Computer Applications – I (SEMESTER I)

GE1: Generic Elective as per CBCS

Credits: 3+1 Duration: 2 hrs. Marks: 100(Theory 75 + Practical 25)

Lectures: 45, Practical Lab: 15 Sessions Batch Size: 10-15 per batch

One Theory Lecture = One Hour & One Practical Lab Session = Two Hours

Course Objectives: To provide an understanding of essential Information Technology Concepts and Emerging Technologies. Includes practical skills in data capture, analysis and presentation, report formatting, efficient search techniques and online collaboration tools.

Unit I Lectures: 15, Practical Lab 2 Marks Th-30, Pr-1.

Information Technology Basics

Information : Prerequisites of Information, Need for Information Technology and its advantages; Information Technology : Definition and components; Data : Definition, Types, Data Representation, Number system and Coding Schemes(ASCII and UNICODE); Parts of a Computer: CPU, Memory, Input/ Output Devices, Auxiliary Memory; Software – Definition, Relationship between Hardware and Software, Categories of Software, OS - definition & functions Role of Information Technology in : Business, Mobile Computing, Health Services, ,Public Sector, Media, Defence Services, Education and Publication.

Lab1

OS basic

Installation of Operating System (Demonstration only) , Demonstrate features of any MS Windows based OS or any of the Linux flavor , Identification of Directories , Setting up computer, Add a printer, Check device drivers, Installation software, Users and administrative rights for installation , Unicode, Enable computer to support regional language, add Keyboard, Use onscreen keyboard, install phonetic keyboard, type the national anthem using Unicode, Use online translators and transliteration services

Unit II Lectures: 15, Practical Lab 08 Marks Th-15, Pr-16.

Introduction to data handling, processing, analysis and presentation software

Word processing concepts: Use of Templates, Working with word document: Editing text, Find and replace text, Formatting, spell check, Autocorrect, Autotext, Bullets and numbering, Tabs, Paragraph Formatting, Indent, Page Formatting, Header and footer, Tables: Inserting, filling and formatting a table; Inserting Pictures and Video; Mail Merge: including linking with Database; Printing documents Creating Business Documents using the above facilities

Basics of presentations: Slides, Fonts, Drawing, Editing; Inserting: Tables, Images, texts, Symbols, Media; Design; Transition; Animation; and Slideshow. Creating Business Presentations using above facilities

Spreadsheet concepts: Managing worksheets; Formatting, Entering data, Editing, and Printing a worksheet; Handling operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs, Generally used Spreadsheet functions: Mathematical, Statistical, Financial, Logical, Date and Time, Lookup and reference, Database, and Text functions

Lab 2.1

Data capture using Google Forms

Create data forms to capture data for Event Registration, Event Feedback, Customer feedback/satisfaction on a product or service and Order Request.

Lab2.2

Report Formating using Word Processing

Draft an official letter for job interview invitation/ job appointment/ invitation to an business trade show event, use mail merge to input the recipients list linking with database.

Given a project report in PDF format transfer to word processor software and format to include title page, specified Paragraph and Page Formating (page size, orientation, line spacing, font type and font size, Indent, bullets, paragraph formatting) details, Acknowledgement page, Table of contents page, List of figures page, List of Tables page, bibliography, references, distinct

headers for each chapter, page numbering in roman for initial pages and normal from first chapter. The document should be checked for spelling errors and corrected appropriately.

Create/ Upload a document in a collaboration software like Google docs. Share and collaborate in real time, Safely store and organize your work, Control who can see your documents

Lab2.3

Spreadsheet

Working with worksheets -Entering data, Formatting, Editing, and Printing a worksheet, Formulas and Functions, Handling operators in formula, Generally used Spreadsheet functions - Mathematical, Statistical, Financial, Logical, Date and Time, Lookup and reference, Database, and Text functions, Inserting Charts and graphs, Data Sorting and Filtering

Introduction to some more useful functions such as the IF, nested IF, VLOOKUP and HLOOKUP, construction of Pivot Tables to organize data, Creating spreadsheet in the area of: Loan and Lease statement; Ratio Analysis; Payroll statements; Capital Budgeting; Depreciation Accounting; Graphical representation of data; Frequency distribution and its statistical parameters; Correlation and Regression

Lab 2.4

Data Presentation using Presentation Software

Preparing presentation in areas such as Customer satisfaction/ feedback, product analysis, job satisfaction using the data obtained through data capture tool, including appropriate slide animation, sound recording, slide timings, customer feedback video. Export the presentation as video or save as slide show. Prepare handouts for audience.

