

Indira Gandhi University Meerpur, Rewari

(A State University established under Haryana Act No.29 of 2013)

Recognized u/s 12 (b) and 2(f) of UGC Act, 1956



Scheme of Examination for Under-Graduate Programmes

Skill Enhancement Courses (SEC)

Offered by Department of Computer Science & Engineering

According to

Curriculum Framework for Under-Graduate Programmes

As per NEP-2020 (Multiple Entry-Exit, Internships and Choice Based Credit System)

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

(For the Batches Admitted from 2024-2025)

Indira Gandhi University, Meerpur, Rewari
Scheme of Examination for Undergraduate Programmes
Skill Enhancement Courses (Computer Science)
According to Curriculum Framework for Undergraduate Programmes
as per NEP 2020 (Multiple Entry-Exit, Internships and Choice Based Credit System)

| Sem | Course Type | Course Code | Nomenclature of paper | Credits | Contact hours | Internal marks | End term Marks | Total Marks | Duration of exam (Hrs) T + P |
|-----|-------------|--------------------|---------------------------------------|---------|---------------|----------------|----------------|-------------|------------------------------|
| I | SEC | 24L4.5-SEC-CSE-101 | Office and Spreadsheet Tools Learning | 2 | 2 | 15 | 35 | 50 | 3 |
| | | | Practical | 1 | 2 | 5 | 20 | 25 | 3 |
| | SEC | 24L4.5-SEC-CSE-102 | Advance Spreadsheet Tools | 2 | 2 | 15 | 35 | 50 | 3 |
| | | | Practical | 1 | 2 | 5 | 20 | 25 | 3 |
| | SEC | 24L4.5-SEC-CSE-103 | Basic IT Tools | 2 | 2 | 15 | 35 | 50 | 3 |
| | | | Practical | 1 | 2 | 5 | 20 | 25 | 3 |
| | SEC | 24L4.5-SEC-CSE-104 | Essentials of Python | 2 | 2 | 15 | 35 | 50 | 3 |
| | | | Practical | 1 | 2 | 5 | 20 | 25 | 3 |
| | SEC | 24L4.5-SEC-CSE-105 | Introductory Course in R | 2 | 2 | 15 | 35 | 50 | 3 |
| | | | Practical | 1 | 2 | 5 | 20 | 25 | 3 |
| | SEC | 24L4.5-SEC-CSE-106 | Computer Programming in C | 2 | 2 | 15 | 35 | 50 | 3 |
| | | | Practical | 1 | 2 | 5 | 20 | 25 | 3 |

Indira Gandhi University Meerpur, Rewari

(A State University established under Haryana Act No.29 of 2013)

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Syllabus of Examination for Under-Graduate Programmes

SKILL ENHANCEMENT COURSES (SEC)

according to

Curriculum Framework for Under-Graduate Programmes

As per NEP-2020 (Multiple Entry-Exit, Internships and Choice Based Credit System)

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

(For the Batches Admitted From 2024-2025)

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
INDIRA GANDHI UNIVERSITY, MEERPUR, REWARI**

| Session: 2024-25 | | | |
|---|--|----------------------------------|-------|
| Part A - Introduction | | | |
| Subject | COMPUTER SCIENCE | | |
| Semester | I | | |
| Name of the Course | Office and spreadsheet Tools Learning | | |
| Course Code | 24L4.5-SEC-CSE-101 | | |
| Course Type: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/ VAC) | SEC | | |
| Level of the course (As per An- nexure-I) | | | |
| Pre-requisite for the course (if any) | | | |
| Course Learning Outcomes(CLO): | <p>After completing this course, the learner will be able to:</p> <ol style="list-style-type: none"> 1. understand the basic concepts of operating systems 2. do the basic editing and formatting in a document 3. create basic spread-sheets for different purposes 4. create basic presentations for different applications <hr/> <p>5*. to understand the working of operating system and various office tools practically.</p> | | |
| Credits | Theory | Practical | Total |
| | 2 | 1 | 3 |
| Contact Hours | 2 | 2 | 4 |
| Max. Marks:75(50(T)+25(P)) | | Time: 3 Hrs.(T), 3Hrs.(P) | |
| Internal Assessment Marks:20(15(T)+5(P)) | | | |
| End Term Exam Marks: 55(35(T)+20(P)) | | | |
| Part B-Contents of the Course | | | |
| <u>Instructions for Paper- Setter</u> | | | |
| <p>Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus.</p> <p>Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.</p> <p>Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.</p> | | | |

