers and Acquisitions</b>  | <b>10</b>    |
| Meaning - Reasons – Types of Combinations - Types of Merger – Motives and Benefits of Merger – Financial Evaluation of a Merger - Merger Negotiations – Leverage buyout, Management Buyout Meaning and Significance of P/E Ratio. Problems on Exchange Ratios based on Assets Approach, Earnings Approach and Market Value Approach and Impact of Merger on EPS Market Price and Market capitalization.                      |              |
| <b>Module No. 5: Ethical and Governance Issues</b>   | <b>08</b>    |
| Introduction to Ethical and Governance Issues: Fundamental Principles, Ethical Issues in Financial Management, Agency Relationship, Transaction Cost Theory, Governance Structures and Policies, Social and Environmental Issues, Purpose and Content of an Integrated Report.   |              |

**Skill Development Activities:**

1. Visit an organization in your town and collect data about the financial objectives.
2. Compute the specific cost and weighted average cost of capital of an Organization, you have visited.
3. Case analysis of some live merger reported in business magazines.
4. Meet the financial manager of any company, discuss ethical issues in financial management.
5. Collect the data relating to dividend policies practices by any two companies.
6. Any other activities, which are relevant to the course.

**Books for Reference:**

1. I M Pandey, Financial management, Vikas publications, New Delhi.
2. Abrish Guptha, Financial management, Pearson.
3. Khan & Jain, Basic Financial Management, TMH, New Delhi.
4. S N Maheshwari, Principles of Financial Management, Sulthan Chand & Sons, New Delhi.
5. Chandra & Chandra D Bose, Fundamentals of Financial Management, PHI, New Delhi.
6. B.Mariyappa, Advanced Financial Management, Himalaya Publishing House, New Delhi.
7. Ravi M Kishore, Financial Management, Taxman Publications
8. Prasanna Chandra, Financial Management, Theory and Practice, Tata McGraw Hill.

**Note: Latest edition of text books may be used**

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|---|--------------------------------|----------------------|--------------------------------|
| Program Name  | B.Com (Computer Application)   | Semester             | VI                             |
| Course Title  | Income Tax Law & Practice – II |                      |                                |
| Course Code:  | A-8                            | No. of Credits: 04   |                                |
| Contact hours   | 60 Hours (5 hrs./week)         | Duration of SEA/Exam |                                |
| Formative Assessment Marks  |                                | 40                   | Summative Assessment Marks: 60 |
| <b>Pedagogy:</b> Classrooms lecture, Case studies, Tutorial Classes, Group discussion, Seminar & field work etc.  |                                |                      |                                |
| <b>Course Outcomes: On successful completion of the course, the students' will be able to</b> <ul style="list-style-type: none"><li>Understand the procedure for computation of income from business and other Profession.</li><li>Understand the provisions for determining the capital gains.</li><li>Compute the income from other sources.</li><li>Demonstrate the computation of total income of an Individual.</li><li>Comprehend the assessment procedure and to know the power of income tax authorities.</li></ul> |                                |                      |                                |

| <b>SYLLABUS</b>  | <b>HOURS</b> |
|--|--------------|
| <b>Module No. 1: Profits and Gains of Business and Profession</b>  | <b>18</b>    |
| Introduction-Meaning and definition of Business, Profession and Vocation. - Expenses Expressly allowed - Expenses Expressly Disallowed - Allowable losses - Expressly disallowed expenses and losses, Expenses allowed on payment basis. Problems on computation of income from business of a sole trading concern - Problems on computation of income from profession: Medical Practitioner - Advocate and Chartered Accountants. |              |
| <b>Module No. 2: Capital Gains</b>   | <b>12</b>    |
| Introduction - Basis for charge - Capital Assets - Types of capital assets – Transfer - Computation of capital gains – Short term capital gain and Long term capital gain - Exemptions under section 54, 54B, 54EC, 54D, 54F, and 54G. Problems covering the above sections.   |              |
| <b>Module No. 3: Income from other Sources</b>   | <b>10</b>    |
| Introduction - Incomes taxable under Head income other sources – Securities - Types of Securities - Rules for Grossing up. Ex-interest and cum-interest securities. Bond Washing Transactions - Computation of Income from other Sources.  |              |
| <b>Module No. 4: Set Off and Carry Forward of Losses &amp; Assessment of individuals.</b>  | <b>12</b>    |
| Introduction – Provisions of Set off and Carry Forward of Losses (Theory only) - Computation of Total Income and tax liability of an Individual.   |              |
| <b>Module No. 5: Assessment Procedure and Income Tax Authorities:</b>  | <b>08</b>    |
| Introduction - Due date of filing returns, Filing of returns by different assesses, E- filing of returns, Types of Assessment, Permanent Account Number - Meaning, Procedure for obtaining PAN and transactions were quoting of PAN is compulsory. Income Tax Authorities their Powers and duties.   |              |

