

# EE4014: BUSINESS DATA COMMUNICATION NETWORKS

---

## Effective Term

Semester A 2022/23

## Part I Course Overview

### Course Title

Business Data Communication Networks

### Subject Code

EE - Electrical Engineering

### Course Number

4014

### Academic Unit

Electrical Engineering (EE)

### College/School

College of Engineering (EG)

### Course Duration

One Semester

### Credit Units

3

### Level

B1, B2, B3, B4 - Bachelor's Degree

### Medium of Instruction

English

### Medium of Assessment

English

### Prerequisites

EE3009 Data Communications and Networking

### Precursors

Nil

### Equivalent Courses

Nil

### Exclusive Courses

Nil

## Part II Course Details

### Abstract

The course aims to train students' ability to act as network professional of business data communications networks.

### Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Administer and Manage medium sized network infrastructure of business data communications networks		x	x	
2	Perform security assessment on business data communications networks		x	x	
3	Realise the importance of cybersecurity		x	x	
4	Relate networking principles learnt in the course to knowledge needed to serve as professional network engineers of business communications networks		x	x	

#### A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

#### A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

#### A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

### Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Key concepts are described with lecture activities to reinforce students' learning. Key concepts are applied in solving real time network problems.	1, 2, 3, 4	3 hrs/wk

### Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Tests (min.: 2)	1, 2, 3, 4	56	
2	#Assignments (min.:3)	1, 2, 3, 4	14	

### Continuous Assessment (%)

**Examination (%)**

30

**Examination Duration (Hours)**

1.5

**Additional Information for ATs**

Remark:

To pass the course, students are required to achieve at least 30% in course work and 30% in the examination.

# may include homework, tutorial exercise, project/mini-project, presentation

**Assessment Rubrics (AR)**

**Assessment Task**

Examination

**Criterion**

Achievements in CILOs

**Excellent (A+, A, A-)**

High

**Good (B+, B, B-)**

Significant

**Fair (C+, C, C-)**

Moderate

**Marginal (D)**

Basic

**Failure (F)**

Not even reaching marginal levels

---

**Assessment Task**

Coursework

**Criterion**

Achievements in CILOs

**Excellent (A+, A, A-)**

High

**Good (B+, B, B-)**

Significant

**Fair (C+, C, C-)**

Moderate

**Marginal (D)**

Basic

**Failure (F)**

Not even reaching marginal levels

---

**Part III Other Information****Keyword Syllabus**Administration of Business Data Communications Networks

Network Infrastructure; Network Testing: Tools & Methodology; Network Connectivity; Switching; VLANs & Trunking; VTP; InterVLAN Routing; Redundancy of Connectivity: STP, VSS, HSRP, VRRP, GLBP.

Management of Business Data Communications Networks

Network Monitoring; Access Control Management: AAA, RADIUS, 802.1x; SNMP; Syslog; Active Directory & LDAP.

Security of Business Data Communications Networks

Endpoint Security; Router & Switch Security; Network Security Devices: Firewalls, IDS, VPNs

Security Assessment of Business Data Communications Networks

Security Assessment and Penetration Testing; Hacking Techniques; Web Hacking; Information Gathering; Vulnerability Assessment; Target Exploitation; Privilege Escalation; Maintaining Access.

Cybersecurity

Cyber Attacks, Concepts & Techniques; Protecting Data & Privacy; Malware and Malicious Code; Ensuring Integrity.

**Reading List****Compulsory Readings**

Title	
1	Nil

**Additional Readings**

Title	
1	Angus Wong and Alan Yeung, Network Infrastructure Security, Springer, 2009.
2	Web site of Cisco Networking Academy, CCNP Switch & Security curriculum.
3	Web site of Offensive Security