| Unit | Topics | Contact Hours |
|--|--|---|
| I | Operating System - Definition, Functions, Types of Operating System, Basics of Popular Operating Systems, The User Interface, Exploring Computer, Icons, taskbar, desktop, Using Menu and Menu-selection, managing files and folders, Control panel – display properties, add/remove software and hardware, Common utilities. | 4 |
| II | Word Processing - Introduction to Word Processing, Menus, Creating, Editing & Formatting Document, Spell Checking, Printing, Views, Tables, Word Art, Mail Merge, Macros, Inserting hyperlinks, Searching for text, Modifying page setup, Applying document themes, Applying document style sets, Inserting headers and footers. | 7 |
| III | Spread Sheet: Elements of Electronics Spread Sheet, Applications, Creating and Opening of Spread Sheet, Menus, Manipulation of cells: Enter texts numbers and dates, Cell Height and Widths, Copying of cells, Mathematical, Statistical and Financial function, Drawing different types of charts, Sort and Filter Data. | 7 |
| IV | Presentation Software: Creating, Modifying and enhancing a presentation, Type of presentation views, Using sound, Animation, Working with Objects, Printing. | 7 |
| V* | Practicum: Operating System: <ul style="list-style-type: none"> • Starting with basics of Operating Systems and its functionalities Word Processing: <ul style="list-style-type: none"> • Create and format word documents. • Use tables, word Art and other features in your documents. • Use macros to simplify the tasks in a document. • Use mail merge to write once for many. Spread Sheet: <ul style="list-style-type: none"> • Use spreadsheet for basic data handling • Apply formulas to sheet for automation. • Use Charts & Shapes for better visualization of the data. • Use sorting and filtering of the data Presentation Software: <ul style="list-style-type: none"> • Prepare and format presentations. • Apply slide transitions, animations and sequencing for slides. • Apply different formatting and insert options to make presentation better. • Applying sound and animation. | 25 |
| Suggested Evaluation Methods | | |
| Internal Assessment: > Theory <ul style="list-style-type: none"> • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 | | End Term Examination: A three hour exam for both theory and |

| | |
|---|-------------------|
| <p>➤ Practicum</p> <ul style="list-style-type: none"> • Class Participation: 2 • Seminar/Demonstration/Viva-voce/Lab records etc.: 3 • Mid-Term Exam: NA | <p>practicum.</p> |
| <p>Part C-Learning Resources</p> | |
| <p>Recommended Books/e-resources/LMS:</p> <ul style="list-style-type: none"> • Help files from Apache Open Office, https://wiki.openoffice.org/wiki/Documentation • Channelle Andy, “Beginning OpenOffice 3: From Novice to Professional”, Press Publications • Beginning OpenOffice 3: From Novice to Professional, Andichannele, Apress. • Microsoft Office 2016 Step by Step: MS Office 2016 Step by Step, By Joan Lambert, Curtis Frye • Computer Fundamentals - By Pradeep K. Sinha, Priti Sinha, BPB Publications, 6th Edition • Getting Started with LibreOffice 5.0, Friends of Open Documents Inc., http://friendsofopendocument.com • Documentation from LibreOffice, https://documentation.libreoffice.org/en/english-documentation/ | |

*Applicable for courses having practical component.

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
INDIRA GANDHI UNIVERSITY, MEERPUR, REWARI**

