

# SKILL ENHANCEMENT COURSES

SYLLABUS FOR THE

## SUBJECT: COMPUTER APPLICATIONS (VOCATIONAL)

for the award of the Degree in

**BACHELOR OF ARTS/ BACHELOR OF SCIENCE/HONOURS**

(Offered under 4-year UG Degree Programme)

(Credit Based Grading System)  
under NEP 2020

**Batch: 2025–29**



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## GURU NANAK DEV UNIVERSITY AMRITSAR

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**SCHEME**

**COMPUTER APPLICATIONS (VOCATIONAL)**

**SKILL ENHANCEMENT COURSES (SEC)**

**SEC-I**

<b>Sr. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credits L - T - P</b>	<b>Total Marks</b>
1.		INTRODUCTION TO THE INTERNET (THEORY)	2 - 0 - 0	50
2.		INTRODUCTION TO THE INTERNET (PRACTICAL)	0 - 0 - 1	25

**SEC-II**

<b>Sr. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credits L - T - P</b>	<b>Total Marks</b>
1.		CYBER SECURITY FUNDAMENTALS (THEORY)	2 - 0 - 0	50
2.		CYBER SECURITY FUNDAMENTALS (PRACTICAL)	0 - 0 - 1	25

**SEC-III**

<b>Sr. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credits L - T - P</b>	<b>Total Marks</b>
1.		DATA ANALYSIS WITH EXCEL (THEORY)	2 - 0 - 0	50
2.		DATA ANALYSIS WITH EXCEL (PRACTICAL)	0 - 0 - 1	25

**COMPUTER APPLICATIONS (VOCATIONAL)  
SKILL ENHANCEMENT COURSES**

**SEC-I**

**INTRODUCTION TO THE INTERNET  
(THEORY)**

**M. Marks: 50  
Time: 3 Hours**

**Credits  
L-T-P  
2-0-0**

**Instructions for the Paper Setters: -**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Course Outcomes:**

To give hands-on experience and provide a comprehensive, non-technical, hands-on overview of the Internet based services.

**SECTION–A (7.5 Hrs)**

Origin, growth and evolution of the Internet; the impact of the Internet; terminology: web pages, website, web browser, web server, bandwidth; Connect to the Internet: hardware and software, types of Internet connections, Internet Service Providers; Navigating different types of websites and online resources.

Student should explore the local market to understand the internet service providers, rates, bandwidth etc.

**SECTION – B (7.5 Hrs)**

E-mail Communication: E-mail Etiquette and Best Practices, Managing and Organizing E-mails  
E-mail Tools and Features, identifying spam and phishing E-mails;

Searching on the Internet: Overview of internet resources and search engines, Basics of Using Search Engines -How search engines work, Basic search techniques and tips, Understanding search engine results pages (SERPs), Using search operators (e.g., AND, OR, NOT), Utilizing advanced search features (e.g., Google Advanced Search),

**SECTION – C (7.5 Hrs)**

Online Tools for Productivity: Introduction to productivity tools (e.g., Google Workspace, Microsoft Office 365), Cloud storage and file management (e.g., Google Drive, Dropbox),

Collaboration and Communication Tools: Online communication etiquette and best practices, using collaboration tools (e.g., Google Docs, Slack, Microsoft Teams), Effective virtual meeting strategies (e.g., Zoom, Google Meet),

**SECTION – D****(7.5 Hrs)**

Building Online Presence: Creating and maintaining a professional online profile (e.g., LinkedIn), Personal branding and digital portfolios, Networking strategies for academic and career growth, Understanding digital footprints and online reputation.

Digital citizenship and respectful online behaviour, balancing screen time and managing digital distractions

**Recommended Books and Materials:**

1. Douglas E Comer, The Internet Book: Everything You Need to Know About Computer Networking and How the Internet Works, CRC Press
2. Faithe Wempen, Digital Literacy For Dummies 1st Edition

