

University of Southern California, EE 532, Fall 2004

Wireless Internet and Pervasive Computing

Class No. 048-34474, Tu. Th. 2:00 – 3:20 pm, Classroom: GFS 101

Class Web Site: <http://learn.usc.edu>

Instructor: Prof. Kai Hwang, Email: kaihwang@usc.edu

Office: EEB 212, Office Hours: Th. 9 - 12 am

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Course Description:

Design principles and applications of wireless Internet access technologies, pervasive computing device architecture, network security features for mobile E-commerce, and development of information appliances in digital society applications. Important topics covered include 2.5G and 3G digital cellular radio technology; WAP, Bluetooth, IrDA, and wireless LAN (IEEE 802.11); wireless and media gateways; mobile devices architecture, OS, and software tools; smart cards, PDA, and handheld computers; IPSec, VPN, PKI, IDS, and firewalls for Internet/Intranet security; UPnP and JINI for service discovery in ad hoc networks; Java for mobile computing, wired and wireless Grids and security infrastructures.

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

Course Syllabus: (Topics and Events in 15 weeks)

1. Class Organization and Network Computing
2. Wired and wireless Internet Protocols (IP)
3. 2.5G and 3G digital Cellular Radio Technology
4. Wireless LAN (IEEE 802.11) and Security Issues
5. Wireless application protocols (WAP) architecture
6. Smart cards, Handheld Computers, PDAs, etc.
7. OS, Middleware, and Java for mobile computing
8. Network and System Security Issues and products
9. Firewalls and Intrusion Detection Systems
10. Public-Key Infrastructure (PKI) and Interoperability
11. **Mid-Term Exam** (Nov.2, 2004)
12. Wired and Wireless Grids and Security Infrastructures
13. Pervasive Services Discovery (UPnP and JINI)
14. IPSec, VPN, and Wireless PKI Architectures
15. **Final Presentations and Oral Exams** (Final Week)

Required Textbook:

The following textbook is required. In addition, we will cover handout material selected from published papers, technical reports, and web sites of industrial sectors and research centers.

Pervasive Computing Handbook (ISBN: 3-540-00218-9), Second Edition,
by Uwe Hansmann, et al, Springer-Verlag, Berlin, 2003.

Grading Policy and Procedures:

1. **Three pop quizzes:** 20% (4 unannounced short tests with no makeup, if missed)
2. **Mid-term written exam:** 35% (Closed book test on **Nov.2**)
3. **Final Project Report** in teams: 30% (Due **Nov.23** before Thanksgiving)
4. **PPT Presentation of Final Project:** 15% (During **final week** in early Dec.)