

ECE 463 – Wireless Communication Networks

Catalog Description: Wireless networks: personal area (IEEE 802.15.4a), local area (IEEE 802.11), metropolitan area (IEEE 802.16), and mobile cellular networks (e.g., CDMA); Physical-layer techniques for data modulation and multiple access; RF system engineering aspects of mobile cellular networks (e.g., system capability for voice and packet data traffics, RF coverage for a certain propagation environment).

Credits: 4 **Terms Offered:** Spring

Prerequisites: ECE 351, ECE 352

Courses that require this as a prerequisite: None

Structure: Two 100-minute lectures per week

Instructors: H. Liu (primary), M. Magaña (secondary)

Course Content:

- Fundamentals of wireless networks
- Spread spectrum and OFDM techniques (IEEE 802.11g, 802.16)
- Multiple-access techniques (cellular networks)
- Queuing theory
- Cellular systems engineering (network capacity, RF coverage, etc.)

Measurable Student Learning Outcomes:

At the completion of the course, students will be able to...

1. **Understand** common wireless network architectures, data modulation/demodulation schemes, wireless channels, and multiple-access schemes. (ABET Outcomes h, i, m)
2. **Apply** the fundamental concepts of communications and signal processing to wireless network design (ABET Outcomes A, m, n)
3. **Analyze** cellular network capacity and RF coverage for voice traffic (ABET Outcomes A, C, e, k, l, m, n, O)
4. **Study** system throughput for packet traffic (ABET Outcomes A, B, k, l, n)

Graduate students must also apply system and network analysis skills to optimize multiple-access networks.

Learning Resources:

- Textbook TBD

Students with Disabilities:

Accommodations are collaborative efforts between students, faculty and Services for Students with Disabilities (SSD). Students with accommodations approved through SSD are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through SSD should contact SSD immediately at 737-4098.

Link to Statement of Expectations for Student Conduct:
<http://oregonstate.edu/admin/stucon/achon.htm>

Revised: 5/3/07