School of Physics

Course Outline 2022

PHYS3112

Experimental and Computational Physics

School of Physics

Faculty of Science

T1, 2022

1. Staff

Position	Name	Email	Consultation times and locations	Contact Details
Course Coordinator	Professor Michael Ashley	m.ashley@unsw.edu.au	Consultation times: by arrangement via email	(02) 9385 5465

- Technical Communication

2.3 Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

1. Demonstrate knowledge of key concepts, principles and skills in experimental physics and use them to investigate a broad range of physical phenomena.
2. Demonstrate knowledge of key concepts, principles and skills in computational physics and use them to investigate and simulate a broad range of physical phenomena.
3. Demonstrate and appropriately apply a broad range of analytical skills and techniques in experimental and computational physics expected from a physics graduate.
4. Communicate concepts, ideas and analyses in experimental and computational physics to both specialist and non-specialist audiences.

2.4 Relationship between course and program learning outcomes and assessments

Course learning outcomes 1–4 are assessed by the weekly quizzes, laboratory sessions, a final experimental report, and a computational essay. These assessments offer a variety of ways for students to demonstrate their attainment of the course learning outcomes while being aligned with key graduate attributes for successful physics-trained graduates.

3. Strategies and approaches to learning

3.1 Learning and teaching activities

Assumed knowledge

Students should have completed the prerequisite courses. In addition, students should have completed at least one PHYS2XXX course with an experimental component.

Prerequisite courses: (PHYS2111 or PHYS2110 or PHYS2113 or PHYS2114) and (MATH2089 or (MATH2301 and (MATH2801 or MATH2901))

Timetable

Lectures: 2 per week 1x 2 hr (synchronous), and 1 x 1hr (asynchronous) (Weeno5c0.0n7 (s)-2 (e)6.1 (s).002 To

NOTE: Details regarding the online or face-to-face aspects of the lectures & tutorials will be announced on the Moodle page at the start of term.

Day	Time	Location
Monday	14:00 – 16:00	[redacted]

4. Course schedule and s tructure

5. Assessment

5.1 Assessment tasks

Course assessment comprises assignments, laboratory and final examination.

Assessment task	Length	Weight	Mark	Due date
Final lab report ：		30%		Submission in week 9; viva in week 10. See Moodle for details during term.
Computational essay ：		30%		During final exam period. Exact date to be announced on Moodle during term.
Laboratory：		20%		See note below about lab classes.
Weekly quizzes：	1 hr	8%		Monday 9am (Weeks 2–5, 7–9)
Final quiz：	50 min	12%		Week 10. See Moodle for details during term.

Laboratory

Preparation work will be required b351.84 450.78 168.36 2.88 reg316.0.5 (b)6.1 (e)0e8 050.78 0.48 3grtifact /C.6 (n)

7. Readings and resources

Textbooks

None.

Comput er software

Python

The Course will be taught in Python, specifically Python 3.10 (or more recent), and Jupyter notebook. To install both of these, and a number of python packages you will need for this course, we recommend that you install the Anaconda distribution. This software will also be installed on the