CHEN90036 Recent Advances in Separation Processes

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 2 hours of lectures every week and an average of 2 hours of practicals and workshops. Total Time Commitment: 200 hours
Prerequisites:	Approval from the subject coordinator AND

Subject	Study Period Commencement:	Credit Points:
CHEN30005 Heat and Mass Transport Processes	Semester 1, Semester 2	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
Coordinator:	Prof Geoff Stevens
Contact:	Prof Geoff Stevens Email: **gstevens@unimelb.edu.au (mailto:gstevens@unimelb.edu.au)**
Subject Overview:	**AIMS** This subject provides an advanced focus on the separation processes that are part of the core knowledge and problem solving skills basis for chemical engineering unit operations. In addition, an advanced understanding of these processes will help enable students in the design of larger scale chemical engineers processes, particularly in the capstone deign project subject) as well as in chemical product design. The separation processes covered in this subject include: multi-component distillation, absorption, solvent extraction, membrane, ion exchange, adsorption and gas-liquid contactors with reactions. Each of these separation processes will be examined in detail and their application in a range of industries including oil and gas, mining, pharmaceutical, food and environmental remediation. This subject is part of the c-Campus which is jointly taught with Tsinghua University in China. It will be delivered as a series of lectures half from Melbourne and half from China and students will need to interact with a similar class in China. **INDICATIVE CONTENT** The separation process theory covered in this subject will enable students to build and develop quantitative models of how these separation processes work and so enable the student to apply

	these in new applications. This will include models based on the equilibrium stage approach as well as a transfer unit approach. These models will also be extended to non-ideal and transient flow conditions and to situations where mass transfer and chemical reaction occur simultaneously.
Learning Outcomes:	**INTENDED LEARNING OUTCOMES (ILO)** On completion of this subject the student is expected to be able to: 1 Analyse and design separation operations including adsorption and ion exchange, multicomponent distillation, solvent extraction, and gas-liquid contactors 2 Apply separation process principles to scenarios other than unit operations 3 Apply knowledge of basic science and engineering fundamentals 4 Undertake problem identification, formulation and solution.
Assessment:	Attendance and participation in two laboratory classes with a written assignment of approximately 3000 words per group report (20% total, 10% each); requiring an overall time commitment of 25-30 hours of work including preparation (Intended Learning Outcomes (ILOs) 1, 3 and 4 are addressed in this laboratory class); due Weeks 1-4 and 7-10 (20%) Two written assignments (20% total, 10% each) each of approximately 3000 words per group assignment; an overall time commitment of 25-30 hours (ILOs 1 to 4 are addressed in the assignments); dues Weeks 6 and 12 (20%) One written 3-hour closed book end-of-semester examination (ILOs 1 to 4 are addressed in the exam); (60%) Hurdle requirement:The examination is a hurdle item and must be passed in order to pass the subject.
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:	# Ability to apply knowledge of basic science and engineering fundamentals # Ability to utilise a systems approach to design and operational performance # Ability to learn, condense and take notes on technical materials in a lecture setting # Ability to undertake problem identification, formulation and solution # Capacity for independent thought # Ability and self-confidence to comprehend complex concepts, to express them lucidly and to confront unfamiliar problems.
Related Course(s):	Doctor of Philosophy - Engineering Master of Philosophy - Engineering
Related Majors/Minors/ Specialisations:	Master of Engineering (Biochemical) Master of Engineering (Chemical)