| Session: 2024-25 | | | |
|---|--|----------------------------------|-------|
| Part A - Introduction | | | |
| Subject | COMPUTER SCIENCE | | |
| Semester | I | | |
| Name of the Course | Advance Spreadsheet Tools | | |
| Course Code | 24L4.5-SEC-CSE-102 | | |
| CourseType: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/VAC) | SEC | | |
| Level of the course (As per Annex- ure-I) | | | |
| Pre-requisite for the course (if any) | | | |
| Course Learning Outcomes(CLO): | After completing this course, the learner will be able to: <ol style="list-style-type: none"> 1. create and format spreadsheets 2. create and format tables and applying formulas in a spreadsheet 3. create charts and protect worksheets 4. create and use pivot charts and tables <hr style="width: 20%; margin-left: 0;"/> 5*. to implement various spreadsheet tools practically. | | |
| Credits | Theory | Practical | Total |
| | 2 | 1 | 3 |
| Contact Hours | 2 | 2 | 4 |
| Max. Marks:75(50(T)+25(P)) | | Time: 3 Hrs.(T), 3Hrs.(P) | |
| Internal Assessment Marks:20(15(T)+5(P)) | | | |
| End Term Exam Marks:55(35(T)+20(P)) | | | |
| Part B-Contents of the Course | | | |
| <u>Instructions for Paper- Setter</u> | | | |
| <p>Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus.</p> <p>Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.</p> <p>Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.</p> | | | |

| Unit | Topics | Contact Hours |
|---|---|--|
| I | Manage Workbook Options and Settings: Create Worksheets and Workbooks, navigate in Worksheets and Workbooks, Format Worksheets and Workbooks, Customize Options and Views for Worksheets and Workbooks, Configure Worksheets and Workbooks for Distribution Apply Custom Data Formats and Layouts: Apply Custom Data Formats and Validation, Apply Advanced Conditional Formatting and Filtering, Create and Modify Custom Workbook Elements | 6 |
| II | Create Tables: Create and Manage Tables, Manage Table Styles and Options, Filter and Sort a Table Perform Operations with Formulas and Functions: Summarize Data by using Functions, Perform Conditional Operations by using Functions, Format and Modify Text by using Functions. | 6 |
| III | Create Charts and Objects: Create Charts, Format Charts, Insert and Format Objects Manage Workbook Options and Settings: Manage Workbooks, Manage Workbook Review Restrict editing | 6 |
| IV | Create Advanced Formulas: Apply Functions in Formulas, Look up data by using Functions, Apply Advanced Date and Time Functions, Perform Data Analysis and Business Intelligence, Define Named Ranges and Objects, Create Advanced Charts and Tables: Create and Manage PivotTables, Create and Manage Pivot Charts | 6 |
| V* | Practicum: Spread Sheet: <ul style="list-style-type: none"> • Use spreadsheet for basic data handling • Apply formulas to sheet for automation. • Use if-else to make certain decisions in a sheet. • Use Charts & Shapes for better visualization of data. • Use filters and data validation controls for control of data • Formatting data and spreadsheets • Creating and managing tables • Use Pivot table and charts • Use what-if analysis along with goal seek and scenarios | 25 |
| Suggested Evaluation Methods | | |
| Internal Assessment: <ul style="list-style-type: none"> > Theory <ul style="list-style-type: none"> • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:4 • Mid-Term Exam: 7 > Practicum <ul style="list-style-type: none"> • Class Participation: 2 | | End Term Examination: A three hour exam for both theory and practicum. |

- Seminar/Demonstration/Viva-voce/Lab records etc.:3
- Mid-Term Exam: NA

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Help files from Apache Open Office, <https://wiki.openoffice.org/wiki/Documentation>
- Channelle Andy, “Beginning OpenOffice 3: From Novice to Professional”, aPress Publications
- Beginning OpenOffice 3: From Novice to Professional, Andichannele, Apress.
- Microsoft Office 2016 Step by Step: MS Office 2016 Step by Step, By Joan Lambert, Curtis Frye
- Getting Started with LibreOffice 5.0, Friends of OpenDocuments Inc., <Http://friendsofopendocument.com>
- Documentation from LibreOffice, <https://documentation.libreoffice.org/en/english-documentation/>
- Walter Holland, Microsoft Office 2013 Digital Classroom
- Wayne L. Winston, Data Analysis and Business Modeling

*Applicable for courses having practical component.

