



The  
University  
Of  
Sheffield.

Department  
Of Physics &  
Astronomy.

# First Year Physics Handbook 2006-2007

*Dr Richardson, August 2006*

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

**Telephone: 0114 222 4546  
Fax: 0114 272 8079  
Email: [t.duncan@sheffield.ac.uk](mailto:t.duncan@sheffield.ac.uk)  
Web-Site:  
[www.sheffield.ac.uk/~phys/](http://www.sheffield.ac.uk/~phys/)**

*This guide describes the operation of the first year single and dual honours physics courses. A fuller 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

2006 - 2007

1. Academic Year 2006 - 2007
2. Organisation of Teaching
3. Physics and Astronomy at Sheffield
4. The Single Honours Physics Course
5. Dual Degree Courses
6. Outline Structure of First Year Physics
7. First Year Advisers: First Year Tutor.
8. Assessment and Examinations
9. Plagiarism and Collusion
10. Absence from Class
11. The Library
12. First Year Course Textbooks
13. Intro Week
14. Departmental Telephone Numbers
15. Student Support
16. Feedback
17. Prizes
- \* **Summary Descriptions of 1<sup>st</sup> 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:**

Mrs Linda Simmons  
Miss Tracy Duncan

## First Year Physics

**Year Tutor:**

Dr Tim Richardson

**Laboratory Tutor:**

Prof David Mowbray

**First Year Lecturers:**

Prof Richard Jones

Dr Tim Richardson

Prof John Cockburn

Dr Chris Booth

Prof David Mowbray

Dr Vitaly Kudryavtsev

**Year Tutor for First**

**Year Astronomy:**

Dr Susan Cartwright

## 1. ACADEMIC YEAR 2006 - 2007

	Teaching Week	Starting Monday	
<b>AUTUMN SEMESTER</b>			
	0	18 <sup>th</sup> September	<b>Intro Week</b>
	1	25 <sup>th</sup> September	<b>Autumn Term Begins</b>
	2	2 <sup>nd</sup> October	
	3	9 <sup>th</sup> October	
	4	16 <sup>th</sup> October	
	5	23 <sup>rd</sup> October	
	6	30 <sup>th</sup> October	
	7	6 <sup>th</sup> November	<b>Reading Week</b>
	8	13 <sup>th</sup> November	
	9	20 <sup>th</sup> November	<b>Module Questionnaires</b>
	10	27 <sup>th</sup> November	
	11	4 <sup>th</sup> December	
	12	11 <sup>th</sup> December	<b>Term Ends, Friday 15<sup>th</sup> December 2006</b>
EXAMINATIONS	13	15 <sup>th</sup> January	
EXAMINATIONS	14	22 <sup>nd</sup> January	
EXAMINATIONS	15	29 <sup>th</sup> January	<b>Autumn Term Ends 3<sup>rd</sup> February</b>
<b>SPRING SEMESTER</b>			
	16	5 <sup>th</sup> February	<b>Spring Term Begins 5<sup>th</sup> February</b>
	17	12 <sup>th</sup> February	
	18	19 <sup>th</sup> February	
	19	26 <sup>th</sup> February	
	20	5 <sup>th</sup> March	
	21	12 <sup>th</sup> March	
	22	19 <sup>th</sup> March	<b>Module Questionnaires Easter vacation 24<sup>th</sup> March until 16<sup>th</sup> April</b>
	23	16 <sup>th</sup> April	
	24	23 <sup>rd</sup> April	
	25	30 <sup>th</sup> April	
	26	7 <sup>th</sup> May	<b>Year Questionnaires</b>
	27	14 <sup>th</sup> May	<b>Reading Week</b>
EXAMINATIONS	28	21 <sup>st</sup> May	
EXAMINATIONS	29	28 <sup>th</sup> May	
EXAMINATIONS	30	4 <sup>th</sup> June	<b>Spring Term Ends</b>

Resit Examination Period	Mid - late August 2007
--------------------------	------------------------

### READING WEEKS

A one week break or 'reading week' is built into each semester of our teaching schedule. These are meant as a time for students to take stock, organise notes, and catch up with tutorial problems or revise work. Guidance will be given about these points before each week, and students are expected to be available for special lectures, during those times.

