2014
First Year Info Session

created and presented by UNSW PHYSOC

UNSW Student Life

Preamble

In case you haven't heard of PHYSOC...

- Events
- Resources
- etc

https://www.facebook.com/groups/unsw.physoc/

http://ugrad.phys.unsw.edu.au/physoc/

http://instagram.com/physoc_unsw

Physoc Room

We also have a room where you can chill at!

Old Main Building RM LG35

Amenities include:

- Fridge
- Drinks ($1 honor system)
- Microwave
- Kettle
- Toaster
- Whiteboard
- Chess board
- Five iMacs
- Physics textbooks
- Past assignments and exams

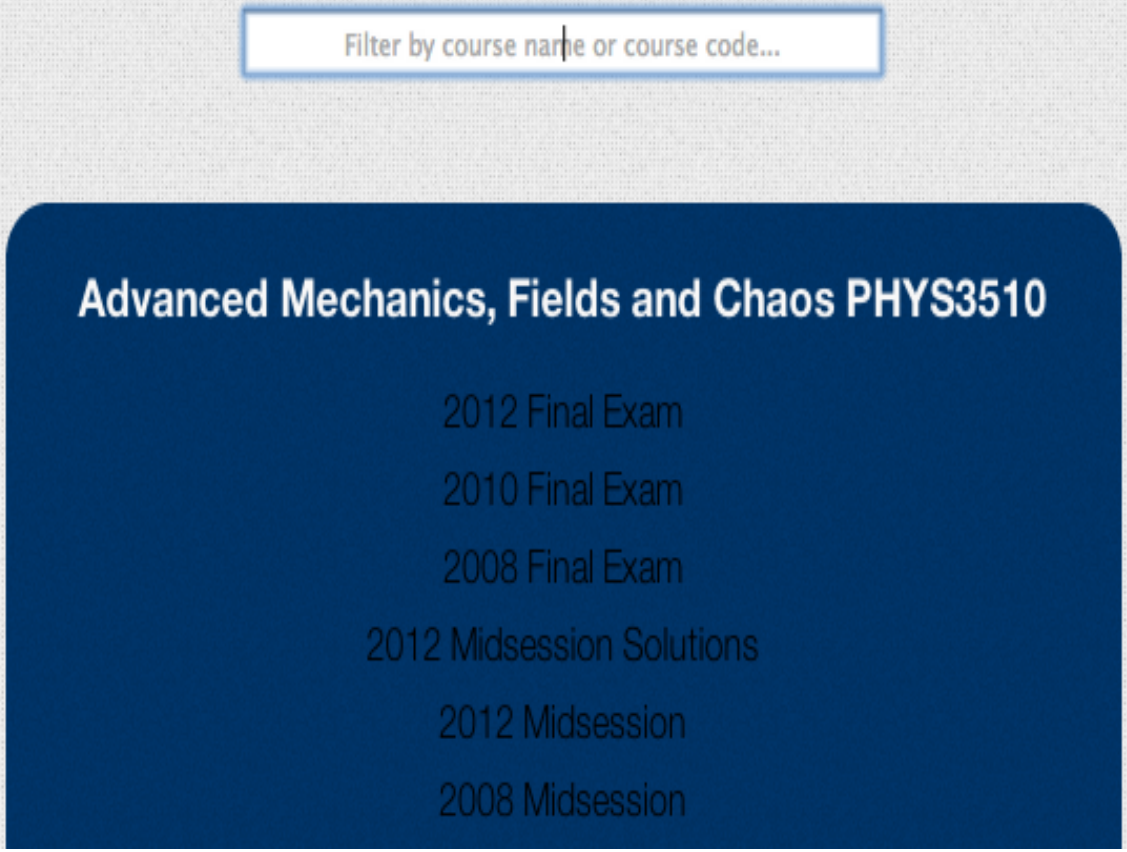
UNSW PHYSICS STUDENT SOCIETY

Home | About Us | Social | Events | Photos | PHYSOC History | Resources | Tutoring | Affiliates | Contact Us

