411-256 Chemical Process Analysis 1

Credit Points:	12.50
Level:	2 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: 30 hours of lectures, 18 hours of tutorials, a three hour field trip Total Time Commitment: Not available
Prerequisites:	Engineering Systems Design 1
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:	Assoc Prof David Shallcross
Subject Overview:	This subject is an introduction to chemical engineering flowsheet calculations, including materials balances, unit systems, and the prediction. The concept of conversion of mass is developed as the basis for determining mass flows in chemical processing systems. Topics covered include material balances around single process units and groups of units, involving simple systems and recycle streams, and non-reacting and reacting systems;. Total, component, and elemental balances are covered. Other topics include systems of units and unit conversion, gases, liquids and vapours, P-V-T diagrams of pure substances, ideal and real gas behaviour, use of compressibility factor and generalized compressibility factor charts, equations of state, vapour pressure estimation, humidity. Students will be introduced to flowsheeting packages and chemical engineering simulation software. The subject will include exercises in process optimisation and the solution of ill-defined process problems. An introduction to the chemical process industries as well as a history of the profession and developments in chemical and biomolecular engineering will be given.
Objectives:	On completion of this subject students will be able to # Apply knowledge of basic science and engineering fundamentals to solve material balances # Define and scope engineering problems and formulate suitable strategies for problem solution # Use appropriate software tools to solve material balances # Model real gas behaviour # Continue study in the area of energy balances with a solid foundation
Assessment:	Four assignments spread throughout the semester, each of no more than 1500 words (10% each) and one written two hour end-of semester examination (60%). A mark of 40% or more in the end of semester examination is required to pass the subject.
Prescribed Texts:	None

Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2009/D09)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2009/F04)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2009/M05)** You should visit **learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html)** and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.
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 undertake problem identification, formulation and solution # Ability to utilise a systems approach to design and operational performance # Ability to function effectively as an individual and in CHEN20008 multi-disciplinary and multi-cultural teams, with the capacity to be a leader or manager as well as an effective team member
Notes:	This subject is available for science credit to students enrolled in the BSc (new degree only).
Related Course(s):	Bachelor of Engineering