

# BMEN30005 Introduction to Biomechanics

<b>Credit Points:</b>	12.50																							
<b>Level:</b>	3 (Undergraduate)																							
<b>Dates &amp; Locations:</b>	This subject is not offered in 2014.																							
<b>Time Commitment:</b>	Contact Hours: 36 hours of lectures; 12 hours of tutorials; 12 hours of workshops Total Time Commitment: 170 hours																							
<b>Prerequisites:</b>	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>COMP20005 Engineering Computation</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>AND either</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST20029 Engineering Mathematics</td> <td>Summer Term, Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>OR both of the following subjects -</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST20009 Vector Calculus</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>MAST20030 Differential Equations</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>COMP20005 Engineering Computation and MAST20029 may be taken concurrently.</p>			Subject	Study Period Commencement:	Credit Points:	COMP20005 Engineering Computation	Semester 1, Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	MAST20029 Engineering Mathematics	Summer Term, Semester 1, Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	MAST20009 Vector Calculus	Semester 1, Semester 2	12.50	MAST20030 Differential Equations	Semester 2	12.50
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<b>Corequisites:</b>	None																							
<b>Recommended Background Knowledge:</b>	None																							
<b>Non Allowed Subjects:</b>	BMEN30005 Biomechanics and Biotransport																							
<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>	Email: <a href="mailto:pandym@unimelb.edu.au">pandym@unimelb.edu.au</a> ( <a href="mailto:pandym@unimelb.edu.au">mailto:pandym@unimelb.edu.au</a> )																							
<b>Subject Overview:</b>	<p><b>AIMS</b></p> <p>This subject provides an introduction to the biomechanics of human movement. At the completion of the subject, students will be able to -</p> <ul style="list-style-type: none"> <li># Understand the basic concepts of mechanics and appreciate the ways in which they can be applied to the study of musculoskeletal biomechanics</li> <li># Describe some of the common experimental methods used to study human motion biomechanics</li> <li># Describe and be able to apply some of the theoretical methods used to analyse human movement</li> </ul> <p><b>INDICATIVE CONTENT</b></p>																							

	Topics covered include kinematics and dynamics of particles and rigid bodies; kinematic measurement techniques; processing of kinematic measurements; anthropometric properties of body parts; force and moment of force; equations of motion; force and strain requirements in biomechanics; work, energy and power in human motion.
<b>Learning Outcomes:</b>	<p><b>INTENDED LEARNING OUTCOMES (ILO)</b></p> <p>Having completed this subject the student is expected to be able to:</p> <ol style="list-style-type: none"> <li>1 Understand the basic concepts of mechanics and appreciate the ways in which they can be applied to the study of human movement;</li> <li>2 Understand some of the common experimental methods used in human movement studies;</li> <li>3 Apply some of the theoretical methods used to analyse human movement.</li> </ol>
<b>Assessment:</b>	One hour written test mid semester (10%; Three assignments throughout the semester (10% each) One written examination of two hours duration at the end of semester (60%) Intended Learning Outcomes (ILOs) 1 to 3 are assessed in the final written examination, the mid-semester test, and submitted assignments.
<b>Prescribed Texts:</b>	Abernethy B et al. Biophysical Foundations of Human Movement. Human Kinetics.
<b>Breadth Options:</b>	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> <li># <b>Bachelor of Arts</b> (<a href="https://handbook.unimelb.edu.au/view/2014/B-ARTS">https://handbook.unimelb.edu.au/view/2014/B-ARTS</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2014/B-COM">https://handbook.unimelb.edu.au/view/2014/B-COM</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2014/B-MUS">https://handbook.unimelb.edu.au/view/2014/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>	<p>On completing this subject, students should have developed -</p> <ul style="list-style-type: none"> <li># The ability to apply knowledge of science and engineering fundamentals</li> <li># The ability to undertake problem identification, formulation and solution</li> <li># The ability to utilise a systems approach to complex problems and to design and operational performance</li> <li># Proficiency in engineering design</li> <li># The ability to communicate effectively, with the engineering team and with the community at large</li> <li># A capacity for creativity and innovation</li> <li># The 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> <li># A capacity for lifelong learning and professional development</li> </ul>
<b>Related Majors/Minors/ Specialisations:</b>	<p>Bioengineering Systems  Master of Engineering (Biomedical)  Science-credited subjects - new generation B-SCI and B-ENG.  Selective subjects for B-BMED</p>