**CmpE 477 - Wireless and Mobile Networks Spring 2015**

**Description**: Introduction to wireless and mobile networks and network architectures. Cellular networks. Mobility and handoff management. Centralized wireless LANs and Mobile IP. Mobile transport protocols. Ad hoc wireless networks. Satellite networks.

**Instructor**: [Cem Ersoy](http://www.cmpe.boun.edu.tr/~ersoy), Room #: 44, Ext: 6861, ersoy@boun.edu.tr, *http://www.cmpe.boun.edu.tr/~ersoy*

**Teaching Assistant**: Ahmet Cihat Baktır, Room #: 47, cihatbaktir@gmail.com

**Course home page:***http://orkinos.cmpe.boun.edu.tr/netlab/courses/cmpe477/spring2015*

**Textbook**:     - J. Schiller, Mobile Communications, 2nd Ed., Addison, 2003, and class notes.

**Textbook Slides** at: <http://www.netlab.boun.edu.tr/477slides/477slides.zip>

**Reference:**-T. S. Rappaport, 2nd Ed. Wireless Communications: Principles and Practice,

Prentice-Hall, 2004.

                      - W. Stallings, Wireless Communications and Networks, Prentice-Hall, 2005.

**Prerequisites**: CmpE 475 or background on "computer networks" or consent of the instructor.

**Times**: MMT 236  **Room:** Computer Engineering Building, Room A2

**Topics**:   
1. Introduction:  Wireless Transmission, Medium Access Control: TDD/FDD and Channel Access , Wireless Comm' Basics (Cell reuse, spectrum, sectoring, ...),

2. Cellular Networks (2G/3G), Location, Handoff, Connection Management, Mobile Cellular Data: GPRS, EDGE, UMTS, ...

3. Satellite Networks: GEO/MEO/LEO Satellite Systems, Satellite Architectures, Satellite Routing, Satellite Channel Access, Satellite Handoff, Protocols, Applications,

4. Ad Hoc Networks: Architecture & Protocols, Ad Hoc (Routing/Handoff), Applications,

5. Wireless LANs: IEEE 802.11 family, infrastructure and ad hoc modes

6. Wireless IEEE 802 networks : 802.15, 802.16 (Wimax), 802.22, ...

7. Mobile IP: Problems for IP in Wireless (Routing/Handoff),

8. Mobile Transport Layer, support for mobility,

9. Wireless Application Layer, Mobile OS and intermediate layers  
10. Recent advances: Wireless Sensor Networks, urban and participatory sensing, pervasive healthcare, green cellular networks, ...

**Term paper 1**:  A mini survey on radio propagation.

(*Do not submit but you are advised to complete before the first midterm.*)

**Term paper 2**: (due 12 May 2015 - 17:00) Critical evaluation of a technical paper on wireless and mobile networks. We will distribute the corresponding papers.

**Grading:** (Tentative)  
15% Homeworks and quizzes  
10% Term paper 2  
22.5% Midterm 1 (16 March 2015)  
22.5% Midterm 2 (28 April 2015)  
30% Final (    2015)