APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES

Course Code: GE-181

Credit Hours: 3(2+1)

Pre-requisite: Nil

Course Objectives

The key objectives of this course include:

- The course introduces students to information and communication technologies and their application in the workplace.
- Students will get basic understanding of computer software, hardware, and associated technologies.
- They will also learn how computers are used in the workplace, how communications systems can help boost productivity, and how the Internet technologies can influence the workplace.

Course Learning Outcomes

After successful completion of this course, the students should be able to:	GA	BT Level
1. **Define** basics of computing technology, hardware and software.	2	C1
2. **Solve** number system conversion problems.	3	C3
3. **Discuss** the use of different computing technologies.	4	C2

Course Contents

Brief history of Computer; Four Stages of History: Computer Elements; Processor: Memory: Hardware: Software; Application Software its uses and Limitations: System Software its Importance and its Types: Types of Computer (Super, Mainframe, Mini and Micro Computer. Number system, Input Devices; Keyboard and its Types: Dedicated Data Entry. Pointing Devices: Voice Input: Output Devices: Soft- Hard Copies: Monitors and its Types: Printers and its Types: GAtters: Computer Virus and its Forms; Storage Units; Primary and Secondary Memories: RAM and its Types; Cache: Hard Disks: Data Communications; Data Communication Model: Data Transmission;Digital and Analog Transmission: Modems; Asynchronous and Synchronous Transmission: Simplex: Half Duplex: Full Duplex, Protocols; Network Topologies and Online Services Providers:Function and Features of Browser: Search Engines; Some Common Services available on Internet, LAN: LAN: Internet; A Brief History: Birthplace of ARPA Net: Web Link: Browser; ISP. Future trends of ICT: Cloud computing.

Mapping of CLOs to GAs

GAs/CLOs	**CLO1**	**CLO2**	**CLO3**
GA1 (Academic Education)			
GA2 (Knowledge for Solving Computing Problems)	✓		
GA3 (Problem Analysis)		✓	
GA4 (Design/Development of Solutions)			✓
GA5 (Modern Tool Usage)			
GA6 (Individual and Teamwork)			
GA7 (Communication)			
GA8 (Computing Professionalism and Society)			
GA9 (Ethics)			
GA10 (Life-long Learning)			

Resources

Text Book:

1. An introduction to automatic digital computers, Livesley, Robert Kenneth. Cambridge University Press, 2017, ISBN: 1316633306

Reference Books:

1. Exploring four decades of research in Computers & Education, Zawacki-Richter, Olaf, and Colin Latchem. 2018.
2. Computer fundamentals, Sinha, Pradeep K., and Priti Sinha, 2010. ISBN: 8176567523
3. Computer fundamentals, Goel, Anita. Pearson Education India, 2010: ISBN: 978-8131733097

Weekly Course Plan

WEEK No.	Topics Covered
WEEK 01	**Introduction to computers** • Basic concepts and definitions • Fundamental Characteristics of computers • History of computers and Generation • Types of computer,(analog, digital and hybrid)
WEEK 02	**Basic Computer Organization** • Basic operations of computer System • Basic Units of CPU • Computer Organization • Types of Memory
WEEK 03	**I/O devices** • Common I/O Devices • Basic Fundamentals of I/O Devices
WEEK 04	**Software** • Hardware vs software • Types of Software (System software, Application Software)
WEEK 05	**Storage Devices** • Classification of storage devices • Basic operations • Sequential and Direct Access • Sequential Access Storage • Magnetic Tape
WEEK 06	**Storage Devices** • Direct Access Storage • Magnetic Disk • Optical Disk

WEEK 07&08	**Number system** • Positional and non-positional number system • Conversion of decimal number system • Conversion of binary number system
MID SEMESTER EXAM	
WEEK 09	**Number system Conversion** • Conversion of octal number system • Conversion of hexadecimal number system
WEEK 10	**Data Communication and Computer Networks** • Networks • Basic elements of communication system • Types of computer Networks • Communication Protocols
WEEK 11	• Asynchronous and Synchronous • Transmission, Simplex. Half Duplex, Full Duplex Transmission • Medias (Cables, Wireless), Protocols, Network Topologies (Star, Bus, Ring) • LAN, WAN, MAN
WEEK 12	**Introduction to Operating System** • Need for operating system • Functions of operating system • Types of operating System
WEEK 13	**The Internet** • Evolution of internet • Basic services of internet • World Wide Web • Browsers and Search Engines
WEEK 14	**Cyber Security** • Categories of cybercrime • Major security problems • Computer Virus and its Forms • Hacking and its prevention • ATM skimming and point of scale crimes
WEEK 15	**Databases and Information System** • Database management system • Database Models • Main components of DBMS
WEEK 16	**Future Trends in ICT** • Artificial Intelligence • Machine Learning • Deep Learning
End semester examination	