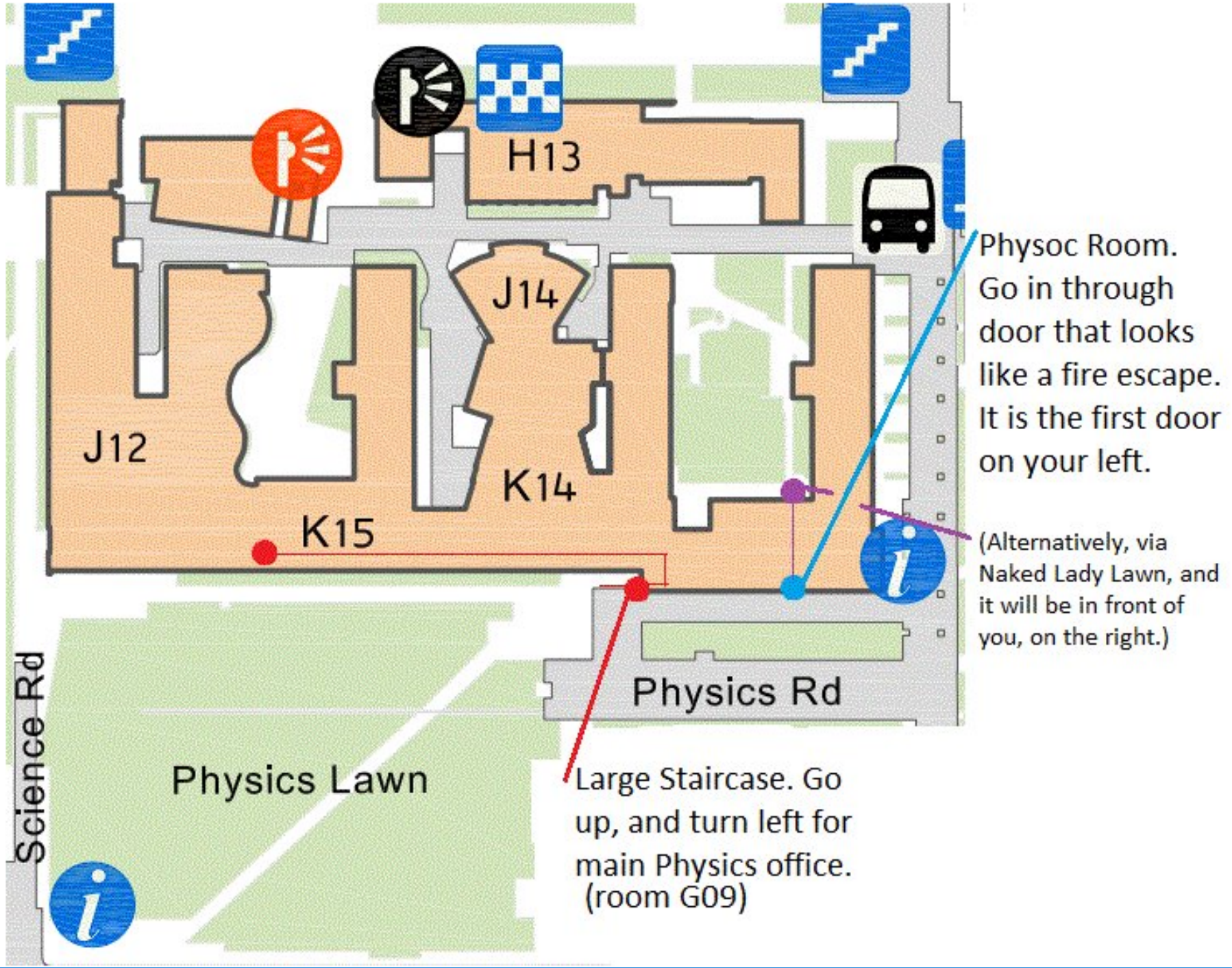
Resources for Physics Students

- UNSW Physics
- Physics Friend
- First Year Physics Website
- Information for First Years Enrolling Into Second Year
- UNSW Physclips
- Physics Course Webpages
- Lab Resources
- Textbooks
- Physics Servers
- Software
- Forums
- Past Exams
- LaTeX

UNSW Physics Past Exams Database



http://ugrad.phys.unsw.edu.au/physoc/2014/database/


H13
J14
J12
K14
K15
Physics Rd
Physics Lawn
Science Rd
Physoc Room. Go in through door that looks like a fire escape. It is the first door on your left.
(Alternatively, via Naked Lady Lawn, and it will be in front of you, on the right.)
Large Staircase. Go up, and turn left for main Physics office. (room G09)

Course Selection

https://www.physics.unsw.edu.au/current-students/courses

The physics website is currently being updated so there are some broken links here and there. Most of syllabi are here.

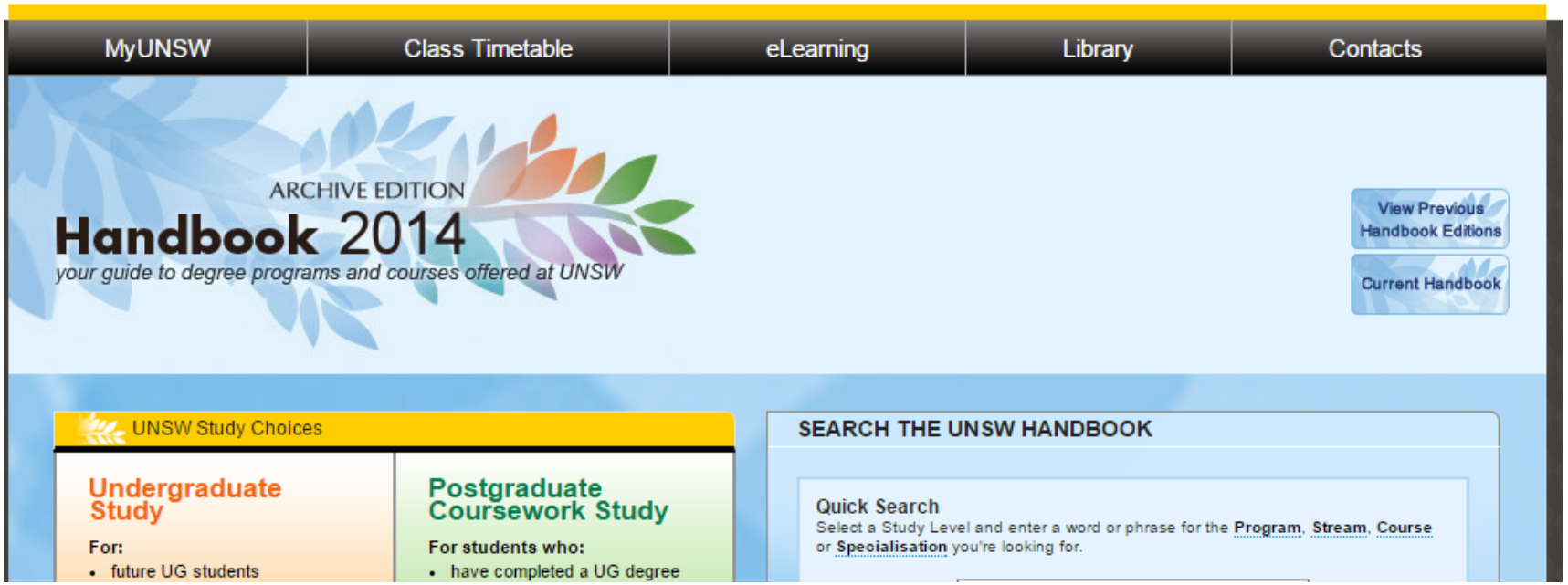
Most lecturers use this site (or their own) to upload lecture notes, assignments and past papers as opposed to Moodle/Blackboard.

www.phys.unsw.edu.au/phys_current/re_enrolment.html

Re-enrolment info (info on which courses are offered this year).

Using the Handbook

Use handbook from year you started in regards to required subjects



Using the Handbook

Looking up your program and what courses you need to do to graduate

http://www.handbook.unsw.edu.au/undergraduate/programs/2014/3970.html

Change to the year you started in^

Courses offered each year – timetable.unsw.edu.au also works.

