

1302BPS Physics IB

Semester 2 2009

Academic Organisation:	School of Biomolecular and Physical Sciences
Faculty:	Science, Environment, Engineering and Technology
Credit point value:	10
Student Contribution Band:	Band 4A (Nat Priority Band)
Course level:	Undergraduate
Campus/Location/Learning Mode:	Nathan / On Campus / In Person
Convenor/s:	Dr Joan Vaccaro (Nathan)
Enrolment Restrictions:	Nil
This document was last updated:	29 June 2009

BRIEF COURSE DESCRIPTION

This course extends the physics presented in Physics 1A and provides a basis for further studies in physics and physical chemistry. It introduces students to Quantum Physics and Relativity and develops more advanced concepts in Mechanics, Electricity and Magnetism through lectures, tutorials and laboratory classes.

Prior Assumed: 1301BPS Physics 1A, 1201BPS Mathematics 1A

Concurrent Assumed: 1210SCE Mathematics 1B

Incompatible: 1606SCE Engineering Physics; 1306SCE Physics 1B

SECTION A – TEACHING, LEARNING AND ASSESSMENT

COURSE AIMS

Course Aims

The course gives students a grounding in classical and modern physics. It provides the basis for courses in later years for students going on to study physics, chemistry and electronics.

The purpose of the course is

- to provide an understanding of, and an ability to apply fundamental concepts of electricity and mechanics, and
- to introduce the conceptual bases of modern physics.

This course is an element in the development of an increasingly sophisticated understanding of the natural world.

LEARNING OUTCOMES

Upon completion of this course students will have

- (a) a reasonable knowledge of the course content,
- (b) a fundamental understanding of the physical principles underlying the content,
- (c) skills that enable them to solve problems based on the content, and
- (d) technical knowledge and skills to be able them to carry out basic experimental investigations.

CONTENT, ORGANISATION AND TEACHING STRATEGIES

This course is delivered in 28 lectures, 10 tutorials, and 6 laboratory classes over a 13-week period. Lectures and tutorials are typically of one hour duration and laboratory classes are of four hours duration. In most weeks there will be three lectures and one tutorial. The 6 laboratory classes will be spread over the teaching period. The lectures introduce the physical concepts and their application to physical problems. The tutorials are devoted to discussing the solution to set of problems. In the laboratory classes students will learn some basic experimental techniques and the scientific method as applied to physics.

Contact Summary

The content comprises

- lectures in four modules:
 - Mechanics B (7 lectures)
 - Electricity & Magnetism B (8 lectures)
 - Relativity (5 lectures)
 - Quantum Physics (8 lectures)
- ten tutorials (two for Mechanics, three for Electricity and Magnetism, two for Relativity and three for Quantum Physics), and
- six laboratory classes (24 hours in total).

CONTENT SUMMARY

Module	Lecture Content	Tutorial/Laboratory Content
Mechanics B	<ul style="list-style-type: none"> • Motion in two dimensions: projectiles, collisions • Circular motion: angular momentum, torque • Precession • Moments of inertia • Gravity 	Tutorials and Laboratories
Electricity and Magnetism B	<ul style="list-style-type: none"> • Gauss' Law, electrostatic potential • Biot-Savart Law, Amperes Law and applications. • Inductance and capacitance. • Reactance and impedance. • Phasors. • Storage and dissipation of energy in circuit elements. • Voltage and current generators. • Thevenin's and Norton's theorems. • Basic circuit analysis. Resonance 	Tutorials and Laboratories
Relativity	<ul style="list-style-type: none"> • Newtonian relativity, Galilean transformations, • Special relativity • Early experiments • Lorentz transformations twin paradox • Equivalence of mass and energy. 	Tutorials only
Quantum Physics	<ul style="list-style-type: none"> • Black body radiation and Planck's Law • Photoelectric effect • Compton effect • De Broglie's hypothesis • Particle and wavelike nature of matter and radiation • The uncertainty principle • Bohr's theory of the hydrogen atom • Schrödinger's equation 	Tutorials only

ASSESSMENT

Item	Assessment Task	Length	Weighting	Relevant Learning Outcomes	Due Day and Time
1.	Computer-based assignments		40%	(a), (b),(c)	Throughout semester. See learning@griffith for details.
2.	Laboratory assessment	6 at 4hrs each	20%	(d)	Throughout semester. See learning@griffith for details.
3.	End-semester exam	2hrs	40%	(a), (b),(c)	End of semester exam period.

