

## CHEN40010 Biochemical/Environmental Engineering 2

<b>Credit Points:</b>	12.50
<b>Level:</b>	4 (Undergraduate)
<b>Dates &amp; Locations:</b>	2010, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
<b>Time Commitment:</b>	Contact Hours: Forty-two hours of lectures and 6 hours of practical work. Total Time Commitment: Estimated 120
<b>Prerequisites:</b>	# 411-392 Fermentation Process Engineering (or 411-393 Bioprocess Engineering) # 411-303 Reactor Engineering.
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	None
<b>Core Participation Requirements:</b>	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: <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a>
<b>Coordinator:</b>	Dr Greg Martin
<b>Contact:</b>	Melbourne School of Engineering Office Building 173, Grattan Street The University of Melbourne VIC 3010 Australia General telephone enquiries: + 61 3 8344 6703 + 61 3 8344 6507 Facsimiles: + 61 3 9349 2182 + 61 3 8344 7707 Email: <a href="mailto:eng-info@unimelb.edu.au">eng-info@unimelb.edu.au</a> (/)
<b>Subject Overview:</b>	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.
<b>Objectives:</b>	# 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.

<b>Assessment:</b>	One 3-hour examination at the end of semester (70%); One mid-term test (20%) One practical report of no more than 2000 words (10%) An overall mark of 50% and a mark of 40% or more in the end of semester examination are needed to pass the subject.
<b>Prescribed Texts:</b>	None
<b>Recommended Texts:</b>	Information Not Available
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<ul style="list-style-type: none"> <li># Ability to apply knowledge of basic science and engineering fundamentals</li> <li># In-depth technical competence in at least one engineering discipline</li> <li># Ability to undertake problem identification, formulation and solution</li> <li># Ability to utilise a systems approach to design and operational performance</li> </ul>
<b>Related Course(s):</b>	Bachelor of Engineering (Chemical Engineering) Bachelor of Engineering (Chemical) and Bachelor of Science Graduate Diploma in Biotechnology