FACULTY OF ENGINEERING & TECHNOLOGY

VALUE ADDED ELECTIVE COURSE

VAET-011 - Introduction to Data Science

INTRODUCTION TO COMPUTERS AND OPERATING SYSTEMS: Computer system – hardware: input devices, output devices – Software : system software - application Software - utility Software - Virus: types of virus – virus preventive and corrective measures - operating system: Building blocks of a generic operating system – Types of operating system – Functions of operating systems.

INTERNET AND WEB UTILITIES: Internet Vs Intranet – Browser – Universal Resource Locator (URL) - World Wide Web (WWW) – Search Engine - e-Mail Servers – e-Mail services: Create, Forward, Reply, Attachment, Carbon Copy (CC), Blind Carbon Copy (BCC).

INTRODUCTION TO COMPUTER NETWORK: Types of Network – LAN, MAN, WAN, WLAN - Basic networking devices: Repeater, Hub, Switch, Bridge, Router, Gateway - Wi-Fi Hotspot - IP Address: Class A, B, C and D – Protocols: TCP/IP, HTTP, FTP – Network Models. Review of Reference Models: OSI, TCP/IP and their comparison.

FUNDAMENTALS OF NETWORK SECURITY: Attacks – Services – Mechanisms – Conventional Encryption – Classical and Modern Techniques – Digital Signatures – Authentication Protocols. Authentication– Applications – Electronic Mail Security – IP Security – Web Security- Intruders – Viruses – Worms – Firewalls -Design Principles.

INTRODUCTION TO DATA SCIENCE: Statistical Inference - Exploratory Data Analysis and the Data Science Process - Basic Machine Learning Algorithms - Feature Generation and Feature Selection - Data Visualization.

REFERENCES

1. Sanjay Saxena, "A First Course in Computers", Vikas Publishing house, 2001.
2. Comer, " Computer Networks and Internet with Internet Applications", PHI, Fourth Edition, 2006.
3. Stallings William, Data and Computer Communication, Pearson, tenth edition ,2014.
4. Stallings William, "Cryptography and Network Security" PHI, Sixth Ediiton, 2014.
5. Cathy O'Neil and Rachel Schutt. "Doing Data Science, Straight Talk from the Frontline", O'Reilly. 2014.