

# UNIVERSITY OF STRATHCLYDE

## DEPARTMENT OF PHYSICS

2009/2010 HANDBOOK

for

**2<sup>nd</sup> YEAR STUDENTS**

MSci in Physics

MSci in Applied Physics

MSci in Photonics

MSci in Physics and Mathematical Finance

MSci in Biophysics

MSci in Physics with Visual Simulation

Honours BSc Physics

Honours BSc Applied Physics

Honours BSc Laser Physics and Optoelectronics

Honours BSc in Mathematics and Physics

Honours BSc in Physics with Teaching

BSc in Physics and Applied Physics



This handbook should help guide you through your studies, but if you have any questions please do not hesitate to ask. Our friendly and experienced staff will be glad to help. We are one of the most successful physics departments in the UK and our teaching was awarded the top grade of “excellent” in the Government assessment of Scottish Universities. Our courses are accredited by the Institute of Physics. They are designed to be exciting, stimulating and rewarding. We think you will enjoy them as well.

With best wishes

David Birch  
Head of Department

## Courses

### **MSci in Physics, MSci in Applied Physics, MSci in Photonics**

These enhanced degrees aim to teach Physics to a greater depth and breadth than the BSc degrees and provides an excellent qualification for those wishing to go on to work in industry as well as providing a superb preparation for research leading to a PhD degree.

### **MSci in Physics with Visual Simulation**

This degree course has been designed to provide a broad-based knowledge of physics and mathematics combined with studies of computer systems, programming and software development.

### **MSci in Physics and Mathematical Finance**

There is growing demand by financial institutions for physicists. This degree is ideal for mathematically minded physicists interested in a career in the financial sector.

### **MSci in Biophysics**

This unique degree course combines a strong foundation in physics with specialisation in biophysical applications.

### **BSc Honours Physics**

This is a broad based physics course which aims to give the student coverage of a wide range of topics in physics with emphasis on modern physical principles. As the student proceeds towards his or her Honours Degree a larger fraction of the time is spent on physics with considerable flexibility in the choice of subjects available.

### **BSc Honours Applied Physics**

The main objective of this course is to develop the skills necessary to solve practical problems in industry. It is designed around a core of fundamental physics and mathematics, linked to a programme of interdisciplinary applied physics and a wide choice of elective subjects.

### **BSc Honours Laser Physics and Optoelectronics**

The course admitted its first students in 1985 and was the first undergraduate course of its kind in Europe. It aims to combine a strong grounding in mainstream physics with specialisation in laser physics, optoelectronics and the associated technologies.

### **BSc Honours Physics with Teaching**

This course aims to provide for students interested in following careers in education a training in which physics is integrated with teaching methods and practice. The degree offers a joint qualification which prepares graduates to be teachers of physics in secondary schools. Students cover the syllabus of the Honours Physics degree plus the curriculum and classroom experience required for General Teaching Council recognition.

### **BSc Honours Mathematics and Physics**

The aim of this degree is to provide students with a joint qualification in Mathematics and Physics by providing the opportunity to pursue Mathematics and Physics to a high level. It contains the physics necessary for future fundamental and applied work, along with computational and theoretical physics.

### **BSc Physics and Applied Physics**

This BSc degree is gained by a 3-year course involving a flexible selection of modules from physics, mathematics and other subjects. It provides a physics based education for the non-specialist, and aims to equip students for the wide range of careers in which numeracy and a grasp of physical principles are seen to be an advantage.

# CONTENTS

## Page

### **THE ACADEMIC YEAR 2009/2010**

**4**

### **GENERAL INFORMATION**

**5**

#### YOUR DEGREE COURSE

**6**

Timetables

6

Advisers of Study

6

Report Writing

8

Advice for Students with Special Needs

8

### **ASSESSMENT AND PROGRESS**

**9**

#### EXAMINATION ATTEMPTS

**9**

#### PLAGIARISM

**9**

#### PROGRESSION REQUIREMENTS

**10**

#### ERASMUS SCHEME

**12**

#### CLASS DESCRIPTORS

**12**

### **SAFETY**

**14**

Our best wishes for your studies during this academic year, 2009/2010. We welcome you and hope that you will enjoy your time with us. We cannot hope to make a physics degree easy: it would not be worthwhile if it was, and it takes many years of hard work - but we will do all we can to make it an enjoyable experience, and to provide you with the facilities to make your studying as effective as possible.