**Skill Development activities:**

- Visit any chartered accountant office and identify the procedure involved in the computation of income from profession.
- List out the different types of capital assets and identify the procedure involved in the computation of tax for the same.
- List out the steps involved in the computation of income tax from other sources and critically examine the same.
- Identify the Due date for filing the returns and rate of taxes applicable for individuals.
- Draw an organization chart of Income Tax department in your locality.
- Any other activities, which are relevant to the course.

**Books for Reference:**

1. Mehrotra H.C and T.S.Goyal, Direct taxes, Sahithya Bhavan Publication, Agra.
2. Vinod K. Singhania, Direct Taxes, Taxman Publication Private Ltd, New Delhi
3. Gaur and Narang, Law and practice of Income Tax, Kalyani Publicat Ludhiana.
4. Bhagawathi Prasad, Direct Taxes.
5. B.Mariyappa, Income tax Law and Practice-II, Himalaya Publishing House. Delhi.
6. Dr. Saha, Law and Practice of Income Tax, Himalaya Publishing House.

**Note: Latest edition of text books may be used.**

|                            |                                     |                      |                            |
|----------------------------|-------------------------------------|----------------------|----------------------------|
| Program Name               | <b>B.Com (Computer Application)</b> | Semester             | <b>VI</b>                  |
| Course Title               | <b>PHP and MySQL (Theory)</b>       |                      |                            |
| Course Code:               | <b>DSC-B16</b>                      | No. of Credits       | <b>4</b>                   |
| Contact hours              | <b>42 Hours</b>                     | Duration of SEA/Exam | <b>2hours</b>              |
| Formative Assessment Marks |                                     | <b>40</b>            | Summative Assessment Marks |
|                            |                                     |                      | <b>60</b>                  |

**Pedagogy:** Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe- Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

#### **Course Outcomes:**

After the successful completion of the course, the student will be able to:

- Design dynamic and interactive web pages and websites.
- Run PHP scripts on the server and retrieve results.
- Handle databases like MySQL using PHP in websites.

| <b>Module</b> | <b>Syllabus</b>  | <b>Hours</b> |
|---------------|--|--------------|
| <b>1</b>      | Introduction to PHP: Introduction to PHP, History and Features of PHP, Installation & Configuration of PHP, Embedding PHP code in Your Web Pages, Understanding PHP, HTML and White Space, Writing Comments in PHP, Sending Data to the Web Browser, Data types in PHP, Keywords in PHP, Using Variables, Constants in PHP, Expressions in PHP, Operators in PHP.  | <b>11</b>    |
| <b>2</b>      | Programming with PHP: Conditional statements: if, if-else, switch, The ? Operator, Looping statements: while Loop, do-while Loop, for Loop Arrays in PHP: Introduction- What is Array?, Creating Arrays, Accessing Array elements, Types of Arrays: Indexed v/s Associative arrays, Multidimensional arrays, Creating Array, Accessing Array, Manipulating Arrays, Displaying array, Using Array Functions, Including and Requiring Files- use of Include() and Require(), Implicit and Explicit Casting in PHP. | <b>11</b>    |
| <b>3</b>      | Using Functions , Class- Objects, Forms in PHP: Functions in PHP, Function definition, Creating and invoking user-defined functions, Formal parameters versus actual parameters, Function and variable scope, Recursion, Library functions, Date and Time Functions Strings in PHP: What is String?, Creating and Declaring String, String Functions   | <b>10</b>    |
| <b>4</b>      | Class & Objects in PHP: What is Class & Object, Creating and accessing a Class & Object, Object properties, object methods, Overloading, inheritance, Constructor and Destructor Form Handling: Creating HTML Form, Handling HTML Form data in PHP Database Handling Using PHP with MySQL: Introduction to MySQL: Database terms, Data Types. Accessing MySQL –Using MySQL Client and Using php MyAdmin, MySQL Commands, Using PHP with MySQL: PHP MySQL Functions, Connecting to MySQL and                      | <b>10</b>    |