## 2. ORGANISATION OF TEACHING

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 **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 is 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.

### 3. 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 and the relevant dates are given later.

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 each degree course 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 the same units, 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 or, more generally, half modules. A full module will typically involve 35 or more lectures. Each module has a unit code, e.g. PHY101, and a credit assignment; 20 credits for a full module and 10 credits for half a module. In order to be awarded the credits for a module a student must obtain a minimum of a pass grade. A student must obtain **120 credits at level 1** in order to proceed to level 2. The student work load is 120 credits in each year of study.

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. Pre-requisites must usually be satisfied when making this choice.

### 4. THE SINGLE HONOURS PHYSICS COURSES

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

<b>PHY101</b>	Mechanics, Heat and Matter (20 credits)
<b>PHY102</b>	Fields, Waves and Quanta (20 credits)

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

<b>AMA125</b>	Mathematics for Physicists (10 credits).
---------------	--

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

**EITHER**, you can take seven half modules of **Further Mathematics**: (10 credit's each).

AMA126	Differential and Difference Equations
AMA121	Applied Mathematics 1
AMA122	Applied Mathematics - Core II
SOM103	Mathematics with Maple
SOM104	Probability, Sets and Complex Numbers
SOM111	Practical Calculus
SOM112	Matrices and Geometry

A good A-level Mathematics record is advisable for this choice.

**OR**, you can take **one and a half modules of subsidiary Mathematics**:

PHY112	Introductory Mathematics for Physicists and Astronomers (20 credits)
PMA116	Further Subsidiary Mathematics (10 credits)

**plus unrestricted units** to the value of 40 credits. It is advisable that these should be divided equally between the two semesters. These units can in principle be chosen from a wide range of science and arts modules. Commonly these are chosen from the **Astronomy** and **Medical Physics** units which are taught in the Physics & Astronomy Department. Towards the end of the booklet short descriptions are given of the relevant half 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 you. Often **timetabling problems** preclude a particular choice, and possibly pre-requisites must be satisfied.

It is advisable, but not necessary, for **Theoretical Physics** students to take the Further Mathematics units.

## 5. DUAL DEGREE COURSES

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

Physics/Astrophysics	Astronomy/Mathematics
Physics/Mathematics	Physics/Philosophy
Physics/Medical Physics	Astronomy/Philosophy
Physics/ Computer Science	Physics/Enterprise Management

In the first year there are **no unrestricted module choices** for Dual degree students. 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, these are as follows:

#### PHYSICS/ASTROPHYSICS

PHY101, PHY102, AMA125, PHY112, PMA116, as for Single Honours, and

PHY111	Our Evolving Universe
PHY104	Introduction to Astrophysics
PHY105	Observing the Night Sky
PHY106	The Solar System

#### PHYSICS/MEDICAL PHYSICS

PHY101, PHY102, AMA125, PHY112, PMA116, as for Single Honours, and

EEE140	Electrical circuits
EEE141	Diodes, transistors, switches and amplifiers
MPY101	Physics of Living Systems 2
MPY102	Physics of Living Systems 1

#### PHYSICS/COMPUTER SCIENCE

PHY101, PHY102, AMA125, PHY112, PMA116, as for Single Honours, and

COM161	Basic Java Programming and Problem Solving
COM162	System Analysis and Design
COM165	Computer Systems Architecture.

## 6 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**.

These components comprise

#### **Lectures**

You will typically have three or 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 of typically five 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 one or more specified question must be handed in. 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 each semester 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.

#### **Workshops**

Approximately 10 workshops per semester will provide an additional forum for practising and developing **problem solving techniques**. In addition to covering lecture problems, more general problems will be attempted. Instruction in various problem solving techniques will be given.