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
INDIRA GANDHI UNIVERSITY, MEERPUR, REWARI**

| Session: 2024-25 | | | |
|--|--|----------------------------------|-------|
| Part A - Introduction | | | |
| Subject | COMPUTER SCIENCE | | |
| Semester | I | | |
| Name of the Course | Basic IT Tools | | |
| Course Code | 24L4.5-SEC-CSE-103 | | |
| Course Type: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/VAC) | SEC | | |
| Level of the course (As per Annex- ure-I) | | | |
| Pre-requisite for the course (if any) | | | |
| Course Learning Outcomes(CLO): | <p>After completing this course, the learner will be able to:</p> <ol style="list-style-type: none"> 1. Identify the basic components of computers and terminology 2. acquaint with Operating System and its applications for both desktop and mobile devices 3. Understand computer networks, and browse the internet, content search, email and collaborate with peers 4. Use e-Governance applications; and use computer to improve existing skills and learn new skills <hr/> <p>5*. to implement various spreadsheet tools practically.</p> | | |
| Credits | Theory | Practical | Total |
| | 2 | 1 | 3 |
| Contact Hours | 2 | 2 | 4 |
| Max. Marks:75(50(T)+25(P)) | | Time: 3 Hrs.(T), 3Hrs.(P) | |
| Internal Assessment Marks:20(15(T)+5(P)) | | | |
| End Term Exam Marks:55(35(T)+20(P)) | | | |
| Part B-Contents of the Course | | | |
| <u>Instructions for Paper- Setter</u> | | | |
| <p>Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus.</p> | | | |

Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.
Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

| Unit | Topics | Contact Hours |
|---|---|--|
| I | Introduction to Computer: Computer and Latest IT gadgets, Evolution of Computers & its applications, Basics of Hardware and Software, Application Software, Systems Software, Utility Software. Central Processing Unit, Input devices, Output devices, Computer Memory & storage, Mobile Apps. | 6 |
| II | Introduction to Operating System, Functions of the Operating system, Operating Systems for Desktop and Laptop, Operating Systems for Mobile Phone and Tablets, User Interface for Desktop and Laptop, Task Bar, Icons & shortcuts, Running an Application, Operating System Simple Setting, Changing System Date and Time, Changing Display Properties, To Add or Remove Program and Features, Adding, Removing & Sharing Printers, File and Folder Management. | 6 |
| III | Introduction to Internet and World Wide Web, Basic of Computer Networks, Local Area Network (LAN), Wide Area Network (WAN), Network Topology, Internet, Applications of Internet, Website Address and URL, Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.), Popular Search Engines, Searching on the Internet. | 6 |
| IV | E-mail: Using E-mails, Opening Email account, Mailbox: Inbox and Outbox, Creating and Sending a new E-mail, replying to an E-mail message, forwarding an E-mail message, searching emails, Attaching files with email, Email Signature. Social Networking: Facebook, Twitter, LinkedIn, Instagram, Instant Messaging (WhatsApp, Facebook Messenger, Telegram), Introduction to Blogs, Digital Locker. | 6 |
| V* | Practicum: <ul style="list-style-type: none"> • Identify the various parts of computer • Using computer/mobile software and hardware • Use of operating system for various tasks such as file creation, directory creation, shortcut creation, using control panel, etc. • Using Internet & various browsers. • Identify the various hardware/software required for Internet • How to create and use e-mail account • Using Facebook, WhatsApp, Instagram, LinkedIn, Telegram • Writing blogs | 25 |
| Suggested Evaluation Methods | | |
| Internal Assessment: > Theory | | End Term Examination: A three hour ex- |

| | |
|---|-----------------------------------|
| <ul style="list-style-type: none"> • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:4 • Mid-Term Exam: 7 <p>➤ Practicum</p> <ul style="list-style-type: none"> • Class Participation: 2 • Seminar/Demonstration/Viva-voce/Lab records etc.:3 • Mid-Term Exam: NA | am for both theory and practicum. |
| PartC-Learning Resources | |
| <p>Recommended Books/e-resources/LMS:</p> <ul style="list-style-type: none"> • Sinha, P.K. & Sinha, Priti, Computer Fundamentals, BPB • Dromey, R.G., How to Solve it By Computer, PHI • Norton, Peter, Introduction to Computer, McGraw-Hill • Leon, Alexis & Leon, Mathews, Introduction to Computers, Leon Tech World • Rajaraman, V., Fundamentals of Computers, PHI • Ram, B., Computer Fundamentals, Architecture & Organization, New Age International (P) Ltd. | |

*Applicable for courses having practical component.