## THE ACADEMIC YEAR 2009/2010

**REGISTRATION :** **Monday 21<sup>st</sup> September 2009 – Friday 25<sup>th</sup> September 2009**

*(Interviews with Advisers of Study are arranged during this week)*

### SEMESTER I :

University closed	Monday 28 <sup>th</sup> September 2009
Teaching Weeks 1 – 12	Tuesday 29 <sup>th</sup> September 2009 – Friday 18 <sup>th</sup> December 2009
Christmas Vacation	Saturday 19 <sup>th</sup> December 2009 – Sunday 3 <sup>rd</sup> January 2010
University closed	Thursday 24 <sup>th</sup> December 2009 – Sunday 3 <sup>rd</sup> January 2010
Revision Week	Monday 4 <sup>th</sup> January 2010 – Friday 8 <sup>th</sup> January 2010
Examination Weeks	Monday 11 <sup>th</sup> January 2010 – Friday 22 <sup>nd</sup> January 2010

### SEMESTER II :

Teaching Weeks 1-12	Monday 25 <sup>th</sup> January 2010 – Friday 30 <sup>th</sup> April 2010
Spring Vacation	Monday 5 <sup>th</sup> April 2010 – Friday 16 <sup>th</sup> April 2010
University closed	Friday 2 <sup>nd</sup> April 2010
University closed	Monday 5 <sup>th</sup> April 2010
Revision Week	Monday 3 <sup>rd</sup> May 2010
Examination Weeks	Monday 10 <sup>th</sup> May 2010 – Friday 4 <sup>th</sup> June 2010
University closed	Monday 3 <sup>rd</sup> May 2010
University closed	Monday 31 <sup>st</sup> May 2010

**Resit Examinations begin** **Wednesday 4<sup>th</sup> August 2010** (normally of two weeks duration)

**The Further and Higher Education Charter** for Scotland was published in 1994. A leaflet outlining its main points is available from Registry (the University's Administration, in the McCance Building). The University's teaching was inspected by the Enhancement Lead Institutional Review (2005) and was given the highest rating possible.

The Faculty of Science includes the Departments of Physics, Mathematics and Statistics, Computer & Information Science, Pure & Applied Chemistry as well as the Strathclyde Institute of Pharmacy and Biomedical Sciences which comprises the many bioscience departments. The Faculty, one of five in the University, has administrative and financial powers devolved to it by the University.

The current office-holders in the Faculty (appointed from and by the academic staff of the Faculty) are:

Dean: Professor Iain Hunter

Vice-Deans: Professor Alexander Cunningham (Resource)  
Professor Kathie Kane (Research)  
Dr Des McGhee (Academic)

Permanent administrative staff of the Faculty (based in the McCance Building) are:

Faculty Officer: Dr Jim McGrath

Assistant Faculty Officer: Ms Jill Smith

Enquiries to Faculty staff can be presented at the Faculty of Science enquiry desk in the McCance Building. [They also deal with changes of address, changes of registration for classes or courses, medical certificates and the administration of the Examination Boards that consider your end-of-year examination results.]

The Department is housed mainly in the **John Anderson (JA) building**, but some staff have offices and laboratories in the adjacent Colville (Col.) Building, linked at levels 3, 4 and 5. The John Anderson Building is open Monday to Friday from 8.00 am to 10.00 pm. After 6.00 pm access is only via the main door (level 5) or via the Colville Building as the subsidiary entrances are locked to maintain security.

The Department makes available JA8.18 (The Bob Illingworth Room) as a **Student Reading Room**. You are asked to cooperate by not using 8.18 for conversing, eating or drinking. This room is for students of all years, and of all courses. (Please treat it with care, or else the facilities will be withdrawn.) There is a student common room JA 5.12

The Department has over **30 academic staff**. The Head of Department (2007/2010) is Professor David J. S. Birch (JA 8.02).

Information on the Department and its staff can also be obtained from the Department Website <http://phys.strath.ac.uk>

Should you need to contact a member of staff, contact details can also be found on the Department Website <http://phys.strath.ac.uk/information/people/people.php>. Alternatively, messages for staff may be left in their pigeonhole on the 8th floor of the John Anderson Building, outside JA 8.31. (Please note, names are above pigeonholes, not under.) Besides its academic staff, the Department also includes research fellows, research assistants and research students who, besides their research activities, participate in the teaching of the Department. In addition there are also technical and secretarial staff. **Photographs** of all the staff are displayed on the **8th. Floor of the John Anderson Building** outside JA 8.03.

The Department uses the internet to communicate with students and so it is essential that you check both your university email account and the Faculty of Science VLE, SPIDER, daily.

On timetables and notices, each building on the Campus is identified by a prefix. Originally these were mostly single letters, and the John Anderson Building was denoted by K. This is still used by the University in its

timetables for classes and examinations, but the more user-friendly notices issued by the Department use two letter building prefixes, like JA for the John Anderson Building, LT for the Livingstone Tower, etc.

