

PUNJABI UNIVERSITY, PATIALA

(Established Under Punjab Act No. 35 of 1961)

UNDERGRADUATE CURRICULUM BASED ON NATIONAL EDUCATION POLICY (NEP-2020)



OUTLINE AND SYLLBUSES OF IDC/MDC/SEC/VoC COURSES

IN

**COMPUTER APPLICATIONS/ COMPUTER SCIENCE/
INFORMATION TECHNOLOGY**

FOR

FOUR YEAR UG PROGRAMMES

B.A. /B. Sc. (HONOURS)

**(FOR REGULAR STUDENTS OF AFFILIATED COLLEGES, NEIGHBORHOOD CAMPUSES, REGIONAL
CENTERS, CONSTITUENT COLLEGES AND CENTER FOR DISTANCE & ONLINE EDUCATION)**

(SEM - I, II, III & IV)

FOR 2025-26, 2026-27 BATCHES

APPLICABILITY OF REGULATIONS FOR THE TIME BEING IN FORCE

Notwithstanding the integrated nature of the academic programs spread over four academic years, the regulations in force at the time a student joins a program / course shall hold good only for the examinations held during or at the end of the academic year. Nothing in these regulations shall be deemed to debar the University from amending the regulations subsequently and the amended regulations, if any, shall apply to all students whether old or new.

**IDC/MDC, SEC, AND VoC COURSES
IN
COMPUTER SCIENCE/ COMPUTER APPLICATIONS/
INFORMATION TECHNOLOGY
FOR
UG PROGRAMME (HONOURS WITHOUT RESEARCH)**

IDC: Inter Disciplinary Courses (Courses from Science disciplines other than Major and Minor disciplines);
MDC: Multi-Disciplinary Course (Courses from disciplines other than Science disciplines i.e., Humanities and Arts);
SEC: Skill Enhancement Course (Specially designed Courses to augment the skills of students);
VoC: Vocational Course (To enhance employability of a student)

INTER/MULTI DISCIPLINARY COURSES (IDC/MDC)

Year	Sem	IDC/MDC 3 Credits
1	SEM I	MDCC1101T:Computer Fundamentals
	SEM II	MDCC1201T:Internet and Web Technologies
2	SEM III	-
	SEM IV	MDCC2201T:Digital Marketing

SKILL ENHANCEMENT COURSES (SEC)

Year	Sem	SEC 3 Credits
1	SEM I	SECC1101P: Desktop Publishing using Word SECC1102P: Programming with C SECC1103P: Working with Linux
	SEM II	SECC1201P: Presentations using PowerPoint SECC1202P: Programming with Python
2	SEM III	SECC2101P: Data Handling using Spreadsheets SECC2102P: Programming with Java

VOCATIONAL COURSES (VOC)

Year	VOC* 4 Credits
1	VOCC1001P: DESKTOP PUBLISHING AND OFFICE AUTOMATION
2	VOCC2001P: WEB DESIGNING

*Applicable for those opting for Exit option

MDCC1101T: COMPUTER FUNDAMENTALS (L3 TO P0 C3)

Internal Assessment: 30*
University Examination: 70
Min Pass Marks: 35%

Maximum Marks: 100
Maximum Time: 3 Hrs
Lectures to be delivered: 30-40 Hrs

* Division of marks for Internal Assessment is as follows

Performance in Mid-Semester Test	15
Assignment/Project/Seminar	10
Attendance	5

(A) INSTRUCTION FOR THE PAPER SETTER

The question paper will consist of three section A, B & C Section A & B will have four question from the respective section of the syllabus and will carry 12 marks each. Section C will have 11 short answer type questions of 2 mark each which will cover the entire syllabus and will carry 22 marks in all.

(B) INSTRUCTON FOR THE CANDIDATES

Candidates are required to attempt two questions each from the section A & B of the question paper and the entire section C.

COURSE OBJECTIVES

The main objective of this course is to introduce the fundamentals of computing devices and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software. It focuses on such computer literacy that prepares students for life-long learning of computer concepts and skills. Students discovers why computers are essential components in education, business and society in this course.

SECTION A

Computer Fundamentals: Block diagram of a computer, characteristics of computers and generations of computers. Categories of Computers - Supercomputer, mainframe computer, network server, Workstation, Desktop computers, notebook computer, Tablet PC, handheld PC, smart phone. Input Devices: Keyboard, Mouse, Joy tick, Track Ball, Touch Screen, Light Pen, Digitizer, Scanners, Speech Recognition Devices, Optical Recognition devices – OMR, OBR, OCR Output Devices: Monitors, Impact Printers - Dot matrix, Character and Line printer, Non-Impact Printers – DeskJet and Laser printers, Plotter. Memories: Memory Hierarchy, Primary Memory – RAM, ROM, Cache memory. Secondary Storage Devices - Hard Disk, Compact Disk, DVD, Flash memory.

SECTION B

Software: Types of Software- System Software, Application Software, Firmware. Type of System Software: Operating Systems, Language Translators, Utility Programs, Communications Software. Commonly Used Application Software: Word Processor, Spreadsheet, Database, Education, Entertainment Software. Computer Languages: Machine language, assembly language, high level language, 4GL. Operating Systems: Introduction, Types, Structure, Functions, Operating System Services.

Recommended Books:

1. Faithe Wempen, Computing Fundamentals: Introduction to Computers, Wiley, 2015.
2. Peter Nortan, Introduction to Computers, McGraw-Hil publications, 2008.

