



The
University
Of
Sheffield.

Department of Physics
& Astronomy.

First Year Physics & Astronomy Handbook 2011-2012

Dr Richardson, August 2011

**Department of Physics and
Astronomy
University of Sheffield
The Hicks Building
Sheffield
S3 7RH**

**Telephone: 0114 22 23752
Fax: 0114 2223555**

Web-Site:

<http://www.shef.ac.uk/physics/>



**Physics and Astronomy at the University of
Sheffield**



@UoSPHY

This guide describes the operation of the first year single and dual honours physics courses. A more complete description of the physics degree courses and organisation of the Department of Physics and Astronomy is contained in the general Undergraduate Guide.

The Department of Physics and Astronomy

First Year Physics Guide

2011 – 2012

1.	Academic Year 2011 - 2012
2.	Physics and Astronomy at Sheffield
3.	The Single Honours Physics Course
4.	Dual Degree Courses
5.	Outline Structure of First Year Physics
6.	Tutors and Advisors
7.	Assessment and Examinations
8.	Plagiarism and Collusion
9.	Absence from Class
10.	The Library
11.	First Year Course Textbooks
12.	Intro Week
13.	Departmental Telephone Numbers
14.	Student Support
15.	Feedback
16.	Prizes
17.	Departmental Committees
*	Summary Descriptions of 1st Year Modules
*	Staff Contact Details

THE DEPARTMENT OF PHYSICS AND ASTRONOMY

Head of Department: Professor David Mowbray

Senior Tutor for Undergraduate Studies: Dr Chris Booth

Secretarial Support: Queries to G12, Hicks Building

First Year Physics

Year Tutor: Dr Tim Richardson

Laboratory Tutor: Prof John Cockburn

First Year Lecturers: Dr Tim Richardson
Dr Chris Booth
Dr Luke Wilson
Dr Ed Daw
Dr Jamie Hobbs
Prof John Cockburn
Dr Stathes Paganis
Dr Davide Costanzo

Year Tutor for First Year Astronomy: Dr Susan Cartwright

First Year Lecturers: Dr Susan Cartwright,
Dr Simon Goodwin,
Dr Stuart Littlefair

1. ACADEMIC YEAR 2011-2012

AUTUMN SEMESTER

Teaching Week	Starting Monday	
0	19-09-11	Intro Week
1	26-09-11	Autumn Semester Begins
2	03-10-11	
3	10-10-11	
4	17-10-11	
5	24-10-11	
6	31-10-11	
7	07-11-11	
8	14-11-11	
9	21-11-11	Module Questionnaires
10	28-11-11	
11	05-12-11	
12	12-12-11	

Christmas vacation, 17th Dec. 2011 to 15th Jan. 2012

EXAMINATIONS	13	16-01-12	
EXAMINATIONS	14	23-01-12	
EXAMINATIONS	15	30-01-12	Semester Ends 4th February

SPRING SEMESTER

16 (1)	06-02-12	Spring Semester Begins
17 (2)	13-02-12	
18 (3)	20-02-12	
19 (4)	27-02-12	
20 (5)	05-03-12	
21 (6)	12-03-12	
22 (7)	19-03-12	
23 (8)	26-03-12	

9th April to 2nd May

24 (9)	23-04-12	Easter vacation,	
25 (10)	30-04-12	Module and Year Questionnaires	
26 (11)	07-05-12		
27 (12)	14-05-12		
EXAMINATIONS	28(13)	21-05-12	
EXAMINATIONS	29 (14)	28-05-12	
EXAMINATIONS	30 (15)	04-06-12	Semester Ends 9th June

2. PHYSICS & ASTRONOMY AT SHEFFIELD

The Academic year is divided into two 15 week semesters, each composed of **12 weeks teaching**, followed by **3 weeks examinations** on the completed units. There are breaks for Christmas and Easter but not between the semesters.

Students have the option of studying Physics as either a **single subject** or as part of a **dual honours** degree, which may involve teaching in another Department of the University. In addition, for most degree courses there is the option of registering for a three year (**BSc**) or the four year (**MPhys**) course. The first two years of each degree involve many of the same modules, and students may opt out of the four year option at any time up to the end of the second year. The selection of students for the four year MPhys degree is based on performance in the second year examinations. Unless you are sure on first entry to the University that you wish to study for only three years, we advise you to register for the appropriate MPhys course. There is just one first year Physics course, which is taken by all Single and Dual Honours students, and all students taking Physics as a principal subject must also take Mathematics.

Teaching in the Department of Physics & Astronomy is arranged in modules. A full module will typically involve 35 or more lectures. Each module has a unit code, e.g. PHY101, and a credit assignment; generally 20 credits or 10 credits. A 10 credit module would typically involve 22 lectures plus course work. The student work load is 120 credits in each year of study, preferably 60 credits in each semester, although a 70:50 or 50:70 split is acceptable.

In order to be awarded the credits for a module a student must obtain a minimum of 40% overall, and satisfy any special requirements – for example, some modules require that each individual component of the assessment must be passed. A student must obtain **120 credits at level 1** in order to proceed automatically to level 2.

Three types of module can appear in a degree programme:

1. **Core modules**, which are a compulsory part of a degree course.
2. **Approved modules**, which are selected from a list compiled by the Department.
3. **Unrestricted modules**, which are selected by the student from the University Directory of Modules.

The choice of modules is restricted by timetabling constraints, and individual modules may have pre-requisites (e.g. specific A levels) which must be satisfied. Acceptance on to modules which are not provided by the Department of Physics and Astronomy is subject to approval from the host department.

3. THE SINGLE HONOURS PHYSICS COURSES

All first year students must take **four core Physics modules** (two in each semester)

PHY101	Mechanics, Heat and Matter	(20 credits)
PHY102	Fields, Waves and Quanta	(20 credits)
plus		
PHY113	Professional Skills in Physics I	(10 credits)
PHY114	Professional Skills in Physics II	(10 credits)

A brief overall description of these modules is given later. All first year Physics students must also take the **Mathematics core half module**:

MAS165	Mathematics for Physicists	(10 credits).
---------------	----------------------------	---------------

This core represents 70 credits. The remaining 50 credits can be obtained in two ways.

