Physics – 2016 and Beyond

• From Session 1, 2016 the School of Physics plans to introduce completely new second and third year courses. This also involves changing the requirements for majors in Science and Advanced Science degrees.

• These changes will be introduced progressively during 2016 and 2017
### Advanced Science - Advanced Physics

#### Semester 1
- **MATH1141** Higher Maths 1A
- **PHYS1141** Higher Physics 1A (Special)
- **SCIF1121** Advanced Science: PPP (or SCIF1131)

#### Semester 2
- **MATH1241** Higher Maths 2A
- **PHYS1241** Higher Physics 1B (Special)
- **PHYS2114** Electromagnetism
- **PHYS3114** Electrodynamics

**Electives chosen from:**
- PHYS3115 Particle Physics and the Early Universe
- PHYS3116 Astrophysics
- PHYS3117 Physics Laboratory
- PHYS3118 Solid State Physics

### Science - Physics

#### Semester 1
- **MATH131 or MATH141** Maths 1A or higher
- **PHYS1121 or PHYS1131** Physics 1A or higher
- **PHYS2111** Quantum Physics

#### Semester 2
- **MATH1231 or MATH1241** Maths 2A or higher
- **PHYS1221 or PHYS1231 or PHYS1241** Physics 1B or higher
- **PHYS2114** Electromagnetism

**Electives chosen from:**
- PHYS2113 Classical Mechanics & Special Relativity
- PHYS3114 Electrodynamics
- PHYS3115 Particle Physics and the Early Universe
- PHYS3116 Astrophysics
- PHYS3117 Physics Laboratory
- PHYS3118 Solid State Physics
Features of the new streams:

- All courses are now 6 UOC.
- Second year maths requirements have changed.
- Laboratory component in all core courses.
- Removed the 3 UOC mash-ups – this will reduce overall number of exams and assignments.
- Introduction of core third year courses in the Bachelor of Science.
- Only four electives, and these will be offered in Session 2 of third year. (PHYS2801 Atmospheric Physics will still be offered, but under the course code CLIM2001 Fundamentals of Atmospheric Science)

So, in 2016...

- Current first year students will begin the new second year courses
- Current second years will continue into the current third year courses
- Current third years will continue into the current honours program
But…if you are taking a dual degree, a double major, or have failed courses, you may be affected by these changes.

Don’t panic!

You won’t have to take extra courses. You may need to substitute courses, but you will only need the same UOC to graduate.

Start Planning!

Some things to remember:
• New second year courses will be introduced in 2016
• New third year courses will be introduced in 2017.
• There will be no more 3 UOC courses after 2016.
• In most cases, the current content remains, but under different course numbers.
2015 S2 – last chance to take:

- PHYS2210 Electromagnetism and Thermal Physics
- PHYS2160 Astronomy
- PHYS3610 Computational Physics
- PHYS3170 Cosmology and the Interstellar Medium (don't take this if you are planning on taking Physics honours in 2017 or later, as it will become an honours-only course then)

2016 S1 – last chance to take

- PHYS3011 Quantum Mechanics and Electrodynamics
- PHYS3021 Statistical and Solid State Physics
- PHYS3040 Experimental Physics 1A
- PHYS3550 General Relativity (this will become an honours course in the future)
- PHYS3720 Optoelectronics
2016 S2 – last chance to take

- PHYS3031 Advanced Optics and Nuclear Physics
- PHYS3070/PHYS3110 Experimental Physics
- PHYS3160 Astrophysics
- PHYS3310 Physics of Solid State Physics
- PHYS3510 Advanced Mechanics, Fields and Chaos
- PHYS3770 Laser and Spectroscopy Laboratory
- PHYS3780 Photonics Laboratory

You should take either

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<tr>
<td>S2 2015</td>
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<td>PHYS3021</td>
<td>Statistical and Solid State Physics</td>
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<tr>
<td>S2 2016</td>
<td>PHYS3310</td>
<td>Solid State Devices (but beware – this is a 3 UOC course!)</td>
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<td>S1/S2 2016</td>
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<td>PHYS2113</td>
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<td>PHYS3112</td>
<td>Experimental and Computational Physics</td>
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Honours prerequisites? Two options...

If you are taking honours in 2016 or 2017:
- PHYS3011 Quantum Mechanics and Electrodynamics
- PHYS3021 Statistical and Solid State Physics
- PHYS3031 Advanced Optics and Nuclear Physics

If you are taking honours in 2018 or later:
- PHYS3111 Quantum Mechanics
- PHYS3112 Experimental and Computational Physics
- PHYS3113 Statistical Mechanics and Thermal Physics
- PHYS3114 Electrodynamics
Degree requirements

- Current first year students will move into the new plans, with all core and elective rules.
- Current second and third years will continue with the same degree rules, even though the courses will change. For example:
  - BSc – required to complete at least 18 UOC of level 3 physics, but no core level 3 courses unless you want to continue onto honours in Physics
  - BSc (Advanced) – will still have the option to take Level 3 Maths courses as part of their major.

Substitutions

- We expect that everyone will complete at least 12 UOC of level 2 Mathematics subjects. For some this may be PHYS2011 Several Variable Calculus and MATH2121 Differential Equations; for others this may be MATH2069 Mathematics 2A and MATH2089 Numerical Methods and Statistics. Which Maths courses you need to take may also depend on what your Engineering degree, or a major in Mathematics, requires.
- We will expect at a minimum that every student who graduates with a major in Physics will have completed upper year courses in the following core areas:
  - Quantum Physics
  - Electromagnetism
  - Thermal Physics or Statistical Mechanics
What next?

• Plan your enrolment – not just for S2 2015, but for 2016 and even 2017 if necessary.
• If you need to substitute courses – get formal, written approval.
• We are happy to check, discuss, suggest, advise….

Need help?

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