IBC/MDX

MDCC1201T: INTERNET AND WEB TECHNOLOGIES (L3 TO P0 C3)

Internal Assessment: 30*
University Examination: 70
Min Pass Marks: 35%

Maximum Marks: 100
Maximum Time: 3 Hrs
Lectures to be delivered: 30-40 Hrs

* Division of marks for Internal Assessment is as follows

Performance in Mid-Semester Test	15
Assignment/Project/Seminar	10
Attendance	5

(A) INSTRUCTION FOR THE PAPER SETTER

The question paper will consist of three section A, B & C Section A & B will have four question from the respective section of the syllabus and will carry 12 marks each. Section C will have 11 short answer type questions of 2 mark each which will cover the entire syllabus and will carry 22 marks in all.

(B) INSTRUCTON FOR THE CANDIDATES

Candidates are required to attempt two questions each from the section A & B of the question paper and the entire section C.

COURSE OBJECTIVES

The course will help students to gain understanding of basic concepts of the Internet and fundamentals of web technologies. At the end of the course the students should be able to get an overview of Internet, web technologies and various browsers available to access the internet. Connect to Internet using various modes of connections/ devices available, searching the web and creating and linking simple web pages.

SECTION A

Definition of networks, Intranet, Internet, Internet organisation and committees, Growth of Internet, Internet Application, Portals, Introduction to WWW, Definition of DNS (Domain Name System).
Internet Protocols - Data Transmission Protocols, Client/Server Architecture & its Characteristics, FTP & its usage. Telnet and related Concepts, Remote Logging, Internet chatting - Voice chat, Text chat, Search engines, E-mail.

SECTION B

Introduction to Hyper Text Markup Language(HTML), HTML tags (The structure of an HTML program, Document Head, Document Body), Titles and Footers, Text Formatting (Paragraph Breaks, Line Breaks), Emphasizing Material in a Web Page (Heading Styles, Drawing Lines), Text Styles, Text Effects, Lists: Types of Lists, Web Server, Web Client/Browser (Understanding how a Browser communicates with a Web Server). Linking Documents: Links, Images as Hyperlinks, Introduction to Frames.

Recommended Books:

1. Harvey, Paul & Abbey, Deitel , Internet & World Wide Web How to program, Pearson Education
2. Powell Thomas, The Complete Reference-HTML, Tata McGraw Hill
3. D. E. Comer, Computer network and internets, Pearson Education.
4. E. Stephen Mack and Janam Platt, HTML, BPB Publications
5. Evan Bayross, HTML, DHTML, JAVA SCRIPT AND CGI, BPB Publications

IDC/MDC

MDCC2201T: DIGITAL MARKETING (L3 TO PO C3)

Internal Assessment: 30*
University Examination: 70
Min Pass Marks: 35%

Maximum Marks: 100
Maximum Time: 3 Hrs
Lectures to be delivered: 30-40 Hrs

* Division of marks for Internal Assessment is as follows

Performance in Mid-Semester Test	15
Assignment/Project/Seminar	10
Attendance	5

(A) INSTRUCTION FOR THE PAPER SETTER

The question paper will consist of three section A, B & C Section A & B will have four question from the respective section of the syllabus and will carry 12 marks each. Section C will have 11 short answer type questions of 2 mark each which will cover the entire syllabus and will carry 22 marks in all.

(B) INSTRUCTON FOR THE CANDIDATES

Candidates are required to attempt two questions each from the section A & B of the question paper and the entire section C.

COURSE OBJECTIVES

The basic objective of the course is make students understand about digital marketing concepts and on-line platforms for it. On the successful completion of the course students should be able to Understand meaning, functions, and opportunities in digital marketing, Make use of internet, To handle and use various digital social media platforms such as Facebook and Twitter for marketing.

SECTION A

Meaning and Definition of Marketing- Basics of Marketing, Features of Marketing, Importance of Marketing, Functions of Marketing, Core Concept of Marketing - Need, Want, Demand, Value and Satisfaction, Production-Concept, Product concept, selling concept Marketing concept, Marketing Mix: Meaning, Seven Ps of marketing mix.

Introduction to Digital Marketing- Key Concepts of Digital Marketing, Traditional Marketing vs. Digital Marketing, The Opportunity of Digital Marketing, Characteristics of Digital Marketing, Implications of Digital Marketing, Strategies in Digital Marketing.

Internet: Introduction to internet and its working, business use of internet, services offered by Internet, evaluation of internet, internet service provider (ISP), internet addressing (DNS and IP addresses).

SECTION B

SMO (Social Media Optimization) Introduction to Social Media, Types of Social Media, How Social Media is affecting Google Search, How to choose right social media, integrating social media into your website and blogs, Facebook Marketing, Introduction to Facebook, Difference between Profiles, Places, Groups and Pages, Social media and communications strategy, Facebook Connect (Like, Share, Comment), Facebook pages (Creating, Managing, Retention). Twitter Marketing: Introduction to Micro blogging and Twitter, Twitter Demographics, Use for reputation, promotion, sales, conversing, who to follow, Tweeting, searching tweets and users, Measuring Influence, Tools, Tracking Code, Twitter Account Promotion.

