BIEN40002 Biomolecular Engineering Design Project

Credit Points:	18.75
Level:	4 (Undergraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus. A self-learning engineering design project, conducted as a team, aided by lectures and consultation sessions.
Time Commitment:	Contact Hours: Fifty-four hours (18 hours of lectures and 36 hours of consultation sessions). Total Time Commitment: Estimated 120 hours.
Prerequisites:	# 411-303 Reactor Engineering(prior to 2005 411-433) # 411-336 Process Dynamics and Control # 411-337 Practical Work and Computer Laboratory # 411-392 Fermentation Engineering # 411-441 Advanced Heat and Mass Transport Processes 2 # 411-442 Process Equipment Design # 411-445 Process Engineering 3 # 411-343 Chemical Engineering Management
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 Sandra Kentish
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Subject Overview:	Students successfully completing the course will learn the skills necessary to complete a biomolecular engineering feasibility study and to carry out the integrated process and equipment design for an industrial process. They will be presented with an initially poorly-defined task for which much of the design data is not available. In completing the design they will apply most of the skills learned earlier in their course and will learn to function as part of a team and to manage their time effectively. This unit requires the students to undertake a major design task utilising the knowledge gained throughout the chemical and biomolecular engineering course. This comprises the following tasks: design of a process to meet a specified requirement; feasibility study of alternative

	processes which meet the specification; determination of sequence for investigation of a manufacturing project and preparation of a report; consideration of environmental impacts and sustainability issues; preparation of flowsheets; confirmation of effects of market forecasts; economic evaluation; preparation of estimates for the minimisation of capital and production costs; specification of equipment; selection of construction materials; and specification of instrumentation location, staff and labour requirements and safety precautions. The HYSYS simulation package will be utilised where appropriate. There will also be a series of lectures on various aspects of design
Objectives:	On completion of this subject students should be able to: # Apply the skills necessary to complete a biomolecular engineering feasibility study and # Carry out the integrated process and equipment design for an industrial chemical process, which is an initially poorly-defined task for which much of the design data is not available. In completing the design they will apply most of the skills learned earlier in their course. # Function as part of a team and manage their time effectively
Assessment:	Three written reports of up to 200 pages in total and with no more than 100 pages of supporting material (appendices, diagrams, tables, computations and computer output).The first report is due one third of the way through the semester (15%),The second report is due two thirds of the way through the semester (30%)And the final report (55%) is due at the end of the semester.The first two reports include team-based tasks and peer assessments by team members will be included in the final mark
Prescribed Texts:	None
Recommended 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:	# Ability to apply knowledge of basic science and engineering fundamentals # In-depth technical competence in at least one engineering discipline # Ability to undertake problem identification, formulation and solution # Ability to utilise a systems approach to design and operational performance # Ability to function effectively as an individual and in multi-disciplinary and multi-cultural teams, with the capacity to be a leader or manager as well as an effective team member # 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 # Capacity for independent critical thought, rational inquiry and self-directed learning # Openness to new ideas and unconventional critiques of received wisdom
Related Course(s):	Bachelor of Engineering (Chemical and Biomolecular Engineering)