

## BMEN90024 Cellular and Tissue Biomechanics

<b>Credit Points:</b>	12.50						
<b>Level:</b>	9 (Graduate/Postgraduate)						
<b>Dates &amp; Locations:</b>	This subject is not offered in 2011.						
<b>Time Commitment:</b>	Contact Hours: 12 hours of lectures; 22 hours of workshops; 6 hours of laboratory work; one field trip of 4 hours. Total Time Commitment: 120 hours						
<b>Prerequisites:</b>	<p>The prerequisite for this subject is:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BMEN30005 Biomechanics and Biotransport</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table> <p>OR enrolment in Master of Biomedical Engineering</p>	Subject	Study Period Commencement:	Credit Points:	BMEN30005 Biomechanics and Biotransport	Semester 1	12.50
Subject	Study Period Commencement:	Credit Points:					
BMEN30005 Biomechanics and Biotransport	Semester 1	12.50					
<b>Corequisites:</b>	None						
<b>Recommended Background Knowledge:</b>	None						
<b>Non Allowed Subjects:</b>	<p>Anti-requisite for this subject is:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BMEN30002 Cellular &amp; Tissue Biomechanics</td> <td>Not offered 2011</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	BMEN30002 Cellular & Tissue Biomechanics	Not offered 2011	12.50
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BMEN30002 Cellular & Tissue Biomechanics	Not offered 2011	12.50					
<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 Coordinator 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>	<p>Dr. David Grayden            Email: <a href="mailto:bmen-subjectenquiry@unimelb.edu.au">bmen-subjectenquiry@unimelb.edu.au</a> (mailto:bmen-subjectenquiry@unimelb.edu.au)</p>						
<b>Subject Overview:</b>	<p>This subject examines the mechanics of animal and human cells and tissues. Various modes of tissue injury will be outlined, from the cellular level to gross injury mechanics such as head injury and neck injury.</p> <p>Cell, tissue and whole body injury mechanics will be taught using a variety of case studies, ranging from situations leading to muscle strain and tears to impact mechanics in murder and car crashes.</p> <p>The course will focus on examining the mechanics and statistical approaches that can cope with large uncertainties. Engineering mechanics and computational analysis will be interwoven throughout the case studies.</p>						
<b>Objectives:</b>	<p>On completing this course students should be able to:</p> <ul style="list-style-type: none"> <li># Discuss the provided literature on injury mechanics;</li> <li># Design an experiment to determine the yield points and statistical outcomes of bone loading;</li> <li># Demonstrate advanced Matlab skills;</li> <li># Compare the merits and drawbacks of various experimental and calculative methods in application to bone mechanics;</li> <li># Describe the mechanical properties of various soft tissues and bone.</li> </ul>						
<b>Assessment:</b>	One end-of-semester exam of 2-hours duration (50%). Three individual on-line tests in Weeks 3, 7 and 11 (15%). Three group laboratory assignments of 1000 words each due in Weeks 3, 7						

	and 11 (24%). Three informal peer discussions in Weeks 4, 8 and 12, where students provide or respond to scientific feedback on assignments (6%). An observational study, which is a field trip where a series of observations and prescribed tests are conducted (5%).
<b>Prescribed Texts:</b>	TBA
<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 science and engineering fundamentals</li> <li># Ability to undertake problem identification, formulation, and solution</li> <li># Ability to utilise a systems approach to complex problems and to design and operational performance</li> <li># Proficiency in engineering design</li> <li># Ability to conduct an engineering project</li> <li># Ability to communicate effectively, with the engineering team and with the community at large</li> <li># Ability to manage information and documentation</li> <li># Capacity for creativity and innovation</li> <li># Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member</li> </ul>
<b>Related Course(s):</b>	Master of Biomedical Engineering
<b>Related Majors/Minors/ Specialisations:</b>	Master of Engineering (Biomedical)