Recommended Books:

1. William I. Stanton, Ajay Pandit-Marketing Concepts & Cases,- The McGraw Hill companies Ltd. New Delhi
2. S.A. Sherlekar, "Marketing Management", Himalaya Publishing House, Mumbai.

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SECC1101P: DESKTOP PUBLISHING USING WORD (L0 T1 P4 C3)

Internal Assessment: 30*
 University Examination: 70
 Min Pass Marks: 35%

Maximum Marks: 100
 Maximum Time: 3 Hrs
 Practical to be conducted: 45-50 Hrs

* Division of marks for Internal Assessment is as follows

Performance in Mid-Semester Test	10
Lab Record	15
Attendance	5

*Division of marks for University Examination:

Lab Record	20
Viva-voce	20
Practical Work	30

INSTRUCTIONS FOR INTERNAL EVALUATOR

The course instructor will give 5-10 Lab assignments based on the course contents. Each assignment will carry minimum weightage of 10% of the total marks allotted for Internal Assessment such that sum of the maximum marks for all assignments given during the semester is equal to the total marks allotted for internal assessment.

INSTRUCTIONS FOR THE UNIVERSITY EXAMINER

The examiner will give due weightage to practical work, Lab records and viva-voce of the student while awarding marks to the student during end-semester final practical examination.

INSTRUCTIONS FOR STUDENTS

For Internal Assessment: Students are required to submit all the assignments given by the course instructor from time-to-time during the semester. The total marks obtained by the student in the internal assessment will be the sum of marks obtained in each assignment.

For University Examination: Students will appear for the end-semester final practical examination and evaluation will be done on the basis of Practical work, Lab records and viva-voce of the student.

COURSE OBJECTIVES

This course provides a comprehensive introduction to desktop publishing (DTP) using Microsoft Word. It covers essential concepts, practical skills, and advanced techniques to create professional documents, including newsletters, brochures, reports, and more. The course is designed for beginners and intermediate users who want to utilize Word's DTP capabilities for personal, academic, or professional projects.

Course Contents

Activity 1: Introduction to Desktop Publishing: Overview of Desktop Publishing, differences between Word Processing and Desktop Publishing, introduction to Microsoft Word's DTP Features, setting up the Workspace and Preferences.

Activity 2: Basic Document Design and Layout: Creating and Saving Documents, using Templates for Quick Start, Page Setup: Margins, Orientation, and Paper Size, basic Text Formatting: Fonts, Sizes, and Styles.

Activity 3: Working with Text and Paragraphs: Advanced Text Formatting: Drop Caps, Text Effects, Paragraph Formatting: Alignment, Line Spacing, and Indents, using Styles for Consistent Formatting, creating and Modifying Lists: Bullets and Numbering.

Activity 4: Images and Graphics: Inserting and Formatting Images, using Shapes, Icons, and SmartArt, Text Wrapping and Positioning Images, creating and Modifying Charts and Graphs.

Activity 5: Working with Tables: Creating and Formatting Tables, Table Design and Layout Options, using Tables for Layout Purposes, advanced Table Features: Sorting, Formulas, and Nested Tables.

Activity 6: Advanced Document Design: Using Sections for Complex Documents, Headers, Footers, and Page Numbering, creating and Using Columns, inserting and Formatting Text Boxes.

Activity 7: Creating Professional Documents: Designing Newsletters: Layout and Content Organization, creating Brochures and Flyers: Using Columns and Sections, Designing Reports: Cover Pages, Table of Contents, and Indexes, creating Business Documents: Letters, Invoices, and Proposals.

Activity 8: Enhancing Document Aesthetics: Using Themes and Styles for Consistent Design, applying Borders, Shading, and Watermarks, using Quick Parts and Building Blocks, creating Custom Templates.

Activity 9: Review and Real-World Applications: Applying Learned Techniques to Real-World Projects, Group Projects and Presentations, critiquing and Improving Document Designs.

Recommended Texts

1. For Open Source: Documentation Team, LibreOffice. Getting Started with LibreOffice 6.0. Australia, Friends of OpenDocument, Incorporated, 2019.
2. For Proprietary: Working in Microsoft Office – Richard Mansfield – Tata McGraw Hill Education



SECC1102P: PROGRAMMING WITH C (LO T1 P4 C3)

Internal Assessment: 30*
 University Examination: 70
 Min Pass Marks: 35%

Maximum Marks: 100
 Maximum Time: 3 Hrs
 Practical to be conducted: 45-50 Hrs

* Division of marks for Internal Assessment is as follows

Performance in Mid-Semester Test	10
Assignment/Project/Seminar	15
Attendance	5

Division of marks for University Examination is as follows

Lab Record	20
Viva Voce	20
Practical Work	30

INSTRUCTIONS FOR INTERNAL EVALUATOR

The course instructor will give 5-10 Lab assignments based on the course contents. Each assignment will carry minimum weightage of 10% of the total marks allotted for Internal Assessment such that sum of the maximum marks for all assignments given during the semester is equal to the total marks allotted for internal assessment.

INSTRUCTIONS FOR THE UNIVERSITY EXAMINER

The examiner will give due weightage to practical work, Lab records and viva-voce of the student while awarding marks to the student during end-semester final practical examination.

INSTRUCTIONS FOR STUDENTS

For Internal Assessment: Students are required to submit all the assignments given by the course instructor from time-to-time during the semester. The total marks obtained by the student in the internal assessment will be the sum of marks obtained in each assignment.

