Selected topics in information technologies and communications systems and services

COURSE INFORMATION

COURSE No: TLEN 5834

TERM: Summer 2009, B term

CLASS DAYS: T W R, 10:00 to 12:30

COURSE MECHANICS: there will be regular lectures during the meeting times, but the e-learning platform based on CU-connect will be used extensively, mainly to allow distance students to have access to the lectures and discussions. Distance students can submit their questions after the lectures, and they will be discussed and analyzed at the beginning of the next lecture, so that all students can benefit from the questions and discussion topics proposed by everyone else.

REQUIRED TEXT: None; there will be instructor’s notes, presentations, and there will be several reading assignments based on papers selected by the instructor.

PREREQUISITES: TLEN 5300 (TM 705-CU) or equivalent with instructor’s approval.

COURSE OBJECTIVE:

To provide a perspective at basic and relevant issues of the communications and information technology (CIT) industry, while obtaining a wide-picture overview of its main problems and trends. After a review of basic concepts of modern telecommunications, a map that will allow students to understand the overall telecomm industry will be presented and discussed. It includes technical, economic, management (strategy making) and regulatory perspectives, and it covers fundamental concepts and terminology appearing in communication devices, infrastructure, and services.

COURSE CONTENTS

1. Introduction: a perspective on the global telecom industry and markets, cross- country comparative analysis
2. Communications technology basics review: information, telecomm systems and services
3. Communication networks: review, status, trends; access, switching, transport, interconnection
4. Regulatory frameworks and examples (European Union, US, others)
5. Next generation networks and communications emerging technologies
6. Economic frameworks for communications industry: competition, monopoly, market power
7. Management (strategy making) frameworks for communications industry
8. Trends & future expectations for electronic devices, communications infrastructure, and information services
9. Overall telecommunications industry trends and future expectations
10. Finding opportunities and the road to the future

COURSE EVALUATION:

**Homework**: One short paper after week three, that includes a specific emerging technology literature review, and a proposal for a term paper related to the selected emerging technology

**Examinations**: One midterm quiz and a final exam

**Term paper**: Topics and specifications to be proposed, discussed and determined during the course. They can be originated by the personal interests of individual students. At this point, for illustrative purposes only, the following possibilities are mentioned: broadband deployment in developing countries, mobile virtual network operators, virtual and/or mobile banking, mobile e-commerce, WiMax deployment advantages and strategies, possibilities for exploiting digital dividend, and many others that can be suggested by participating students. Each participating student is expected to work individually on a term paper.

**GRADING POLICY**:

Homework 15%
Midterm Exam 25%
Final Exam 25%
Term Paper 35%

**PRELIMINARY COURSE OUTLINE AND SCHEDULE** (based on fifteen 2½ hour sessions):

Session #1: Telecomm overview: industry, main players, market dimension, country comparison, main operators, quantitative indices and correlations, digital divides, strategies
Session #2: Introduction: information, signals, messages, analog and digital signals; source and channel coding, quantization
Session #3: Networks: systems and services
Session #4: Current issues in network interconnection
Session #5: Regulatory frameworks; analysis of selected examples; recent developments, new issues, pending agenda
Session #6: Elements to imagine future developments, tools for a prospective analysis
Session #7: Next Generation Networks (NGN); emerging technologies, impact on regulation and economy
Session #8: Economic frameworks; selected examples
Session #9: Strategy making frameworks and tools for market analysis; selected examples
Session #10: Understanding the Information Technology and Communications Industry
Session #11: Emerging technologies, trends and future expectations for personal devices
Session #12: Emerging technologies, trends and expectations for telecomm infrastructure
Session #13: Models for emerging information services, trends and future expectations
Session #14: Overall industry trends and expectations
Session #15: The road to the future: finding areas of opportunity

*The course outline and schedule, may change slightly according to students interests and possible events occurring during the course, which could be discussed and/or analyzed.

**Special Circumstances

*Disability*

If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities. Contact: 303-492-8671, Willard 322, and http://www.Colorado.EDU/disabilityservices

*Religious Observances*

Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, please send an e-mail to the instructor in the first week of classes if you anticipate a conflict. See full details at http://www.colorado.edu/policies/fac_relig.html

*Classroom Behavior*

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race,
culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. See policies at www.colorado.edu/policies/classbehavior.html and http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code.

**Discrimination and Harassment**

The University of Colorado at Boulder policy on Discrimination and Harassment, the University of Colorado policy on Sexual Harassment and the University of Colorado policy on Amorous Relationships apply to all students, staff and faculty. Any student, staff or faculty member who believes s/he has been the subject of discrimination or harassment based upon race, color, national origin, sex, age, disability, religion, sexual orientation, or veteran status should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Judicial Affairs at 303-492-5550. Information about the ODH, the above referenced policies and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at http://www.colorado.edu/odh.

**Honor Code**

All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (send e-mail: 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at http://www.colorado.edu/policies/honor.html and at http://www.colorado.edu/academics/honorcode/. 