EITHER, you can take **the following module of subsidiary Mathematics**:

PHY112	Introductory Mathematics for Physicists & Astronomers	(20 credits)
---------------	--	--------------

plus unrestricted modules to the value of 30 credits. It is advisable to select 10 credits in Autumn semester and 20 in Spring, to give an overall 60:60 split. These units can in principle be chosen from a wide range of science and arts modules, though many students take **Astronomy** and **Medical Physics** modules which are part of the corresponding Dual Honours programmes. Towards the end of the booklet short descriptions are given of the relevant modules available, together with the module numbers, to help you make a provisional choice if you want to follow this path. Other choices are possible, such as Philosophy, Politics, Management or a language, and you can investigate such possibilities in Intro Week. The University will send you a booklet containing details of all courses available to first-year students; note, however, that **timetabling problems** may preclude a particular choice, and possible pre-requisites must be satisfied.

OR, you can take five modules (10 credits each) of **Further Mathematics**:

MAS100	Mathematics with Maple
MAS101	Probability, Sets and Complex Numbers
MAS103	Differential and Difference Equations
MAS170	Practical Calculus
MAS171	Matrices and Geometry

A good A-level Mathematics record (ideally an A-grade) is advisable for this choice. It is recommended, but not essential, for **Theoretical Physics** students to take the Further Mathematics units.

Note that this option may not be available if the School of Mathematics and Statistics has a particularly large first-year cohort, because the allocated lecture theatres may not be large enough to accommodate additional students. This was the case in 2009/10, and may be so again this year. If this is so, *Theoretical Physics* students should be allowed to take this option (because the regulations for this degree include more Mathematics units in later years), but ordinary *Single Honours Physics* students will not be accepted. We apologise in advance if this turns out to be the case: such circumstances are unfortunately beyond our control.

4. DUAL DEGREE COURSES

The Dual Honours degree combinations which involve a component of teaching within Physics & Astronomy are:

Physics/Astrophysics

Physics/Philosophy

Physics/Medical Physics

Physics/ Computer Science

In the first year there are **no unrestricted module choices** for Dual degree students with the exception of Physics and Computer Science. The appropriate combination of units for these courses is given in the University Regulations for Undergraduate Study, and these will usually be printed automatically on your Registration form.

For the Dual degree courses taught largely in this department, the regulations are as follows:

<p>PHYSICS/ASTROPHYSICS MAS165 Mathematics for Physicists PHY101 Vibrations, Waves & Matter PHY102 Fields, Waves and Quanta PHY112 Introductory Mathematics for Physicists and Astronomers PHY111 Our Evolving Universe PHY104 Introduction to Astrophysics PHY106 The Solar System PHY115 Professional Skills in Physics & Astronomy 1 PHY116 Professional Skills in Physics & Astronomy 2</p>	<p>PHYSICS/COMPUTER SCIENCE COM161 Basic Java Programming & Problem Solving COM162 Object Oriented Design & Programming with Java MAS165 Mathematics for Physicists PHY101 Mechanics, Heat and Matter PHY102 Fields, Waves and Quanta PHY112 Introductory Mathematics for Physicists and Astronomers PHY113 Professional Skills in Physics 1 PHY114 Professional Skills in Physics 2 <i>Plus unrestricted units to the value of ten credits.</i></p>
<p>PHYSICS/MEDICAL PHYSICS EEE140 Introduction to Electric Circuits MAS165 Mathematics for Physicists MAT191 Introduction to Biomedical Engineering MPY101 Physics of Living Systems 2 PHY101 Mechanics, Heat and Matter PHY102 Fields, Waves and Quanta PHY112 Introductory Mathematics for Physicists and Astronomers PHY113 Professional Skills in Physics 1 PHY114 Professional Skills in Physics 2</p>	
<p>PHYSICS/PHILOSOPHY MAS165 Mathematics for Physicists PHY101 Mechanics, Heat and Matter PHY102 Fields, Waves and Quanta PHY112 Introductory Mathematics for Physicists and Astronomers PHY118 Professional Skills in Physics <i>Plus units to the value of forty credits from Philosophy</i></p>	

5. OUTLINE STRUCTURE OF FIRST YEAR PHYSICS

The first year course consists of a number of components designed to deliver the necessary **physics concepts**, to allow you to develop a comprehensive **understanding** of these concepts, to gain practice in **problem solving**, to develop **skills** associated with **research reading** and **report writing** and to gain experience in **laboratory techniques**.

Essentially, the 20-credit modules PHY101 and PHY102 focus on introducing and developing new concepts, while PHY113, PHY114 and their equivalents in Dual Honours programmes concentrate on the associated professional skills.

PHY101 and PHY102 are **lecture-based**, and deliver material through:

Lectures

You will have four 50 minute lectures per week. These provide the **main forum** in which the course material is delivered.

Tutorials

Tutorials are held once a week and consist typically of around seven students and one academic tutor. Their main purpose is to cover questions set by the lecturers and at each tutorial the working and solution to several specified questions must be submitted. These questions will be marked by the tutor and returned to you at the following tutorial. The marks obtained for these questions will contribute to the total module mark. Tutorials also provide opportunities to discuss more general physics questions and, towards the end of a semester, to **prepare for the examinations**. Please note that you will only obtain the full benefit of the tutorial if you have attempted the relevant questions beforehand. At the end of the year a short report on each student is prepared by tutors and is entered on to the departmental records, **attendance and submission of work will also be recorded**.

Problem Solving

Each week you will be set a number of problems which have to be completed online. Some of these problems allow you to practise techniques and give immediate feedback, but a subset are assessed and the marks will contribute towards your total module mark.

PHY113 and PHY114 are **laboratory-based**, and deliver material through

Laboratories

You will attend one three-hour laboratory session per week. Working in pairs, you will initially gain experience in the use of basic laboratory equipment before moving on to more complicated experiments. The main aims of the laboratory sessions are to develop skills in the taking of good quality data, data analysis (including correct treatment of experimental uncertainties), and the keeping of clear and concise records of your work in the form of a laboratory diary. In addition to the formal laboratory work some of the sessions are spent in the computing laboratory developing relevant skills.

Preparatory sessions

When you move on from the basic laboratory skills training to more advanced experimental work, each 3-hour laboratory session will be preceded by a 50-minute preparatory session in the morning. During this session you should make sure you understand the underlying theory, plan your measurements, and consider possible sources of experimental uncertainties. It is very important that you use the preparatory session effectively, as otherwise you will not work efficiently in the afternoon session and may not be able to complete the experiment.