Adv. Sci

Stream Structure

A major in Physics in Advanced Science programs is comprised of 90 units of credit of courses as follows:

Stage 1

- PHYS1131 Higher Physics 1A (6 UOC) **or** PHYS1141 Higher Physics 1A (Special) (6 UOC)
- PHYS1231 Higher Physics 1B (6 UOC) **or** PHYS1241 Higher Physics 1B (Special) (6 UOC)
- MATH1131 Mathematics 1A (6 UOC) **or** MATH1141 Higher Mathematics 1A (6 UOC)
- MATH1231 Mathematics 1B (6 UOC) **or** MATH1241 Higher Mathematics 1B (6 UOC)

Stage 2

- MATH2111 Higher Several Variable Calculus (6 UOC) **or** MATH2011 Several Variable Calculus (6 UOC)
- MATH2221 Higher Theory and Applications of Differential Equations (6 UOC) or MATH2121 Theory and Applications of Differential Equations (6 UOC)
- PHYS2110 Quantum Physics & Laboratory (6 UOC)
- PHYS2120 Mechanics and Computational (6 UOC)
- PHYS2210 Electromagnetism and Thermal (6 UOC)

Stage 3

- PHYS3011 Quantum & Electrodynamics (6 UOC)
- PHYS3021 Statistical & Solid State (6 UOC)
- PHYS3031 Optics & Nuclear Physics (6 UOC)

PLUS 6 UOC from:

- PHYS3040 Experimental Physics A1 (3 UOC)
- PHYS3070 Experimental Physics A2 (3 UOC)
- PHYS3110 Experimental Physics B1 (3 UOC)
- Level III MATH courses totalling 6 UOC

PLUS 12 UOC of other level III PHYS or MATH courses

Note: Students should take the higher versions of Mathematics courses where possible.

Science

Stream Structure

A major in Physical Science is comprised of 78 units of credit of courses as follows:

Stage 1

- PHYS1121 Physics 1A (6 UOC) **or** PHYS1131 Higher Physics 1A (6 UOC) **or** PHYS1141 Higher Physics 1A (Special) (6 UOC)
- PHYS1221 Physics 1B (6 UOC) **or** PHYS1231 Higher Physics 1B (6 UOC) **or** PHYS1241 Higher Physics 1B (Special) (6 UOC)
- MATH1131 Mathematics 1A (6 UOC) **or** MATH1141 Higher Mathematics 1A (6 UOC)
- MATH1231 Mathematics 1B (6 UOC) **or** MATH1241 Higher Mathematics 1B (6 UOC)

Stage 2

- PHYS2110 Quantum Physics & Laboratory (6 UOC)
- PHYS2210 Electromagnetism and Thermal (6 UOC)
- MATH2011 Several Variable Calculus (6 UOC) **or** MATH2111 Higher Several Variable Calculus (6 UOC)
- MATH2121 Theory and Applications of Differential Equations (6 UOC) or MATH2221 Higher Theory and Applications of Differential Equations (6 UOC)
- 12 UOC level II or III PHYS course

Stage 3

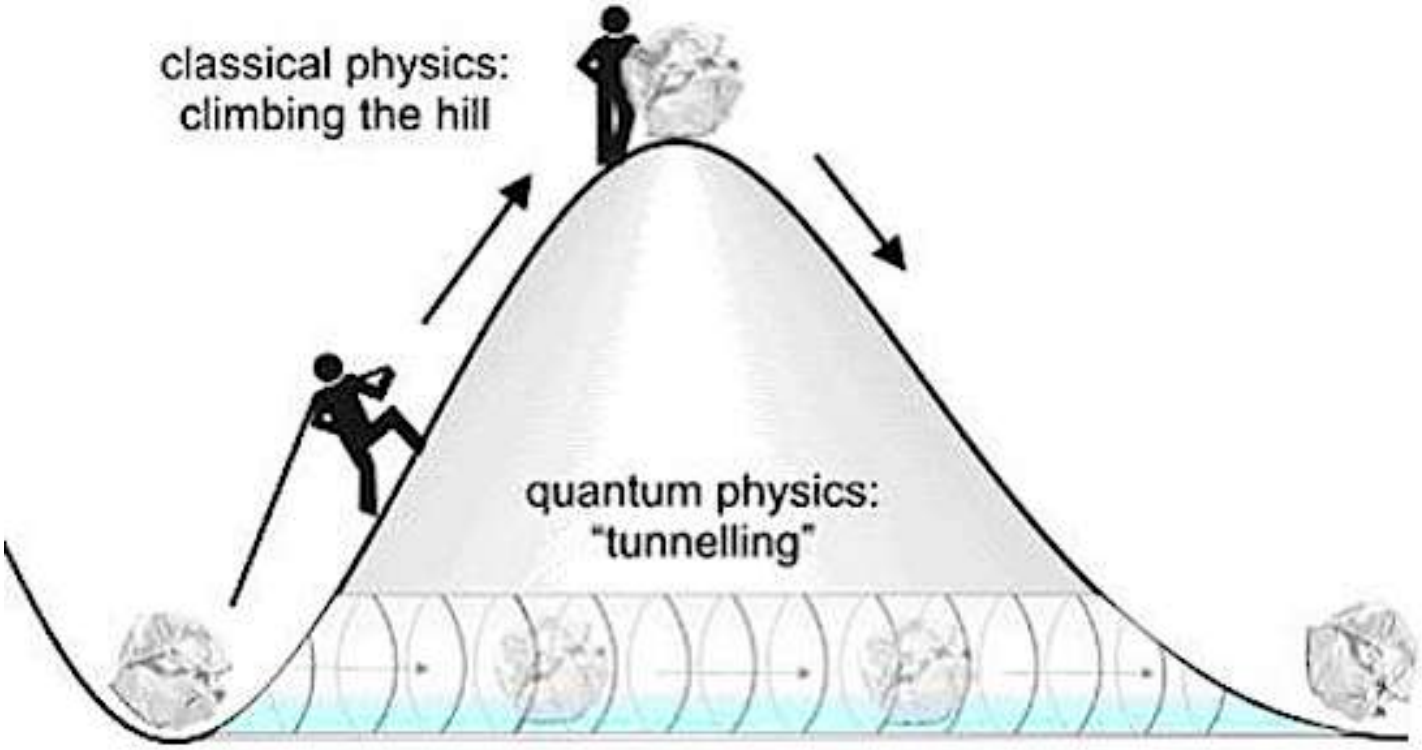
- 18 UOC of level III PHYS courses

Note: *Students who wish to take honours in Physics should take 24 UOC of level III PHYS courses which include:*