APPLICATION OF INFORMATION TO COMMUNICATION AND TECHNOLOGY LAB

Course Code: GE-181L

Lab Objectives

The key objectives of this LAB include:

- To provide basic knowledge of commonly used applications such as word, excel, power point.
- To demonstrate the ability to create and use documents, spreadsheets, presentations also by using MS access and SQL in order to communicate and store information as well as to support problem solving
- To learn and design basic web page using HTML and creating email and learning its features

Lab Learning Outcomes

After successful completion of this course, the students should be able to:	GA	BT Level
1. **Perceive** basic knowledge of the tools commonly like Microsoft word, Excel & PowerPoint to develop different documents	1	P1
2. **Demonstrate** the ability to create and use documents, spreadsheets, presentations and databases using Access and SQL in order to communicate and store information as well as to support problem solving.	5	A2
3. **Produce** basic web page using HTML	4	P4

Lab Contents

Basic definitions and concepts. Hardware: Computer system and components, storage devices. Software: operating systems, programming and application software Databases and information system networks. Data communication. The internet: browsers and search engines. Email collaborative computing and social networking. E-commerce. IT Security and other issues. Use of Microsoft Office tools (MS Word, MS PowerPoint, MS Excel)

Mapping of LLOs to GAs

GAs/CLOs	LLO1	LLO2	LLO3
GA1 (Academic Education)	✓		
GA2 (Knowledge for Solving Computing Problems)			
GA3 (Problem Analysis)			
GA4 (Design/Development of Solutions)			✓
GA5 (Modern Tool Usage)		✓	
GA6 (Individual and Teamwork)			
GA7 (Communication)			
GA8 (Computing Professionalism and Society)			
GA9 (Ethics)			
GA10 (Life-long Learning)			

Resources

Text Book:

1. An introduction to automatic digital computers, Livesley, Robert Kenneth. Cambridge University Press, 2017, ISBN: 1316633306

Reference Books:

1. Exploring four decades of research in Computers & Education, Zawacki-Richter, Olaf, and Colin Latchem. 2018.
2. Computer fundamentals, Sinha, Pradeep K., and Priti Sinha, 2010. ISBN: 8176567523
3. Computer fundamentals, Goel, Anita. Pearson Education India, 2010: ISBN : 978-8131733097

Weekly Lab Outline	
WEEK No.	**Topics Covered**
WEEK 01	Introduction to MS Word, Basic formatting styling using MS word
WEEK 02	Introduction to using basic commands in MS office Word, Mathematical Equation and Table, Adding References, Table and Figure Captions, Table of Contents
WEEK 03	Effective CV writing techniques using MS word, Introduction to the PowerPoint, Choosing design and themes for slides
WEEK 04	Making Interactive presentations, Adding transitions, Animations, Audios and videos to the slides, Different views and layouts
WEEK 05	Introduction to MS Excel, Exploring layout, tabs, formulas, and complex mathematical calculations
WEEK 06	Exploring MS Excel, Advanced features and filtration of data, Advanced formulas, Charts
WEEK 07	Introduction to MS Word, Basic formatting styling using MS word
WEEK 08	**Lab Sessional**
WEEK 9	Internet Browsers, Search Engines, Upload, Download, Sending Email, Attachment, Diff between CC and BCC
WEEK 10	Introduction to MS Access, To get familiar with the database environment by creating databases and tables. Access, Query Creating Custom Query, Basic Query Overview
WEEK 11	Creating forms and reports on MS Access, To get familiar with the database environment by creating databases and tables. Creating access form. Creating access reports

WEEK 12	Setting Validation Rules on MS Access
WEEK 13	Introduction to HTML
WEEK 14	Introduction to HTML (Cont)
WEEK 15	Networking with CISCO
WEEK 16	**Lab Sessional**