

ELEN90058 Signal Processing

Credit Points:	12.50												
Level:	9 (Graduate/Postgraduate)												
Dates & Locations:	This subject is not offered in 2013.												
Time Commitment:	Contact Hours: 3 x one hour lectures and 1 x two hour workshop per week Total Time Commitment: 120 hours												
Prerequisites:	<p>Prerequisite for this subject is:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>ELEN30012 Signals and Systems</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>OR</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BMEN30006 Fundamentals of Biosignals</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	ELEN30012 Signals and Systems	Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	BMEN30006 Fundamentals of Biosignals	Not offered 2013	12.50
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ELEN30012 Signals and Systems	Semester 2	12.50											
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BMEN30006 Fundamentals of Biosignals	Not offered 2013	12.50											
Corequisites:	None												
Recommended Background Knowledge:	None												
Non Allowed Subjects:	<p>Anti-requisite for this subject is:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>ELEN30008 Signal Processing 1 (Fundamentals)</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	ELEN30008 Signal Processing 1 (Fundamentals)	Not offered 2013	12.50						
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Core Participation Requirements:	<p>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: http://www.services.unimelb.edu.au/disability/</p>												
Contact:	<p>Assoc Prof Erik Weyer Email : ewey@unimelb.edu.au (mailto:ewey@unimelb.edu.au)</p>												
Subject Overview:	<p>This subject provides an introduction to the fundamentals of signal processing. Topics include:</p> <ul style="list-style-type: none"> # Applications of signal processing techniques; # Sampling of analog signals, anti-aliasing filters; # Frequency-domain analysis of signals and systems, Discrete Time Fourier Transform, Discrete Fourier Transform, Fast Fourier Transform; # Digital filters, low-pass, high-pass, band-pass, stop-band and all pass filters. Phase and group delay, FIR and IIR filters. # Design of digital FIR and IIR filters. # Multi-rate signal processing, with a focus on up-sampling, down-sampling, and sampling rate conversion; and # Simple non-parametric methods for spectral estimation. 												

	This fundamental material will be complemented by exposure to MATLAB tools for signal analysis and a DSP (Digital Signal Processor) based development platform for the implementation of signal processing algorithms in the laboratory.
Objectives:	<p>On completing this subject the student should be able to:</p> <ul style="list-style-type: none"> # Apply fundamental mathematical tools, in particular frequency-domain techniques, in the analysis and design of signal processing systems; # Design, implement and test simple digital filters according to given specifications; # Use software such as MATLAB for the analysis and design of signal processing systems; # Use DSP based prototyping platforms and associated software development tools to implement signal-processing algorithms
Assessment:	One written examination, not exceeding three hours at the end of semester, worth 70% (must pass written exam to pass subject); Continuous assessment of submitted project work, not exceeding 20 pages over the semester, worth 20%; and A one-hour mid-semester test, worth 10%.
Prescribed Texts:	TBA
Recommended 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:	<ul style="list-style-type: none"> # 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 utilise a systems approach to design and operational performance # Capacity for independent critical thought, rational inquiry and self-directed learning # Openness to new ideas and unconventional critiques of received wisdom # 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 # Ability to communicate effectively, with the engineering team and with the community at large
Notes:	Credit may not be obtained for both ELEN30008(431-335) Signal Processing 1 and ELEN90058 Signal Processing
Related Majors/Minors/ Specialisations:	B-ENG Electrical Engineering stream Master of Engineering (Electrical)