#### **Laboratory**

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 and the treatment of errors before moving on to more **detailed experiments**. Towards the end of the second semester you will perform an extended group project which culminates in a joint poster presentation of the results and a scientific report of your findings. The main aims of the laboratory sessions are to develop skills in the taking of good quality data, to properly analyse the data, including a treatment of associated errors, and to keep a clear and concise record 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. Two laboratory sessions are also replaced by presentations dealing with the treatment of errors and the writing of a scientific report. Each of these is followed by an assessed homework exercise. Full details of the laboratory are given in the associated handbook which will be distributed during the first laboratory meeting.. **Note. Attendance at all of the above is compulsory. Registers are taken at all sessions and attendance is monitored.**

## 7 FIRST YEAR ADVISERS: THE FIRST YEAR TUTOR

Among the staff of the Physics & Astronomy department some will have specific responsibilities to you as a student. These are your **Academic Adviser**, your Physics Tutor, the **Physics Year Tutor**, and probably tutors in other subjects.

**Your Academic Adviser** (or personal tutor) will be assigned to you at the first physics meeting in Intro week and a first individual meeting with him or her will be arranged for the next day. The task of your adviser is to help you **plan your degree programme** so that it reflects your interests, career aspirations and academic strengths. You will normally meet your adviser once each semester throughout your undergraduate career to review your progress, to discuss possible module choices or for career guidance etc. *You must always arrange to see your adviser if you wish to change your choice of modules or degree programme.* You may arrange extra meetings if you have problems of any sort. If your problems are personal or sensitive, you may ask for the meetings to be **confidential**. Normally you will keep the same adviser throughout your undergraduate career unless you have a major change of degree programme. If you find your adviser difficult to talk to, you should see the Year tutor and ask to be reassigned.

**The Physics Year 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 and academic tutors, *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 he 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 his or her course. Every lecturer has an 'office hour' set aside for this purpose. Lists of office hours will be posted on the department notice boards.

## 8 ASSESSMENT AND EXAMINATIONS

### Handing in of Assessed work

All assessed work, excluding tutorial work sheets, must be signed in at the Physics Departmental Office with a completed departmental cover sheet. Further guidance will be given during intro week.

The Departmental Office is located in Room E34, Hicks Building. It is open Monday to Friday between 08:30 am and 12:30 pm and from 1:30 pm and 5:00 pm.

Failure to hand in work without extenuating circumstances e.g. doctors note, will result in a reduced mark. Work will be accepted after the deadline set for its completion but:

Late submission will result in a deduction of 5% of the total mark awarded for each working day \*after the submission date. After 10 working days any work submitted will receive a mark of zero.

*\*working days includes 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.*

### Examinations

Examinations are held in the final three weeks of each semester on the completed units, and each module or half 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 examinations (held in the final three weeks of each semester), a one hour progress test held in the middle of each semester, continuous assessment consisting of the marked tutorial problems and seminar essay, and the laboratory mark. The weighting of these individual marks is as follows.

Exam	60%
Lab	20%
Problems classes	7.5%
Tutorials	10%
Essays	2.5%

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.
1-39	work in respect of which the candidate fails.
0	work not submitted.

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. **Note that, to be awarded the credits for the two physics modules it is necessary to obtain a pass grade in the laboratory work.**

### **Passing the first year**

In order to automatically progress to level 2, students must pass all units of study and achieve the full 120 level 1 credits. The Department may award a student a **conceded pass**, provided they have obtained at least 100 credits and the failed modules are not pre-requisites for any level 2 courses.

In the second and subsequent years the grades obtained are combined in a weighted average, to give the final degree classification.

### **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. It is also strongly recommended that any level 2 student carrying less 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 central faculty they will be sent to students through MUSE.

### **What is 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 for BMS students 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

### **Re-sit Examination**

Students who fail to satisfy the criteria for passing level 1 will be allowed to take a re-sit examination in August for any module where they obtained less than 40%. Guidance will be given by the department.

### **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.
- To withdraw from the University.
- To transfer to another degree programme more suited to the students strengths.

**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.

## 9 PLAGIARISM AND COLLUSION

### Plagiarism

During the course of your degree programme you will be required to write essays or lab reports as part of the assessed work of a module. This will often involve reporting the work of others, for example in writing a review of the state of a research field or in explaining the background theory for an experiment. You must, however, ensure that the materials you prepare for submission would be accepted as your own original work. To do otherwise is both theft (you are stealing the original author's work) and cheating (you are, in effect, getting someone else to write your essay), and is taken extremely seriously by this Department and by the University as a whole.

