CHEN90009 Fermentation Processes

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	This subject is not offered in 2013.
Time Commitment:	Contact Hours: 3 x one hour lectures + 1 x one hour tutorial per week + 2 x four hours of laboratory work per semester Total Time Commitment: Estimated 120 hours
Prerequisites:	Students must have completed the following subject prior to enrolling in this subject: **Subject** / **Study Period Commencement:** / **Credit Points:** CHEN30001 Reactor Engineering / Not offered 2013 / 12.50 AND students must have completed the following subject (or equivalent) prior to enrolling in this subject: **Subject** / **Study Period Commencement:** / **Credit Points:** CHEN90016 Metabolic Engineering / Not offered 2013 / 12.50
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering applications for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005) and Students Experiencing Academic Disadvantage Policy, this subject requires all students to actively and safely participate in laboratory activities. Students who feel their disability may impact upon their participation are encouraged to discuss this with the Subject Co-ordinator and the Disability Liaison Unit http://www.services.unimelb.edu.au/disability/
Contact:	Email: **gjmartin@unimelb.edu.au (mailto:gjmartin@unimelb.edu.au)**
Subject Overview:	Batch and continuous culture. Kinetics of microbial growth and product formation. Sterilisation and aseptic equipment design. Factors affecting the selection of media for industrial fermentations. Design of stirred-tank, airlift and other fermenters. Special requirements of plant and animal cell culture. Design for oxygen transfer and mixing. Materials selection. Fermenter scale-up. Fermentation process monitoring and control. Downstream separation technologies including ion exchange and chromatography. Ethical, legal and regulatory issues in fermentation process engineering. Practice classes on the solution of open-ended problems in fermentation process design. Practical work (fermentations and downstream separation techniques).
Objectives:	On completion of this subject students should be able to: # Complete the process design of simple industrial scale fermentation processes # Develop control strategies for simple industrial scale fermentation processes # Solve open-ended design problems in fermentation process engineering # Exhibit practical skills in the conduct of fermentations and associated downstream separation processes
Assessment:	An examination of three hours contributing 70% to the assessment Practice class assignments totalling not more than 1,000 words contributing 10% to the assessment Practical work reports

	totalling not more than 4,000 words contributing 20% to the assessment A mark of 40% or more in the end of semester examination is required to pass the subject
Prescribed Texts:	None
Recommended 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:	# In-depth technical competence in at least one engineering discipline # An ability to utilise a systems approach to design and operational performance
Related Majors/Minors/ Specialisations:	B-ENG Chemical and Biomolecular Engineering stream Master of Engineering (Biomolecular)