- PHYS3011 Quantum & Electrodynamics (6 UOC)
- PHYS3021 Statistical & Solid State (6 UOC)
- PHYS3031 Optics & Nuclear Physics (6 UOC)

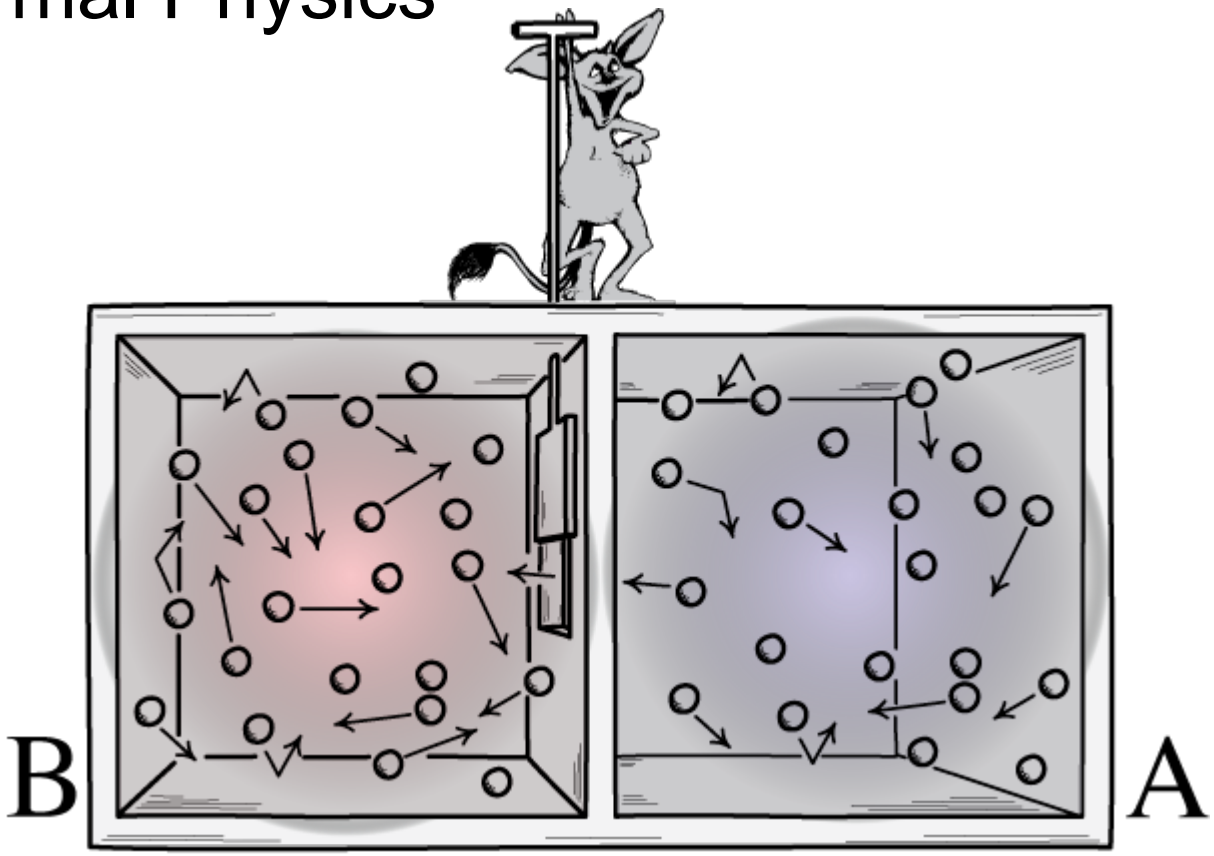
Course Selection - PHYS2XXX Core

PHYS2110 (Sem1) Quantum Mechanics and Lab



Course Selection - PHYS2XXX Core

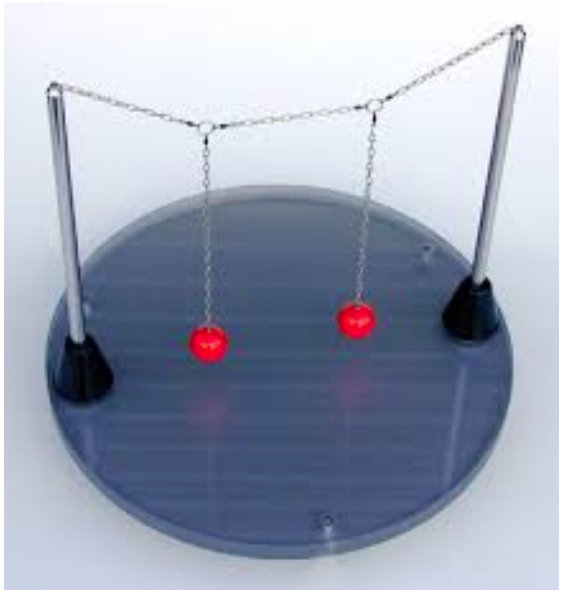
PHYS2210 (Sem2) Electromagnetism and Thermal Physics