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|  | Selecting the Database, Executing Simple Queries, Retrieving Query Results, Counting Returned Records, Updating Records with PHP |  |
| <b>Text Books:</b> <ul style="list-style-type: none"> <li>• PHP &amp; MySQL for Dynamic Web Sites- Fourth Edition By Larry Ullman.</li> </ul> <b>References:</b> <ul style="list-style-type: none"> <li>• Learning PHP, MySQL and JavaScript By Robin Nixon –O'REILLY Publications</li> <li>• Programming PHP By Rasmus Lerdorf, Kevin Tatroe, Peter MacIntyre</li> <li>• SAMS Teach Yourself PHP in 24 hours, Author: Matt Zandstra, Sams Publishing</li> </ul> |  |  |



|                            |                                     |                            |               |
|----------------------------|-------------------------------------|----------------------------|---------------|
| Program Name               | <b>B.Com (Computer Application)</b> | Semester                   | <b>VI</b>     |
| Course Title               | <b>R Programming (Theory)</b>       |                            |               |
| Course Code:               | <b>DSC-B17</b>                      | No. of Credits             | <b>03</b>     |
| Contact hours              | <b>42 Hours</b>                     | Duration of SEA/Exam       | <b>2hours</b> |
| Formative Assessment Marks | <b>40</b>                           | Summative Assessment Marks | <b>60</b>     |

**Pedagogy:** Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe- Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

**Course Outcomes (COs):**

After the successful completion of the course, the student will be able to:

- CO1. Explore fundamentals of statistical analysis in R environment.
- CO2. Describe key terminologies, concepts and techniques employed in Statistical Analysis.
- CO3. Define Calculate, Implement Probability and Probability Distributions to solve a wide variety of problems.
- CO4. Conduct and interpret a variety of Hypothesis Tests to aid Decision Making.
- CO5. Understand, Analyse, and Interpret Correlation Probability and Regression to analyse the underlying relationships between different variables.

| Module   | Syllabus  | Hours     |
|----------|---|-----------|
| <b>1</b> | Introduction of the language, numeric, arithmetic, assignment, and vectors, Matrices and Arrays, Non-numeric Values, Lists and Data Frames, Special Values, Classes, and Coercion, Basic Plotting.  | <b>11</b> |
| <b>2</b> | Reading and writing files, Programming, Calling Functions, Conditions and Loops: stand- alone statement with illustrations in exercise, stacking statements, coding loops, Writing Functions, Exceptions, Timings, and Visibility. Basic Data Visualization.<br>Advanced graphics: plot customization, plotting regions and margins, point and click coordinate interaction, customizing traditional R plots, specialized text and label notation. Defining colors and plotting in higher dimensions, representing and using color, 3D scatter plots.   | <b>11</b> |
| <b>3</b> | <b>Descriptive Statistics:</b> Types of Data, Nominal, Ordinal, Scale and Ratio, Measures of Central Tendency, Mean, Mode and Median, Percentiles, Quartiles, Measures of Variability, Mean Absolute Deviation Range, Inter-Quartile-Range, Standard Deviation, Z-Scores.Cofficient of Variation, Measure of shaper-Skewness and Kurtosis, Bar Chart, Pie Chart and Box Plot, Histogram, Frequency Polygon, Stem and Leaf Diagram.<br><b>Probability, Probability and Sampling Distribution:</b> Methods of assigning probability, Structure of probability, Marginal, union, joint and conditional probabilities. Discrete Probability Distributions: Binomial, Poisson, | <b>10</b> |

