

CHEN20008 Chemical Process Analysis 2

Credit Points:	12.50												
Level:	2 (Undergraduate)												
Dates & Locations:	2011, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.												
Time Commitment:	Contact Hours: 3 x one hour lectures + 1 x two hour problem based workshop per week + 2 x 3 hours of clinical laboratory work per semester Total Time Commitment: Estimated 120 hours												
Prerequisites:	<p>Students should have taken the following subjects prior to enrolling in this subject:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEN20007 Chemical Process Analysis 1</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>CHEM10004 Chemistry 2</td> <td>January, Semester 2</td> <td>12.50</td> </tr> <tr> <td>MAST10007 Linear Algebra</td> <td>Summer Term, Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>Chemical Process Analysis 1 and Chemistry 2 can also be taken concurrently.</p>	Subject	Study Period Commencement:	Credit Points:	CHEN20007 Chemical Process Analysis 1	Semester 1, Semester 2	12.50	CHEM10004 Chemistry 2	January, Semester 2	12.50	MAST10007 Linear Algebra	Summer Term, Semester 1, Semester 2	12.50
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CHEM10004 Chemistry 2	January, Semester 2	12.50											
MAST10007 Linear Algebra	Summer Term, 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 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												
Contact:	Email: dcshal@unimelb.edu.au (mailto:dcshal@unimelb.edu.au) Email: gdasilva@unimelb.edu.au (mailto:gdasilva@unimelb.edu.au)												
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. Performing computer-aided balances in the chemical engineering software package HYSYS is covered, as well as the use of Microsoft Excel in engineering calculations. Students are also taught concepts in process safety, with an emphasis on calculations related to fires and explosions. The subject will include exercises in process optimisation and the solution of ill-defined process problems.												
Objectives:	<p>On completion of this subject students should be able to</p> <ul style="list-style-type: none"> # 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:	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> # Bachelor of Arts (https://handbook.unimelb.edu.au/view/2011/B-ARTS) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2011/B-COM) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2011/B-MUS) <p>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.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<ul style="list-style-type: none"> # 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 Science
Related Majors/Minors/Specialisations:	B-ENG Chemical Engineering stream B-ENG Chemical and Biomolecular Engineering stream Master of Engineering (Biomolecular) Master of Engineering (Chemical)