What is plagiarism? The University's guidelines are:

- If a student submits a piece of work produced by others, or copied from another source, this is plagiarism.
- If a student produces a piece of work which includes sections taken from other authors, this is plagiarism. When copying sections from other authors it is **not sufficient** simply to list the source in the bibliography
- If a student paraphrases from another source without the appropriate attribution, this is plagiarism. **Paraphrasing should use a student's own words to demonstrate an understanding and accurately convey the meaning of the original work, and should not merely reorder or change a few words or phrases of the existing text.**
- If a student copies from or resubmits his or her own previous work for another assignment, this is self-plagiarism, and is not acceptable.

### Collusion

Collusion is a form of plagiarism 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.

- If a student gets someone else to compose the whole or part of any piece of work, this is collusion.
- If a student copies the whole or part of someone else's piece of work with the knowledge and consent of the latter, then this is collusion.
- If a student allows another student to copy material, knowing that it will subsequently be presented as that student's own work, then this is collusion.
- If two or more students work on an assignment together, produce an agreed piece of work and then copy it up for individual submission, then this is normally collusion. In group assignments such as group projects, some degree of collaboration may be acceptable, or even required: if it is not clear from the written instructions, students should seek the advice of the member of staff who set the assigned work regarding the acceptable limits of collaboration.

**How can you make use of the work of others without being guilty of plagiarism?  
There are two answers.**

- If you use **your source's exact words**, you must acknowledge them as a direct quote (enclose them in quotation marks, set them off in a different font or with indented margins, etc.). Direct quotations should form **only a very small part** of the submitted material (normally not more than one short direct quotation per page of material, though more may be appropriate in special cases such as a book review). There should be **good reason** for using a quotation instead of your own words (see the web page mentioned below for more details).
- If you only use the **information** provided by the source, and express this information **entirely in your own words**, this is perfectly acceptable provided that the source is **referenced**. The usual way to do this in scientific writing is to insert a marker (a number, or the author's name and publication date) in the text at the point where the information is used, and then to cite the source in a list of references at the end of the document. Note the comment in the University's definition of plagiarism: a few minor changes in word ordering or punctuation do **not** count as using your own words!

The Department uses the plagiarism detection software Turnitin®. This compares submitted work against an extensive database of documents and other submitted work, providing a sophisticated check for both plagiarism and collusion. For a significant fraction of module assignments (the exceptions are for mainly numerical assignments) you will therefore be required to submit both paper and electronic versions of your work, the latter being submitted to the Turnitin® system. You will be informed at the start of each module which assignments must be submitted electronically along with details of how to submit your work.

If you are found to have committed plagiarism (or collusion), you should normally expect to be given a zero grade for the affected piece of work, although a less severe penalty may be applied if the offence is minor (i.e. only a small part of the work is affected), there was no intent to deceive (i.e. the source is referenced), and there are mitigating circumstances such as inexperience. If you can convince the lecturer, the Year Tutor and the Head of Department that the plagiarism was genuinely unintentional, you may be given an opportunity to redo work that has been given a fail grade, but this is not guaranteed, particularly in third or fourth year where there may not be sufficient time between the discovery of the plagiarism and the deadline for degree results.

Further information, including guidelines on referencing and on the use of direct quotation, can be found on the Department's website at <http://www.shef.ac.uk/~phys/teaching.html> (click on "Plagiarism and Collusion").

## 10 ABSENCE FROM CLASS

If you have good reason to be absent, you **must** inform the First Year Tutor or the Physics Departmental Office. If you miss lectures, labs or tutorials because you are ill, or if illness affects examinations, you should obtain an official Medical Certificate from your doctor or the University Health Service (UHS).

The completed form should be returned to the Physics Departmental Office or directly to the Student Services Information Office (SSiD) as soon as possible. Only if this is done can we make allowance for missed coursework or practical work.

If you are ill for periods lasting up to 7 days which do not include an assessment, you can complete a Student Medical Self-Certificate. Blank self-certificates are available to students from the Student Services Information Desk (SSiD) located in the union, from the Physics Departmental Office or from the on-line forms section of the SSiD Web pages. The completed form should again be returned to the Physics Departmental Office or the SSiD.