For University Examination: Students will appear for the end-semester final practical examination and evaluation will be done on the basis of Practical work, Lab records and viva-voce of the student.

COURSE OBJECTIVES

This course aims to develop a strong foundation in C programming by introducing students to the structure of a C program, data types, operators, and control statements. Students will gain proficiency in writing functions, including user-defined and library functions, recursion, and parameter passing techniques. The course also covers arrays, strings, structures, unions, and pointers, enabling students to efficiently manage memory and data structures. Additionally, students will learn file handling in C, including basic file operations, input/output functions, and data storage techniques. By the end of the course, students will be able to write, debug, and optimize C programs for real-world applications.

The Practical assignments will be based on

Structure of a C program, Character set, Identifiers and keywords, constants, variables, data types. Operators and expressions: Arithmetic, Unary, Logical, Relational operators, assignment operators, Conditional operators, Hierarchy of operations type conversion. Control statements: branching statements (if, if else, switch), loop statements (for, while and do-while), jump statements (break, continue, goto), nested control structures. Functions: Library functions

and user defined functions, prototype, definition and call, formal and actual arguments, local and global variables, methods of parameter passing to functions, recursion. I/O functions: formatted & unformatted console I/O functions
Arrays: One dimensional and two dimensional arrays, Declaration, initialization, reading values into an array, displaying array contents. Strings: input/output of strings, string handling functions (strlen, strcpy, strcmp, strcat & strrev), table of strings. Structures and unions: using structures and unions, comparison of structure with arrays and union. Pointers: pointer data type, pointer declaration, initialization, accessing values using pointers, pointers and arrays.
Introduction to Files in C: opening and closing files. Basic I/O operation on files.

Reference Books:

- 1 E. Balagurusamy, Programming in C, Tata McGraw-Hill.
- 2 Kernighan and Ritchie, The C Programming Language, PHI.
- 3 Byron Gotfried, Programming in C.
- 4 Kamathane, Programming in C, Oxford University Press.

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SECCI1103P: WORKING WITH LINUX (L0 T1 P4 C3)

Internal Assessment: 30*
University Examination: 70
Min Pass Marks: 35%

Maximum Marks: 100
Maximum Time: 3 Hrs
Practical to be conducted: 45-50 Hrs

* Division of marks for Internal Assessment is as follows

Performance in Mid-Semester Test	10
Assignment/Project/Seminar	15
Attendance	5

Division of marks for University Examination is as follows

Lab Record	20
Viva Voce	20
Practical Work	30

INSTRUCTIONS FOR INTERNAL EVALUATOR

The course instructor will give 5-10 Lab assignments based on the course contents. Each assignment will carry minimum weightage of 10% of the total marks allotted for Internal Assessment such that sum of the maximum marks for all assignments given during the semester is equal to the total marks allotted for internal assessment.

INSTRUCTIONS FOR THE UNIVERSITY EXAMINER

The examiner will give due weightage to practical work, Lab records and viva-voce of the student while awarding marks to the student during end-semester final practical examination.

INSTRUCTIONS FOR STUDENTS

For Internal Assessment: Students are required to submit all the assignments given by the course instructor from time-to-time during the semester. The total marks obtained by the student in the internal assessment will be the sum of marks obtained in each assignment.

For University Examination: Students will appear for the end-semester final practical examination and evaluation will be done on the basis of Practical work, Lab records and viva-voce of the student.

COURSE OBJECTIVES

This course is designed to provide students with hands-on experience in installing, configuring, and managing Red Hat Linux. Students will learn to navigate the Linux console, manage files and directories, and understand Linux system permissions. The course also covers text editing using vi and emacs, file management techniques, and effective command-line utilities to enhance productivity. Additionally, students will explore the Red Hat desktop environment (GNOME/KDE) and gain proficiency in writing basic shell scripts for automation and system administration tasks. By the end of the course, students will be able to install, configure, troubleshoot, and operate a Red Hat Linux system efficiently.

The Practical assignments will be based on following

Installing Red Hat Linux: Starting the Red Hat Linux installer, Beginning the installation, Installation type, Disk partitioning setup, Disk setup, Boot loader configuration, Account configuration, Installing packages, Graphical interface configuration, Finishing first run configuration.

Navigating Linux at the Console: Understanding virtual consoles, Logging in a virtual console, working with the file system, Linux file system, Home directory, Current working directory, manipulating files and directories, Understanding permissions. Shutdown, reboot system.

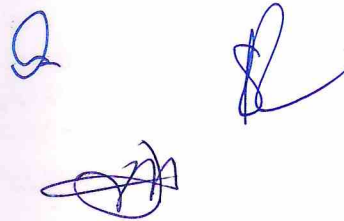
Making the console work for you: Creating, Editing and Saving text files using vi, vi modes, inserting text, Quitting vi, moving the cursor, deleting text, copying and moving text, searching and replacing text, Using emacs to create text files, Grouping files for efficient file management, Searching files and directories quickly, Using pipes, Moving between multiple open applications. Opening, editing and closing an existing file, Cutting, copying and pasting files, Duplicating a file, Renaming, Deleting items, Changing file permissions, Creating a new directory, Manipulating files using drag and drop, Working with trash contents the Standard Linux file structure.

Introducing the Red Hat Desktop: GNOME and KDE Environment, Logging in to desktop, Launching applications, Using window controls, working with multiple windows, Understanding virtual desktops, X window utilities, changing font background, managing files with GNOME and KDE .

