MAST90080 Advanced Modelling: Case Studies

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	This subject is not offered in 2016.
Time Commitment:	Contact Hours: 36 hours comprising of - Weeks 1-3: 4 hours of lectures and 1 hour of practicals class per week. Weeks 4-6: no classes will be held. Weeks 7-12: 2 hours of lectures and 1 hour of practical classes per week. 3x1 hour practical classes will be held in the last week of semester where students oral presentations will be delivered. Total Time Commitment: Estimated Total Time Commitment - 170 hours
Prerequisites:	**Subject** / **Study Period Commencement:** / **Credit Points:** MAST30030 Applied Mathematical Modelling / Semester 1 / 12.50
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
Contact:	Email: **jamesm@unimelb.edu.au (mailto:jamesm@unimelb.edu.au)**
Subject Overview:	Mathematical modelling can give deep insight into many complex systems that arise in nature and technology. It is also used to describe and predict new phenomena, test hypotheses and investigate novel avenues for experiments. This subject presents a series of advanced case studies that demonstrate the utility of mathematical modelling and develop the student's ability to tackle real-world problems arising in scientific, medical or industrial contexts. Mathematical approaches will include discrete, computational and asymptotic methods. The use of appropriate approximations and the interpretation of solutions in the context of the original problem will be emphasised.
Learning Outcomes:	After completing this subject, students should gain: # a deeper appreciation of many complementary techniques and skills needed for modelling physical and biological systems # the ability to pursue further studies in this and related areas.
Assessment:	Two written assignments totalling up to 60 pages. First assignment due in week 6, Second assignment due in week 12. First assignment worth 50%, Second assignment worth 30% (total 80% of final grade). 15-minute oral presentation, given in week 12 (50%).
Prescribed Texts:	TBA
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:	In addition to learning specific skills that will assist students in their future careers in science, they will have the opportunity to develop generic skills that will assist them in any future career path. These include: # problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies; # analytical skills: the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of analysis; # collaborative skills: the ability to work in a team; # time-management skills: the ability to meet regular deadlines while balancing competing commitments
Related Course(s):	Doctor of Philosophy - Engineering Master of Philosophy - Engineering Master of Science (Mathematics and Statistics)
Related Majors/Minors/ Specialisations:	Mathematics and Statistics