Short courses

University physics requires certain professional skills that you may not have acquired at A level, including proper treatment of experimental uncertainties, problem solving strategies, and written and oral communications skills. These will be addressed by means of short courses which take the form of lectures and workshops, with associated homework exercises.

Note. Attendance at all of the above is compulsory. Registers are taken at all sessions and attendance is monitored. Failure to attend regularly will result in disciplinary action being taken.

6. TUTORS AND ADVISORS

Among the staff of the Physics & Astronomy department some will have specific responsibilities to you as a student. These are your **Physics Tutor**, the **Physics Year Tutor**, and probably tutors in other subjects, e.g. your Astronomy Problems Class Leader and the Astronomy Year Tutor if you are taking astronomy modules.

Your **Physics Tutor** is primarily responsible for helping you to **understand** and **apply** the new physics concepts you will meet in PHY101 and PHY102. Because he is probably the staff member you will get to know best, he will also act as your **personal tutor**. According to University guidelines, your personal tutor “is a member of academic staff in your department who is there to help you if you are having any difficulties with your studies or personal difficulties that you are worried about or that are impacting on your studies.” In other words, if you are having any problems that may affect your progress, you should talk to your tutor **as soon as possible** (do **not** wait until your progress has already been affected – it may then be too late to recover). If he cannot help you himself, he will be able to refer you to the relevant University support services. Note that you can ask for the details of personal tutor discussions to be kept confidential (though it may be necessary to disclose some details in order to get you the help you need).

The 1st year Physics Tutor (Dr Richardson) and the **first year Physics team** are in overall charge of the administration and organisation of your physics course.

The Physics Year Tutor assigns students to laboratory classes, academic tutors and advisers, so *you should see him if you have timetable clashes or other organisational problems*. He also **monitors your academic performance** and **attendance** at lectures, tutorials and lab classes and may ask to see you if some aspect of your performance appears to be unsatisfactory. You may also like to see individual lecturers if you wish to discuss specific aspects of your course.

7. ASSESSMENT AND EXAMINATIONS

The University has certain expectations for its graduates, specifically that they are

- knowledgeable in their subject area;
- critical, analytical and creative thinkers;
- independent learners and researchers;
- problem solvers;
- information literate and IT literate;
- flexible team workers;
- accomplished communicators;
- efficient planners and time managers;
- competent in applying their knowledge and skills;
- professional and adaptable;
- reflective, self-aware and self-motivated.

The assessment process is designed to encourage you to develop these attributes, and to demonstrate that you have done so, as well as to ensure that you have acquired the knowledge and skills necessary to tackle the next stage of your degree programme successfully. This is why you will be faced with a diverse range of assessment methods, from traditional examinations through homework and problem sets to IT tasks, literature searches, essays and oral presentations. While the end-of-semester examination is still a key part of the assessment process, you will also complete a large amount of assessed work during the course of the semester.

Submission of Assessed Work

All assessed work, excluding tutorial work, must be placed in to the drop box outside the Hicks Reception on G Floor of the Hicks Building. G12 Reception is open from 9.30 am to 4.30 pm. All course work must have the relevant cover sheet attached. You can obtain a cover sheet for a specific assignment from this link:

<https://sciencecoversheet.group.shef.ac.uk/>

You will need to use your MUSE login details. Print out the cover sheet and attach this to the front of your work. Cover sheets are available a week before the submission date.

Work can be submitted at any time via the drop box outside G12.

Please note that cover sheets are specific to a given item of course work and student. If you get a friend to print out a cover sheet your marks may not be credited to you.

Failure to hand in work without extenuating circumstances, e.g. doctor's note, will result in a reduced mark. Work will be accepted after the deadline set for its completion, but the standard departmental policy for late submission of assessed coursework is a deduction of 5% of the total mark for each working day after the submission date. Work submitted more than five working days* late will receive a mark of zero.

Some assessed work (e.g. first year tutorial sheets and problem class work) does not qualify for the reduced mark scheme. A mark of zero will be awarded to such work submitted late. In cases where such non-standard late submission policies apply, the lecturer or course administrator should have informed you of the alternative policy. You should consult the lecturer or course administrator if you are unsure of the rules on late submission for a particular exercise.

It is very important that you attempt and submit all items of assessed work. In addition to contributing to your final module mark, this work also provides important practice in using the material you will meet throughout the course. Failure to complete a significant fraction of the assessed work will therefore most likely affect your exam performance as well as directly reducing your module mark. Note that it is not possible to re-sit the vast majority of the assessed work so **if you have to re-sit a module in August your original mark for the assessed work will be used.**

Note that late submission **for good reason** (e.g. illness) will not be penalised. However, the University's Examination Conventions state that "It is the responsibility of students to notify their tutors and supervisors, or other appropriate departmental representatives, **at the earliest opportunity** if there are any extenuating circumstances that might have a bearing on their examination performance." You should **not** expect a sympathetic hearing if you only claim extenuating circumstances *after* you have missed a deadline or failed an exam! It is also essential that you present **documentary evidence** of the problem, again as early as possible. The greater the weight of the assessed work, the more important it is to present independent evidence of the problem.

** "Working days" include working days within standard vacation times. For example, if a submission date falls on the last day before the start of the Easter vacation, penalties would start to be applied from the following working day and not from the first day following the vacation. However, days on which the University is closed, e.g. Bank Holidays, do not count as working days.*

Examinations

Examinations are held in the final three weeks of each semester on the completed units, and each module must be passed to gain the relevant credits.

You will be given a total mark for each physics module. This mark is composed of individual marks from the main examination, if there is one, and the various items of continuous assessment, including marked tutorial problems, problem class work, laboratory experiments, homework and so on. The weighting of these individual marks is given in the module descriptions later in this handbook.

For each unit a grade on a 100 point scale will be awarded according to the following scheme, which correlates with degree standards as shown.

70-100	work to a standard appropriate to Class I.
60-69	work to a standard appropriate to Class II Division 1.
50-59	work to a standard appropriate to Class II Division 2.
45-49	work to a standard appropriate to Class III.
40-44	work of a Pass standard.
0-39	work in respect of which the candidate fails.