## 11 THE LIBRARY

The Main Library and its associated branch libraries provide 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 U-Card. The U-Card will give all University-registered students automatic access to Library facilities and services and will serve as a Library Card.

### IPOD TOUR OF THE MAIN LIBRARY

The iPod Induction Tour of the Main Library has been designed to help students find their way around. A downloadable mp3 file can be loaded onto your iPod, there are also iPods for loan from the Main Library Enquiry Desk. For more details see the Library web pages at <http://www.lbasg.group.shef.ac.uk/downloads/index.html>

## 12 FIRST YEAR COURSE TEXTBOOKS

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

**Young and Freedman “*University Physics with Modern Physics*” 11<sup>th</sup> edition, by (ISBN 0-8053-8684-X) published by Pearson Addison-Wesley.**

It is expected that all students of Physics will purchase this book. It contains many worked examples and a stock of problems and exercises used by tutors and lecturers. 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).**

Copies of this book will be available in the Main Library.

Second hand books are advertised for purchase on the Physoc website, [www.shef.ac.uk/~physoc](http://www.shef.ac.uk/~physoc).

## FIRST YEAR WEBPAGE

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

## 13 INTRO WEEK: 18-22 SEPTEMBER 2006

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 18<sup>th</sup> September there is a general welcome for all Pure Science students at 9.30 am in the Octagon Centre on the main campus.

The **First Physics and Astronomy meeting** will take place on Monday September 18<sup>th</sup> at 1.30 in Lecture room 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** and a meeting with your **Personal Adviser** will be arranged.

On Friday 22<sup>nd</sup> September there will be a meeting in Lecture Room 2 of the Hicks Building at 10.00 am with the first year physics team, to give you information about **how the Department operates**. An introduction will be given about the University library and will be followed by a guided tour. 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 they provide an important link between students and staff. We would like you to think about taking on this duty.

In addition on Friday 22<sup>nd</sup> September at 3.00 pm a Departmental Welcome Tea will be held in Room D17. This will give you an opportunity to meet our teaching staff and other students. We look forward to seeing you there.

### TIMETABLE OF IMPORTANT EVENTS

Monday 18<sup>th</sup> September 9.30 am Octagon Centre

*General Welcome for all Pure Science Students*

Monday 18<sup>th</sup> September 1.30 pm Lecture Room 7 Hicks Building

*Registration advice and Advisor assignment*

Friday 22<sup>nd</sup> September 10.00 am LT6 Hicks Building

*Meeting with First Year Team, Departmental & University Information.  
Library talk and tour.*

Friday 22<sup>nd</sup> September 3.00 pm D17

*Welcome Tea*

Monday 25<sup>th</sup> September

*Lectures start*

Monday 25<sup>th</sup> September 2.00 pm Room D17

*Introductory Laboratory Talk*

## 14 DEPARTMENTAL TELEPHONE NUMBERS AND EMAILS

### First Year Team

Tim Richardson- <i>First Year Tutor and Lecturer</i>	0114 222 4280	T.Richardson@Sheffield.ac.uk
John Cockburn - <i>Lecturer</i>	0114 222 3507	J.Cockburn@Sheffield.ac.uk
Richard Jones - <i>Lecturer</i>	0114 2224530	R.A.L.Jones@Sheffield.ac.uk
David Mowbray - <i>Laboratory tutor</i>	0114 222 4561	D.Mowbray@Sheffield.ac.uk
John Williams - <i>Laboratory tutor</i>	0114 2224287	J.Williams@Sheffield.ac.uk

### Other useful contacts

Linda Simmons - <i>Physics Departmental Office</i>	0114 222 4278	L.Simmons@Sheffield.ac.uk
Tracy Duncan - <i>Physics Departmental Office</i>	0114 222 4546	T.Duncan@Sheffield.ac.uk
Chris Booth- <i>Senior Undergraduate Tutor</i>	0114 222 3541	C.Booth@Sheffield.ac.uk

## 15 STUDENT SUPPORT

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

**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.**

## GENERAL STUDENT INFORMATION

### NIGHTLINE

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](mailto: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. Develop acknowledge of students issues of concern within the department
5. Encourage the department to meet the Code of Good Practise 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 your 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.