Assessment Details

This course will be assessed by computer-based assignments (40%), continuous assessment of laboratory reports (20%), and a 2-hour end-of-semester exam (40%) to be held in the standard University end of semester exam period.

The computer-based assignments test the students' knowledge and understanding of the course content [course outcomes (a) and (b)] and their problem solving skills [outcome (c)]. They also provide students with immediate feedback that allows them to refocus their learning. The laboratory assessment tests the students' practical skills [outcome (d)]. The end of semester exam tests the students' individual knowledge, understanding and problem solving skills [outcomes (a), (b) and (c)] in a formal exam environment.

Return of Assessment Items

The assignments and the exam have no returnable material. The arrangements for the return of the laboratory items will be posted on the learning@griffith website and announced in the lectures.

Notification of Availability of Feedback on Assessment

The results of the computer-based assignments are available immediately on screen, and feedback is provided continuously while students attempt the practice problems. The results of the laboratory component and the end of semester exam will be posted on the learning@griffith website.

GRADUATE SKILLS

Graduate Skills	Taught	Practised	Assessed
Effective communication (written)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Effective communication (oral)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Effective communication (interpersonal)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information literacy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Problem solving	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Critical evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work autonomously	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Work in teams	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Creativity and innovation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ethical behaviour in social / professional / work environments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Responsible, effective citizenship	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TEACHING TEAM

Course Convenor

Convenor Details	Nathan
Campus Convenor	Dr Joan Vaccaro
Email	J.A.Vaccaro@griffith.edu.au
Office Location	N34 0.21 (Science 2, ground floor)
Phone	373 55059
Fax	37357656
Consultation times	Students may consult with the Convenor during normal office hours.

Additional teaching team members

Details of the teaching team will be posted on the learning@griffith website by the beginning of the first week of teaching.

COURSE COMMUNICATIONS

Students should communicate with the Course Convenor and members of the teaching team by email or phone. For face-to-face consultations students should first request an appointment by email, phone or in person.

It is very important that you REGULARLY access the Learning@Griffith website for this course as important messages from the teaching team may be posted there at any time.

You should also REGULARLY check your student email account for any messages from the teaching team that refer to you specifically.

For questions about lecture content, you should first contact a tutor in a TUTORIAL, or the lecturer who gave the relevant.

TEXTS AND SUPPORTING MATERIALS

The following text book, which is also the set text for Physics 1A, is required for this course:

R. Wolfson, "Essential University Physics", Vols 1 and 2, (Pearson/Addison Wesley, San Francisco 2007)

This text is required as purchase of it enables you to undertake the web-based tutorials which are an essential part of this course.

SECTION B – ADDITIONAL COURSE INFORMATION

Students should refer to the Learning@Griffith website for further information about this course.

SECTION C – KEY UNIVERSITY INFORMATION

ACADEMIC MISCONDUCT

Students must conduct their studies at the University honestly, ethically and in accordance with accepted standards of academic conduct. Any form of academic conduct that is contrary to these standards is academic misconduct and is unacceptable.

Some students engage deliberately in academic misconduct, with intent to deceive. This conscious, pre-mediated form of cheating is one of the worst forms of fraudulent academic behaviour, for which the University has zero tolerance and for which penalties, including exclusion from the University, will be applied.

However the University recognises many students commit academic misconduct without intent to deceive. These students may be required to undertake additional educational activities to remediate their behaviour.