Unit III Lectures: 15, Practical Lab 5 Marks Th-30, Pr-8.

Internet Applications and Emerging Technologies

Internet – role and importance, Web Browser, IP Addressing – Public Vs Private, Static Vs Dynamic; WWW & related protocols; Internet Applications.

Cloud Computing: Meaning, Features, & Service models – Infrastructure as a service, Advantages and disadvantages, Mobile Computing: Meaning, Business Applications of Mobile computing, Virtual reality & Augmented Reality: Meaning and applications, IOT - Internet of Things: Meaning & Application

Lab 3

Surfing the Internet, Use of Email and Search Engines

Advanced web search and translation services, Web search, image search, Search only for pages that contain (ALL the search terms contain the exact phrase you type, contain at least one of the words you type, do NOT contain any of the words you type, written in a certain language, created in a certain file format like ppt, pdf, rtf, doc, xls), Advanced search operators: Include search ("+" search), synonym search, OR search, Domain search, Numrange search, other advanced search features (Google, Local language, Technology Search, Date, Occurrences, Domains, Safe search), Multiuser ; Google docs: Create documents, spreadsheets and presentations online, Share and collaborate in real time, Safely store and organize your work, Control who can see your documents

Reference Books:

1. Introduction to Information Technology by ITL Education Solutions Limited, second edition.

2. 'O' Level made simple "Introduction to ICT resources" by Satish Jain, Shashank Jain, Shashi Singh & M. Geetha Iyer, BPB publication.

3. Computer fundamentals fourth edition by Pradeep K. Sinha and Priti Sinha BPB publications

4. Information Technology The breaking wave by Dennis Curtin Tata McGraw-hill edition

5. Cloud Computing by Anandamurugan, T.Priyaa et al.

6. Internet of Things: A Hands-On Approach byArsheep Bahga

Web references

1. www.moodle.org,

2. www.wikipedia.org

Computer Applications – II (SEMESTER II)

GE2: Generic Elective as per CBCS

Credits: 3+1 Duration: 2 hrs. Marks: 100(Theory 75 + Practical 25)

Lectures: 45, Practical Lab: 15 Sessions Batch Size: 10-15 per batch

One Theory Lecture = One Hour & One Practical Lab Session = Two Hours

Course Objectives: To understand computer networking concepts, e-commerce technology and business applications; understand principles of cyber security, online threats and cyber laws and prepare students to adopt safe practices.

Unit I Lectures: 6, Practical Lab 2 Marks Th-15, Pr-2.

Basics of Computer Networking

Networking basics, Need for computer networks, Types of networks-LAN, MAN, WAN, Network Components – H/W, Software, Communication channels, Network Devices, Network topologies.

Lab1

Basic Networking Setup of PC, Network commands like ipconfig, ping, traceroute, nslookup / dig etc, Setup of Home Router / Wifi Hotspot, Understanding of Firewall and Basic Firewall Setup, File and Printer Sharing, connecting to share, Setup of Email Clients like Outlook, FTP Clients and Upload / Download. Finding out public address, connection speeds etc.

Unit II Lectures: 10, Practical Lab 07 Marks Th-15, Pr-15.

E-Commerce

Definition, E-commerce and Trade Cycle, Electronic Markets, Electronic Data Interchange and Internet Commerce, Types of E-commerce :Business to Business E-Commerce, Business to Consumer E-Commerce. Consumer to Consumer, Electronic Payment Systems: Smart Cards –

Credit Cards – Wallets, Risks, E-Retail, Concept and Examples, E-Banking, Features and services, M-Commerce, Products and services

Lab2

E-commerce

- *Attempt to purchase a product online from any E-Commerce Site. Proceed till payment gateway. Check digital certificates (such as ebay.in and amazon.com)*
- *Write a review of an E-Commerce Site visited include: Site description, Site Design, ease in navigation , process for purchasing items, security, privacy, customer service, best features of site etc..*
- *An E-commerce site case study: Include*

  Target market/audience: who uses this service?