Linux commands with their options, How Linux commands work, wildcards, Shell Scripts assigning values to variable, if statement, loops, function various Linux commands.

Recommended Books:

1. A Practical Guide to Linux Commands, Editors, and Shell Programming by: Mark G. Sobell
2. Red Hat Enterprise Linux & Fedora Edition: The Complete Reference by Richard Petersen



SECC1201P: PRESENTATION USING POWER POINT (LO T1 P4 C3)

Internal Assessment: 30*
 University Examination: 70
 Min Pass Marks: 35%

Maximum Marks: 100
 Maximum Time: 3 Hrs
 Practical to be conducted: 45-50 Hrs

* Division of marks for Internal Assessment is as follows

Performance in Mid-Semester Test	10
Lab Record	15
Attendance	5

*Division of marks for University Examination:

Lab Record	20
Viva-voce	20
Practical Work	30

INSTRUCTIONS FOR INTERNAL EVALUATOR

The course instructor will give 5-10 Lab assignments based on the course contents. Each assignment will carry minimum weightage of 10% of the total marks allotted for Internal Assessment such that sum of the maximum marks for all assignments given during the semester is equal to the total marks allotted for internal assessment.

INSTRUCTIONS FOR THE UNIVERSITY EXAMINER

The examiner will give due weightage to practical work, Lab records and viva-voce of the student while awarding marks to the student during end-semester final practical examination.

INSTRUCTIONS FOR STUDENTS

For Internal Assessment: Students are required to submit all the assignments given by the course instructor from time-to-time during the semester. The total marks obtained by the student in the internal assessment will be the sum of marks obtained in each assignment.

For University Examination: Students will appear for the end-semester final practical examination and evaluation will be done on the basis of Practical work, Lab records and viva-voce of the student.

COURSE OBJECTIVES

This course provides a comprehensive introduction to creating effective presentations using Microsoft PowerPoint. It covers essential concepts, practical skills, and advanced techniques to design and deliver professional presentations. The course is designed for beginners and intermediate users who want to leverage PowerPoint for academic, professional, or personal projects.

Course Contents

Activity 1: Introduction to Presentation Design: Overview of Presentation Design, principles of effective presentations, introduction to Microsoft PowerPoint's features, setting up the workspace and preferences.

Activity 2: Creating and Formatting Slides: Creating and saving presentations, using templates and themes for quick start, slide layout and design principles, basic text formatting: fonts, sizes, and styles.

Activity 3: Working with Text and Lists: Advanced text formatting: text boxes, text effects, using bullet points and numbering, aligning and distributing text elements.



Activity 4: Images and Graphics: Inserting and formatting images, using shapes, icons, and SmartArt, positioning and resizing images, creating and modifying charts and graphs.

Activity 5: Working with Tables and Charts: Creating and formatting tables, table design and layout options, creating and customizing charts, using charts to visualize data effectively.

Activity 6: Adding Multimedia Elements Inserting and managing audio and video files, using animations for text and objects, applying transition effects between slides, timing and sequence of animations.

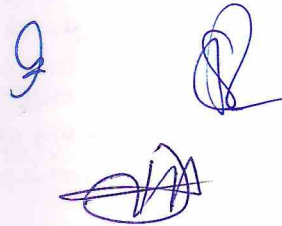
Activity 7: Designing Professional Presentations Designing slides with a consistent theme, using slide master for uniform design, creating custom slide layouts, using design tools for alignment and spacing.

Activity 8: Enhancing Presentations: Using advanced themes and styles, applying backgrounds, borders, and effects, using PowerPoint's design ideas feature, creating custom templates.

Activity 9: Review and Real-World Applications Applying learned techniques to real-world projects, group projects and presentations, critiquing and improving presentation designs.

Recommended Texts

1. For Open Source: Documentation Team, LibreOffice. Getting Started with LibreOffice 6.0. Australia, Friends of OpenDocument, Incorporated, 2019.
2. For Proprietary: Working in Microsoft Office – Richard Mansfield – Tata McGraw Hill Education

Three handwritten signatures in blue ink are located in the middle-right section of the page. The top-left signature is a simple cursive 'g'. The top-right signature is a more complex cursive mark. The bottom signature is a stylized, bold signature that appears to be 'M' or 'MA'.

SECC1202P: PROGRAMMING WITH PYTHON (LO T1 P4 C3)

Internal Assessment: 30*
 University Examination: 70
 Min Pass Marks: 35%

Maximum Marks: 100
 Maximum Time: 3 Hrs
 Practical to be conducted: 45-50 Hrs

* Division of marks for Internal Assessment is as follows

Performance in Mid-Semester Test	10
Assignment/Project/Seminar	15
Attendance	5

Division of marks for University Examination is as follows

Lab Record	20
Viva Voce	20
Practical Work	30

INSTRUCTIONS FOR INTERNAL EVALUATOR

The course instructor will give 5-10 Lab assignments based on the course contents. Each assignment will carry minimum weightage of 10% of the total marks allotted for Internal Assessment such that sum of the maximum marks for all assignments given during the semester is equal to the total marks allotted for internal assessment.

INSTRUCTIONS FOR THE UNIVERSITY EXAMINER

The examiner will give due weightage to practical work, Lab records and viva-voce of the student while awarding marks to the student during end-semester final practical examination.