|   |   |           |
|---|---|-----------|
|   | Continuous Probability Distribution, Normal Distribution, Uniform Distribution. Estimating the population mean using the and t-distribution.  |           |
| <b>4</b>  | <p><b>Statistical Inference and Hypothesis Testing:</b> Types of Hypothesis, and Sample, Null and Alternate Hypothesis, Level of Significance, Type I and Type II Errors, One Sample t-Test, One Sample Proportion Test, Paired Sample t-Test, Independent Samples t-Test, Two Sample Proportion Tests, One Way Analysis of Variance and Chi Square Test.</p> <p><b>Correlation and Regression:</b> Analysis of Relationship, Positive and Negative Correlation, Perfect Correlation, Karl Pearson Coefficient of Correlation, Correlation Matrix, Scatter Plots, Simple Regression Analysis.</p> | <b>10</b> |
| <p><b>Text Books:</b></p> <ul style="list-style-type: none"> <li>• Tilman M. Davies, "The book of R: A first course in programming and statistics", San Francisco, 2016.</li> <li>• Ken Black, Business Statistics, New Delhi, Wiley, 2013.</li> </ul> <p><b>References:</b></p> <ul style="list-style-type: none"> <li>• Vishwas R. Pawgi, "Statistical computing using R software", Nirali prakashan publisher, e1 edition, 2022.</li> <li>• <a href="https://www.youtube.com/watch?v=KlsYCECWewe">https://www.youtube.com/watch?v=KlsYCECWewe</a></li> <li>• <a href="https://www.geeksforgeeks.org/r-tutorial/">https://www.geeksforgeeks.org/r-tutorial/</a></li> <li>• <a href="https://www.tutorialspoint.com/r/index.html">https://www.tutorialspoint.com/r/index.html</a></li> </ul> |   |           |

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| Program Name               | <b>B.Com (Computer Application)</b>        | Semester                   | <b>VI</b>      |
| Course Title               | <b>PHP and MySQL and R-Programming Lab</b> |                            |                |
| Course Code:               | <b>DSC-B18 LAB</b>                         | No. of Credits             | <b>02</b>      |
| Contact hours              | <b>04 Hours per week</b>                   | Duration of SEA/Exam       | <b>3 hours</b> |
| Formative Assessment Marks | <b>25</b>                                  | Summative Assessment Marks | <b>25</b>      |

**Evaluation Scheme for Lab Examination:**

| <b>Assessment Criteria</b> |  |                 |
|----------------------------|--|-----------------|
| <b>Program-1</b>           | <b>PART-A</b><br><b>Writing:5 Marks Execution:5Marks</b> | <b>10 Marks</b> |
| <b>Program-2</b>           | <b>PART-B</b><br><b>Writing:5 Marks Execution:5Marks</b> | <b>10 Marks</b> |
| <b>Practical Record</b>    |  | <b>05 Marks</b> |
| <b>Total</b>               |  | <b>25 Marks</b> |

|   |  |                            |                |
|---|--|----------------------------|----------------|
| Program Name  | <b>B.Com (Computer Application)</b>          | Semester                   | <b>VI</b>      |
| Course Title  | <b>Fundamentals of Data Science (Theory)</b> |                            |                |
| Course Code:  | <b>DSE-E2</b>                                | No. of Credits             | <b>03</b>      |
| Contact hours   | <b>42 Hours</b>                              | Duration of SEA/Exam       | <b>2 hours</b> |
| Formative Assessment Marks  | <b>40</b>                                    | Summative Assessment Marks | <b>60</b>      |
| <b>Pedagogy:</b> Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc. |  |                            |                |
| <b>Course Outcomes (COs):</b><br>After the successful completion of the course, the student will be able to: <ul style="list-style-type: none"> <li>Understand the concepts of data and pre-processing of data.</li> <li>Know simple pattern recognition methods</li> <li>Understand the basic concepts of Clustering and Classification</li> </ul> Know the recent trends in Data Science  |  |                            |                |

