CHEN20008 Chemical Process Analysis 2

Credit Points:	12.50
Level:	2 (Undergraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 30 hours of lectures, 22 hours of tutorials, two 3-hour laboratory classes Total Time Commitment: Estimated 120 hours
Prerequisites:	411-256 Chemical Process Analysis 1 and 620-156 Linear Algebra
Corequisites:	None
Recommended Background Knowledge:	Students undertaking this subject will be expected to be competent in the use of Matlab, Microsoft Word and Excel and an internet browser.
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 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: http://www.services.unimelb.edu.au/disability/
Coordinator:	Assoc Prof David Shallcross, Dr Gabriel Da Silva
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Subject Overview:	This subject extends chemical engineering flowsheet calculations to include energy balances. The concept of conservation of energy is developed as the basis for determining energy flows in and around chemical processing systems, evaluation of enthalpy changes with and without phase change, simplified energy balances for batch, steady-state and adiabatic systems, estimation of heats of reaction, combustion, solution and dilution, energy balances in reacting systems, simultaneous material and energy balances. The application of chemical engineering software packages is extended to perform energy balances. The subject will include exercises in process optimisation and the solution of ill-defined process problems.
Objectives:	On completion of this subject students should be able to # Draw flowsheets for appropriate chemical engineering processes. # Calculate energy flows within such processes, including evaluation of enthalpy changes with and without phase change, simplified energy balances for batch, steady-state and adiabatic systems, estimation of heats of reaction, combustion, solution and dilution, energy balances in reacting systems, simultaneous material and energy balances. # Use chemical engineering software packages to perform energy balances. # Perform process optimisation and solve ill-defined process problems.

Assessment:	Four assignments spread throughout the semester, each of no more than 1500 words (10% each) 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:	Shallcross D.C., “Physical Property Data Book for Engineers and Scientists”
Recommended Texts:	Felder, R.M., Rousseau, R.W., “Elementary Principles of Chemical Processes”
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/2010/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2010/B-COM)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2010/B-MUS)** 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 communicate effectively, not only with engineers but also with the community at large; # Ability to undertake problem identification, formulation and solution; # Ability to use a systems approach to design and operational performance; # Understanding of the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development; # Understanding of the principles of sustainable design and development.
Notes:	This subject is available for science credit to students enrolled in the BSc (new degree only).
Related Course(s):	Bachelor of Engineering Bachelor of Science
Related Majors/Minors/ Specialisations:	Master of Engineering (Biomolecular) Master of Engineering (Chemical)