INSTRUCTIONS FOR STUDENTS

For Internal Assessment: Students are required to submit all the assignments given by the course instructor from time-to-time during the semester. The total marks obtained by the student in the internal assessment will be the sum of marks obtained in each assignment.

For University Examination: Students will appear for the end-semester final practical examination and evaluation will be done on the basis of Practical work, Lab records and viva-voce of the student.

COURSE OBJECTIVES

This course introduces students to data manipulation and analysis using NumPy and Pandas, covering array operations, DataFrame creation, and data handling techniques. Students will learn the data science process, including data cleaning, handling missing values, and working with various file formats. The course also explores data visualization with Matplotlib, enabling students to create line plots, histograms, scatter plots, and box plots. Additionally, students will gain an understanding of big data concepts, data preprocessing techniques, and exploratory data analysis using statistical measures. The fundamentals of SciPy and scikit-learn will also be introduced for machine learning and scientific computing applications.

The Practical assignments will be based on

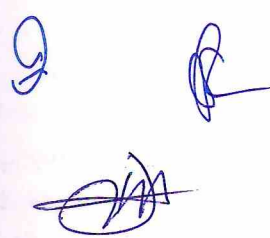
Arrays in NumPy: creating, indexing, slicing, and iteration, concatenating and splitting arrays, arithmetic operations on multi-dimensional arrays

Pandas: creation of series using ndarray, creating DataFrames, DataFrame attributes, reading data, DataFrame operations.

Data science process: steps of data science process, handling duplicates, dealing with missing values, removing null values, imputation, slicing, conditional selections, iteration, working with text/CSV/Excel/JSON files
Data visualization with Matplotlib: line plots, bar plots, histograms, box plots, scatter plots.
Meaning of big data and data science, facets of data.
Data Set and its features, observations and variables, variables classified on scale
Data cleansing, data integration, data normalization, data discretization
Exploratory data analysis using descriptive statistics, measurements of location and variability, skewness, correlation and regression.
Basics of SciPy and scikit-learn

Recommended Books:

1. Rachel Schutt & Cathy O'Neil, Doing Data Science, First Edition, O'Reilly Media, 2014
2. Wes McKinney, Python for Data Analysis, First Edition, O'Reilly Media, 2012
3. A. Martelli, A. Ravenscroft, S. Holden, Python in a Nutshell, Third edition, O' Reilly, 2017.
4. Charles Dierbach, Introduction to Computer Science using Python, Wiley, 2013.
5. Martin C. Brown, Python: The complete Reference, McGraw Hill Education Core, 2001.



SECC2101P: DATA HANDLING USING SPREADSHEET (LO T1 P4 C3)

Internal Assessment: 30*
University Examination: 70
Min Pass Marks: 35%

Maximum Marks: 100
Maximum Time: 3 Hrs
Practical to be conducted: 45-50 Hrs

* Division of marks for Internal Assessment is as follows

Performance in Mid-Semester Test	10
Lab Record	15
Attendance	5

*Division of marks for University Examination:

Lab Record	20
Viva-voce	20
Practical Work	30

INSTRUCTIONS FOR INTERNAL EVALUATOR

The course instructor will give 5-10 Lab assignments based on the course contents. Each assignment will carry minimum weightage of 10% of the total marks allotted for Internal Assessment such that sum of the maximum marks for all assignments given during the semester is equal to the total marks allotted for internal assessment.

INSTRUCTIONS FOR THE UNIVERSITY EXAMINER

The examiner will give due weightage to practical work, Lab records and viva-voce of the student while awarding marks to the student during end-semester final practical examination.

INSTRUCTIONS FOR STUDENTS

For Internal Assessment: Students are required to submit all the assignments given by the course instructor from time-to-time during the semester. The total marks obtained by the student in the internal assessment will be the sum of marks obtained in each assignment.

For University Examination: Students will appear for the end-semester final practical examination and evaluation will be done on the basis of Practical work, Lab records and viva-voce of the student.

COURSE OBJECTIVES

This course provides basic understanding to the fundamentals of Excel, develop proficiency in Excel for data manipulation and analysis, learn to clean and prepare data for analysis, create effective data visualizations, apply advanced Excel functions and features to solve complex problems.

Course Contents

Activity 1: Introduction to Excel: Overview of Microsoft Excel, understanding the Excel interface, setting up the workspace and preferences, basic data entry and formatting.

Activity 2: Basic Excel Functions and Formulas: Understanding Excel formulas and functions, basic arithmetic functions (SUM, AVERAGE, MIN, MAX), text functions (CONCATENATE, LEFT, RIGHT, MID), logical functions (IF, AND, OR, NOT).

Activity 3: Data Cleaning and Preparation: Importing data from various sources, data cleaning techniques: removing duplicates, handling missing values, data validation, text functions for data cleaning.

Activity 4: Data Manipulation and Transformation: Sorting and filtering data, using tables and structured references, using lookup functions (VLOOKUP, HLOOKUP, INDEX-MATCH), working with PivotTables for data summarization.

Activity 5: Basic Data Analysis Techniques: Descriptive statistics in Excel: mean, median, mode, standard deviation, and variance, frequency distributions, using Excel's Data Analysis Tool pack.

Activity 6: Introduction to Data Visualization: Principles of data visualization, creating basic charts in Excel: bar charts, line charts, pie charts, customizing charts for better clarity.