## 16 FEEDBACK

### Questionnaires

At some point during each lecture course the lecturer will distribute anonymous questionnaires to determine the reaction to the course and find possible ways to improve. The results are analysed and the lecturer concerned is asked to respond. A full summary of each module is examined by the Teaching Committee and Head of Department. A summary is posted on the student board. The questionnaire returns are valued feedback data on each module and all students should fill in and return a questionnaire.

### Student Staff Committee

The Department of Physics and Astronomy has a student-staff committee that meet regularly to discuss matters of mutual interest such as teaching, examinations, organisational matters and social events, but any topic can be raised by students or staff. The committee normally meet 2/3 times per year with additional meetings if necessary. The students are represented by students from each year of study and the staff present include the Head of Department and lecturers from Physics and Astronomy.

## 17 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 examination.

**Winifred Moulds Prize** - awarded to a female with outstanding performance in Physics, from any year.

## FIRST YEAR PHYSICS MODULES

### **PHY101      Mechanics, Heat & Matter (20 Credits - Autumn Semester)**

This first of the two-module Level 1 Physics course, provides a basic grounding in elementary mechanics including Newton's Laws of motion and gravitation, the conservation laws for momentum and energy and collisions. The rotational dynamics of rigid bodies is covered, together with moments of inertia and angular momentum. The bulk and thermal properties of matter in solid, liquid and gaseous states are discussed in relation to the atomic-scale phenomena underlying these states. The laboratory work consists of simple exercises designed to teach the use of basic equipment followed by more general physics experiments. In addition there is a computing component.

### **PHY102      Fields, Waves & Quanta (20 Credits - Spring Semester)**

Together with PHY101, this full module constitutes the Level 1 Physics course. It consolidates and develops electromagnetism from A-level or Foundation Year standard to the point where, in the second year, it can be used as a firm foundation for courses in solid state and atomic physics. The course also includes an introduction to electrical circuit analysis, including Kirchhoff's Laws, transients in RL and RC circuits and resonance in RLC circuits. It provides a general introduction to the phenomena of vibrations and waves with examples from mechanics and optics. A broad overview of quantum physics is also presented with recourse to as little mathematics as possible. Throughout, emphasis is placed on concepts, the encouragement of independent study and development of problem-solving skills. The laboratory work develops practical and computing skills, and introduces working in a small team on a project.

## FIRST YEAR ASTRONOMY MODULES

### **PHY104 Introduction to Astrophysics (10 Credits - Spring Semester)**

One of four half-modules forming the Level 1 Astronomy course. PHY104 aims to equip students with a basic understanding of the important physical concepts and techniques involved in astronomy with an emphasis on how fundamental results can be derived from fairly simple observations. The course consists of two sections: (i) Basic Concepts, (ii) Physics of Stars. (i) and (ii) each involve some eight lectures. Both are supported by problem classes and laboratory work. PHY111 serves as a preparation for PHY104.

### **PHY105 Observing the Night Sky (10 Credits - Autumn Semester)**

One of four half-modules forming the Level 1 Astronomy course, PHY105 introduces the student to celestial mechanics and astronomical instruments. The former includes (i) celestial co-ordinate systems, (ii) planetary motions and (iii) the expansion of the universe. (i) involves spherical trigonometry, co-ordinate transformations and the systems of time measurement. (ii) covers Kepler's laws, Newtonian mechanics and gravitation applied to the two-body problem. (iii) is approached within the confines of Newtonian physics. The section on astronomical instruments discusses electromagnetic radiation, simple telescope design and performance, and case studies on the eye as detector, the Anglo-Australian telescope and the Hubble space telescope.

### **PHY106 The Solar System (10 Credits - Spring Semester)**

One of four half-modules forming the Level 1 Astronomy course, PHY106 has five main sections. (i) provides a brief survey of the characteristics, composition and origin of the various planets, their satellites, the asteroids and comets and the motions and interactions of these bodies; (ii) discusses the internal structures of the planets, the moon and other major bodies; (iii) is concerned with their surfaces and the processes that shape them, impacts, erosion, plate tectonics etc; (iv) discusses planetary atmospheres and ionospheres, their origins and why they differ from one planet to another; (v) is concerned with planetary magnetism and its origins.

