

FYBA Semester I
Computer Fundamentals and Emerging Technologies
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 Fundamental Technology Concepts and Emerging Technologies in Computer Field. Includes practical skills in data capture, text editing with report formatting, effective presentation tools, efficient search techniques and online collaboration tools.

Unit I Lectures:15, Practical Lab:1 Sessions Marks(Theory-30, Practicals-1)
Computer Fundamentals (Theory)

Introduction: Introduction to computer system, uses, types.

Data Representation: Number system and Coding Schemes(ASCII and UNICODE).

Human Computer Interface: Relationship between Hardware and Software, Types of software, Operating system as user interface, utility programs.

Role of Computers in: Business, Manufacturing, Mobile Computing, Public Sector, Media, Defense Services.

Lab 1: Computer Fundamentals (Practicals)

- a. Features of MS Windows based OS and any of the Linux flavor, Setting up users and User rights in a computer, Adding a printer, Software Installation
- b. Troubleshooting basic computer connections.

Unit II Lectures: 15, Practical Lab: 10 Sessions Marks (Theory-10, Practicals-18)
Content/Data Management Tools (Theory)

User Generated Content: Blogs and Wikis.

Online Data Capture Tools: Types of data capture form templates (Personal, Work and Education). Question Formats for data capture (short answer, paragraph, multiple choice, check- box, drop-down, linear-scale, multiple choice grid). Data form design (Add new question, add section, add title/description/image/video). Data form distribution techniques (Send via email, publish on social media, send as link). Response management (Print responses, Export to spreadsheet, View analysis, Include analysis in word processing reports)

Text Formatting using Word Processing tools: Use of Templates, Working with document: Editing text, Find and replace text, Formatting, spell check, Autocorrect, Autotext; Bullets and numbering, Tabs, Paragraph Formatting, Indent, Page Formatting, Header and footer, section break, footnotes, bibliography and references. Tables: Inserting, filling and formatting a table; Inserting Pictures and Video; Managing Mail Merge: including linking with Database; Printing documents Creating Business Documents using the above facilities.

Data Presentation using Presentation tools: Slides, Fonts, Drawing, Editing; Inserting: Tables, Images, texts, Symbols, Media; Design; Transition; Animation; and Slide-show. Creating Business Presentations using above facilities

Lab 2.1 : Creating Content for the Web (Practicals)

- a. Create a blog using popular blogging tools like WordPress/ BlogSpot.
- b. Edit Wikipedia articles.

Lab 2.2 : Data Capture using Google Forms (Practicals)

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

Lab 2.3 : Report Formating using Word Processing (Practicals)

- a. Draft an official letter for job interview invitation/ job appointment/ invitation to an event, use mail merge to input the recipients list linking with database.
- b. 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.
- c. Design a certificate in landscape orientation with a border around the document.
- d. Design a Garage Sale sign.

Lab 2.4 : Content Presentation using Presentation Software (Practicals)

- a. Preparing presentation in areas such as Impact of Social Media on Youth, Emerging trends in Mobile Technology include appropriate slide animation, slide transitions, sound recording, slide timings, customer feedback video.
- b. Export the presentation as video or save as slide show.
- c. Prepare handouts for audience.

Unit III Lectures: 5, Practical Lab: 3 Sessions

Marks(Theory -20, Practical -5)

Overview of Emerging Technologies

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: Web Applications (Practicals)

- a. Scheduling tasks in Google Calendar
- b. Create/Upload documents / spreadsheets and presentations online.
- c. Share and Collaborate in real time
- d. Safely store and organize your work of Google Drive or OneDrive

Unit IV Lectures: 10, Practical Lab: 1 Sessions

Marks (Theory-15, Practical -1)

Computing Trends in Internet, Education and Research:

Internet-role and importance, Web Server and Web clients like web browser or web app, IP addressing : Public Vs Private, Static Vs Dynamic, world wide web and related protocols, e-Library, Google Scholar.

Lab 4: Internet Applications (Practicals)

- a. Surfing the Internet, Using Email and Search Engines

- b. *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)*
- c. *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),*

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. Computer Fundamentals by A. Goel, Pearson Education, 2010.
6. Introduction to Information Technology by P. Aksoy and L. DeNardis, Cengage Learning, 2006

FYBA Semester II
Cyber Space and Cyber Security
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 introduce computer networking, e-commerce and understand principles of cyber security, online threats and cyber laws and prepare students to adopt safe practices.

Unit I Lectures: 6, Practical Lab: 2 Sessions Marks (Theory -15, Practicals -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: 04 Sessions Marks (Theory-15, Practicals-16)

E-Commerce

Definition, Hardware requirements, E-commerce and Trade Cycle, Electronic Markets, Electronic Data Interchange and Internet Commerce, Benefits and Risk, 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

Lab 2

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, compare with competitors, 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? Competitive environment: who else is competing in this market, or who might enter the market and threaten this company's position? Competitive advantage analysis: how is your case company

attempting to gain an advantage: competing on cost? Differentiation? How are they promoting their products in the marketplace? ,How have they been doing - financial results if available?

Unit III Lectures: 15, Practical Lab: 02 Sessions Marks (Theory-25, Practicals-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 crimes, Unauthorized access to computer system or networks, Theft of information contained in electronic form, Cyber Stalking, Identity Theft, Forgery, E-mail Spoofing, E-mail bombing, Online gambling, Sale of illegal articles, Child pornography, Cyber Defamation, Salami attack, Phishing, Pharming, Data Diddling, Virus/ worm attack, logic bombs, Web jacking, Theft of computer system, physically damaging a computer system, Cyber warfare, Cyber terrorism.)

Lab 3

- *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: 7, Practical Lab 03 Sessions Marks (Theory-10, Practicals-2)

Online Privacy and Cyber Safety

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.

Lab 4

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

Unit V Lectures: 7, Practical Lab 04 Sessions Marks (Theory-10, Practicals-3)

Cyber Laws and Cyber Forensics

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.

Lab 5

- *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'Reilly 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. Cyber Laws, <http://deity.gov.in/content/cyber-laws>
8. www.cert.org
9. Frontiers of Electronic Commerce Ravi Kalakota& Andrew B Whinston, Pearson Education.