FACULTY OF ENGINEERING AND TECHNOLOGY
First Year Bachelor of Technology
In Effect from Academic Year 2018-19

Subject Code: 1ET1000108	Subject Title: FUNDAMENTALS OF ICT
Pre-requisite	-

Course Objective:
The course aims to make the students familiar with basic tools and techniques associated with Information and Communication Technology (ICT) and make them digitally literate. The course intends to make the student understand fundamentals concepts associated with ICT.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory		Practical		
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total
3	-	2	4	70	30	-	20	120

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
1	**Basic Building Blocks of Computer:** Introduction, ComputerHardware, Software, Central Processing Unit (CPU), main/internal memory (including ROM and RAM), input/output devices, and secondary/backup storage. **Computing devices**: Desktops, PDAs, Tablets, Laptops, smart phones and other gadgets **Software Packages:** Database applications, Office suits, Graphics Tools	4	10
2	**Operating Systems**: Introduction and types, functions,working with windows/Linux	2	5
3	**Computer Networks**: Introduction, types, Topologies, Protocols, WiFi/Bluetooth, IP, ISP, Network devices (routers, hubs, bridges, switches, proxy servers etc) **Internet**: WWW, Email, Social Networking, Dos and Don’ts on Internet	4	10
4	**Data analysis**: Create, and present data using a spreadsheet, Data management operations, Generating graphs.	1	4
5	**General terminology**: Copyright, Plagiarism, Virus, Hacking, Trademark **Related technologies**: Sensors, CCTV, Webcam, Peripherals etc.	3	6
6	**Role of ICTin various sectors:**Education, Agriculture, Business,Aviation, Infrastructure, Smart Cities, Governance. **ICT in day to day life**: e-Learning, Blogs, Social networking (virtual communities), Wikis, online shopping/e-Commerce. **Darker side of ICT:** Data security issues, virus, malfunctioning, hacking, identity theft	6	15
7	**Introduction to Waves and Signals:** Wave properties, relationship among waves properties. Electromagnetic Waves. **Electromagnetic spectrum:** Power and telephone band, radio and television band, microwaves, light bands. Electromagnetic energy, propagation of electromagnetic waves, factors that limit the propagation of electromagnetic waves, analog and digital data and signals, comparing analog and digital signals	4	10
8	**Transmission Media: Wire media:** Twisted pair cable, coaxial cables, fiber optical cables, **Wireless Media:** broadcast radio, microwave, light waves	4	10
9	**Basic Communication System:** **Introduction, Basic scheme of a modern communication system:** Information source and input transducer, Transmitter, channel or medium, Noise, Receiver, information and bandwidth, overview of analog and digital modulation	4	10

10	**Wired &Wireless transmission systems:** Telephone system structure,components of a telephone system, call routing, **Overview of cellular networks:** mobile station, base station	4	10
11	**Overview of telecommunication technologies:** GSM, CDMA,GPRS, Bluetooth, Wi-Fi	4	10

Course Outcome:
At the end of this course, the student would be able to

- Understand and identify basic tools and techniques associated with ICT
- Develop digital literacy skills
- Access various tools and applications related to ICT
- Operate a variety of hardware and software independently

List of References:

1. Rajaraman, V., Fundamental of Computer, PHI Learning Pvt Ltd
2. Nagpal, D. P. Computer Fundamentals, Wheeler Publisher
3. Goel, Anita , Computer Fundamentals, Pearson Education
4. T. S. Rappaport, "Wireless Communication: Principle and Practices", 2nd Edition, Pearson
5. Behrouz A. Forouzan, Data Communication and Networking, 4th Edition,
6. G. Kennedy, B. Davis, "Electronics Communication System", 4th Edition, Tata Mcgraw-Hill Edition.

E-Resource / Web link :

1. http://nptel.ac.in/courses/126104006/5#
2. http://www.itdesk.info/handbook_basic_ict_concepts.pdf
3. http://www.ou.ac.lk/home/images/OER/Computer_Science/ICT%20Skills%20Full%20Book.pdf
4. http://www.igcseict.info/theory/index.html
5. https://www.f-secure.com/documents/996508/1030743/threat_summaries_2006_2002.pdf

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

1. Learn and identify the fundamentals components in a typical computer system.
2. Learn and identify various memory modules and IO devices including secondary storage devices.
3. Getting familiar with Windows operating system.
4. Getting familiar with Linux operating system.
5. Learn and identify institute's computing networking structure.
6. Study various networking components involved in institute networks.
7. Learn and identify institute's CCTV networking structure. Also learn to manage the console.
8. Using spreadsheet suits learn to collect and analyze different data. Also represent the same in various charts/graphs/figures.
9. Getting acquainted with personal emails, blogs and social accounts.
10. Search various e-Learning sites available and prepare a comparison chart for common features.
11. Search various e-Commerce (shopping) sites available and prepare a comparison chart for common features.
12. Search various online matrimonial sites available and prepare a comparison chart for common features.
13. Prepare a short report on guidelines for novice Internet users mentioning Dos and Don'ts.
14. Learn and understand various communication cables (twisted pairs, coaxial cable, fiber optcal cable, wireless channel).
15. Learn and understand various analog and digital signals
16. Learn and understand various blocks of Analog communication system (Analog Radio Tx/Rx)
17. Learn and understand various blocks of digital communication system (Digital Radio Tx/Rx)
18. Identify various blocks of a telephone system.
19. Identify various blocks of a mobile communicating system.
20. Draw electromagnetic spectrum and identify various bands and its applications