Specifically it is academic misconduct for a student to:

- **Cheat in examinations and tests** by communicating, or attempting to communicate, with a fellow individual who is neither an invigilator or member of staff; by copying, or attempting to copy from a fellow candidate; attempting to introduce or consult during the examination, any unauthorised printed or written material, or electronic calculating or information storage device; or mobile phones or other communication device, or impersonates another.

- **Fabricate results** by claiming to have carried out tests, experiments or observations that have not taken place or by presenting results not supported by the evidence with the object of obtaining an unfair advantage.
- **Misrepresent themselves** by presenting an untrue statement or not disclosing where there is a duty to disclose in order to create a false appearance or identity.
- **Plagiarise** by representing the work of another as their own original work, without appropriate acknowledgement of the author or the source. This category of cheating includes the following:
 1. collusion, where a piece of work prepared by a group is represented as if it were the student's own;
 2. acquiring or commissioning a piece of work, which is not his/her own and representing it as if it were, by
 - purchasing a paper from a commercial service, including internet sites, whether pre-written or specially prepared for the student concerned
 - submitting a paper written by another person, either by a fellow student or a person who is not a member of the University;
 3. duplication of the same or almost identical work for more than one assessment item;
 4. copying ideas, concepts, research data, images, sounds or text;
 5. paraphrasing a paper from a source text, whether in manuscript, printed or electronic form, without appropriate acknowledgement;
 6. cutting or pasting statements from multiple sources or piecing together work of others and representing them as original work;
 7. submitting, as one own work, all or part of another student's work, even with the student's knowledge or consent.

A student who willingly assists another student to plagiarise (for example by willingly giving them their own work to copy from) is also breaching academic integrity, and may be subject to disciplinary action.

Visit the following web sites for further details:

[Institutional Framework for Promoting Academic Integrity among Students](#)
[Academic integrity for students](#)

PLAGIARISM DETECTION SOFTWARE

The University uses plagiarism detection software. Students should be aware that your Course Convenor may use this software to check submitted assignments. If this is the case your Course Convenor will provide more detailed information about how the detection software will be used for individual assessment items.

HEALTH AND SAFETY

Griffith University is committed to providing a safe work and study environment, however all students, staff and visitors have an obligation to ensure the safety of themselves and those whose safety may be affected by their actions. Staff in control of learning activities will ensure as far as reasonably practical, that those activities are safe and that all safety obligations are being met. Students are required to comply with all safety instructions and are requested to report safety concerns to the University.

General health and safety information can be obtained from
http://www.griffith.edu.au/hrm/health_and_safety/

Information about Laboratory safety can be obtained from
http://www.griffith.edu.au/ots/secure/health/content_labsafety.html

KEY STUDENT-RELATED POLICIES

All University policy documents are accessible to students via the University's Policy Library website at: www.griffith.edu.au/policylibrary. Links to key policy documents are included below for easy reference:

[Academic Calendar](#)

[Academic Standing, Progression and Exclusion Policy](#)

[Assessment Policy](#)

[Examinations Timetabling Policy and Procedures](#)

[Guideline on Student E-Mail](#)

[Health and Safety Policy](#)

[Institutional Framework for Promoting Academic Integrity Among Students](#)

[Policy on Student Grievances and Appeals](#)

[Student Administration Policy](#)

[Student Charter](#)

UNIVERSITY SUPPORT RESOURCES

The University provides many facilities and support services to assist students in their studies. Links to information about University support resources available to students are included below for easy reference:

[Learning Centres](#) - the University provides access to common use computing facilities for educational purposes. For details visit www.griffith.edu.au/cuse

[Learning@Griffith](#) - there is a dedicated website for this course via the Learning@Griffith student portal.

[Student Services](#) facilitate student access to and success at their academic studies. Student Services includes: Careers and Employment Service; Chaplaincy; Counselling Service; Health Service; Student Equity Services (incorporating the Disabilities Service); and the Welfare Office.

[Learning Services](#) within the Division of Information Services provides learning support in three skill areas: computing skills; library skills; and academic skills. The study skills resources on the website include self-help tasks focusing on critical thinking, exam skills, note taking, preparing presentations, referencing, writing, proof reading, and time management.