620-143 Applied Mathematics

Credit Points:	12.500
Level:	Undergraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Summer Term, - Taught on campus. Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: 36 lectures (three per week) and 11 one-hour tutorials (one per week) Total Time Commitment: 120 hours
Prerequisites:	One of [07]620-120 (UMEP Maths for High Achieving Students), [07]620-121, [07]620-140 or [07]620-141.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may only gain credit for one of [07]620-113, [07]620-123, [08]620-143, 620-155, 620-158 or [05]620-193.
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Coordinator:	Dr O Foda
Subject Overview:	This subject introduces the terminology of ordinary differential equations (ODEs), the principles of first and second order ODEs, and their applications. This subject also introduces the basic properties of sequences and series, including Taylor series for functions. Students completing the subject develop the ability to solve analytically first order ODEs, second order linear ODEs; and learn how to apply the above techniques to simple problems. Students should develop the ability to understand the convergence of series and sequences. The subject demonstrates the role of differential equations and sequences and series in applied mathematics. Integration topics include techniques of integration; applications of integration to areas and arc length; improper integrals. Differential equations topics include first-order ODEs (separable, linear via integrating factor, homogeneous) and applications; second-order ODEs (reducible to first order, linearly independent solutions); second-order linear ODEs (particular solutions, complementary functions) and applications. Sequences and series topics include convergence and divergence of sequences and series; tests for convergence; Taylor's theorem and series representation of elementary functions; generation of series solutions of first order ODEs, including non-linear types not solvable by elementary methods.
Assessment:	Up to 25 pages of written assignments due during semester (10%), a 45-minute written test held mid-semester (15%); a 3-hour written examination in the examination period (75%).
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
Notes:	This subject is available for science credit to students enrolled in the BSc (pre-2008 degree only), BASc or a combined BSc course.
Related Course(s):	Bachelor of Arts