If you fail to submit a compulsory piece of assessed work without extenuating circumstances, you will be awarded a grade of NC (“not completed”); if there are extenuating circumstances, you will be awarded NA (“not assessed”).

Obtaining 40 or above will result in the award of the relevant credits for that unit. The grades will be communicated to students and can be used as a record of achievement. The grades obtained in the second and subsequent years are combined to give the final degree classification, normally in the ratio 1:2 for a BSc and 1:2:2 for an MPhys .

Calculators

It is important to note that **only calculators approved by the University can be taken into examinations**. To avoid problems it is essential to check that your calculator is on the approved list, and have it stamped at the SSiD (Student Services Information Desk) in the student union.

Passing the first year

In order to progress automatically to level 2, students must pass all units of study and therefore obtain the full 120 level 1 credits. If a student has obtained at least 100 credits, including all modules which are pre-requisites for level 2, **and** the marks in the failed module(s) are **at least 30**, the Department **may** award a “conceded pass” and allow the student to proceed to level 2. **Note that this is a concession and not an automatic right.**

Students on the Year Abroad programmes MPhys Physics with Study in North America/ Australasia must obtain a mean grade of **at least 55** in order to continue on these degree programmes. This is because your placement relies on your first year grades (placements are allocated in January of your second year, before any level 2 grades are available), and a poor performance will not be acceptable to our exchange partners. If your grade average is below the threshold, you will be transferred to the Single Honours degree programme.

Progression to the MPhys

To enter years 3 and 4 of the MPhys course a student must obtain a grade point average of at least 55 at level 2 (60 for study abroad degree programmes). It is also generally recommended that any level 2 student carrying fewer than 120 level 2 credits should transfer to the 3 year BSc. Students needing more information should contact Dr Ed Daw, the MPhys Tutor.

Notification of Results

Once results have been finalised by the Faculty of Science they will be sent to students through MUSE. Provisional results for Autumn semester are usually posted on departmental noticeboards as soon as they have been ratified by the Department's Examiners' Meetings.

Resit Examination

Students who fail to satisfy the criteria for passing level 1 will be allowed to take a resit examination in August for any taught module where they obtained less than 40. Guidance will be given by the department. The timetable for the re-sit exams is not made available by the University until the end of July, so you should **not** make any commitments, e.g. holiday bookings, for the resit period (usually the second and third weeks of August).

Note that the nature of the laboratory-based modules PHY113, 114, 115, 116, and 118 is such that resits are not possible for these modules. It is therefore **essential** that you pass these at the first attempt if you wish to proceed to level 2 on schedule. If at any point you feel you are falling behind with your laboratory work, you should talk to Prof Cockburn (Physics), Dr Littlefair (Astronomy) or your personal tutor as soon as possible – they may be able to help you or advise you in what you should do to address the problem.

Failure

Students who fail the year following re-sits have various options dependent on individual circumstances. They may be allowed:

- to repeat failed modules the following year as an external candidate (without attendance);
- to repeat failed modules the following year, with attendance (part time);
- to repeat the entire year with attendance (full time) – note that if this option is chosen *all* module marks are scrapped, including any that you may have passed;
- to withdraw from the University;
- to transfer to another degree programme more suited to the student's strengths.

In cases where students have failed multiple modules, we strongly recommend either withdrawal or transfer. Our experience is that students who repeat the first year very seldom complete their degree programme successfully.

Note that it is not possible to repeat the laboratory-based modules as an external candidate: the nature of these modules is such that attendance is required.

8. UNFAIR MEANS, PLAGIARISM AND COLLUSION

Using unfair means in the assessment process is dishonest and also means that you cannot demonstrate that you have acquired the essential academic skills and attributes of a Sheffield graduate.

What constitutes unfair means?

It is clear that cheating in examinations, for example by bringing in unauthorised material, is using unfair means. However, you may not be so familiar with the application of “unfair means” to work that is not done under exam conditions – homework problems, essays and so on.

The basic principle underlying the preparation of any piece of academic work is that the work submitted must be your own work. **Plagiarism, submitting bought or commissioned work, double submission (or self-plagiarism), collusion and fabrication of results** are not allowed because they violate this principle (see definitions below). Rules about these forms of cheating apply to all assessed and non-assessed work.

- 1. Plagiarism (either intentional or unintentional)** is the stealing of ideas or work of another person (including experts and fellow or former students) and is considered dishonest and unprofessional. Plagiarism may take the form of cutting and pasting, taking or closely paraphrasing ideas, passages, sections, sentences, paragraphs, drawings, graphs and other graphical material from books, articles, internet sites or any other source and submitting them for assessment. *Note that copying or close paraphrasing of other people’s work constitutes plagiarism even if the source is acknowledged.* referencing a source entitles you to use the **information** in that source, but *not* the author’s actual words. The use of information from a source which is **not** appropriately acknowledged is also plagiarism, even if the information has been re-expressed in your own words.
- 2. Submitting bought or commissioned work** (for example from internet sites, essay “banks” or “mills”) is an extremely serious form of plagiarism. This may take the form of buying or commissioning either the whole assignment or part of it and implies a clear intention to deceive the examiners. The University also takes an extremely serious view of any student who sells, offers to sell or passes on their own assignments to other students.
- 3. Double submission (or self-plagiarism)** is resubmitting previously submitted work on one or more occasions (without proper acknowledgement). This may take the form of copying either the whole assignment or part of it. Normally credit will already have been given for this work.
- 4. Collusion** is where two or more people work together to produce a piece of work, all or part of which is then submitted by each of them as their own individual work. This includes passing on work in any format to another student. Collusion does not occur where students involved in group work are encouraged to work together to produce a single piece of work as part of the assessment process.
- 5. Fabrication** is submitting work (for example, practical or laboratory work) any part of which is untrue, made up, falsified or fabricated in any way. This is regarded as fraudulent and dishonest.

How can I avoid the use of unfair means?

To avoid using unfair means, any work submitted must be your own and must not include the work of any other person, unless it is properly acknowledged and referenced. As part of your programme of studies you will learn how to reference sources appropriately in order to avoid plagiarism. This is an essential skill that you will need throughout your University career and beyond. You should follow any guidance on the preparation of assessed work given by the academic department setting the assignment.

