PHYC10005 Physics 1: Fundamentals

Credit Points:	12.5
Level:	1 (Undergraduate)
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 3 x one hour lectures per week; 1 x one hour tutorial per week; 28 hours of practical work (8 x three hour laboratory sessions and up to 30 minutes of pre-laboratory activity) and 10 weekly assignments of 30 minutes each during the semester. Total Time Commitment: Estimated total time commitment of 170 hours
Prerequisites:	Mathematics One of # VCE Units 3/4 Mathematical Methods or equivalent. # Admission into the Bachelor of Science
Corequisites:	None
Recommended Background Knowledge:	Some knowledge of physics, to Year 10 level.
Non Allowed Subjects:	Students may only gain credit for one of # PHYC10001 Physics 1: Advanced # PHYC10003 Physics 1 # PHYC10005 Physics 1: Fundamentals Students with a score of 30 or more in VCE Unit 3/4 Physics will normally not be permitted to enrol in this subject.
Core Participation Requirements:	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: http://www.services.unimelb.edu.au/disability/
Coordinator:	Assoc Prof Roger Rassool
Contact:	Director of First Year Studies **Email: dfys@physics.unimelb.edu.au (mailto:dfys@physics.unimelb.edu.au)**
Subject Overview:	This subject is designed for students with a minimal background in Physics, and aims to provide a sound introduction to a range of important physics principles and applications. Emphasis is placed on key concepts rather than detailed analysis. Topics include: 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). Waves and sound: water waves; production and detection of sound, eg. musical instruments, hearing; ultrasound (reflection and refraction, superposition, resonance, energy transport, absorption, Doppler effect). Optics: optical imaging; sensors and optical instruments; human vision (dispersion, lenses and mirrors, interference, diffraction, polarisation).

	Gravitation: universal gravity, weightlessness, planetary and satellite orbits, escape velocity (universal gravity, Kepler's laws). Vector notation, and differential and integral calculus, are used when appropriate. New mathematical concepts that students may not have encountered in previous studies are introduced as required.
Learning Outcomes:	To enable students to understand the importance of physical principles and develop their capacity to: # understand and explain the physics principles of translational and rotational mechanics, wave and optics; # apply these principles using logical reasoning, together with appropriate mathematical reasoning, to a variety of familiar and novel situations and problems; and # acquire experimental data using a range of measurement instruments and interpret these data.
Assessment:	Ongoing assessment of practical work during the semester (25%); ten weekly assignments (10 x 1.5% = 15%); 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:	Physics Vol 1, Asia-Pacific Edition, R. Serway, J. Jewett, K. Wilson and K. Wilson, Pub. Cengage Learning: Volume 1 & EWA-9780170173193
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2015/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2015/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2015/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2015/B-MUS)** 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.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	A student who completes this subject should be able to: # 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; and # 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. Students with a score of 30 or more in VCE Unit 3/4 Physics will normally not be permitted to enrol in this subject.
Related Majors/Minors/ Specialisations:	Science-credited subjects - new generation B-SCI and B-ENG. Selective subjects for B-BMED