431-687 Nonlinear Systems Theory

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: 24 hours; Non-contact time commitment: 96 hours Total Time Commitment: Not available
Prerequisites:	None
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 Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	Dr Marcus Nathan Brazil
Subject Overview:	Topics include: properties of solutions of nonlinear differential equations; Lyapunov stability; linearization; the invariance principle; converse stability theorems; stability of perturbed systems; averaging.
Objectives:	The aim of this subject is to give students an introduction to some advanced topics in the analysis of nonlinear systems. The emphasis of the course is on analysis methods, and in particular on the Lyapunov stability method. Upon completion of the course the students should master some of the most powerful methods used in analysis and design of nonlinear control systems.
Assessment:	Continuous assessment (40%) to the equivalent of 3 hours writing time. Final Exam 3 hours, worth 60%. Students are required to pass the final examination in order to pass the subject as a whole.
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:	1. ability to apply knowledge of basic science and engineering fundamentals; 2. in-depth technical competence in at least one engineering discipline ability to undertake problem identification, formulation and solution; 3. ability to utilise a systems approach to design and operational performance 4. expectation of the need to undertake lifelong learning, capacity to do so 5. capacity for independent critical thought, rational inquiry and self-directed learning 6. intellectual curiosity and creativity, including understanding of the philosophical and methodological bases of research activity 7. openness to new ideas and unconventional critiques of received wisdom

	8. profound respect for truth and intellectual integrity, and for the ethics of scholarship
Related Course(s):	Ph.D.- Engineering