| Module   | Syllabus  | Hours     |
|----------|---|-----------|
| <b>1</b> | <b>Data Mining:</b> Introduction, Data Mining Definitions, Knowledge Discovery in Databases (KDD) Vs Data Mining, DBMS Vs Data Mining, DM techniques, Problems, Issues and Challenges in DM, DM applications.   | <b>11</b> |
| <b>2</b> | <b>Data Warehouse:</b> Introduction, Definition, Multidimensional Data Model, Data Cleaning, Data Integration and transformation, Data reduction, Discretization  | <b>11</b> |
| <b>3</b> | <b>Mining Frequent Patterns:</b> Basic Concept – Frequent Item Set Mining Methods -Apriori and Frequent Pattern Growth (FP Growth) algorithms -Mining Association Rules   | <b>10</b> |
| <b>4</b> | <b>Classification:</b> Basic Concepts, Issues, And Algorithms: Decision Tree Induction. Bayes Classification Methods, Rule-Based Classification, Lazy Learners (or Learning from your Neighbours), k Nearest Neighbour. Prediction - Accuracy- Precision and Recall<br><b>Clustering:</b> Cluster Analysis, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods, Evaluation of Clustering | <b>10</b> |

**Text Books:**

- Jiawei Han and Micheline Kambar – “Data Mining Concepts and Techniques” II Ed.

**Reference Books:**

- Arun K Pujari – “Data Mining Techniques” 4th Edition, Universities Press 3
- Pang-Ning Tan, Michael Steinbach, Vipin Kumar: Introduction to Data Mining, Pearson Ed., 2012.
- K.P.Soman, Shyam D, V.Ajay: Insight into Data Mining – Theory and Practice, PHI 5
- Pang-Ning Tan, Michael Steinbach, Vipin Kumar - “Introduction to Data Mining”, Pearson Edu.

|                            |  |                            |                |
|----------------------------|--|----------------------------|----------------|
| Program Name               | <b>B.Com (Computer Application)</b>            | Semester                   | <b>VI</b>      |
| Course Title               | <b>Mobile Application Development (Theory)</b> |                            |                |
| Course Code:               | <b>DSE-E2</b>                                  | No. of Credits             | <b>03</b>      |
| Contact hours              | <b>42 Hours</b>                                | Duration of SEA/Exam       | <b>2 hours</b> |
| Formative Assessment Marks | <b>40</b>                                      | Summative Assessment Marks | <b>60</b>      |

**Pedagogy:** Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

**Course Outcomes (COs):**

After the successful completion of the course, the student will be able to:

- Create Servlets for server side programming Create, test and debug Android application by setting up Android development environment
- Critique mobile applications on their design pros and cons,
- Program mobile applications for the Android operating system and understand techniques for designing and developing sophisticated mobile interfaces
- Deploy applications to the Android marketplace for distribution.

| Module   | Syllabus  | Hours     |
|----------|---|-----------|
| <b>1</b> | <b>Android OS design and Features:</b> Android development framework, SDK features, Installing and running applications on Android Studio, Creating AVDs, Types of Android applications, Best practices in Android programming, Android tools, Building your First Android application.   | <b>11</b> |
| <b>2</b> | <b>Android Application Design Essentials:</b> Anatomy of an Android applications, Android terminologies, Application Context, Activities, Services, Intents, Receiving and Broadcasting Intents, Android Manifest File and its common settings, Using Intent Filter, Permissions.   | <b>11</b> |
| <b>3</b> | <b>Android User Interface Design Essentials:</b> User Interface Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation. Testing Android applications, Publishing Android application, Using Android preferences, Managing Application resources in a hierarchy, working with different types of resources. | <b>10</b> |
| <b>4</b> | <b>Using Common Android APIs:</b> Using Android Data and Storage APIs, Managing data using Sqlite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs, Deploying Android Application to the World.   | <b>10</b> |

**Text Books:**

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

**Reference Books:**

- Reto Meier, "Professional Android 2 Application Development", Wiley India Pvt Ltd
- Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd
- Android Application Development All in one for Dummies by Barry Burd, Edition: I
- Beginning Android 4 Application Development, Wei-Meng Lee, Wiley India (Wrox), 2013
- Professional Android 4 Application Development, Reto Meier, Wiley India, (Wrox), 2012.

|                               |   |                               |                |
|-------------------------------|---|-------------------------------|----------------|
| Program Name                  | <b>B.Com (Computer Application)</b>           | Semester                      | <b>VI</b>      |
| Course Title                  | <b>Web Content Management System (Theory)</b> |                               |                |
| Course Code:                  | <b>Voc-2</b>                                  | No. of Credits                | <b>03</b>      |
| Contact hours                 | <b>42 Hours</b>                               | Duration of<br>SEA/Exam       | <b>2 hours</b> |
| Formative<br>Assessment Marks | <b>40</b>                                     | Summative<br>Assessment Marks | <b>60</b>      |

