

# CHEN30001 Reactor Engineering

<b>Credit Points:</b>	12.50																																
<b>Level:</b>	3 (Undergraduate)																																
<b>Dates &amp; Locations:</b>	This subject is not offered in 2013.																																
<b>Time Commitment:</b>	Contact Hours: 2 x one hour lecture and 1 x two hour lecture per week, 1 x one hour tutorial per week and 2 x three hour laboratory sessions per semester Total Time Commitment: Estimated 120 hours																																
<b>Prerequisites:</b>	<p>Students must have completed:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST10009 Accelerated Mathematics 2</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> <p>OR:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST10006 Calculus 2</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> <p>AND both:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEN20008 Chemical Process Analysis 2</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>CHEM20018 Chemistry: Reactions and Synthesis</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> <p>CHEN20018 Reactions and Synthesis may also be taken concurrently</p> <p>OR</p> <p>Admission to the Master of Engineering (MC-ENG), plus both of the following:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEN20008 Chemical Process Analysis 2</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>CHEM20018 Chemistry: Reactions and Synthesis</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> <p>CHEN20018 Reactions and Synthesis may also be taken concurrently</p>			Subject	Study Period Commencement:	Credit Points:	MAST10009 Accelerated Mathematics 2	Not offered 2013	12.50	Subject	Study Period Commencement:	Credit Points:	MAST10006 Calculus 2	Not offered 2013	12.50	Subject	Study Period Commencement:	Credit Points:	CHEN20008 Chemical Process Analysis 2	Semester 2	12.50	CHEM20018 Chemistry: Reactions and Synthesis	Not offered 2013	12.50	Subject	Study Period Commencement:	Credit Points:	CHEN20008 Chemical Process Analysis 2	Semester 2	12.50	CHEM20018 Chemistry: Reactions and Synthesis	Not offered 2013	12.50
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<b>Corequisites:</b>	None																																
<b>Recommended Background Knowledge:</b>	None																																
<b>Non Allowed Subjects:</b>	CHEN40003 Reactor Engineering																																
<b>Core Participation Requirements:</b>	For the purposes of considering applications for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005) and Students Experiencing Academic Disadvantage Policy, this subject requires all students to actively and safely participate in laboratory activities. Students who feel their disability may impact upon their participation are encouraged to discuss this with the Subject Co-ordinator and the Disability Liaison Unit <a href="http://www.services.unimelb.edu.au/disability">http://www.services.unimelb.edu.au/disability</a>																																
<b>Contact:</b>	Email: <a href="mailto:gregghq@unimelb.edu.au">gregghq@unimelb.edu.au</a> (mailto:gregghq@unimelb.edu.au)																																

<b>Subject Overview:</b>	This subject introduces students to aspects of reactor system design. Topics covered include ideal batch and flow reactors, the approximation of reaction systems using combinations of plug flow reactors and continuously stirred tank reactors. Also covered are the use of multiple reactors of identical and differing sizes, temperature effects on both non-adiabatic and adiabatic operation and issues associated with temperature instability. Non-ideal flow in reactors is also covered including residence time distributions, tracer tests, conversion in non-ideal reactors, micromixing and macromixing.
<b>Objectives:</b>	On completion of this subject students should be able to: <ul style="list-style-type: none"> <li># Interpret data from both ideal and non-ideal batch, plug flow and mixed flow reactors</li> <li># Model more complex flowing reactor systems using combinations of idealized plug flow and continuously stirred tank tanks</li> <li># Design simple reactor systems</li> <li># Predict simple temperature profiles in reacting systems</li> </ul>
<b>Assessment:</b>	One written three hour end-of-semester examination (70%) A written 2-hour mid-semester test and two lab reports during the semester (30% in total) A mark of 40% or more in the end-of-semester examination is required to pass the subject
<b>Prescribed Texts:</b>	O. Levenspiel, Chemical Reaction Engineering, 3rd Edition, John Wiley & Sons, Inc., New York,1999
<b>Recommended Texts:</b>	R. W. Missen, C. A. Mims and B. A. Saville, <i>Introduction to chemical reaction engineering and kinetics</i> , John Wiley & Sons, Inc, New York,1999 H.S.Fogler, <i>Elements of chemical reaction engineering</i> , 3rd Edition, Prentice Hall PTR, New Jersey, 1999
<b>Breadth Options:</b>	This subject potentially can be taken as a breadth subject component for the following courses: <ul style="list-style-type: none"> <li># <b>Bachelor of Arts</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-ARTS">https://handbook.unimelb.edu.au/view/2013/B-ARTS</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-COM">https://handbook.unimelb.edu.au/view/2013/B-COM</a>)</li> <li># <b>Bachelor of Environments</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-ENVS">https://handbook.unimelb.edu.au/view/2013/B-ENVS</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-MUS">https://handbook.unimelb.edu.au/view/2013/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>	On completion of this subject students should have developed team work skills and enhance the following generic skills: <ul style="list-style-type: none"> <li># Ability to undertake problem identification, formulation and solution</li> <li># Capacity for independent thought</li> <li># Ability and self-confidence to comprehend complex concepts, to express them lucidly and to confront unfamiliar problem</li> </ul>
<b>Related Course(s):</b>	Bachelor of Engineering (Biomedical)Biocellular
<b>Related Majors/Minors/Specialisations:</b>	B-ENG Chemical Engineering stream B-ENG Chemical and Biomolecular Engineering stream Chemical Systems Master of Engineering (Biomolecular) Master of Engineering (Chemical) Science-credited subjects - new generation B-SCI and B-ENG. Core selective subjects for B-BMED.