PHYC20013 Laboratory and Computational Physics 2

Credit Points:	12.5
Level:	2 (Undergraduate)
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. Semester 2, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 72 Hours (six hours of experimental or computational laboratory class per week of the Teaching Period) Total Time Commitment: 170 Hours
Prerequisites:	One of: **Subject** / **Study Period Commencement:** / **Credit Points:** PHYC10001 Physics 1: Advanced — Semester 1 — 12.5 PHYC10003 Physics 1 — Semester 1 — 12.5 PHYC10005 Physics 1: Fundamentals — Semester 1 — 12.5 And one of: **Subject** / **Study Period Commencement:** / **Credit Points:** PHYC10002 Physics 2: Advanced — Semester 2 — 12.5 PHYC10004 Physics 2: Physical Science & Technology — Semester 2 — 12.5 PHYC10006 Physics 2: Life Sciences & Environment — Semester 2 — 12.5 And VCE Mathematical Methods or equivalent.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	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. 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
Coordinator:	Assoc Prof Harry Quiney
Contact:	**quiney@unimelb.edu.au (mailto:quiney@unimelb.edu.au)**
Subject Overview:	This subject introduces students to the use of computational techniques in the investigation of problems in physics and develops students' skills in experimental physics within areas of optics, acoustics, electromagnetism, classical nuclear and quantum physics. Students will

	develop programming skills and learn a range of numerical methods commonly used in physics research.
Learning Outcomes:	Students completing this subject should be able to: # apply critical reasoning to the evaluation of experimental data and sources of experimental uncertainty; # use experimental log books effectively; and # present clearly the results of experimental work; # construct computer programs that implement algorithms for the solution of problems in physics and the modeling of experimental data; # apply elementary computational techniques such as finite difference approximations, root finding, quadrature, numerical solutions of ordinary differential equations and discrete Fourier series to physical problems.
Assessment:	Written pre-laboratory and pre-computational assignments due throughout the teaching period of semester (20%). Participation in Laboratory and Computational classes throughout the teaching period of semester (20%). Written and oral laboratory reports and computational assignments equivalent to 3000 words due throughout the teaching period of semester (60%).
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:	A student who completes this subject should be able to: # Explain their understanding of physics principles and applications lucidly, both in writing and orally; # Describe the experimental and observational basis of the physical principles presented in the subject, both in writing and orally; # Express mathematical descriptions of physical processes in a form accessible to numerical computation; # Participate as an effective member of a group in tutorial discussions and study groups; # Think independently and analytically and direct his or her own learning; # Manage time effectively in order to be prepared for regular tutorial classes, tests, the examination and to complete assignments.
Related Majors/Minors/ Specialisations:	Physics Science-credited subjects - new generation B-SCI and B-ENG. Selective subjects for B-BMED