Activity 7: Advanced Data Visualization Techniques: Creating advanced charts: scatter plots, histograms, box plots, introduction to Pivot Charts, using sparklines for data trends.

Activity 8: Advanced Excel Functions: Advanced functions: SUMIFS, COUNTIFS, AVERAGEIFS, array formulas, performing scenario analysis and what-if analysis, using Solver for optimization problems.

Activity 9: Working with Macros: Introduction to Excel macros, recording and running macros, basic VBA programming for Excel, automating repetitive tasks.

Recommended Texts

1. For Open Source: Documentation Team, LibreOffice. Getting Started with LibreOffice 6.0. Australia, Friends of OpenDocument, Incorporated, 2019.
2. For Proprietary: Working in Microsoft Office – Richard Mansfield – Tata McGraw Hill Education

Three handwritten signatures in blue ink are present on the page. One is a simple cursive 'a', another is a more complex cursive signature, and the third is a signature enclosed in a circle.

SECC2102P: PROGRAMMING WITH JAVA (LO T1 P4 C3)

Internal Assessment: 30*
 University Examination: 70
 Min Pass Marks: 35%

Maximum Marks: 100
 Maximum Time: 3 Hrs
 Practical to be conducted: 45-50 Hrs

* Division of marks for Internal Assessment is as follows

Performance in Mid-Semester Test	10
Assignment/Project/Seminar	15
Attendance	5

Division of marks for University Examination is as follows

Lab Record	20
Viva Voce	20
Practical Work	30

INSTRUCTIONS FOR INTERNAL EVALUATOR

The course instructor will give 5-10 Lab assignments based on the course contents. Each assignment will carry minimum weightage of 10% of the total marks allotted for Internal Assessment such that sum of the maximum marks for all assignments given during the semester is equal to the total marks allotted for internal assessment.

INSTRUCTIONS FOR THE UNIVERSITY EXAMINER

The examiner will give due weightage to practical work, Lab records and viva-voce of the student while awarding marks to the student during end-semester final practical examination.

INSTRUCTIONS FOR STUDENTS

For Internal Assessment: Students are required to submit all the assignments given by the course instructor from time-to-time during the semester. The total marks obtained by the student in the internal assessment will be the sum of marks obtained in each assignment.

For University Examination: Students will appear for the end-semester final practical examination and evaluation will be done on the basis of Practical work, Lab records and viva-voce of the student.

COURSE OBJECTIVES

This course introduces Object-Oriented Programming (OOP) in Java, covering syntax, data types, control statements, classes, objects, and inheritance. Students will learn to write, debug, and execute modular Java programs using the JDK environment.

The Practical assignments will be based on

Overview of Java Language: Introduction to Simple Java Program, Use of Comments and Math function, Application of two classes, Java Program Structure, Java Tokens and statements, Implementing Java program And JVM, Command Line Arguments.

Constants, Variables and Data Types: Constants, Variables, Data Types, Declaration of Variables, Giving values to Variables, Symbolic Constants, Type casting.

Operators & Expressions: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, conditional operators, Bitwise operators, Arithmetic Expressions, Evaluation of Expressions, Type Conversions in Expressions, Operator Precedence & Associativity.

Decision Making, Branching & Looping: Decision Making with Control Statements, Looping statements, Jump in loops, Labelled loops.

Classes, Objects and Methods: Defining Class, Methods Declaration, Constructors, Methods Overloading, Overriding Methods, Inheritance

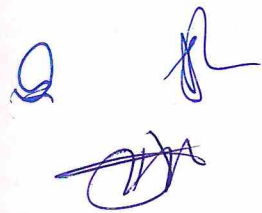
Arrays, Strings and Vectors: 1D arrays, Creating an Array, 2D arrays, Strings, Vectors, Wrapper Classes, Enumerated Types

Inheritance: Defining, extending classes, and Implementing Interfaces. Multiple inheritance and polymorphism.

Packages: Basics of packages, System packages, Creating and accessing packages, Creating user defined packages, Adding class to a package.

Recommended Books:

1. Balaguruswamy E. (2023). Programming with JAVA: A Primer. 7th edition. India: McGraw Hill Education
2. Schildt, H. (2022). Java: The Complete Reference. 12th edition. McGraw-Hill Education.
3. . Y. Daniel Liang, Introduction to Java Programming, 7th Edition, Pearson, 2008.

Three handwritten signatures in blue ink are located in the right-center area of the page. The top two are smaller and more distinct, while the bottom one is larger and more stylized.

VOCC1001P: OFFICE AUTOMATION AND DESKTOP PUBLISHING (L0 T2 P4 C4)

Internal Assessment: 30*
 University Examination: 70
 Min Pass Marks: 35%

Maximum Marks: 100
 Maximum Time: 3 Hrs
 Practical Sessions: 45-55 Hrs

* Division of marks for Internal Assessment is as follows:

Practical Work /Assignments	25
Attendance	5

Division of marks for University Examination:

Lab Record	10
Viva-voce	20
Practical Work	40

INSTRUCTIONS FOR INTERNAL EVALUATOR

The course instructor will give 5-10 Lab assignments based on the course contents. Each assignment will carry minimum weightage of 10% of the total marks allotted for Internal Assessment such that sum of the maximum marks for all assignments given during the semester is equal to the total marks allotted for internal assessment.

