

Mobile and Sensor Networks

Course Name: Mobile and Sensor Networks

Course Code: NWE407

Credit hours: 3

Knowledge Domain: Networks and Web Engineering..

Prerequisite(s): Computer Networks (2) (NWE303)

Learning Objectives

Upon completion of this course, the student will be able to:

1. Present the basic architecture for Mobile networks and the structure of the Mobile IP.
2. Explain the cross-layer protocol optimization for Mobile networks.
3. Grasp the basic concepts of sensor networks and applications.

Learning Outcomes:

1. Grasping the main features of Mobile networks and the nature of the Mobile IP, and the importance of cross-layer optimization.
2. Grasping the need for Ad Hoc& sensor networks and their security aspects.

Overview and Syllabus

Introduction. Layered architecture for Mobile networks. Mobile IP and higher layers. Cross-layer protocol engineering. Ad Hoc and sensor networks.

Course Outline

	Topic
1	<u>Module 1: Introduction and history of wireless networks</u> Lesson 1: Characteristics of Wireless Networks (Net2) Lesson 2: Wireless Cellular Systems Lesson 3: Wireless Systems Overview
2	<u>Module 2: Wireless Physical and Mac Layers</u> Lesson 1: Mobile Propagation Lesson 2: Modulation Techniques Lesson 3: Coding and Error Control Techniques Lesson 4: Multiple Access Mechanisms Lesson 5: Multiple Division Techniques for Traffic Channels
3	<u>Module 3: Mobile Network Layer</u> Lesson 1: Mobility Management Lesson 2: Mobility Management in IP-based Networks Lesson 3: Higher Layer Mobility Management (MM)

	Lesson 4: Channel and Mobility Impact on Higher layers
4	<u>Module 4: Cellular Technology Concepts and Standards</u> Lesson 1: Frequency Reuse and Capacity Improvement Lesson 2: Location Management in Cellular Systems Lesson 3: Handoff Management in Cellular Systems Lesson 4: Overview of Cellular Standards
5	<u>Case Studies: WLAN and Sensor Networks</u> Lesson 1: WLAN: 802.11 Lesson 2: Personal Area Networks Lesson 3: Wireless Sensor Networks (WSN)