You are required to attach a **declaration form** to all submitted work (including work submitted online), stating that the work submitted is entirely your own work.

If you have any concerns about appropriate academic practices or if you are experiencing any personal difficulties which are affecting your work, you should consult your personal tutor or a member of staff involved with that unit of study.

The following websites provide additional information on referencing appropriately and avoiding unfair means:

The **Departmental website** provides information on plagiarism and a guide to correct referencing of sources: <http://www.shef.ac.uk/physics/teaching/plagiarism-collusion.html>.

The **Library** provides a range of online tutorials on information skills, <http://www.librarydevelopment.group.shef.ac.uk/isr.html>: the tutorial on plagiarism is particularly relevant to this section, but you should also look at some of the others (for example, "Evaluating Information").

Students who are guilty of plagiarism often cite difficulties with writing formal academic English as a contributing factor to their decision to use unfair means. There is, however, a legitimate solution to this problem: the English Language Teaching Centre operates a Writing Advisory Service, <http://www.shef.ac.uk/eltc/services/writingadvisory>, through which students can make individual appointments to discuss a piece of writing. This is available for all students, both native and non-native speakers of English.

What happens if I use unfair means?

Any form of unfair means is treated as a serious academic offence and action may be taken under the Discipline Regulations. For a student registered on a professionally accredited programme of study, action may also be taken under the Fitness to Practise Regulations. Where unfair means is found to have been used, the University may impose penalties ranging from awarding a grade of zero for the assignment through to expulsion from the University in extremely serious cases.

Detection of Unfair Means

The University subscribes to a national plagiarism detection service which helps academic staff identify the original source of material submitted by students. This means that academic staff have access to specialist software that searches a database of reference material gathered from professional publications, student essay websites and other work submitted by students. It is also a resource which can help tutors to advise students on ways of improving their referencing techniques. Your work is likely to be submitted to this service.

For further information

(www.shef.ac.uk/ssid/charter/guidance_taught.html)

(www.shef.ac.uk/ssid/procedures/grid.html#discipline)

9. ABSENCE FROM CLASS

If you have good reason to be absent, you **must** inform the First Year Tutor **and** the staff of the Physics and Mathematics Teaching Hub in room G12.

If you miss lectures, labs or tutorials because you are ill, or if illness affects your examinations, you should complete a Special Circumstances form available from the departmental office or the SSID web pages and, if applicable, obtain an official Medical Certificate from your doctor or the University Health Service for absences of over 7 days or if any assessment or examination has been affected by your absence.

The Special Circumstances form can also be used for absences of a non-medical nature such as family bereavements etc.

The completed form should be returned to the Hicks Reception (G12) **as soon as possible**. Only if this is done can we make allowance for missed coursework or practical work.

10. THE LIBRARY

The University Library provides an essential service to all students and staff. There are some 1,000,000 items in the system as a whole, including microfilms, audio-tapes, video cassettes and CD-ROMs, in addition to the large collection of books and periodicals. Material is listed on the Library's on-line catalogue, STAR, which is available beyond the Library via the campus computer network. Introductions to services and facilities are available to new users.

When you register for your course you will be issued with a University Membership Card, known as a UCard. The UCard will give all University-registered students automatic access to Library facilities and services and will serve as a Library Card.

The Information Commons (IC) is a state-of-the-art information resource for use by any member of the University, although it is intended principally for undergraduates. Please familiarise yourself with this resource early in your first semester since it is an excellent place to study in a quiet and pleasant environment. In general, most of the books you will need as an undergraduate should be located in the IC, although some that are not listed on course book-lists may be in the Western Bank library instead. The STAR catalogue entry will give the location of the book, as well as information about its loan conditions (some books are for reference only, and may not be taken out of the library; others are "short-loan" books which must be returned within a few days).

MUSE

MUSE (My University of Sheffield Environment) is the web-based portal service allowing you to access secure electronic web-based services provided by the University and the department all in one place. You can customise it to show your favourite resources on your homepage, which makes working more convenient for you. At a glance, the main advantages are you can:

- view your year level 'Notice Board' using the Communities facility
- download files such as timetables and other information relevant to your year
- access restricted library and electronic resources from home
- manage your Novell network account using NetStorage
- check your student record, library account details, printing information and more
- send and receive emails using Webmail through your internet browser

11. FIRST YEAR COURSE TEXTBOOKS

The first year Physics lecturers will generally use a single course textbook:

Young and Freedman "University Physics with Modern Physics" 13th edition, ISBN 0-8053-8684-X, published by Pearson Addison-Wesley.

It is essential that all students of Physics purchase this book. It contains many worked examples and a stock of problems and exercises used by tutors and lecturers. In addition it allows access to the website that is used for the problem solving exercises. **Without the software that comes with the book, students can not log onto our assessment site and would disqualify themselves for 10% of the available marks.**

The following book is recommended for use with the first year laboratory course:

'Experimental Methods; an introduction to the analysis and preparation of data' by L. Kirkup (Wiley). A few copies of this book are available in the Information Commons, but it is not expensive (£15.68 from Amazon) so you should consider buying your own.

YOUNG & FREEDMAN WILL BE AVAILABLE IN BLACKWELLS BOOKSHOP DURING INTRO WEEK WITH THE RECOMMENDED MATHS BOOK - PLEASE BUY THEM THEN IN ORDER TO OBTAIN THE UNIVERSITY OF SHEFFIELD CORPORATE EDITION AT DISCOUNTED PRICES.

FIRST YEAR WEBPAGE

A series of WebPages containing information relevant to the first year course will be live from Intro week. It is accessible via the departmental pages.

<http://www.shef.ac.uk/physics/teaching/first-year>

12. INTRO WEEK: 19-23 SEPTEMBER 2011

During Intro Week you will be given a **general introduction** to University life and the Department will explain in more detail how the Physics and Astronomy courses are organised. On Monday 20th September there is a general welcome for all Pure Science students at 11.00 am in the Octagon Centre on the main campus.

The First **Physics and Astronomy meeting** will take place on Monday September 20th at 1.30 pm in Lecture Theatre 7 in the Hicks Building. This room is on the first floor (Floor E) and is clearly signposted from the Entrance Hall. At this meeting you will be given advice about the choice of modules for **registration**. On Tuesday and Wednesday, you are required to register at the Octagon Centre (details of this will be fully explained to you at the first year meeting).

