

640-131 Physics 1

Credit Points:	12.500
Level:	Undergraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: 35 one-hour lectures (three per week); 11 one-hour tutorials (one per week); 27 hours of practical work (pre-laboratory activities plus nine weeks of 2- or 3-hour workshop sessions). Total Time Commitment: 120 hours
Prerequisites:	VCE Unit 3/4 Physics and Unit 3/4 Mathematical Methods or equivalent. VCE Unit 3/4 Specialist Mathematics or equivalent is recommended but not required.
Corequisites:	None
Recommended Background Knowledge:	Students who have not completed the equivalent of VCE Unit 3/4 Specialist Mathematics are encouraged to enrol in a 620-154 Calculus 1 concurrently with this subject.
Non Allowed Subjects:	Students may only gain credit for one of 640-111, 640-131 or 640-171 (or before 2008, 640-121, 640-141, 640-151, 640-161).
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Coordinator:	Associate Professor M Livett
Subject Overview:	<p>This subject is designed for students with a sound background in physics, and aims to provide a strong understanding of a broad range of physics principles.</p> <p>Topics include:</p> <p>Mechanics: describing and explaining translational and rotational motion, for example in the contexts of human and animal movement and transport (Newton's laws of motion, both translational and rotational; energy transfer and transformation; momentum and impulse; simple harmonic motion, equilibrium).</p> <p>Waves and sound: water waves; seismic waves; production and detection of sound, eg. musical instruments, hearing; ultrasound (reflection and refraction, superposition, resonance, energy transport, absorption, Doppler effect).</p> <p>Optics: optical imaging, sensors and optical instruments, human vision, crystallography (dispersion, lenses and mirrors, interference, diffraction, polarisation).</p> <p>Gravitation: weightlessness, planetary and satellite orbits, escape velocity (universal gravity, Kepler's laws).</p> <p>Special relativity: particle accelerators, the 'twin paradox' (Einstein's modification of Newtonian physics, relativity of time and space, equivalence of mass and energy).</p> <p>Vector notation, and differential and integral calculus, are used wherever appropriate.</p>
Assessment:	Ongoing assessment of practical work during the semester (25%); two written tests with a total duration of up to 1 hour, held early and mid semester (10%); one written assignment requiring up to 4 hours of work outside class time during the semester (5%); a 3-hour written examination in the examination period (60%). Satisfactory completion of practical work is necessary to pass the subject (i.e. attendance and submission of work for at least 80% of workshop sessions together with a result for assessed work of at least 50%).
Prescribed Texts:	None
Breadth Options:	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> # Bachelor of Arts # Bachelor of Commerce # Bachelor of Environments

	<p># Bachelor of Music</p> <p>You should visit learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<p>A student who completes this subject should be able to:</p> <ul style="list-style-type: none"> # explain their understanding of physics principles and applications lucidly, both in writing and orally; # acquire and interpret experimental data and design experimental investigations; # participate as an effective member of a group in tutorial discussions, laboratory and study groups; # think independently and analytically, and direct his or her own learning; # manage time effectively in order to be prepared for regular practical and tutorial classes, tests and the examination.
Notes:	This subject is available for science credit to students enrolled in the BSc (both pre-2008 and new degrees), BAsc or a combined BSc course.
Related Course(s):	Bachelor of Optometry Bachelor of Veterinary Science(PV)