**Pedagogy:** Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

**Course Outcomes (COs):**

After the successful completion of the course, the student will be able to:

- Understand content development basics
- Gain Knowledge of tools for multimedia content development for audio/ video, graphics, animations, presentations, screen casting
- Host websites and develop content for social media platforms such as wiki and blog.
- Understand e-publications and virtual reality
- Use of e-learning platform Moodle and CMS applications Drupal and Joomla

| Module   | Syllabus  | Hours     |
|----------|---|-----------|
| <b>1</b> | Web Content Development and Management, Content Types and Formats, Norms and Guidelines of Content Development, Creating Digital Graphics, Audio Production and Editing.  | <b>11</b> |
| <b>2</b> | Web Hosting and Managing Multimedia Content, Creating and Maintaining a Wiki Site. Presentation Software Part I, Presentation Software Part II, Screen casting Tools and Techniques, Multilingual Content Development.  | <b>11</b> |
| <b>3</b> | Planning and Developing Dynamic Web Content Sites, Website Design Using CSS Creating and Maintaining a WIKI Site, Creating and Managing a Blog Site,  | <b>10</b> |
| <b>4</b> | E- Publication Concept, E- Pub Tools, Simulation and Virtual Reality Applications, Creating 2D and 3 D Animations. Introduction to Moodle, creating a New Course and Uploading, Create and Add Assessment, Add and Enroll User and Discussion Forum, Content Management System: Joomla, Content Management System: Drupal | <b>10</b> |

**Text Books:**

- Web Content Management: Systems, Features, and Best Practices 1st Edition by Deane Barker.

**Reference Books:**

- Content Management Bible (2nd Edition) 2nd Edition by Bob Boiko.
- Using Joomla!: Efficiently Build and Manage Custom Websites 2nd Edition by Ron Severdia

Additional Reading:

- [https://onlinecourses.swayam2.ac.in/cec20\\_lb09/preview](https://onlinecourses.swayam2.ac.in/cec20_lb09/preview)

|                            |                                     |                            |                |
|----------------------------|-------------------------------------|----------------------------|----------------|
| Program Name               | <b>B.Com (Computer Application)</b> | Semester                   | <b>VI</b>      |
| Course Title               | <b>Internship</b>                   |                            |                |
| Course Code:               | <b>SEC-5</b>                        | No. of Credits             | <b>02</b>      |
| Contact hours              | <b>30 Hours</b>                     | Duration of<br>SEA/Exam    | <b>2 hours</b> |
| Formative Assessment Marks | <b>20</b>                           | Summative Assessment Marks | <b>30</b>      |

### **GUIDELINES FOR CONDUCTING INTERNSHIP:**

Internships can cover a wide range of concepts and topics and some common concepts that can be covered under various types of internships:

- **Technical Skills**
  - Depending on the field, interns can develop technical skills such as programming languages, software tools, data analysis, design software, and more.
- **Soft Skills:**
  - Communication: Written and verbal communication skills, including effective email communication, presentations, and client interactions.
  - Teamwork: Collaborating with colleagues, working in cross-functional teams, and building effective relationships.
  - Time Management: Prioritizing tasks, managing deadlines, and staying organized.
  - Problem Solving: Analysing challenges, identifying solutions, and making informed decisions.
  - Adaptability: Handling changes, learning new processes, and adjusting to evolving situations.
- **Innovation and Entrepreneurship:**
  - Exploring innovative business ideas, product development, market research, and business model creation.
- **Data Analytics and Interpretation:**
  - Learning how to work with data, perform analysis, and derive insights to inform decision-making.
- **Leadership and Management:**
  - Developing leadership skills, understanding different management styles, and learning how to motivate teams.

These are just a few examples of the many concepts that can be covered in internship programs. The specific concepts/coverage of the above will vary based on college infrastructure and faculty competence. It is important to tailor the internship experience to align with the interns' career goals and the industry needs.

### **EVALUATION:**

The report shall be prepared by the student under the guidance of the identified mentor in the college and submitted to the Head of the Department for evaluation. The report shall be evaluated by the two internal faculty members and submit the final sessional and summative marks to the university.