### **PHY111 Our Evolving Universe (10 Credits - Autumn Semester)**

This half 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.

## 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.

### **MPY102      Physics of Living Systems 1 (10 Credits - Autumn Semester)**

The aim of this module is to explore the physics of the senses, with particular emphasis on vision and hearing. What do we hear, how do we hear it, how well do we hear it, what can go wrong, and how might we fix it. Clinical tests of hearing are studied, both theoretically and experimentally, and we investigate remedial measures that are available to the impaired ear, including hearing aids. The structure for the investigation of vision is similar. The senses of touch, taste and smell are also introduced.

## STAFF CONTACT DETAILS

### Academic staff

INITIALS	SURNAME	NUMBER	ROOM	EMAIL
MRS CATHERINE	ANNABEL	24360	E29	<a href="mailto:C.J.ANNABEL@SHEF.AC.UK">C.J.ANNABEL@SHEF.AC.UK</a>
DR CHRIS	BOOTH	23541	D24	<a href="mailto:C.BOOTH@SHEF.AC.UK">C.BOOTH@SHEF.AC.UK</a>
DR SUSAN	CARTWRIGHT	24572	D22	<a href="mailto:S.CARTWRIGHT@SHEF.AC.UK">S.CARTWRIGHT@SHEF.AC.UK</a>
PROF JOHN	COCKBURN	23507	E15	<a href="mailto:J.COCKBURN@SHEF.AC.UK">J.COCKBURN@SHEF.AC.UK</a>
DR DAVIDE	COSTANZO	24549	D27	<a href="mailto:D.COSTANZO@SHEF.AC.UK">D.COSTANZO@SHEF.AC.UK</a>
DR NEIL	COWLAM	24295	E37	<a href="mailto:N.COWLAM@SHEF.AC.UK">N.COWLAM@SHEF.AC.UK</a>
DR PAUL	CROWTHER	24291	E45	<a href="mailto:PAUL.CROWTHER@SHEF.AC.UK">PAUL.CROWTHER@SHEF.AC.UK</a>
DR ED	DAW	24353	D28	<a href="mailto:E.DAW@SHEF.AC.UK">E.DAW@SHEF.AC.UK</a>
DR RICHARD	DE GRIJS	24524	E43	<a href="mailto:R.DEGRIJS@SHEF.AC.UK">R.DEGRIJS@SHEF.AC.UK</a>
DR VIK	DHILLON	24528	E40	<a href="mailto:VIK.DHILLON@SHEF.AC.UK">VIK.DHILLON@SHEF.AC.UK</a>
DR MARK	FOX	24527	E12A	<a href="mailto:MARK.FOX@SHEF.AC.UK">MARK.FOX@SHEF.AC.UK</a>
PROF GILLIAN	GEHRING	24299	E16	<a href="mailto:G.GEHRING@SHEF.AC.UK">G.GEHRING@SHEF.AC.UK</a>
DR MARK	GEOGHEGAN	23544	D19	<a href="mailto:MARK.GEOGHEGAN@SHEF.AC.UK">MARK.GEOGHEGAN@SHEF.AC.UK</a>
DR RAMIN	GOLESTANIAN	24273	E19	<a href="mailto:R.GOLESTANIAN@SHEF.AC.UK">R.GOLESTANIAN@SHEF.AC.UK</a>
DR SIMON	GOODWIN	23585	E48	<a href="mailto:S.GOODWIN@SHEF.AC.UK">S.GOODWIN@SHEF.AC.UK</a>
DR MARTIN	GRELL	23598	D30	<a href="mailto:M.GRELL@SHEF.AC.UK">M.GRELL@SHEF.AC.UK</a>
DR JAMIE	HOBBS	29316 / 24532	D16	<a href="mailto:JAMIE.HOBBS@SHEF.AC.UK">JAMIE.HOBBS@SHEF.AC.UK</a>
PROF DAVID	HUGHES	24288	E47	<a href="mailto:D.HUGHES@SHEF.AC.UK">D.HUGHES@SHEF.AC.UK</a>
PROF RICHARD	JONES	24530	F11	<a href="mailto:R.A.L.JONES@SHEF.AC.UK">R.A.L.JONES@SHEF.AC.UK</a>
DR VITALY	KUDRYAVTSEV	24531	F09B	<a href="mailto:V.KUDRYAVTSEV@SHEF.AC.UK">V.KUDRYAVTSEV@SHEF.AC.UK</a>
DR DAVID	LIDZEY	23501	D18	<a href="mailto:D.G.LIDZEY@SHEF.AC.UK">D.G.LIDZEY@SHEF.AC.UK</a>
PROF DAVID	MOWBRAY	24561	E14	<a href="mailto:D.MOWBRAY@SHEF.AC.UK">D.MOWBRAY@SHEF.AC.UK</a>
DR EFSTATHIOS STATHES	PAGANIS	24352	D29	<a href="mailto:E.PAGANIS@SHEF.AC.UK">E.PAGANIS@SHEF.AC.UK</a>
DR TIM	RICHARDSON	24280	D21	<a href="mailto:T.RICHARDSON@SHEF.AC.UK">T.RICHARDSON@SHEF.AC.UK</a>
PROF LESZEK	ROSZKOWSKI	23580	F09C	<a href="mailto:L.ROSZKOWSKI@SHEF.AC.UK">L.ROSZKOWSKI@SHEF.AC.UK</a>
DR TIM	SEARLE	24289	E49	<a href="mailto:T.SEARLE@SHEF.AC.UK">T.SEARLE@SHEF.AC.UK</a>
PROF MAURICE	SKOLNICK	24277	E20	<a href="mailto:M.SKOLNICK@SHEF.AC.UK">M.SKOLNICK@SHEF.AC.UK</a>
PROF NEIL	SPOONER	24422	E23	<a href="mailto:N.SPOONER@SHEF.AC.UK">N.SPOONER@SHEF.AC.UK</a>
PROF CLIVE	TADHUNTER	24300	E35	<a href="mailto:C.TADHUNTER@SHEF.AC.UK">C.TADHUNTER@SHEF.AC.UK</a>
DR LEE	THOMPSON	24577	E41	<a href="mailto:L.THOMPSON@SHEF.AC.UK">L.THOMPSON@SHEF.AC.UK</a>
DR DAN	TOVEY	23546	D26	<a href="mailto:D.R.TOVEY@SHEF.AC.UK">D.R.TOVEY@SHEF.AC.UK</a>
PROF DAVID	WHITTAKER	23537	E12B	<a href="mailto:D.M.WHITTAKER@SHEF.AC.UK">D.M.WHITTAKER@SHEF.AC.UK</a>
DR JOHN	WILLIAMS	23583	E42	<a href="mailto:J.WILLIAMS@SHEF.AC.UK">J.WILLIAMS@SHEF.AC.UK</a>