INSTRUCTIONS FOR THE UNIVERSITY EXAMINER

The examiner will give due weightage to practical work, Lab records and viva-voce of the student while awarding marks to the student during end-semester final practical examination.

INSTRUCTIONS FOR STUDENTS

For Internal Assessment: Students are required to submit all the assignments given by the course instructor from time-to-time during the semester. The total marks obtained by the student in the internal assessment will be the sum of marks obtained in each assignment.

For University Examination: Students will appear for the end-semester final practical examination and evaluation will be done on the basis of Practical work, Lab records and viva-voce of the student.

COURSE OBJECTIVES

The course will help students to gain understanding of selected key principles of Computer Science and their application in everyday devices and services. At the end of the course the students should be able to Format, edit, and print text documents and prepare for desktop publishing, worksheet and presentation software.

COURSE CONTENTS

Word: Properly format and organize a formal report in Microsoft Word, Working with Text, spell check and grammar, Table manipulation, Flow chart drawing and Create organization chart, Generate equations, sample calculations, and basic diagrams in Word, Real-time document preparation (Covering letter, greeting cards, invitation, brochures).

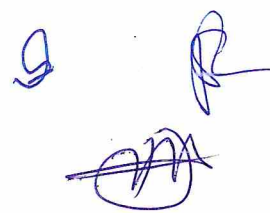
Excel: Input data, Perform calculations using both manually inputting formulas and built-in Functions, Generate simple and effective tables and graphs to describe data, Performing arithmetic calculations using worksheet, Using functions, Using Graphs and charts, Sorting and filtering, Integrate graphs/tables/charts created in Excel into Word/PowerPoint

PowerPoint: Designing slides for real time applications, Using image, audio and video effects, Using Animation and transition.

Desktop Publishing (any one available proprietary or Open Source DTP software): Type Settings for Publication, Page Layout, Word Wrapping, Grouping, Merging two or more files, Creating columns, Tab settings, Paragraph settings, Hyphenation, Paper Style, Index & Table of Contents, Fonts, Mixing Text & Graphics, Linking objects, Printing facility.

Recommended Books:

1. For Open Source: Documentation Team, LibreOffice. Getting Started with LibreOffice 6.0. Australia, Friends of OpenDocument, Incorporated, 2019.
2. For Proprietary: Working in Microsoft Office – Richard Mansfield – Tata McGraw Hill Education

Handwritten initials in blue ink. The top row contains a lowercase 'g' on the left and an uppercase 'R' on the right. Below them is a signature that appears to be 'am' with a horizontal line through it.

VOCC2001P: WEB DESIGNING (LO T2 P4 C4)

Internal Assessment: 30*
 University Examination: 70
 Min Pass Marks: 35%

Maximum Marks: 100
 Maximum Time: 3 Hrs
 Practical Sessions: 45-55 Hrs

* Division of marks for Internal Assessment is as follows:

Practical Work /Assignments	25
Attendance	5

Division of marks for University Examination:

Lab Record	10
Viva-voce	20
Practical Work	40

INSTRUCTIONS FOR INTERNAL EVALUATOR

The course instructor will give 5-10 Lab assignments based on the course contents. Each assignment will carry minimum weightage of 10% of the total marks allotted for Internal Assessment such that sum of the maximum marks for all assignments given during the semester is equal to the total marks allotted for internal assessment.

INSTRUCTIONS FOR THE UNIVERSITY EXAMINER

The examiner will give due weightage to Logic development/ Program execution, Lab records and viva-voce of the student while awarding marks to the student during end-semester final practical examination.

INSTRUCTIONS FOR STUDENTS

For Internal Assessment: Students are required to submit all the assignments given by the course instructor from time-to-time during the semester. The total marks obtained by the student in the internal assessment will be the sum of marks obtained in each assignment.

For University Examination: Students will appear for the end-semester final practical examination and evaluation will be done on the basis of Logic development/ Program execution, Lab records and viva-voce of the student.

COURSE OBJECTIVES

This course will enable students to learn and design simple websites using HTML and moving on to creating more interactive and dynamic web pages to create a dynamic and responsive website.

COURSE CONTENTS

Basic Concepts of Internet: Introduction to Internet, Working of Internet, WWW, Client Side, Server Side, Web Pages, URL, Website.

Introduction to HTML: Introduction of HTML, History of HTML, Features of HTML.

HTML Overview: Creating HTML Pages, Saving HTML Pages, and Viewing Pages in different Web Browsers, Structures of HTML documents, Tags, Elements and Attributes: The <html> element, the <head> element, the <body> element

Formatting in HTML: Text Formatting Tags, Block Level Tags, Applying formatting to the body section of HTML document, color codes and fonts, Adding graphics with images tag, image elements, attributes, image map, image preliminaries, Ordered list, Un-ordered list, Definition list, Nesting of list.

Hyper Linking: Basic, Linking in HTML, creating external and internal links, using image as link, presenting information in table, attributes of table, table as layout tools, nested table.

Recommended Books:

1. Harvey, Paul & Abbey, Deitel , Internet & World Wide Web How to program, Pearson Education
2. Thomas A. Powell, The Complete Reference HTML, Osborne/McGraw-Hill
3. Notes
4. National Institute of Open Schooling
https://nios.ac.in/media/documents/330srsec/online_course_material_330/Theory/Lesson_24.pdf
5. Swayam course on HTML https://onlinecourses.swayam2.ac.in/aic20_sp11/preview

