

# CHEN20007 Chemical Process Analysis 1

<b>Credit Points:</b>	12.50
<b>Level:</b>	2 (Undergraduate)
<b>Dates &amp; Locations:</b>	2010, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
<b>Time Commitment:</b>	Contact Hours: 30 hours of lectures, 22 hours of tutorials, two 3-hour laboratory classes Total Time Commitment: Estimated 120 hours
<b>Prerequisites:</b>	# 800-001 Engineering Systems Design 1 # 610-101 Chemistry 1 # 620-155 Calculus 2
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	None
<b>Core Participation Requirements:</b>	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: <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a>
<b>Coordinator:</b>	Assoc Prof David Shallcross, Prof Greg Qiao
<b>Contact:</b>	Melbourne School of Engineering Office Building 173, Grattan Street The University of Melbourne VIC 3010 Australia General telephone enquiries: + 61 3 8344 6703 + 61 3 8344 6507 Facsimiles: + 61 3 9349 2182 + 61 3 8344 7707 Email: <a href="mailto:eng-info@unimelb.edu.au">eng-info@unimelb.edu.au</a> (/)
<b>Subject Overview:</b>	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.
<b>Objectives:</b>	On completion of this subject students will be able to # Apply knowledge of basic science and engineering fundamentals to solve material balances



	<ul style="list-style-type: none"> <li># Define and scope engineering problems and formulate suitable strategies for problem solution</li> <li># Use appropriate software tools to solve material balances</li> <li># Model real gas behaviour</li> <li># Continue study in the area of energy balances with a solid foundation</li> </ul>
<b>Assessment:</b>	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.
<b>Prescribed Texts:</b>	None
<b>Breadth Options:</b>	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> <li># <b>Bachelor of Arts</b> (<a href="https://handbook.unimelb.edu.au/view/2010/B-ARTS">https://handbook.unimelb.edu.au/view/2010/B-ARTS</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2010/B-COM">https://handbook.unimelb.edu.au/view/2010/B-COM</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2010/B-MUS">https://handbook.unimelb.edu.au/view/2010/B-MUS</a>)</li> </ul> <p>You should visit <b>learn more about breadth subjects</b> (<a href="http://breadth.unimelb.edu.au/breadth/info/index.html">http://breadth.unimelb.edu.au/breadth/info/index.html</a>) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<ul style="list-style-type: none"> <li># Ability to apply knowledge of basic science and engineering fundamentals</li> <li># Ability to undertake problem identification, formulation and solution</li> <li># Ability to utilise a systems approach to design and operational performance</li> <li># 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</li> </ul>
<b>Notes:</b>	This subject is available for science credit to students enrolled in the BSc (new degree only).
<b>Related Course(s):</b>	Bachelor of Engineering Bachelor of Science
<b>Related Majors/Minors/ Specialisations:</b>	Master of Engineering (Biomolecular) Master of Engineering (Chemical)