At 9.30 am on Friday 23rd September there will be a meeting with the first year physics team in Lecture Room 7 of the Hicks Building, to give you information about **how the Department operates**. We will be discussing safety procedures during laboratory work and we also hope to recruit some **First Year Student Representatives**. Representing a class does not take very much time, but is valued by the Department, as class reps provide an important link between students and staff. We would like you to think about taking on this duty. There will also be a fun physics quiz, and at 12.30 pm a Departmental Welcome lunch will be held in Room D17. These events will give you an opportunity to meet our teaching staff and other students.

If you are nervous about starting university, or simply want to be assured of at least one friendly face, you may wish to enrol in the University's **Student Mentoring Scheme**. Mentors are volunteer undergraduate students who have undergone training to equip them for the role. They are normally matched with a small group of year 1 students (the mentees) from their own department, and, if possible, from the same course.

On Thursday 22nd September at 4.00 pm in the Abbeydale Room, University House, there will be a tea party co-ordinated by the University Mentor Team. This will give you the perfect opportunity to meet your mentor for the first time – or, if you have not applied to join the Mentor scheme in advance of your arrival, you will be able to apply at this event.

TIMETABLE OF IMPORTANT EVENTS (times/venues are subject to change)

Intro week

Monday 19th Sept 11.00 – 12.00 Octagon Centre
 Monday 19th Sept 1.30 pm LT7 Hicks
 Tuesday 20th Sept am & pm/Wed 21st Sept am
 Thursday 22nd Sept 4.00 pm Abbeydale Room
 Friday 23rd Sept 9.30 am LT7 Hicks

General Welcome for all Pure Science Students
Pre - Registration advice and Adviser assignment
Registration in the Octagon Centre
Sheffield Mentor Tea Party
Meeting with the First Year team, Departmental & University Information
Coffee Break
Induction Event (Quiz)
Welcome lunch

Friday 23th Sept 10.45 – 11.00 am D17
 Friday 23rd Sept 11.00 am LT7
 Friday 23rd Sept 12.30 pm D17

Week 1

Monday 26th Sept

Lectures and Introductory Lab meetings start

13. DEPARTMENTAL TELEPHONE NUMBERS AND EMAILS

First Year Team		
Tim Richardson- <i>First Year Tutor and Lecturer</i>	0114 22 24280	T.Richardson@Sheffield.ac.uk
John Cockburn - <i>Lecturer</i>	0114 22 23507	J.Cockburn@Sheffield.ac.uk
Jamie Hobbs - <i>Lecturer</i>	0114 22 29316	Jamie.Hobbs@Sheffield.ac.uk
Chris Booth – <i>Lecturer</i>	0114 22 23541	C.Booth@Sheffield.ac.uk

14. STUDENT SUPPORT

Much of the information required by undergraduate students to guide them through their studies is provided in this handbook and the University Guides that you will receive. If you have any other queries, please contact Dr Richardson or your Physics tutor.

It is important to emphasise that students may approach any of the first year lecturers, personally or by e-mail, for help on any aspect of the first year physics courses. It is departmental policy to encourage students to approach any member of staff for help and support on both academic and other matters.

15. FEEDBACK

Feedback is an essential part of getting the most from your degree. As a student, you will receive feedback from us on every piece of assessed work. This may take the form of written notes on your script, a “common problems in Homework X” handout, a model answer (which you can compare with yours to see where you went wrong), or a discussion with your tutor or a laboratory demonstrator. Even a simple mark, such as the final grade for a module, is a form of feedback, though admittedly not a very useful one – if you genuinely do not know why you did badly in a particular exam, please ask the lecturer for more information.

Feedback also goes the other way, from you to us. There are two principal ways in which students can provide input to the Department: through questionnaires, and via the Student-Staff committee. If there is an issue that you feel is particularly urgent, e.g. a timetabling problem or an essential textbook which has gone out of print and is unavailable, you should contact the appropriate Year Tutor.

Questionnaires

Each semester you will be asked to complete an on-line questionnaire for each module you have taken that semester. From this information we will determine the reaction to the course and find possible ways to improve. The results are analysed and the lecturer concerned is asked to respond to any written comments made; the results for each module are then examined by the Teaching Committee and Head of Department.

A summary is posted on the student noticeboard. **The questionnaires provide valuable feedback data on each module so you should make every effort to complete the on-line questionnaires when asked.**

Student Staff Committee

The Department of Physics and Astronomy has a student-staff committee who meet to discuss matters of mutual interest such as teaching, examinations, organisational matters and social events, but any topic can be raised by staff or students. The committee normally meets four times per year, twice in each semester with additional meetings if necessary. The students have representatives from each year group and the staff members include the Head of Department and various lecturers from Physics and Astronomy. Being a member of the Staff Student Committee gives you the perfect opportunity to be the **spokesperson for your year group**, you also get to **have a say in how the department operates**, plus it **looks great on your CV!**

16. PRIZES

At the end of the year the department awards various prizes, mainly to final year students, though first years are eligible for the following.

Fiddes Prize – awarded to the first year student with the best performance in Physics.

Sir Basil Blackwell Prize – awarded for outstanding performance in level 1 examinations in the Faculty of Science.

Winifred Moulds Prize – awarded to a woman student with outstanding performance in Physics, from any year.

17. DEPARTMENTAL COMMITTEES

The content and organisation of all degree programmes delivered by the Department of Physics and Astronomy is overseen by the **Departmental Teaching Committee**, which has overall responsibility for all matters relating to teaching. The members of the Teaching Committee are appointed by the Head of Department and a **student representative** is invited to attend each term time meeting.

The **development** of new modules and the **monitoring** of existing modules are dealt with by year committees and vertical committees: the year committees consider that balance of material in a given year, while the vertical committees follow a particular topic, such as Quantum Mechanics, through all four years. The **assessment of performance** in all physics modules and courses is the responsibility of the Board of Examiners and the individual year committees. Examination procedures and performance are also reviewed by the External Examiners for Physics and Astronomy.

An important source of information and feedback on teaching related issues is provided by the **Student-Staff Committee**. All students are encouraged to make responsible comments on any aspect of teaching either informally to a member of staff, or formally through their year representative.

