

CHEN90033 Carbon Capture and Storage Fundamentals

Credit Points:	12.50						
Level:	9 (Graduate/Postgraduate)						
Dates & Locations:	This subject is not offered in 2013.						
Time Commitment:	Contact Hours: 36 hours Total Time Commitment: Estimated 120 hours						
Prerequisites:	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>ENGR90029 Analysing Energy Systems</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	ENGR90029 Analysing Energy Systems	Not offered 2013	12.50
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ENGR90029 Analysing Energy Systems	Not offered 2013	12.50					
Corequisites:	None						
Recommended Background Knowledge:	First year chemistry						
Non Allowed Subjects:	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEN90027 Carbon Capture and Storage</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	CHEN90027 Carbon Capture and Storage	Not offered 2013	12.50
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Core Participation Requirements:	<p><p>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.</p> <p>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</p></p>						
Contact:	<p>Professor Sandra Kentish sandraek@unimelb.edu.au (mailto:sandraek@unimelb.edu.au)</p>						
Subject Overview:	<p>This subject will give an overview of the drivers for carbon capture and storage, the technology and the economics. Specific topics will include:</p> <ul style="list-style-type: none"> # Fuel types (coal, oil, gas). Coal chemistry # Other emission sources (natural gas sweetening, cement, iron and steel production) # Combustion – conventional pulverized coal, supercritical boilers, Integrated Gasification Combined Cycle (IGCC) and gasifier design, oxyfuel processes # Carbon capture using solvent absorption. Other technologies including membranes, adsorbents, chemical looping, cryogenics and gas hydrate technology # Carbon dioxide compression and pipeline transport # Geological storage – site selection (containment, capacity, injectivity). Reservoir modeling (static and dynamic), storage in coal seams, enhanced coal bed methane recovery, storage in depleted gas reservoirs and saline formations, enhanced oil recovery. Long term closure and remediation # Economics – the economics of carbon capture and storage # Health and safety, risk assessment and management, legal issues 						
Objectives:	<p>On completion of this subject students should be able to:</p> <ul style="list-style-type: none"> # Describe the operation of coal and gas fired power stations and the integration of carbon capture and storage into this operation # Describe the opportunities for developing liquid fuels and chemicals from coal as oil reserves decline 						

	<ul style="list-style-type: none"> # Describe the behaviour of carbon dioxide in a geological reservoir and the potential issues with carbon dioxide storage # Estimate the cost of carbon capture and storage and its impact on the levelised cost of electricity
Assessment:	A laboratory-based assignment of not more than 1000 words conducted between Weeks 3 and 7(10%) A literature-based assignment of not more than 15 pages due at the end of semester (30%) Two hour exam at the end of semester (60%)
Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<p>On completion of this subject students should be able to demonstrate an:</p> <ul style="list-style-type: none"> # Ability to use a systems approach to design and operational performance # Understanding of the principles of sustainable design and development
Related Course(s):	Master of Energy Systems