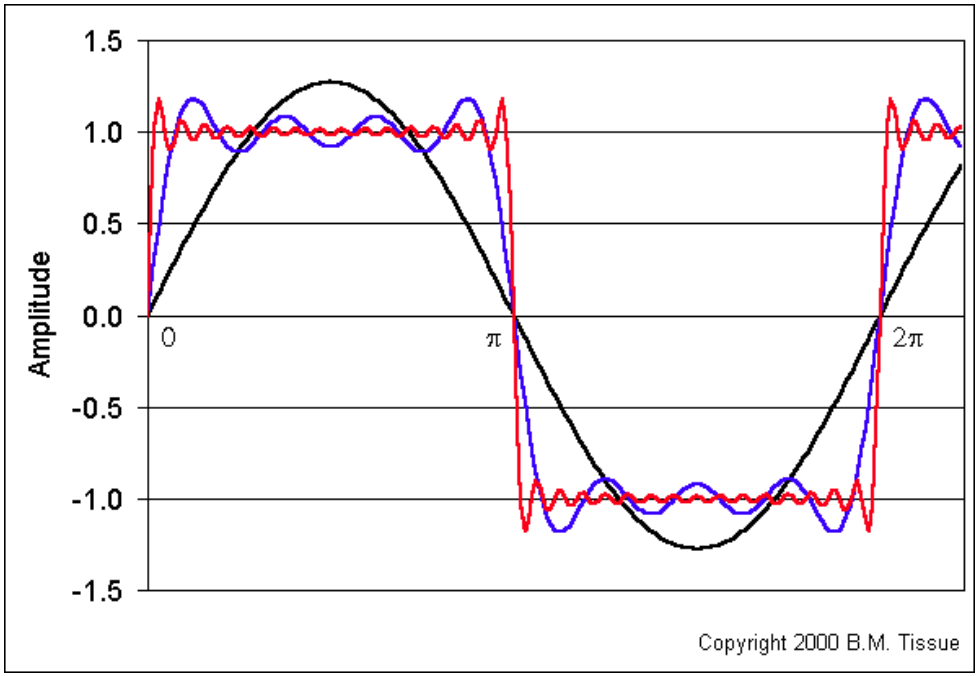


Course Selection - PHYS2XXX Core

Compulsory for Advanced Science students but recommended for everyone:

PHYS2120 (Sem1) Mechanics and Computational Physics





Course Selection - PHYS2x Electives

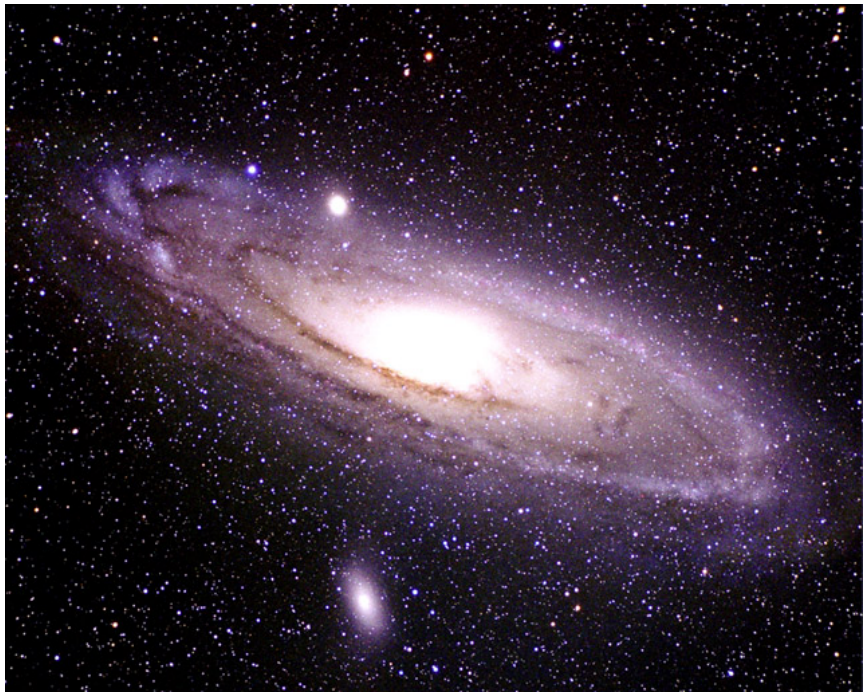
EVERY Year

PHYS2160 Astronomy

PHYS2410 Biophysics

PHYS2630 Electronics

PHYS2801 Atmospheric Science



Course Selection - PHYS3x Electives

EVERY Year cont.

PHYS3550 General Relativity (Sem1)

PHYS3040/3070/3110 Experimental Physics

PHYS3770 Lasers and Spectroscopy Lab

PHYS3780 Photonics Lab

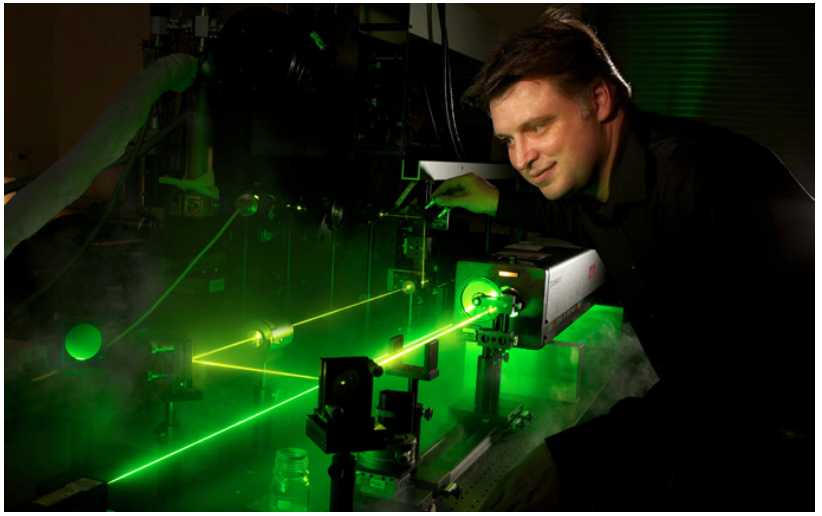
Course Selection - PHYS3 Elective

Odd Years (Next Year)

PHYS3610 Computational Physics

PHYS3170 Cosmology and the Interstellar Medium (Honours Elective)

PHYS3710 Lasers and Applications (Sem1)