18. GENERAL STUDENT INFORMATION

The principal University contact point for students is the **Student Services Information Desk**, <http://www.shef.ac.uk/ssid/>, which is physically located in the Student Union Building behind the Hicks Building. SSID provides a range of services, including various forms (such as Module Add/Drop forms to change optional modules, or Change of Status forms to change your degree programme), documentation you might need (such as grade transcripts or official confirmation of your status as a student), visa documents for overseas students, and calculator approval for examinations.

Other services you might find useful are:

NIGHTLINE 0114 2228787

Nightline is the University of Sheffield's confidential listening and information telephone service. It is run by trained student volunteers, and operates from 8 pm until 8 am every night during term time. It offers students everything from the phone number of a twenty-four hour taxi company, to exam dates, times and locations, and information about every issue that can be encountered within student life. It provides a vital support network for all students, so whatever you need to say, Nightline is listening, and our service can be called free from phones in Halls of Residence. If you think you would like to volunteer for Nightline, contact nightline@shef.ac.uk for more information.

UNION REPRESENTATIVES

Each department has one Union Representative, whose role is to:

1. improve communication between the Union and students in departments;
2. raise awareness about Union campaigns and carry out research;
3. seek the student viewpoint on various academic issues;
4. acknowledge students' issues of concern within the department;
5. encourage the department to meet the Code of Good Practice for Student Course Representatives in Departments and Faculties.

Your Union Rep is paid by the Union to make your voice heard. If you have a welfare or academic related issue of concern and you don't know who to turn to, ask the Union Rep and they'll point you in the right direction.

Alternatively, you may be interested in learning about the various campaigns that the Union is running. Again, your Union Rep is the person to contact.

FIRST YEAR PHYSICS MODULES

PHY101 Mechanics, Vibrations & Waves (20 Credits - Autumn Semester)

This 20-credit module comprises 44 lectures on four topics: Mechanics & Dynamics, Vibrations & Waves, Electromagnetism 1 and Special Relativity. The lecture course is accompanied by a weekly one hour small-group tutorial class (~7-8 students per class) in which weekly course-work is submitted and an online Problems Solving session (1-2 hours). There is also a formal end of course examination.

Assessment: End-of-semester exam 75%, problems 12½%, tutorial homework 12½%

PHY102 Quanta & Matter (20 Credits - Spring Semester)

This 20-credit module comprises 44 lectures on four topics: Properties of Matter, Quantum Physics, Light & Optics and Electromagnetism 2. The lecture course is accompanied by a weekly one hour small-group tutorial class (~7-8 students per class) in which weekly course-work is submitted and an online Problems Solving session (1-2 hours). There is also a formal end of course examination.

Assessment: End-of-semester exam 75%, problems 12½%, tutorial homework 12½%

PHY112 Mathematical Methods For Physicists & Astronomers (20 Credits – Autumn Semester)

This module provides the necessary semester one mathematics for students taking physics and/or astronomy degrees. The following topics will be covered: basic algebra (functions, coordinate systems, algebraic manipulation etc), Taylor and binomial series, common functions of one variable, differential and integration techniques, basic complex numbers, first and second order differential equations, basic properties of vectors (cross and scalar products, the equations of lines and planes) , properties of functions of one or two variables (symmetry, partial differentiation etc.) and basic probability techniques.

Assessment: End-of-semester exam 70%, problems 15%, tutorial homework 15%

PHY113 Professional Skills in Physics I (10 Credits – Autumn Semester)

Physics is more than a body of specialist knowledge: it is an experimental science. This module introduces the skills necessary to become a professional scientist, including data analysis and the treatment of experimental uncertainties, problem-solving techniques, experimental skills and the use of standard laboratory equipment, effective record keeping, and scientific writing.

Assessment: 100% coursework, including laboratory diaries and report, computing assignments, problem sets and homework.

NOTE: NO RESIT OF THIS MODULE IS POSSIBLE.

PHY114 Professional Skills in Physics II (10 Credits – Spring Semester)

This module extends the experimental work begun in PHY113, with further physics experiments, illustrating a variety of physical principles, and more advanced computing exercises. It also includes a laboratory-based course in AC circuits, complementing the taught material of PHY102, and a workshop on oral presentations.

Assessment: 100% coursework, including laboratory diaries and report, computing assignments and oral presentation.

NOTE: NO RESIT OF THIS MODULE IS POSSIBLE.

PHY118 Professional Skills in Physics (10 Credits – Academic Year)

PHY118 is designed for Dual Honours students, and includes the most important elements of PHY113 and PHY114. This module introduces the skills necessary to become a professional scientist, including data analysis and the treatment of experimental uncertainties, problem-solving techniques, experimental skills and the use of standard laboratory equipment, effective record keeping, and scientific communication, both written and oral.

Assessment: 100% coursework, including laboratory diaries and report, computing assignments, problem sets and homework.

NOTE: NO RESIT OF THIS MODULE IS POSSIBLE.

FIRST YEAR ASTRONOMY MODULES

PHY104 Introduction to Astrophysics (10 Credits – Spring Semester)

PHY104 aims to equip students with a basic understanding of the important physical concepts and techniques involved in astrophysics with an emphasis on how fundamental results can be derived from fairly simple observations. The course consists of four sections: (i) Basic Concepts, Fluxes, Temperatures and Magnitudes; (ii) Astronomical Spectroscopy; (iii) Gravitational Astrophysics. Parts (i),(ii) and (iii) each comprise some six lectures, supported by problem classes.

Assessment: End-of-semester exam 80%, class test 10%, homework 10%.

PHY106 The Solar System (10 Credits - Spring Semester)

This module examines the structure and contents of the Solar System. We look in detail at the orbits of the planets and Kepler's Laws, the Sun, the terrestrial planets and the asteroid belt, the gas and ice giant planets and their moons (especially the Galilean Moons and Titan), and finally the icy dwarfs and comets at the outer reaches of the Solar System. Finally we put all of this information together into a model of the formation and evolution of the Solar System.

Assessment: End-of-semester exam 70%, two open-book class tests 15% each.

