

BMEN90028 Anatomy and Physiology for Engineers

Credit Points:	12.5												
Level:	9 (Graduate/Postgraduate)												
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.												
Time Commitment:	Contact Hours: 3 hours lecture per week, 1 hour of tutorial per week and 12 hours of workshops (4 x 3 hours each) Total Time Commitment: 200 hours												
Prerequisites:	Admission to Master of Engineering (Biomedical) or (Biomedical with Business) and one of the following subjects: <table border="1" data-bbox="387 656 1485 862"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BIOL10004 Biology of Cells and Organisms</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>CHEM10003 Chemistry 1</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	BIOL10004 Biology of Cells and Organisms	Semester 1	12.50	CHEM10003 Chemistry 1	Semester 1, Semester 2	12.50			
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BIOL10004 Biology of Cells and Organisms	Semester 1	12.50											
CHEM10003 Chemistry 1	Semester 1, Semester 2	12.50											
Corequisites:	None												
Recommended Background Knowledge:	None												
Non Allowed Subjects:	<table border="1" data-bbox="387 1032 1485 1294"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BIOM20002 Human Structure and Function</td> <td>Semester 2</td> <td>25</td> </tr> <tr> <td>ANAT20006 Principles of Human Structure</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>PHYS20008 Human Physiology</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	BIOM20002 Human Structure and Function	Semester 2	25	ANAT20006 Principles of Human Structure	Semester 1, Semester 2	12.50	PHYS20008 Human Physiology	Semester 1, Semester 2	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>												
Coordinator:	Prof David Grayden												
Contact:	Prof David Grayden Email: grayden@unimelb.edu.au (mailto:grayden@unimelb.edu.au)												
Subject Overview:	<p>AIMS:</p> <p>This subject introduces engineering students to human anatomy and physiology, with direct application of the knowledge to considerations for designing and manufacturing medical devices and equipment to assist in overcoming physical disabilities.</p> <p>INDICATIVE CONTENT:</p> <p>Topics include:</p>												

	Anatomical terminology. The structure and appearance of cells and tissues. The appearance of bone and cartilage, the organisation of dense connective tissues. Skeletal muscle structure and function. Principles of excitable tissues. The structure and function of sensory systems, including the eye and vision and the ear and hearing. Principles of sensory motor control. Cardiac mechanics and cardiac biophysics. Multiscale modelling of physiological systems. Technologies, quantitative measurements and experimental techniques used to investigate the structure and function of different tissues, organs and organ systems.
Learning Outcomes:	<p>INTENDED LEARNING OUTCOMES (ILO's)</p> <p>Having completed this unit the student should be able to:</p> <ol style="list-style-type: none"> 1 Demonstrate correct usage of the terminology used to describe anatomical structures. 2 Describe the organisation of cells and tissues. 3 Describe the principles relating to the structure of connective tissues, skeletal muscle, bones and joints. 4 Describe the principles of excitable tissues. 5 Describe the structure and function of the human eye and ear and the mechanisms of vision and hearing. 6 Describe the principles of sensorimotor control. 7 Describe cardiac mechanics and cardiac biophysics. 8 Develop quantitative descriptions of physiological properties and systems. 9 Describe the application of technologies and techniques for investigating the structure and function of the body. 10 Demonstrate communication skills (oral and written) to describe the structure and function of the human body.
Assessment:	Attendance and participation in four workshops in Weeks 4 to 10, each with a written assignment and/or short oral presentation requiring 13-15 hours of work including preparation (10% each). ILO's 1-10 are addressed in these workshops. One written assignment of up to 2000 words due in Week 12 and requiring 26-30 hours of work, 20%. ILO's 8-10 are addressed in the assignment. One written 2-hour end-of-semester examination (40%). ILO's 1-10 are addressed in the exam. Hurdle requirement: Students must pass end of semester examination to pass the subject.
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 have developed the following generic skills:</p> <ul style="list-style-type: none"> # Ability to apply knowledge of science and engineering fundamentals # Ability to communicate effectively, with the engineering team and with the community at large # Capacity for lifelong learning and professional development # Profound respect for truth and intellectual integrity, and for the ethics of scholarship
Related Majors/Minors/Specialisations:	<p>Master of Engineering (Biomedical with Business)</p> <p>Master of Engineering (Biomedical)</p>