**BASIC COURSE OUTLINE MODEL**

**SCHOOL OF APPLIED SCIENCES**

**DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY**

**Course Code**: **ITEC 202**  **Credit Hour(s)** :**3** **Webpage** :

**Course Title**: **Data Communication and Computer Networks**

**Course Lecturer: Rev. Gustave Amuzu Room:**

**Email Address:** [**gamuzu@central.edu.gh**](mailto:gamuzu@central.edu.gh) **Tel no.: 0244255837**

**Office Hours:**

# Course Objective

The objective this course is designed to provide a strong foundation in data communications and computer network technology. It focuses on the fundamentals of data communication networks.

# Course Description

Topics covered include data transmission technologies including encoding techniques and error correction, basic networking concepts, the OSI Reference Model, network topologies, Local Area Network standards and protocols, Token Ring and FDDI. Others are WAN protocols such as Frame Relay, ATM, various internet-working devices and Virtual LAN.

# Learning Outcomes

After successful completion of this course students will be able to:

* To understand the fundamental principles of Data Communication and Networking
* To Get knowhow of how to effectively use information related to Data Communication and Networking

· Identify the different components and their respective roles in a communication system

· Propose efficient, cost effective, reliable and appropriate technology to establish communication links

· Design an enterprise network employing the common LAN technologies and be able to evaluate the advantages and disadvantages

· Configure a PC to work as a host in a TCP/IP network and to use the IP based commands to facilitate the trouble shooting process

· Describe the technical issues related to the Wide Area Networks and identify the common technologies available in establishing WAN infrastructure

· Describe the specific actions that can be taken to enforce network level security

**Implementation Software:**

For Network Simulation, OPNET IT GURU Academic Edition (Free Download) For Packet Observer: Ethereal Protocol Analyzer (Free Download)

# Instructional Methods

Instructional approaches to be used during the course (e.g., lectures, seminars, laboratory activities, group projects). Note that attendance is also a requirement.

# Required Course Materials and Readings

FitzGerald, J., & Dennic, A. (2006). *Business data communications and networking.* London: John Wiley and Sons.

Forouzan, B. A. (2007). *Data communication and networking.* New York, NY: McGraw- Hill.

Stallings, W. (2003). *Computer networking with Internet protocols.* Boston, MA: Prentice-Hall.

Tanenbaum, A. S., Day, W., & Waller, S. (2002). *Computer networks.* Boston, MA: Prentice Hall

# Evaluation

Class test, quizzes, mid-semester exams, term project and end of semester exams.

# Commit To Academic Integrity

Students in the department are expected to maintain **high degrees of professionalism,** **commitment to active learning, participation and academic integrity every time**.

# Academic Dishonesty

Please note that students involved in academic dishonesty will receive a **ZERO** mark on the particular component in which the infraction occurred and a notation of academic dishonesty in the departmental office. This may also reflect on references written by the department.

**It is the student’s responsibility to understand what constitutes academic dishonesty.**

# Missed Exams / Tests / Assignments

**Assignment Submission**: Assignments must be received on the due date specified for the assignment.

**Lateness Penalty:** Assignments received later than the due date will be penalized Exceptions to the lateness penalty for valid reasons such as illness, etc., may be entertained by the Lecturer but will require supporting documentation (e.g., a doctor’s letter).

**Missed Tests:** Students with a documented reason for missing a course test, such as illness, which is confirmed by supporting documentation (e.g., doctor’s letter) will be handled by the Lecturer.

**WEEK BY WEEK COURSE SCHEDULE / ORGANISER:**

| **Week** | **Topic** | **Activities** | **Due Date** |
| --- | --- | --- | --- |
| 1  2  3 | Data transmission technologies   * Overview of data communication. * exchange of data between two directly-connected devices. * key aspects of transmission, interfacing, link control, and multiplexing. * circuit switching * Packet switching * encoding techniques * error correction | Lectures begin |  |
| 4 | basic networking concepts  the OSI Reference Model  network topologies |  |  |
| 5 | Types of Networks  LAN:   * Technologies and architecture * Transmission media * Medium access control   *High-speed LANs:*  Fast Ethernet (100BASE-T),  100VG-  AnyLAN,  Fibre Channel  ATM LAn  WAN   * internal mechanisms * Data Technologies * Multimedia communications over long-distance networks   GAN  *Wireless and Spread Spectrum:*  *Wireless technologies and techniques* |  |  |
| 6 | COMPUTER PROTOCOLS  Token Ring and FDDI  as Frame Relay |  |  |
| 7 |  |  |  |
| 8 | ATM   * ATM congestion control |  |  |
| 9 | various internet-working devices |  |  |
| 10 | Virtual LAN |  |  |
| 11 | **PRATICALS AND PRESENTATION** | | |
| 12 |
| 13 |  | Lecturers end |  |
| 14 |  | Revision Week |  |
| 15 |  | Exams begin |  |
| 16 |  | Exams end / vacation |  |