### Secretarial Staff

INITIALS	SURNAME	NUMBER	ROOM	E-MAIL
MRS J S	COATES	24272	E34	<a href="mailto:J.S.COATES@SHEF.AC.UK">J.S.COATES@SHEF.AC.UK</a>
MRS A	DAVIS	24362	E34	<a href="mailto:A.DAVIS@SHEF.AC.UK">A.DAVIS@SHEF.AC.UK</a>
MISS T	DUNCAN	24546	E34	<a href="mailto:T.DUNCAN@SHEF.AC.UK">T.DUNCAN@SHEF.AC.UK</a>
Miss J	HOPKIN	24351	E22	<a href="mailto:J.L.HOPKIN@SHEF.AC.UK">J.L.HOPKIN@SHEF.AC.UK</a>
MRS J	MILNER	23514	E34	<a href="mailto:J.MILNER@SHEF.AC.UK">J.MILNER@SHEF.AC.UK</a>
MISS R J	RAYNOR	23520	E34	<a href="mailto:R.J.RAYNOR@SHEF.AC.UK">R.J.RAYNOR@SHEF.AC.UK</a>
MRS L	SIMMONS	24278	E34	<a href="mailto:L.SIMMONS@SHEF.AC.UK">L.SIMMONS@SHEF.AC.UK</a>

\* if calling from outside prefix with "22"