Course Selection - PHYS3 Elective

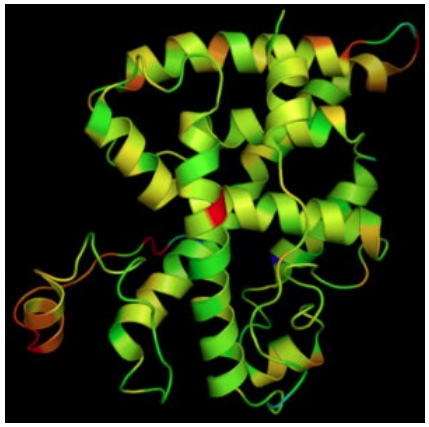
EVEN Years

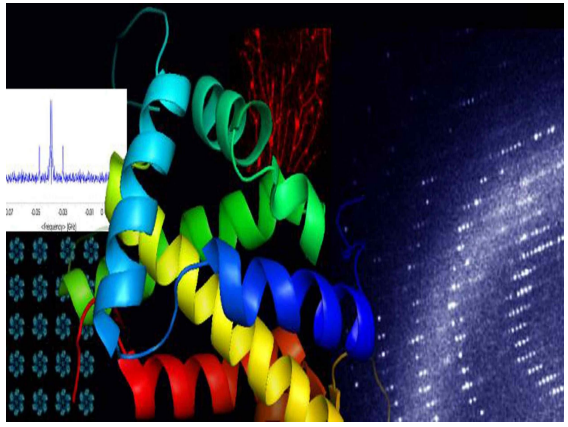
PHYS3720 Optoelectronics (Sem1)

PHYS3410 Biophysics 2

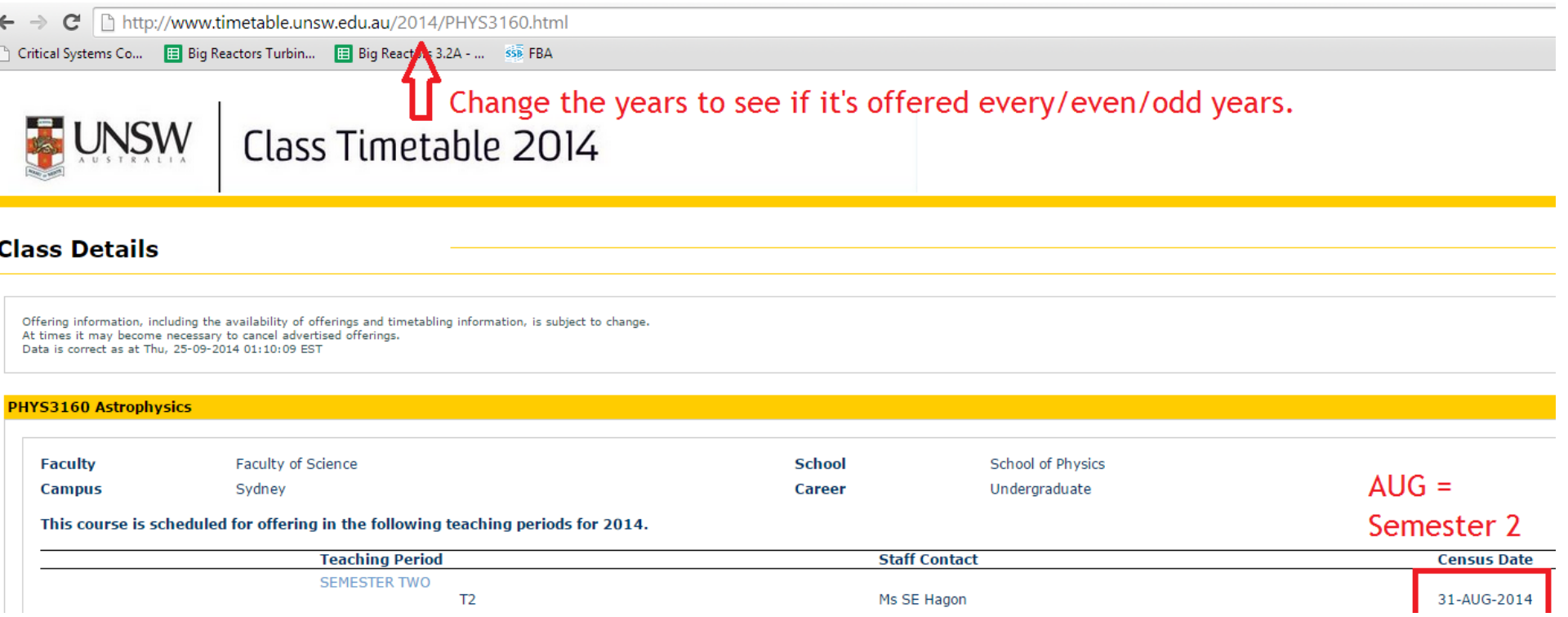
PHYS3510 Adv. Mechanics, Fields and Chaos

PHYS3160 Astrophysics (Honours Elective)

