ELEN40005 Communication Networks

Credit Points:	12.50
Level:	4 (Undergraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: Thirty-six hours of lectures and 12 hours of laboratory or project work. Total Time Commitment: 120 hours
Prerequisites:	431-325 Stochastic Signals and Systems
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit ebsite: http://www.services.unimelb.edu.au/disability/
Coordinator:	Assoc Prof Michael Cantoni
Contact:	Melbourne School of Engineering Office Building 173, Grattan Street The University of Melbourne VIC 3010 Australia General telephone enquiries + 61 3 8344 6703 + 61 3 8344 6507 Facsimiles + 61 3 9349 2182 + 61 3 8344 7707 Email **eng-info@unimelb.edu.au (mailto:eng-info@unimelb.edu.au)**
Subject Overview:	On completion of this subject students should understand the basic principles of communication network design, the layered architecture, and network protocols. Students will obtain a good understanding of the way optimisation and random process models are used in network design, and will undertake a network design project. Topics include network topologies for core and access networks; voice and circuit-switched networks; packet switching and statistical multiplexing; layered network architecture; physical layer multiple access (TDM, WDM); link layer protocols, Medium Access Control; network layer topologies, routing algorithms and protocols (IP); transport layer protocols (TCP); flow control, ARQ error control, analysis of utilisation; random process models for analysing delay; optimisation methods for network design, network reliability; quality of service issues; and LAN protocols, MPLS. All concepts illustrated by examples from the Internet.
Objectives:	On completing this subject the student should be able to: # Explain the basic principles of communication network design, the layered architecture and network protocols; # Quantitatively analyse the performance of simple communication networks; # Design simple communication networks to achieve performance objectives.

Assessment:	One written 3-hour examination 70% (end of semester); One class test not exceeding 1 hour 10% (mid-semester); One design project 8%, with report not exceeding 10 pages (commencing in the second half of semester, due at the end of semester); Continuous assessment: laboratories worth a total of 6%, class problems worth a total of 6%.
Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	# Ability to apply knowledge of basic science and engineering fundamentals # In-depth technical competence in at least one engineering discipline # Ability to undertake problem identification, formulation and solution # Ability to function effectively as an individual and in multi-disciplinary and multi-cultural teams, with the capacity to be a leader or manager as well as an effective team member # Understanding of the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development # Expectation of the need to undertake lifelong learning, capacity to do so # Capacity for independent critical thought, rational inquiry and self-directed learning # Intellectual curiosity and creativity, including understanding of the philosophical and methodological bases of research activity # Profound respect for truth and intellectual integrity, and for the ethics of scholarship
Related Course(s):	Bachelor of Engineering (Computer Engineering) Bachelor of Engineering (Electrical Engineering) Bachelor of Engineering (Electrical) and Bachelor of Arts Bachelor of Engineering (Electrical) and Bachelor of Commerce Bachelor of Engineering (Electrical) and Bachelor of Laws Bachelor of Engineering (Electrical) and Bachelor of Science Bachelor of Engineering (EngineeringManagement) Electrical Bachelor of Engineering (IT) Computer Engineering Bachelor of Engineering (IT) Electrical Engineering Bachelor of Engineering (Software Engineering) Postgraduate Certificate in Engineering