PHY111 Our Evolving Universe (10 Credits - Autumn Semester)

This 10-credit module serves both as a stand-alone elementary astronomy course for science students and as an introductory overview for astronomy duals. The aim is to see how the universe of today has evolved and developed, and to understand the origin and abundance of the chemical elements that make up the stars, planets and ultimately ourselves. To this end we study the structure and evolution of the stars in our Galaxy, the Galaxy itself, and the entire universe, concluding with a brief consideration of extrasolar planetary systems and prospects for extraterrestrial life.

Assessment: End-of-semester exam 70%, coursework 15%, progress tests 10%, homework exercise 5%.

PHY115 Professional Skills in Physics and Astronomy I (10 Credits – Autumn Semester)

This module consists of two parts. The first, which is common to PHY113, introduces the skills necessary to become a professional scientist, including data analysis and the treatment of experimental uncertainties, problem-solving techniques, experimental skills and the use of standard laboratory equipment, effective record keeping, and scientific writing. The second part focuses on the knowledge and skills required to plan and carry out astronomical observations, covering astronomical coordinate systems, elementary spherical trigonometry, and an introduction to the department's robotic telescope ROSA.

Assessment: 100% coursework, including laboratory diaries and report, computing assignments, problem sets and homework.

NOTE: NO RESIT OF THIS MODULE IS POSSIBLE.

PHY116 Professional Skills in Physics and Astronomy II (10 Credits – Spring Semester)

This module extends the experimental work begun in PHY115, with further physics and astronomy experiments and more advanced computing exercises. It also includes a laboratory-based course in AC circuits, complementing the taught material of PHY102, and a workshop on oral presentations. PHY116 is administered jointly with PHY114, the primary difference being that the student will complete a mixture of physics- and astronomy-related experimental work.

Assessment: 100% coursework, including laboratory diaries and report, computing assignments and oral presentation.

NOTE: NO RESIT OF THIS MODULE IS POSSIBLE.

FIRST YEAR MEDICAL PHYSICS MODULES

MPY101 Physics of Living Systems 2 (10 Credits - Spring Semester)

The aim is to introduce biomechanical descriptions of the human body. We look at its structure and its performance as a physical machine. The structural characteristics of human bones and tissue are investigated, together with the mechanical functions of the skeleton and musculature. Simple fluid dynamic characteristics of the body are introduced, including descriptions of blood-flow in the arteries and veins and air-flow in the lungs.

MAT191 Introduction to Biomedical Engineering (10 Credits – Autumn Semester)

This course aims to introduce and discuss the application of engineering principles to biological and medical problems. It is intended to give you a broad overview of biomedical engineering as a discipline and look at the role of biomedical engineers in society. The coursework is divided into 3 main topic areas: biomaterials, biomechanics, and medical imaging. An overview of each subject area will be given and subsequent teaching will focus on specific applications, instrumentation or devices related to the musculoskeletal system. By the end of this course, you will be able to:

- identify and discuss applications of engineering in medicine and biology;
- explain the fundamental aspects of biomedical engineering to an audience of non-specialists;
- analyse problems in biomedical engineering and use the principles discussed in the coursework and to develop a solution using Matlab.

STAFF CONTACT DETAILS

Academic staff * if calling from outside prefix with "22"

TITLE, GIVEN NAME	SURNAME	NUMBER	ROOM	EMAIL
MRS CATHERINE	ANNABEL	24360	E29	C.J.ANNABEL@SHEF.AC.UK
DR CHRIS	BOOTH	23541	D24	C.BOOTH@SHEF.AC.UK
DR ALASTAIR	BUCKLEY	23597	E49	ALASTAIR.BUCKLEY@SHEF.AC.UK
DR SUSAN	CARTWRIGHT	24572	D22	S.CARTWRIGHT@SHEF.AC.UK
PROF JOHN	COCKBURN	23507	E15	J.COCKBURN@SHEF.AC.UK
DR DAVIDE	COSTANZO	24549	D27	D.COSTANZO@SHEF.AC.UK
PROF PAUL	CROWTHER	24291	E45	PAUL.CROWTHER@SHEF.AC.UK
DR ED	DAW	24353	D28	E.DAW@SHEF.AC.UK
PROF VIK	DHILLON	24528	E40	VIK.DHILLON@SHEF.AC.UK
PROF MARK	FOX	24527	E14	MARK.FOX@SHEF.AC.UK
PROF GILLIAN	GEHRING	24299	E12C	G.GEHRING@SHEF.AC.UK
DR MARK	GEOGHEGAN	23544	D19	MARK.GEOGHEGAN@SHEF.AC.UK
DR SIMON	GOODWIN	23585	E48	S.GOODWIN@SHEF.AC.UK
DR MARTIN	GRELL	23598	D30	M.GRELL@SHEF.AC.UK
DR JAMIE	HOBBS	29316/24532	F29	JAMIE.HOBBS@SHEF.AC.UK
PROF RICHARD	JONES	24530	F11	R.A.L.JONES@SHEF.AC.UK
DR PIETER	KOK	23538	E12A	P.KOK@SHEF.AC.UK
DR VITALY	KUDRYAVTSEV	24531	F09B	V.KUDRYAVTSEV@SHEF.AC.UK
PROF DAVID	LIDZEY	23501	D18	D.G.LIDZEY@SHEF.AC.UK
DR STUART	LITTLEFAIR	24525	E47	S.LITTLEFAIR@SHEF.AC.UK
PROF DAVID	MOWBRAY	24561	E35	D.MOWBRAY@SHEF.AC.UK
DR STATHES	PAGANIS	24352	D29	E.PAGANIS@SHEF.AC.UK
DR TIM	RICHARDSON	24280	D21	T.RICHARDSON@SHEF.AC.UK
PROF MAURICE	SKOLNICK	24277	E20	M.SKOLNICK@SHEF.AC.UK
PROF NEIL	SPOONER	24422	E23	N.SPOONER@SHEF.AC.UK
PROF CLIVE	TADHUNTER	24300	E37	C.TADHUNTER@SHEF.AC.UK
DR LEE	THOMPSON	24577	E41	L.THOMPSON@SHEF.AC.UK
PROF DAN	TOVEY	23546	D26	D.R.TOVEY@SHEF.AC.UK
PROF DAVID	WHITTAKER	23537	E12B	D.M.WHITTAKER@SHEF.AC.UK
DR LUKE	WILSON	23532	E17	LUKE.WILSON@SHEF.AC.UK

* if calling from outside prefix with "22"