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
INDIRA GANDHI UNIVERSITY, MEERPUR, REWARI**

| Session: 2024-25 | | | |
|--|--|----------------------------------|-------|
| Part A - Introduction | | | |
| Subject | COMPUTER SCIENCE | | |
| Semester | I | | |
| Name of the Course | Essentials of Python | | |
| Course Code | 24L4.5-SEC-CSE-104 | | |
| Course Type: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/ VAC) | SEC | | |
| Level of the course (As per Annexure-I) | | | |
| Pre-requisite for the course (if any) | | | |
| Course Learning Outcomes(CLO): | After completing this course, the learner will be able to: 1. Understand the basic concepts of Python 2. Learn the syntax and semantics of Python Programming Language. 3. Illustrate the process of structuring the data using lists, tuples and dictionaries. 4. Write Python functions to facilitate code reuse and manipulate strings. 5*. Understand the basic concepts of Python Programming practically. | | |
| Credits | Theory | Practical | Total |
| | 2 | 1 | 3 |
| Contact Hours | 2 | 2 | 4 |
| Max. Marks:75(50(T)+25(P)) | | Time: 3 Hrs.(T), 3Hrs.(P) | |
| Internal Assessment Marks:20(15(T)+5(P)) | | | |
| End Term Exam Marks:55(35(T)+20(P)) | | | |
| Part B-Contents of the Course | | | |
| Instructions for Paper- Setter | | | |
| <p>Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus.</p> <p>Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.</p> <p>Practicum will be evaluated by an external and an internal examiner. Examination will be of</p> | | | |

three-hour duration.

| Unit | Topics | Contact Hours |
|------|--|---------------|
| I | Keywords and Identifiers; Comments: Purpose/use of comments, Single line comment/Multiline comment; Python Variables: Declaration of Variables, Assign Values to Variables, Initialization, Reading, Variable naming restrictions, and Types of Python Variables. Python Data Types: Implicit Declaration of Data Types, Python Numbers (Integers, floating-point numbers, and complex numbers), Python Strings, Python Boolean data type; | 6 |
| II | Operators: Arithmetic, Comparison/Relational Operators, Increment Operators, Logical operators, Identity Operators, and Operators Precedence. Python Control Flow Statement, Decision Making: Simple If Structure, if-else structure, if elif structure, and nested If Structure; | 6 |
| III | Looping: Python Loop Statements. Python while loop, Python for loop, Python range(), Python Nested Loop Structures, and Inserting conditions in Loops and vice versa; Python Branching Statements – break, continue, pass. Python Lists: Create Python Lists, Update Python Lists, Delete Elements from Python Lists, and Built-in Functions Methods for Python Lists. | 6 |
| IV | Tuples: create, update, join and methods; Sets: create, add/remove items, join sets, set methods; Dictionary: create, access, add/remove items, dictionary methods. Manipulating Strings - Working with Strings, Useful String Methods Python Functions: defining function, arbitrary arguments, keywords arguments, default parameter values, return value and return statements; Lambda; Arrays: looping through array elements, array methods; | 7 |
| V* | Students are advised to do laboratory/practical practice not limited to, but including the following types of problems: <ul style="list-style-type: none"> • Write a program to compute distance between two points taking input from the user (Pythagorean Theorem). • Write a program add.py that takes 2 numbers as command line arguments and prints its sum. • Write a Program for checking whether the given number is an even number or not. • Using for loop, write a program that prints out the decimal equivalents of 1/2, 1/3, 1/4, ..1/10. • Create a list and perform the following methods <ul style="list-style-type: none"> (a) insert() (b) remove() (c) append() (d) len() (e) pop() (f) clear() • Create a dictionary and apply the following methods: <ul style="list-style-type: none"> (a) Print the dictionary items (b) access items | 25 |

