



VIETNAM NATIONAL UNIVERSITY OF HO CHI MINH CITY
UNIVERSITY OF NATURAL SCIENCES
FACULTY OF INFORMATION TECHNOLOGY

COURSE SYLLABUS

Course Code:	TH135
Title:	Fundamentals of Telecommunication Networks 2
Credits:	3
Workload:	Lecture hours: 3 periods * 15 weeks = 45 periods Laboratory hours: 0 periods * 15 weeks = 0 periods Preparative hours: 2 periods * 15 weeks = 30 periods
Prerequisites:	TH502 – Fundamentals of Telecommunication Networks

Course Objectives:

This subject will equip the students with the following contents: Flow and Congestion Control, Multiple Access Communication Protocols, and Routing in Telecommunication Networks.

Main Text: N/A

References:

- *Fundamentals of Telecommunication networks*
Tarek N. Sadawi, Mostafa H. Ammar, Ahmel El Hakeem, John Wiley & Son, Inc, 1994.
- *Telecommunications Protocols and design*
John D. Spragins, Jojeph L. Hammond, Krzysztof Pawlikowski, Addison Wesley Inc, 1994.
- *Data and Computer Communication*
William Stallings, Macmillan, 1994.

Course Outline:

Chapter 1: Flow and Congestion Control in Telecommunication Networks

1. Classification and components of control procedures
 1. Flow and congestion control
 2. Control levels
 3. Control mechanism and policies
 4. Control based on reaction and prevention control
2. Buffer allocation solution
3. Window sliding solution
 1. Window sliding in flow control
 2. Window sliding in congestion control
4. Network access solution

Chapter 2: Multiple Access Communication Protocols

1. Efficiency measures of multiple access protocols
2. Average throughput
 1. Average packet delay

2. Stability
3. Other features
3. Fixed bandwidth assignment technique
 1. FDMA
 2. TDMA
 3. CDMA
4. Random access technique
 1. ALOHA
 2. ALOHA with Capture
 3. CSMA and CSMA/CD
5. On-demand bandwidth assignment technique in centralized processing
 1. Polling
 2. Probing and Adaptive Polling
6. On-demand bandwidth assignment technique in decentralized processing
 1. Tree algorithm
 2. Ring protocol
7. Combination techniques
 1. Combination techniques
 2. Reservation ALOHA technique

Chapter 3: Routing in Telecommunication Networks.

1. Principles of routing techniques
 1. Concepts of virtual channel routing and datagram routing
 2. Network nodes in telecommunication networks
 3. Optimal path specification
 4. Classification of routing techniques
2. Shortest path routing
 1. Centralized routing
 2. Distributional routing
3. Hierarchical routing technique
4. Table- Free routing techniques
 1. Random routing
 2. Source routing
 3. Computer-routing
5. Multi-destination routing
 1. Flooding routing
 2. Routing technique for data packets with different addresses
 3. Multi-destination Addressing routing technique
 4. Spanning Tree Forwarding routing techniques
 5. Reverse Path Forwarding routing technique

Grading

Final exam: 70%

Assignments: 30%