

COURSE PROFILE

Course Number : EE 478	Course Title : Satellite Communications systems
Required / Elective : Elective	Pre-requisite : Consent of Instructor
<p>Course Description: Historical perspectives of satellite communications. Orbital aspects. Baseband signaling and communication techniques. Satellite link analysis and design. Multiple access methods. Networking and on-board processing. Antennas, earth stations and subsystems. Communications payload. Specific applications of satellites: global positioning systems, satellites for mobile communication, satellites for internet.</p>	<p>Textbook / Required Material : Pratt, T., C. Bostian, and J. Allnutt, <i>Satellite Communications</i>, 2nd Ed., Wiley, 2003.</p>
Course Structure / Schedule : (3+0+0) 3 / 6 ECTS	
Extended Description : See above	
Design content :	Computer usage: Mandatory computer assignments.
<p>Course Outcomes:</p> <p>On successful completion of this course, students should be able to:</p> <ol style="list-style-type: none"> 1. Recall the fundamentals of orbital mechanics, identify the characteristics of common orbits used by communications and other satellites, and assess launch methods and technologies. [2], [3], [6], [10] 2. Identify the systems required by a communications satellite to function and the trade-offs and limitations encountered in the design of a communications satellite system. [2], [3], [6], [10] 3. Identify the radio propagation channel for Earth station to satellite and satellite to satellite communications links, and describe the basics of designing antenna systems to accommodate the needs of a particular satellite system. [2], [6] 4. Calculate an accurate link budget for a satellite or other wireless communications link. [2], [6] 5. Assess the analog and digital technologies used for satellite communications networks and the topologies and applications of those networks, and compare them to alternative systems [2], [6].[11] <p style="margin-left: 40px;">Strong: [2],[6], Average:[3],[10] Some:[11]</p>	

Recommended reading: Digital Communications by John G. Proakis and Massoud Salehi, McGraw Hill	
Teaching Methods: Pre-readings, lecture.	
Assessment Methods: Exams, homeworks, term project, computer assignments, class surveys.	
Student Workload:	
Preparatory reading	66 hrs
Lectures, workshop, discussions	42 hrs
Homeworks, computer assignments	35 hrs
Midterm exams	4 hrs
Final Exam	3 hrs
TOTAL	150 hrs ... to match 25 x 6 ECTS
Prepared by : Mengüç Öner	Revision Date : 02.02.2010