

**Department of
Physics and
Astronomy**

Physics

Foundation Year Guide

2017-2018

Modules PHY009, PHY010

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Welcome!

Dear Foundation Year Student,

welcome to Sheffield and its Physics & Astronomy Department! We'd like to take this opportunity to wish you well for the forthcoming year's study. Physics is a subject that you may not have studied in depth before, but you will need knowledge of the foundations of Physics for all science degree courses, and many engineering courses. For other engineering courses, you will need at least elements of Physics.

The purpose of the foundation year physics modules PHY009 and PHY010 is to equip you with the physics you will need later.

Please read the enclosed guide for information how our modules are organised, and will be delivered to you.

If you have any problems, please do not hesitate to contact us.

Best wishes,

Dr Paul Smith, Dr Martin Grell

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General Information

The home of Physics and Astronomy is the 'Hicks Building', which is shown as 'HI' in University maps and timetables - e.g. HI-LT3 means Lecture Theatre 3 in the Hicks building. In the Hicks, you access lecture theatres with numbers (e.g. HI-LT7) via the main stair case from main entrance. Lecture theatres with letters (e.g HI-LTD) are accessed via the rear stair case that you enter at the downhill entrance, not via main entrance. The Maths and Physics student office is in Hicks F10.

You find a University map here: <http://www.sheffield.ac.uk/visitors/mapsandtravel>

At foundation level, we offer two closely related physics modules:

Module PHY009: 'Foundations of Physics'

Module PHY010: 'Elements of Physics'

PHY009 is a 30 credit module and is taken by all foundation level students registered in a Faculty of Science Department, and most Faculty of Engineering Departments.

PHY010 is a 20 credit module that comprises a subset of topics of PHY009, and is taken by students in some Faculty of Engineering Departments who do not require the full foundations of Physics.

If you are an engineering student, it is at the discretion of your home department which of PHY009 or PHY010 you are signed up for.

Module delivery

PHY009 and PHY010 are taught by **lectures, problems classes, and homework assignments**. PHY009 and PHY010 are taught at the same times, and students will be in the same class room. However, PHY010 students will not take part in all lectures, problems classes, and homeworks, as detailed under 'Syllabus'.

Lectures are 50 minute sessions in which the lecturer presents information about a particular topic and illustrates the information with examples and applications. Attendance at lectures is compulsory. **Problems classes** are sessions where you will be set example problems related to recent lectures, and will be asked to work them with help from demonstrators. You will then be shown a worked answer. Teaching will be supported by **homework** assignments, which you answer independently outside class, and hand in to be marked. Lecture and problems class times are shown in the Physics teaching timetable, go to <http://www.sheffield.ac.uk/physics/teaching> and select 'Timetables by Module' under 'Module Information' on the right hand panel.

PHY009/010 is supported by peer- assisted study sessions (**PASS**). PASS is organised and run by the 301 centre, <http://www.sheffield.ac.uk/ssid/301/pass>. PASS sessions do not deliver content beyond the taught module, but are meant as an interactive forum to ask questions and revise. If you need individual support with Mathematics, you can book a session with 'Maths and Statistics Help' (MASH),

<https://www.sheffield.ac.uk/mash>

PHY009/PHY010 do not include **lab classes**. However, if you take PHY009 as a science faculty student, you are required to also take module FCE003 '**Scientific and Laboratory Skills**', which is delivered by the Faculty of Engineering. For engineering faculty students, lab work is integrated into FCE001.

MOLE

PHY009 and PHY010 are supported by Sheffield's 'My Online Learning Environment' (**MOLE**), a customised version of the Blackboard software. You will have access to the relevant MOLE sections, where you find detailed lecture notes, homework assignments, problems class sheets, and more support material. Much of the material on MOLE is released gradually as time and the module progress, so please visit MOLE regularly.

PHY009 / PHY010 Syllabus

Semester one (Autumn):

Lecture Course 1: Mechanics / Dynamics

Lecture Course 2: Electricity & Magnetism

Semester two (Spring):

Lecture Course 3: Thermal Physics & Solids

Lecture Course 4: Oscillators and Waves

Lecture Course 5: Atomic and Nuclear Physics

PHY009 students take part in all lecture courses. PHY010 students take part in courses 1,2,3 only. PHY010 students leave the module after course 3 (Thermal Physics & Solids).

Homeworks

There will be 6 homework assignments each term for PHY009. For PHY010 there are 6 assignments in Sem 1 and 2 in Sem 2. Homework assignments will be released on MOLE at the start of the semester. Homeworks are handed in with a cover sheet by submitting them to the assignment 'dropbox' outside Hicks F10 (the Physics and Mathematics student office). You download cover sheets from <https://sciencecoversheet.group.shef.ac.uk/>. Marked homeworks are returned in the pigeonholes outside Hicks F10 office.

| Homework No. | Submission deadline |
|------------------|---------------------|
| 1 | Mon 16 Oct 2017 |
| 2 | Mon 30 Oct 2017 |
| 3 | Mon 13 Nov 2017 |
| 4 | Mon 27 Nov 2017 |
| 5 | Mon 4 Dec 2017 |
| 6 | Mon 11 Dec 2017 |
| 7 | Mon 19 Feb 2018 |
| 8 | Mon 5 March 2018 |
| 9 (PHY009 only) | Mon 19 March 2018 |
| 10 (PHY009 only) | Mon 23 April 2018 |
| 11 (PHY009 only) | Tue 8 May 2018 |

Assessment

Assessment is by formal examination, and homework. There will be 2 formal examinations, one in each exam period. PHY009 exams will be 3 hours in length each, and each contributing 45% to your overall mark. The first PHY010 exam will be the same as the first PHY009 exam, and contributes 67.5% to your overall mark. The second PHY010 exam will be a 1 hr subset of PHY009 2nd exam and contributes 22.5% to your overall mark. Exam timetables will be published closer to the time of the exams at:

<http://www.sheffield.ac.uk/ssid/exams/exdates>

The remaining 10% of your overall marks will come from assessed homeworks.

PHY009/010 (like all other SEFY modules) are deemed 'passed' if you score 40% or more of available marks. If you score below 40%, you have failed PHY009/PHY010, and you cannot progress to 1st year. You will be allowed to take resit exam(s) to pass PHY009/010. Passing PHY009/010 may still not be sufficient to progress to 1st year as departments demand a 60% weighted grade average for progression. Your personal tutor will advise you what to do if you have passed all modules but did not reach 60% overall average.

Recommended Books

Lectures and lecture notes provide you with all you need to pass the exam. Should you still wish to buy a textbook, the one we recommend is:

AQA Physics - A Level - 2nd Edition by Jim Breithaupt

Additionally many older A-Level texts or first year undergraduate texts should provide you with further details and problems to work with. The latter can also be found in the University Library.

If it has been a while since you have studied Physics then I would also recommend obtaining a GCSE revision book to read through at the start of the course. Whilst such a book will not provide the depth of coverage provided by this course it should afford you a useful introduction to many of the concepts that we will cover in further depth. The CGP revision books are an inexpensive and a good place to start.

These books may be cheaper second hand and may be available in the University. They should also be available from suppliers such as Amazon.