| | | |
|---|--|--|
| | <p>(c) useget() (d) change values (e) use len()</p> <ul style="list-style-type: none"> • Create a tuple and perform the following methods: <ul style="list-style-type: none"> (a) Add items (b) len() (c) check for item in tuple (d) Access items • Write a python program to print a number is positive/negative using if-else. • Write a python program to find largest number among three numbers. • Write a python Program to read a number and display corresponding day using if_elif_else? • Write a program to create a menu with the following options: <ul style="list-style-type: none"> (a) To perform addition (b) To perform subtraction (c) To perform multiplication (d) To perform division • Accepts users input and perform the operation accordingly. Use functions with arguments. • Write a python program to check whether the given string is palindrome or not. • Write a python program to find factorial of a given number using functions • Write a Python function that takes two lists and returns True if they are equal otherwise false. • Demonstrate a python code to print try, except and finally block statements. • Write a Python script that prints prime numbers less than 20. • Write a python program to find factorial of a number. | |
| Suggested Evaluation Methods | | |
| <p>Internal Assessment:</p> <p>➤ Theory</p> <ul style="list-style-type: none"> • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:4 • Mid-Term Exam: 7 <p>➤ Practicum</p> <ul style="list-style-type: none"> • Class Participation: 2 • Seminar/Demonstration/Viva-voce/Lab records etc.:3 • Mid-Term Exam: NA | <p>End Term Examination: A three hour exam for both theory and practicum.</p> | |
| Part C-Learning Resources | | |
| <p>Recommended Books/e-resources/LMS:</p> <ul style="list-style-type: none"> • Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd Edition, Green Tea Press, 2015, ISBN: 978-9352134755. • Charles Dierbach, "Introduction to Computer Science Using Python", 1st Edition, Wiley India Pvt Ltd. ISBN-13: 978-8126556014. • Wesley J Chun, "Core Python Applications Programming", 3rd Edition, Pearson Education India, 2015. ISBN-13: 978-9332555365. • Reema Thareja, "Python Programming using problem solving approach", Oxford University press, 2017. ISBN-13: 978-0199480173 | | |

- Charles R. Severance, “Python for Everybody: Exploring Data Using Python 3”, 1st Edition, Shroff Publishers, 2017. ISBN: 978-9352136278

*Applicable for courses having practical component.

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
INDIRA GANDHI UNIVERSITY, MEERPUR, REWARI**

| Session: 2024-25 | | | |
|---|--|----------------------------------|-------|
| Part A - Introduction | | | |
| Subject | COMPUTER SCIENCE | | |
| Semester | I | | |
| Name of the Course | Introductory Course in R | | |
| Course Code | 24L4.5-SEC-CSE-105 | | |
| Course Type: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/ VAC) | SEC | | |
| Level of the course (As per An- nexure-I) | | | |
| Pre-requisite for the course (if any) | | | |
| Course Learning Outcomes(CLO): | <p>After completing this course, the learner will be able to:</p> <ol style="list-style-type: none"> 1. Describe the features of R Programming. 2. Use the various data structures in R. 3. Apply data frames, control statements and functions for the simulation. 4. Identify the statistical methods applied in R. <hr style="width: 50%; margin-left: 0;"/> <p>5*. understand the basic concepts of R Programming practically.</p> | | |
| Credits | Theory | Practical | Total |
| | 2 | 1 | 3 |
| Contact Hours | 2 | 2 | 4 |
| Max. Marks:75(50(T)+25(P)) | | Time: 3 Hrs.(T), 3Hrs.(P) | |
| Internal Assessment Marks:20(15(T)+5(P)) | | | |
| End Term Exam Marks:55(35(T)+20(P)) | | | |
| Part B-Contents of the Course | | | |
| <u>Instructions for Paper- Setter</u> | | | |
| <p>Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus.</p> <p>Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.</p> <p>Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.</p> | | | |

| Unit | Topics | Contact Hours |
|------|--|---------------|
| I | Introducing to R, Installation of Libraries; Constants and Variables; Numbers; R Data Structures, Help functions in R. Vectors: Numeric Vectors, Scalars, Declarations Vectorized operation: Using all and any, NA and NULL values, Filtering, Vectorized if-then else, Vector Equality, Vector Element names, Arithmetic and Boolean operations, conditional and loop statement in R. | 6 |
| II | Functions and Recursions in R, Packages in R; Creating matrices, Matrix operations, Applying Functions to Matrix Rows and Columns: Adding and deleting rows and columns, Higher Dimensional arrays; Vector/Matrix Distinction; Avoiding Dimension Reduction; Characters and Strings; String vector; String operations and functions. | 6 |
| III | List: Creating lists, General list operations, accessing list components and values, applying functions to lists, recursive lists, Different R operations using a List, matrix, Array; Overview on Data Frames: Create it in scratch, Matrix-like operations in frames, Merging Data Frames, Applying functions to Data frames. | 6 |
| IV | Factors and Tables: factors and levels, Common functions used with factors, working with tables, Math and Simulations in R, reading a datafile directly into a dataframe, EDA using R, Reading different file formats. Input/Output: reading and writing files, String Manipulation. Statistical analysis: Basic Statistical function, Linear Model, R functions for statistical analysis | 6 |
| V* | Students are advised to do laboratory/practical practice not limited to, but including the following types of problems: <ul style="list-style-type: none"> • Perform arithmetic operations in R. • Demonstrate the process of creating a user defined function in R. • Perform logical operations in R. • Implement Loops with different examples. • Learn the basics of functions in R and implement with examples. • Implement data frames in R. Write a program to join columns and rows in a dataframe using cbind() and rbind() in R. • Implement different String Manipulation functions in R. • Implement different data structures in R (Vectors, Lists, Data Frames) • Write a program to read a csv file and analyze the data in the file in R • Create a data set and do statistical analysis on the data using R | 25 |

