411-453 Bioenvironmental Engineering

Credit Points:	12.50
Level:	4 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 2, - Taught on campus. Lectures, tutorials and practical work.
Time Commitment:	Contact Hours: Forty-two hours of lectures and 6 hours of practical work. Total Time Commitment: Estimated non-contact time commitment of 96 hours.
Prerequisites:	**411-392** Fermentation Process Engineering (or **411-393** Bioprocess Engineering) and **411-303** Reactor Engineering.
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:	Prof Peter Scales
Subject Overview:	The characteristics of liquid and solid wastes and the objectives of waste treatment; important waste assay procedures; primary, secondary and tertiary wastewater treatment processes; physical and chemical treatment processes for both liquid and solid wastes; biological waste treatment and the role of various microbial groups: anaerobic, facultative, aerobic and aerated lagoons and factors affecting their design; activated sludge and related processes; adherent growth processes and associated design considerations; biological and physico-chemical removal of nitrogen and phosphorus; anaerobic processes and their use in liquid and solid waste treatment; treatment and disposal of biosolids; recycling and reuse of wastes; life cycle analysis, sustainability and cleaner production.
Objectives:	Students successfully completing this subject should have a broad understanding of the nature of waste streams, the principles underlying their treatment, and the important processes used to treat a variety of domestic, industrial and agricultural wastes. In addition they will have gained an understanding of the more important physical, chemical and biological techniques used in the process design of a variety of waste treatment systems. They will also have gained practical experience in the operation of a bench scale activated sludge unit and the common assay procedures used to evaluate its performance.
Assessment:	One 3-hour examination at the end of semester (70%), a one-hour mid-term test (20%) and one practical report of no more then 2000 words.
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:	The subject will enhance the following generic skills: # The capacity for independent thought. # The ability to comprehend complex concepts and communicate lucidly this understanding # Awareness of advanced technologies in the discipline # The ability to work in a team (practical work component)
Related Course(s):	Bachelor of Engineering (Chemical and Biomolecular Engineering)