

## BMEN90003 Clinical Engineering

<b>Credit Points:</b>	12.50
<b>Level:</b>	9 (Graduate/Postgraduate)
<b>Dates &amp; Locations:</b>	2012, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
<b>Time Commitment:</b>	Contact Hours: 48 hours Total Time Commitment: 120 hours
<b>Prerequisites:</b>	None
<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>	Dr Emmanuel Koumoundouros
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<b>Subject Overview:</b>	This subject introduces students to the special requirements necessary for managing Medical Devices and Clinical/Biotechnological Environments. Topics covered include: detailed analysis of the cardiopulmonary system, including computer-aided modelling of the cardiovascular system and respiratory system; electrical devices that monitor/support these systems, international/national electrical/biological regulatory bodies and standards.
<b>Objectives:</b>	On successful completion, students should be able to: <ul style="list-style-type: none"> <li># Describe the structure and function of cellular and cardiopulmonary systems</li> <li># Interpret various measures of dynamic responses of the cardiopulmonary system</li> <li># Calculate vascular resistances using thermodilution techniques</li> <li># Implement and evaluate a physiological model on a computer</li> <li># Develop models for analysing physiological systems to determine physiological parameters</li> <li># Design a monitoring system to monitor a specific physiological process</li> <li># Describe the principles underlying various life support devices</li> <li># Identify types of medical devices and their safety requirements</li> <li># Identify clinical and biotechnological workplace areas with their specialised environmental requirements</li> <li># Identify the type of methodology required to analyse different systems using clinical studies</li> </ul>
<b>Assessment:</b>	Assignments/reports (70%) One assignment of 2,000 words equivalent based upon a computer-based project using MATLAB/LABVIEW (30%).
<b>Prescribed Texts:</b>	None

<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<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 communicate effectively, not only with engineers but also with the community at large;</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 multi-disciplinary teams, with the capacity to be a leader or manager as well as an effective team leader.</li> <li># Understanding of the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development</li> <li># Understanding of professional and ethical responsibilities and commitment to them</li> <li># Capacity for independent critical thought, rational inquiry and self-directed learning</li> <li>profound respect for truth and intellectual integrity and for the ethics of scholarship</li> </ul>
<b>Related Course(s):</b>	Master of Biomedical Engineering Postgraduate Certificate in Engineering