**COMPUTER APPLICATIONS (VOCATIONAL)**  
**SKILL ENHANCEMENT COURSES**

**SEC-I**

**INTRODUCTION TO THE INTERNET**  
**(PRACTICAL)**

**M. Marks: 25**  
**Time: 3 Hours**

**Credits**  
**L-T-P**  
**0-0-1**  
**Lab 2h/week**

**Lab exercises based on:**

- Identifying internet connections and Configuring internet connection on PC/Laptop
- E-mail Tools and features
- Using the Google search engine and explore Bing
- Using Google Docs, Google Drive for document preparation and storage
- Collaboration using Slack
- Analyzing LinkedIn profiles
- Creating your own LinkedIn profile
- Virtual meeting platforms: Microsoft Teams, Zoom, Google Meet

**COMPUTER APPLICATIONS (VOCATIONAL)**  
**SKILL ENHANCEMENT COURSES**  
**SEC-II**  
**CYBER SECURITY FUNDAMENTALS**  
**(THEORY)**

**M. Marks: 50**  
**Time: 3 Hours**

**Credits**  
**L-T-P**  
**2-0-0**

**Instructions for the Paper Setters: -**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Course outcome:**

1. Knowledge of fundamentals of Cyber Space, Cyber Threats and defense strategies,
2. understand the ethical, legal, and regulatory environment in the cyber space.

**SECTION-A**

Introduction to the Internet, IP address, MAC address; Client-Server/P2P Architecture, Cloud Computing; Computation/ Storage as a service; confidentiality, Integrity, availability of information; desktop and mobile apps; Authentication & authorization; Data trails of an Internet user; cookies; Why security matters?

**SECTION-B**

**Threats:** Malicious software, Cyber threats, hackers, trackers, types of hackers, hacker motives; Types of Attacks: virus, worms, Trojan horse, spam, spoofing, phishing, spear-phishing, whaling, social engineering, ransomware, spyware, adware, malvertising, supply-chain attacks, zero-day viruses - software/hardware vulnerabilities, exploits; denial of service attacks; bots, botnets; Data breaches; risks of using public Wi-Fi; Cyber bullying;

**SECTION-C**

**How to Safeguard:** Using http/https; Anti-virus software, analysis of the tools available in the market; strong passwords/passphrases, password managers, changing passwords regularly; Cryptography: Encryption, Decryption, public/private cryptography, Digital signatures; Virtual private networks; Setting up private and secure Wi-Fi; Data backup and recovery – full/incremental/differential backup, backup vs archive; software updates/patches; URL filtering;

**SECTION-D**

privacy vs security vs anonymity, privacy settings in apps/browsers and popular social networking sites such as Facebook, Instagram, Snapchat; using web browser incognito mode, the tor browser;

Laws, regulations, and compliance; cybercrimes, Intellectual Property, Licensing, Compliance, Provisions in the IT act.

**Reference Books:**

1. Kenneth Einar Himma and Herman T. Tavani, Handbook of Information and Computer Ethics, Wiley.
2. Douglas E Comer, The Internet Book: Everything You Need to Know About Computer Networking and How the Internet Works, CRC Press
3. Introduction to cyber security: stay safe online, The Open University
4. Justice Yatindra Singh, Cyber Laws, Universal Law Publishing Co. (ULPC)
5. Anirudh Rastogi, Cyber Law-Law Of Information Technology And Internet, Lexis Nexis
6. Cyber Security Essentials By James Graham, Ryanolson, Rickhoward, CRCPRESS

**COMPUTER APPLICATIONS (VOCATIONAL)  
SKILL ENHANCEMENT COURSES  
SEC-II  
CYBER SECURITY FUNDAMENTALS  
(PRACTICAL)**

**M. Marks: 25  
Time: 3 Hours**

**Credits  
L-T-P  
0-0-1  
Lab 2h/week**

**Instructions for the examiners: -**

Two questions of equal marks strictly as per the syllabus and based on the practical exercises covered in the semester. Questions may be subdivided into parts (not exceeding four). Candidates will attempt ONE question, explain their answer by writing on the answer sheet, and then implement the same on the computer. Examiner will evaluate both the answers (theory as well as practical). The viva will also be conducted one-on-one alongside, and the student asked viva questions related to the question and the solution he/she is working on during the exam.