  Revenue model: where does the money come from?

  How are they promoting their products in the marketplace? ,

Unit III Lectures: 15, Practical Lab 02 Marks Th-25, Pr-2.

Emerging threats in Cyber Space

Introduction to cyber space, Malware threats- Definition and types (Virus/ worms, Trojan, Rootkits, Spyware, Keyloggers). Social Engineering, Cyber Crimes – Definition, Types (DOS, Intellectual Property Rights and related crimes, Unauthorized access to computer system or networks, Theft of information contained in electronic form, Cyber Stalking, Identity Theft, E-mail Spoofing, E-mail bombing, Online gambling, Sale of illegal articles, Cyber Defamation, Salami attack, Phishing, Pharming, Data Diddling, logic bombs, Web jacking, Theft of computer system, physically damaging a computer system, Cyber warfare, Cyber terrorism.)

Lab3

Installation and Configuration of any free Antivirus Package eg. AVG/Avast etc., Using Antivirus Package for Threat Detection, Browser security and Safety such as Understanding SSL and Certificates, checking URL of site for Phishing attempts, Email Headers and Tracking, Identification of Phishing Emails

Unit IV Lectures: 14, Practical Lab 04 Marks Th-20, Pr-6.

Cyber Safety, IT Act and Cyber forensic

Online Privacy – Introduction, Significance, Privacy Policy, Sensitive Personal Information, Social media – Usage, Safety. Online shopping – Introduction, Safety measures (Encryption of data authentication , SSL, Digital signatures, Digital Certificates), Online payments – Introduction, Types, Safe practices.

Cyber Laws: Evolution and Need for cyber law, The legal perspectives – Indian perspective, Global perspective, Information Technology Act(ITA) 2000, Provisions related to E-commerce, Provisions for cyber-crimes, Information Technology (Amendment)(ITAA) Act 2008, Adjudicating officer, CERT-IN- its role and powers.

Reporting Cyber Crimes, Cyber Forensics: Introduction, Evidence collection, Data Recovery, Cloning of Devices, Forensic Investigation phases – Acquisition and preservation, Authentication, Analysis, Documenting Evidence, Presentation of Evidence, Media sanitization.

Lab4.1

Keeping passwords cyber secure-Choosing strong passwords, Privacy settings on Facebook, Social Media Safety, Payment Systems Security concerns and Safe Practices, Online Banking Security features, OpenPGP Tools.

Lab4.2

Use of Investigation tools such as Winhex for forensic investigation, Data Recovery using winhex, Use of Free data recovery tools like Recuva, Mapping a given list of cyber-crimes to appropriate ITAA Act 2008 offence listed in http://www.naavi.org/ita_2008/index

Reference Books and web references

1. Rick Lehtinen and G. T. Gangemi, Computer Security Basics, O'Reillly Media, Inc.; 2nd Edition, 2006

2. Wall, David, (2007). Cyber Crime: The Transformation of Crime in the Information Age. Polity Publishing

3. Michael cross, Scene of the Cyber Crime, Syngress Publishing, Elsevier Publishing, 2nd Edition, ISBN 13: 978-1-59749-276-8

4. Chander, Harish, Cyber Laws and IT Protection, ISBN: 978-81-203-4570-6

5. *Nina Godbole, SunitBelapure, "Cyber Security – Understanding Cyber Crimes,Computer Forensics and Legal Perspectives", Wiely India Pvt.Ltd.,ISBN - 978-81-265-2179-1*

6. *Frontiers of Electronic Commerce Ravi Kalakota& Andrew B Whinston, Pearson Education.*

7. *BruiceSchneier, "Applied Cryptography-Protocols, Algorithms and Source code in C", 2nd Edition, Wiely India Pvt Ltd, ISBN 978-81-265-1368-0*

8. *Cyber Laws, http://deity.gov.in/content/cyber-laws*

9. *www.cert.org*