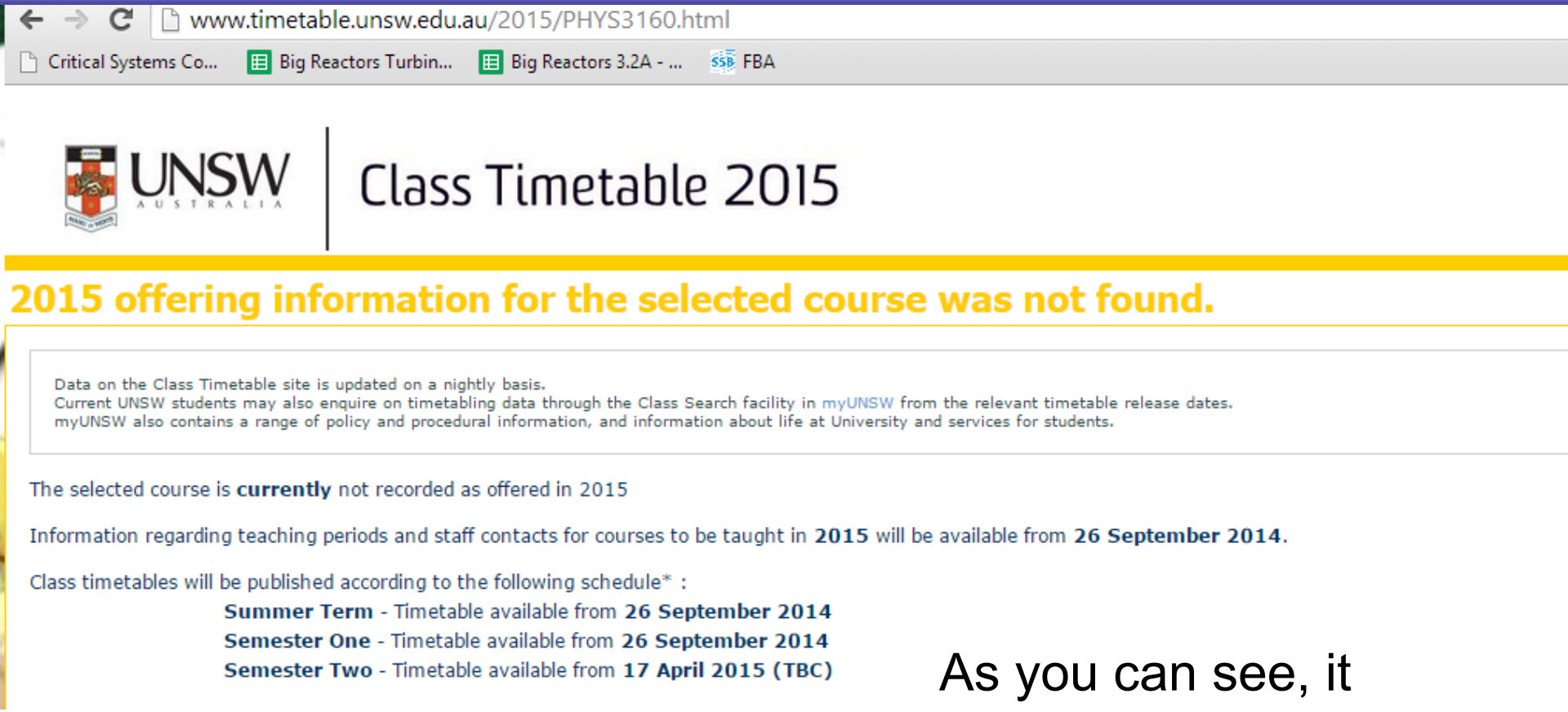




Course Selection - PHYS Electives



Course Selection - PHYS Electives



As you can see, it is not offered in odd years.

Course Selection - MATH2XXX Core

- MATH2011/2111 (Sem1, 6UOC, Core)
  - Several Variable Calculus
- MATH2121/2221 in 2014 (Sem2, 6OUC, Core)
  - Mathematical Methods for Differential Equations
- MATH2521/2621 (Sem2, 6UOC, optional)
  - Complex Analysis
  - Optional, but interesting

Course Selection - More options

Other Useful Courses/Subjects?

- MATH2801/2901 (Sem1) Theory of Statistics
- MATH2501/2601 (Sem1) Linear Algebra - used in QM

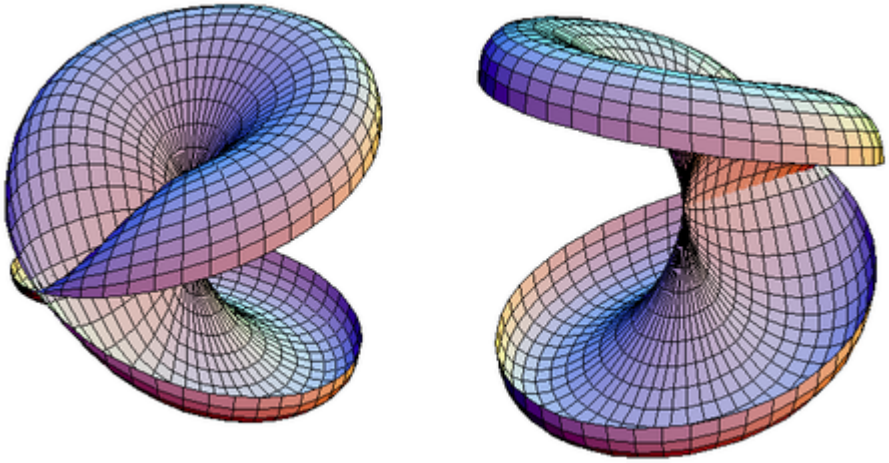
See other maths courses e.g. Discrete, 3rd yr courses at http://www.maths.unsw.edu.au/currentstudents/course-homepages

Computing courses useful for astrophysics/theory. https://wiki.cse.unsw.edu.au/info/COMP1917

Course Selection - Higher Maths?

Higher maths courses:

- Abstract concepts
- Focus on proofs (opposed to calculations as in lower courses).
- Required for Adv. Sci
- Useful for theoretical physics but not strictly necessary



Administrative Help

Sue Hagon

(“Physics Friend”)

- Timetable clashes
- Confusion with courses (when/which ones)
- Special Consideration
- Anything else - Solves most issues

If she isn't able to help you, she can point you to someone who is.

Timetabling Issues

Clashes:

Fill in 'Clash Approval Form' from the science student office/Sue Hagon.

- Physics courses: talk to Sue Hagon
- Maths courses: student office in red centre
- Other: contact lecturer/school office (This can be done via email)

https://www.science.unsw.edu.au/files/TimetableClashApproval.pdf

Research Projects: 2nd year and beyond

Summer Vacation Scholarship: Faculty of Science or School of Physics.

- Apply at the end of second or third year
- Get paid to undertake a 6 week research project

https://www.physics.unsw.edu.au/current-students/vacation-scholarships

Other opportunities available:

- in semester such as PHYS4200 (http://goo.gl/PzpIOP).

Other

- uni's/institutions, companies, govt orgs also offer such positions: eg ANSTO, CSIRO etc.

