

Wireless Internet and Pervasive Computing

(DEN web site: <http://www.uscden.net/webapps/login>)

Morning DEN Session (30445D and 30921D) : M. W. 9:30 -10:45 am, OHE 132

Campus Session (30996R) : M. W. 2:00 – 3:15 pm, Classroom : VKC 155

Instructor: Kai Hwang, kaihwang@usc.edu TA: Chun-Ting Huang, chuntinh@usc.edu

Hwang's Office Hours: EEB 212, Mon. 11 am – 1 pm, Wed. 11 am - noon

TA's Office Hours: Tuesday 9:30 - 11:30 am in EEB Room B-10

Course Description: This course covers wireless Internet access technologies, pervasive mobile device architecture, and information appliances in Internet and cloud applications. Important topics include 3G/4G cellular radio networks, short-range and wide-range wireless networks, WLAN (IEEE 802.11), Zigbee (IEEE 802.15.4) and mesh networking, smart phones and tablet computers, mobile OS (Android and iOS), software tools for resource discovery in mobile ad hoc networks; mobile IPv6, P2P social networks, Internet of things, and mobile cloud computing services.

Prerequisite: EE 450 (Computer Networks) or passing the placement test of EE 450.

Course Syllabus: (26 Lectures plus two exams from Jan.14 to May 8, 2013)

1. Introduction and Internet Evolution (Lectures 1 and 2 on Jan.14 and 16)
2. Overview of Wireless Internet Technologies (Lecture 3, Jan.23, 2013, no class on Jan.21)
3. 2G/3G cellular networks (GSM, CDMA, WCDMA) (Lecture 4 on Jan.28)
4. 4G mobile networks (LTE and Mobile WiMax), (Lectures 5 - 6, Jan.30 and Feb.4)
5. Wifi, Bluetooth, WLAN and Meshes (Lectures 7 and 8 on Feb.6 and 11)
6. Smart phones, etc. (Lectures 9 - 10 on Feb. 13, 20, no class on Feb.18)
7. Tablet computers (Lecture 11 on Feb.25, 2013)
Homework Survey-Study Report #1 due Feb.27, 2013 (covering Lectures 1 - 11)
8. Software Tools and Mobile OS (Android, iOS, etc.) (Lectures 12-13 on Feb.27 and March 4)
9. Mobile IPv4 and IPv6 Standards (Lecture 14 on March 6)
Mid-Term Exam scheduled for March 11, 2013, Solutions on March 13
10. Zigbee, Sensors, RFID, Manet, and Sensor Networks (Lectures 15 - 17 on March 25, 27, April 1)
11. GPS and Location Sensitive Applications (Lectures 18, 19 on April 3 and 8)
12. Internet Clouds and Internet of Things (Lectures 20 - 22 on April 10, 15 and 17)
Homework Survey-Study Report #2 due April 22, 2012 (covering Lectures 12 – 22)
13. P2P Networks and Social Networking (Lecture 23 and 24 on April 22 and 24)
14. Future Internet and Pervasive Applications (Lectures 25 and 26 on April 29 and May 1)
Final Exam (May 8 yet to be confirmed)

Required Textbooks:

- (1). *Pervasive Computing*, (ISBN: 3-540-00218-9), by Hansmann, et al, Springer, 2nd ed., 2003.
- (2). *Distributed and Cloud Computing*, (ISBN:978-0123858801) by K. Hwang, G. Fox and J. Dongarra, Morgan Kaufmann Publisher, 2011.

Recommended Book: (optional)

Pervasive Computing and Networking, edited by M. Obaidat, et al, Wiley Publisher, 2011.

Grading Policy and Class Procedures:

1. Visit the DEN Blackboard web site frequently for announcement, handout material, and records.
2. Check with the TA first for all questions on homeworks, quizzes, and tests and recorded grade scores.
3. **Grading Policies :** (Revised Jan.14, 2013)
 - **Two Survey-Study Homework Reports (20%)** for all students. Campus students can form teams with 3 students per team. Remote DEN students must do it individually.
 - **Two Pop Quizzes (20%)** for campus students only in both morning and afternoon sessions.
 - **Mid-Term Exam (30%)** for all campus students and **(40%)** for remote DEN students.
 - **Final Exam: (30%)** for all campus students and **40%** for DEN remote students.
4. No pop quizzes for remote DEN students. Their mid-term and final exams are weighted higher. No make up exam will be given for missing quizzes and exams. No late Homework Reports will be accepted.