

# ELEN30003 Communication Systems

<b>Credit Points:</b>	12.50
<b>Level:</b>	3 (Undergraduate)
<b>Dates &amp; Locations:</b>	2010, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
<b>Time Commitment:</b>	Contact Hours: Thirty six hours of lectures, 12 hours of practice classes/tutorials and 12 hours of laboratory work Total Time Commitment: 120 hours
<b>Prerequisites:</b>	<b>431-221</b> Fundamentals of Signals and Systems, and <b>431-325</b> Stochastic Signals and Systems or approved equivalent..
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	None
<b>Core Participation Requirements:</b>	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 website: <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a>
<b>Coordinator:</b>	Assoc Prof Girish Nair
<b>Contact:</b>	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 <b><a href="mailto:eng-info@unimelb.edu.au">eng-info@unimelb.edu.au</a> (mailto:eng-info@unimelb.edu.au)</b> <b>(Engineering%20Student%20Centre)</b>
<b>Subject Overview:</b>	On completion of this subject students should understand the use of signals and systems and random process theory in the modelling and analysis of analog and baseband digital communication systems.  Topics include: revision of signals and systems; linear time-invariant channel models; amplitude modulation (AM) and related modulation formats; frequency modulations (FM);revision of random processes and noise; noise analyses of AM and FM in terms of signal-to-noise ratios (SNR); nyquist sampling; sampling of random processes; quantisation; pulse-code modulation (PCM); waveform coding; matched filtering and probabilities of bit error for additive white gaussian noise (AWGN) channels; intersymbol interference (ISI); SNR comparison of PCM and analog modulation formats.  All concepts are illustrated by examples from wireline, wireless and optical communications.
<b>Objectives:</b>	On completing this subject the student should be able to:  # Qualitatively describe the basic functional blocks of a telecommunication system;

	<ul style="list-style-type: none"> <li># Quantitatively analyse the overall performance of analog and digital communication schemes;</li> <li># Assess the relative merits of different modulation and demodulation techniques and make design choices on this basis;</li> <li># Use software tools to simulate the behaviour of simple communication systems.</li> </ul>
<b>Assessment:</b>	60% final written examination, with hurdle requirement. 20% laboratory reports; 10% Mid-semester test 10% assignment.
<b>Prescribed Texts:</b>	Proakis & Salehi, Communication Systems Engineering
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<ul style="list-style-type: none"> <li># Ability to apply knowledge of basic science and engineering fundamentals</li> <li># In-depth technical competence in at least one engineering discipline</li> <li># Ability to undertake problem identification, formulation and solution</li> <li># Ability to utilise a systems approach to design and operational performance</li> <li># 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</li> <li># Understanding of professional and ethical responsibilities and commitment to them</li> <li># Expectation of the need to undertake lifelong learning, capacity to do so</li> <li># Capacity for independent critical thought, rational inquiry and self-directed learning</li> <li># Intellectual curiosity and creativity, including understanding of the philosophical and methodological bases of research activity</li> <li># Openness to new ideas and unconventional critiques of received wisdom</li> <li># profound respect for truth and intellectual integrity, and for the ethics of scholarship</li> </ul>
<b>Related Course(s):</b>	Bachelor of Engineering (Computer Engineering) Bachelor of Engineering (Computer Engineering)/Bachelor of Science Bachelor of Engineering (Electrical Engineering) Bachelor of Engineering (Electrical Engineering)/Bachelor of Science 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 Postgraduate Certificate in Engineering