Textbooks - Suggestions

General/ First-Year:

- Feynman Lectures on Physics
  - Free access now: http://goo.gl/CFW3Lt
- Serway & Jewitt, Physics for Scientists and Engineers
- Halliday - older, but useful problems

Quantum and Electromagnetism:

- **Griffiths**,
  - Introduction to Electrodynamics (2nd & 3rd Yr)
  - Introduction to Quantum Mechanics (3rd Yr [+2nd])
- Eisberg & Resnick, Quantum Physics of ... (2nd Yr)

Textbooks - Suggestions cont.

Mechanics:

- Fowles, Analytical Mechanics (2nd Yr)
- Goldstein, Classical Mechanics (3rd Yr)

Thermal Physics/ Statistical Physics:

- Carter, Classical and Statistical Thermodynamics (Curmi/Gary's reference for both courses)

Textbooks - Where to buy?

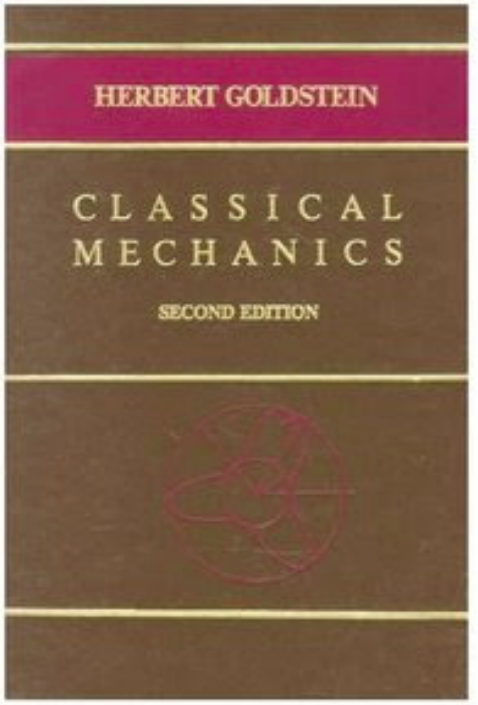
Cheap Textbooks Online:

Abebooks

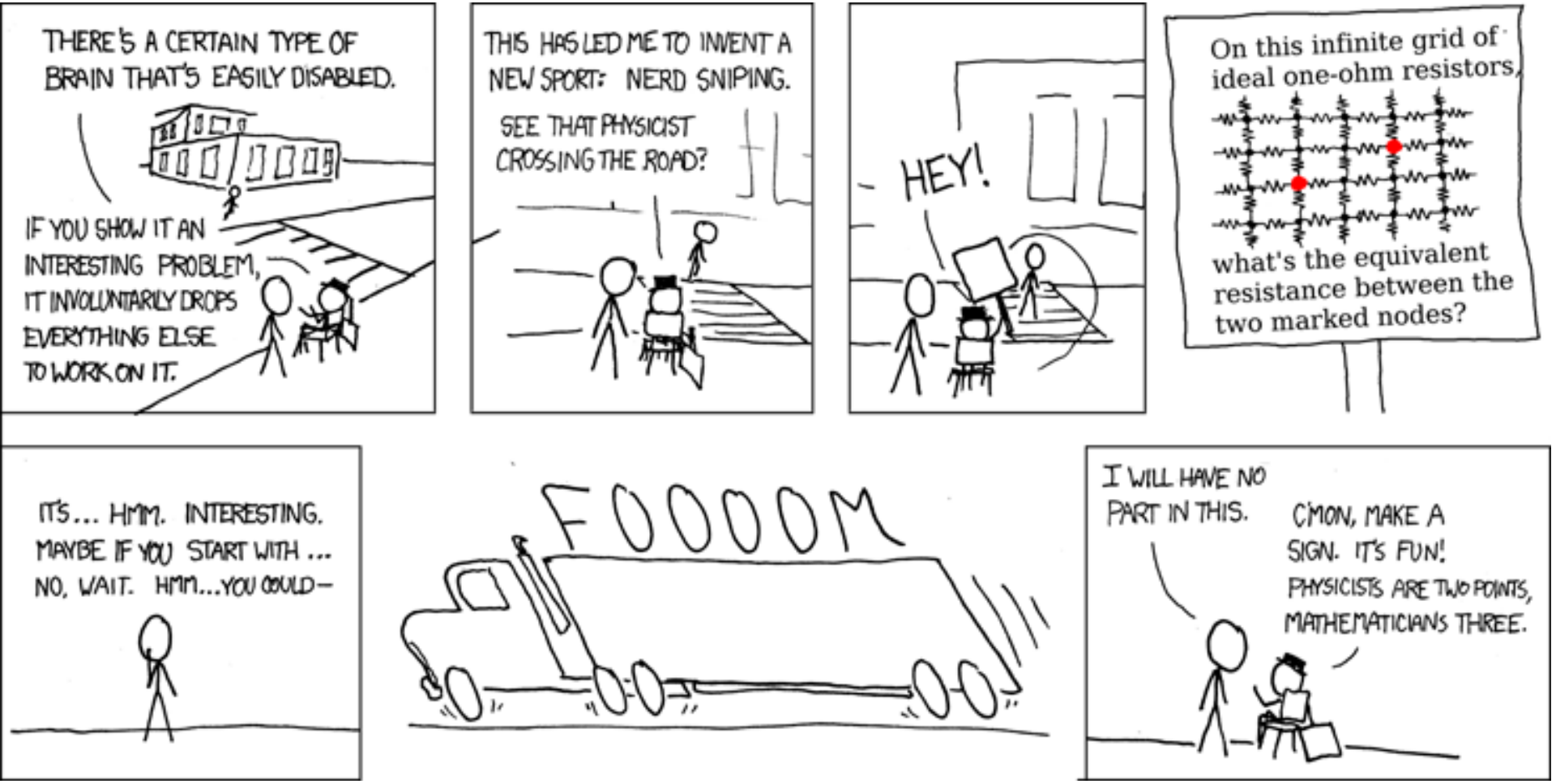
- Lower quality international versions

Other

- Main library (Level 6) has a large collection.
- Free PDFs.



Any Questions?



http://xkcd.com/356/

The End

Good Luck with your studies!