Programming exercises based on:

- Find IP/MAC addresses on personal devices
- Set up a simple cloud service (e.g., Google Drive)
- Check browser cookies and understand privacy settings
- Conduct a phishing simulation to identify red flags
- Analyze secure connections, creation of strong passwords
- Configure a VPN on personal devices
- Data backup routine using a cloud service or external drive
- Adjust privacy settings on popular platforms like Facebook and Instagram
- Understand anonymity using Tor network
- Install and configure antivirus and anti-malware software
- Configure a firewall rule using pfSense or similar tools
- Use OpenSSL to encrypt and decrypt messages.

**COMPUTER APPLICATIONS (VOCATIONAL)**  
**SKILL ENHANCEMENT COURSES**  
**SEC-III**  
**DATA ANALYSIS WITH EXCEL**  
**(THEORY)**

**M. Marks: 50**  
**Time: 3 Hours**

**Credits**  
**L-T-P**  
**2-0-0**

**Instructions for the Paper Setters: -**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Course outcome:**

- Students will get hands-on experience with MS Excel.
- Understand the scope of data analysis with Excel
- To enable students to create applications and tools to deal with complex

**SECTION – A**

MS Excel: Overview, creating, saving, opening, Excel Rows and Columns, Enter Text and numbers in a cell, edit text in a cell, center text and numbers, Font Formatting excel, change the color of a cell, save your work in excel, Currency symbols in excel, Merge cells, Using Auto fill, Adding Simple Addition formula, The Sum Function, Copy and Paste, Using Paste Special, Multiply in excel, adding comment to a cell.

**SECTION - B**

MS Excel Charts: Sorting Data, Create an excel chart, Move and Resize your chart, Charts Styles and Layouts, Chart Titles and Series Titles, Chart Layout Panel in Excel, Format chart Panel, Creating Pie chart, Add Labels to a Pie Chart, Format Pie chart segments, Create a 2D line Chart in Excel, Format your Axis titles, Predict the future with a Trendline chart.

**SECTION - C**

Analysis of Time Series Data: Forecasting/Data Relationship Tools – Graphical Analysis, Linear Regression.

Analysis of Cross-Sectional Data, Inferential Statistical Analysis of Data

**SECTION – D**

Conditional Logic: IF Function, Conditional Formatting in excel, CountIF, CountIFS, SUMIF, and SUMIFS.

MS Excel Advance Feature: Pivot Tables, LOOKUP Function, VLOOKUP Function, Searching with MATCH and INDEX, Drop Down Lists in Excel, Add your own Error Messages.

**Suggested / Reference Books:**

1. Hector Guerrero, Excel Data Analysis Modeling and Simulation, Second Edition

**COMPUTER APPLICATIONS (VOCATIONAL)**  
**SKILL ENHANCEMENT COURSES****SEC-III****DATA ANALYSIS WITH EXCEL****(PRACTICAL)****M. Marks: 25**  
**Time: 3 Hours****Credits**  
**L-T-P**  
**0-0-1**  
**Lab 2h/week****Instructions for the examiners: -**

Two questions of equal marks strictly as per the syllabus and based on the practical exercises covered in the semester. Questions may be subdivided into parts (not exceeding four). Candidates will attempt ONE question, explain their answer by writing on the answer sheet, and then implement the same on the computer. Examiner will evaluate both the answers (theory as well as practical). The viva will also be conducted one-on-one alongside, and the student asked viva questions related to the question and the solution he/she is working on during the exam.

Lab exercises based on:

1. creating, saving, opening excel sheets
2. Enter data in cells and cell formatting
3. Merge cells,
4. Using Auto fill
5. Adding formulae
6. adding comment to a cell
7. MS Excel Charts: Sorting Data, Create an excel chart, Charts Styles and Layouts, Chart Titles and Series Titles, Chart Layout Panel in Excel, Format chart Panel, Format your Axis titles
8. Predict the future with a Trendline chart
9. Analysis of Time Series Data: Forecasting/Data Relationship Tools – Graphical Analysis, Linear Regression
10. Analysis of Cross-Sectional Data
11. Inferential Statistical Analysis of Data
12. Conditional Logic: IF Function, Conditional Formatting in excel, CountIF, CountIFS, SUMIF, and SUMIFS
13. MS Excel Advance Feature: Pivot Tables
14. LOOKUP Function, VLOOKUP Function, Searching with MATCH and INDEX
15. Drop Down Lists in Excel
16. Add your own Error Messages.