| Suggested Evaluation Methods | |
|--|---|
| <p>Internal Assessment:</p> <p>> Theory</p> <ul style="list-style-type: none"> • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:4 • Mid-Term Exam: 7 <p>> Practicum</p> <ul style="list-style-type: none"> • Class Participation: 2 • Seminar/Demonstration/Viva-voce/Lab records etc.:3 • Mid-Term Exam: NA | <p>End Term Examination:</p> <p>A three hour exam for both theory and practicum.</p> |
| Part C-Learning Resources | |
| <p>Recommended Books/e-resources/LMS:</p> <ul style="list-style-type: none"> • Norman Matloff, “The Art of R Programming: A Tour of Statistical Software Design”, NoStarch Press, 2011 • Jared P. Lander, “R for Everyone: Advanced Analytics and Graphics”, Addison-Wesley Data& Analytics Series, 2013. • Mark Gardener, “Beginning R – The Statistical Programming Language”, Wiley, 2013 • Robert Knell, “Introductory R: A Beginner’s Guide to Data Visualisation, Statistical Analysis and Programming in R”, Amazon Digital South Asia Services Inc, 2013. | |

*Applicable for courses having practical component.

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
INDIRA GANDHI UNIVERSITY, MEERPUR, REWARI**

| Session: 2024-25 | | | |
|---|---|----------------------------------|-------|
| Part A - Introduction | | | |
| Subject | COMPUTER SCIENCE | | |
| Semester | I | | |
| Name of the Course | Computer Programming in C | | |
| Course Code | 24L4.5-SEC-CSE-106 | | |
| Course Type: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/ VAC) | SEC | | |
| Level of the course (As per An- nexure-I) | | | |
| Pre-requisite for the course (if any) | | | |
| Course Learning Outcomes(CLO): | <p>After completing this course, the learner will be able to:</p> <ol style="list-style-type: none"> 1. understand the basic concepts of C Programming 2. develop programming capability to design programs as well as real life applications using C language. 3. It also cover the concept of core programming like how to implement functions, arrays and how to manage data in files using different operations. 4. Understand various header Files. <hr style="width: 20%; margin-left: 0;"/> <p>5*. Understand the basic concepts of C Programming practically.</p> | | |
| Credits | Theory | Practical | Total |
| | 2 | 1 | 3 |
| Contact Hours | 2 | 2 | 4 |
| Max. Marks:75(50(T)+25(P)) | | Time: 3 Hrs.(T), 3Hrs.(P) | |
| Internal Assessment Marks:20(15(T)+5(P)) | | | |
| End Term Exam Marks:55(35(T)+20(P)) | | | |
| Part B-Contents of the Course | | | |
| <u>Instructions for Paper- Setter</u> | | | |
| <p>Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus.</p> <p>Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.</p> | | | |

Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

| Unit | Topics | Contact Hours |
|------|--|---------------|
| I | Introduction to C: Data Types: Primitive Data types, Derived Data types, User-Defined Data Types; Operators: Different Types of Operators, Precedence of Operators, Expression and Statements; Token: Variables, Constants, Literals, Identifiers, Keyword, Escape Sequence; Types of Conversion: Typecasting, Conversion. | 6 |
| II | Decision Control Statements: IF, IF-ELSE, Nested IF, IF- ELSE ladder, Switch-case; Iterative statements: FOR loop, WHILE loop, DO-WHILE loop; Jump Statements: Break, Continue. | 6 |
| III | Array: Declaration of an Array, Initialization of Array, Type of Array: Single Dimension Array, Two-Dimensional Array; Address Calculation of an Element in Array. Character Array and Strings: Reading, writing, String Handling Functions: strcat(), strcmp(), strcpy(), strlen(). | 6 |
| IV | Functions: User-Defined Functions; Function Declaration; Types of Arguments: Actual Arguments, Formal Arguments; Function Definition; Methods to Call a Function: Call by Value, Call by Reference; Passing Arrays as Parameters. Storage classes: Automatic, Register, Static, and External Structures; Unions; Enumerations. | 6 |
| V* | Students are advised to do laboratory/practical practice not limited to, but including the following types of problems: <ul style="list-style-type: none"> • Given the values of the variables x, y and z, write a program to rotate their values such that x has the value of y, y has the value of z, and z has the value of x • The distance between two cities (in Km) is input through the keyboard. Write a C program to convert and print this distance in meter, feet, inches and centimeter. • If a five-digit number is input through the keyboard, write a C program to calculate the sum of its digits without using loop. • If a four-digit number is input through the keyboard, write a C program to obtain the sum of the first and last digit of this number. • Program to find largest and smallest number from four given number. • Program to find whether a year is leap or not. • Program to find out the grade of a student when the marks of 5 subjects are given. • A library charges a fine for every book returned late. For first 5 days the fine is 50 paise, for 6-10 days fine is one | 25 |

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| | <p>rupee and above 10 days fine is 5 rupees. If you return the book after 30 days your membership will be cancelled. Write a program to access the number of days the member is late to return the book and display the fine or the appropriate message.</p> <ul style="list-style-type: none"> • Write a C program in which enter any number by the user and perform the operation of Sum of digits of entered number. • Write a C Program to convert Decimal number to Binary number. • WAP to compute the sum of the first n terms of the following series $S = 1 + 1/2 + 1/3 + 1/4 + \dots$ • Write a C program to perform the factorial of given number. • Write a C program to count the number of positive, negative and zero number in the given list of numbers. • Suppose you need to generate a result table which consists of student id, student name, marks of three subject and total marks. Write a program which takes input for ten students and displays result table. Also display student information separately who got the highest total. USE STUCTURES. • WAP to enter an integer array of size 10 and perform following operations on it. <ul style="list-style-type: none"> a) Display the Elements. b) Calculate the Sum and Average of Array. c) Find largest element. d) Find second largest element. e) Find the Smallest element. f) Display the Array in Reverse order. g) Exit • WAP to display Fibonacci series (i)using recursion, (ii) using iteration • Write a menu driven program to perform following operations on strings: <ul style="list-style-type: none"> a. Show address of each character in string b. Concatenate two strings without using strcat function. c. Concatenate two strings using strcat function. d. Compare two strings e. Calculate length of the string (use pointers) f. Convert all lowercase characters to uppercase g. Convert all uppercase characters to lowercase h. Calculate number of vowels i. Reverse the string | |
| Suggested Evaluation Methods | | |
| <p>Internal Assessment:</p> <p>➤ Theory</p> <ul style="list-style-type: none"> • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:4 | <p>End Term Examination:</p> <p>A three hour exam for both theory and</p> | |

| | |
|--|------------|
| <ul style="list-style-type: none"> • Mid-Term Exam: 7 <p>➤ Practicum</p> <ul style="list-style-type: none"> • Class Participation: 2 • Seminar/Demonstration/Viva-voce/Lab records etc.:3 • Mid-Term Exam: NA | practicum. |
| Part C-Learning Resources | |
| <p>Recommended Books/e-resources/LMS:</p> <ul style="list-style-type: none"> • YashwantKanetkar, “Let us C”, BPB Publications, 2002 • E. BalaGuruswamy, “Programming in ANSI C”, TMH, 1999. • Al Kelly and Ira Pohl, “A Book on C”, (4th Ed.), Addison Wesley, 1999. • B. Kernighan and D. Ritchie, “The ANSI C Programming Language”, PHI, 2000. • Kernighan & Ritchie, "The C Programming Language ANSI C Version", Prentice Hall Software Series • Herbert Schildt "ANSI C - Made Easy", Osborne McGraw-Hill | |

*Applicable for courses having practical component.