## YOUR DEGREE COURSE

### Course Requirements

Each degree course is made up of a number of classes. A full year's curriculum normally totals a minimum of 120 credits. Your list of classes to be studied must be agreed with your Adviser (see below) and then you will be able to complete your registration with the University. The syllabus and book list for the main classes given by this Department can be found at <http://phys.strath.ac.uk/undergraduate/classes.php>

Each degree course is governed by a set of Regulations that specify the compulsory classes you must follow for that degree course as well as the progress requirements to move from one year to the next year of a given degree course. These Regulations can be downloaded from <http://phys.strath.ac.uk/undergraduate/handbook>. In addition to the Regulations that are specific to your chosen course you are bound by a set of general regulations and these can be read at <http://phys.strath.ac.uk/undergraduate/handbook>

In the second year, the different degree courses begin to diverge, though transfer between the degrees remains possible. It is possible to transfer to the BSc Degree course at the end of the first year or during the second year. 12 233 Laboratory Project will be available instead of Maths classes for these students who transfer by the beginning of semester 2.

### At the Start of the Year

All students receive an invitation to meet their **Adviser of Study** before registration during "Week 0", 21<sup>st</sup> – 25<sup>th</sup> September 2009, the week before teaching starts. First Year students will receive theirs with their Registration Form, whereas other years will generally receive theirs direct from the Department.

Your Adviser will discuss with you which classes are included in your curriculum. Timetables will also be available then. Degree courses include compulsory classes and elective classes. The latter may be chosen from most classes in any Faculty providing that the timetable permits. (Some classes however are barred as being too close in content to your course's compulsory classes.) All classes have a credit value that you obtain if you pass the class examination. Once the full list of all the classes to be studied has been agreed with your Adviser, your Adviser will approve your curriculum and then you can register

It is important that your **class registration** be correct as, amongst other things, it is used to check the feasibility of draft exam timetables. You may change your list of classes through PEGASUS, the University's VLE, but there are restrictions on changing your classes more than 2 weeks into the semester. Any change needs the approval of your Adviser.

Should you want to change course e.g. to BSc Natural Sciences or BSc Physics and Applied Physics, consult your Counsellor or Adviser. The Natural Sciences course is administered by Dr. Alan McCrudden (SIBS 4.59) on behalf of the Faculty of Science. The BSc Degree in Physics and Applied Physics is coordinated by Dr. T. Han (JA 8.05). It offers an alternative, and wider, course of study for those who find themselves uncomfortable with the Honours curricula. The University has recently approved the award of the BSc Degree with Commendation for students who score an average of at least 60% in their first attempt at the level 2 and 3 classes taken in the third year of study. As the year proceeds, your adviser remains available to help you with academic advice.

### Timetables

The timetables for each degree course will be available on the Departmental website at the start of each semester.

<http://phys.strath.ac.uk/undergrad/timetable/semester1.php>

<http://phys.strath.ac.uk/undergrad/timetable/semester2.php>

## Advisers of Study

### *The Course Advisers 2nd year:-*

Physics MSci and BSc Honours	Dr. T. P. J. Han, JA 8.05, ext. 3267
Applied Physics MSci and BSc Honours	Dr. T. P. J. Han, JA 8.05, ext. 3267
Laser Physics & Optoelectronics BSc Honours	Dr. T. P. J. Han, JA 8.05, ext. 3267
Photonics MSci	Dr. T. P. J. Han, JA 8.05, ext. 3267
Physics with Teaching BSc Honours	Dr. T. P. J. Han, JA 8.05, ext. 3267
Mathematics and Physics BSc Honours	Prof. S. M. Barnett, JA 7.04, ext. 3457
Physics with Mathematical Finance MSci	Dr. T. P. J. Han, JA 8.05, ext. 3267
Biophysics MSci	Dr. C. Trager-Cowan, JA 2.08 ext. 3465
Physics with Visual Simulation MSci	Dr. T. P. J. Han, JA 8.05, ext. 3267
Physics and Applied Physics BSc	Dr. T. P. J. Han, JA 8.05, ext. 3267
Natural Sciences BSc	Dr. A. B. McCruden, SIBS 4.59 ext. 3749

### *Non-Graduating Students*

Dr F. Papoff, JA 8.09 ext. 3178

## Counsellors

As well as an Adviser of Study, students are also allocated to a Counsellor, who is a member of the academic staff. The Counsellor's role is to make your progress through your university studies as free of problems and difficulties as possible. You should meet your Counsellor as soon as possible after the start of term. Should problems arise with the counselling arrangements see Dr. N. Langford (JA 8.17) who organises counselling for the Department.

As your course progresses, students often find that their problems are more academic than personal, so your Adviser may be of greater help in these cases. But try to keep in touch with your Counsellor so that there is always at least one member of the academic staff who is aware of your special needs and circumstances.

The Department has a **Student-Staff Committee** (Convener Dr O. Rolinski) that is made up of student representatives from each year and a number of academic staff. Students are invited to choose their own representative in the first two weeks of the first term. The Committee has an important role, resolving difficulties that may arise. The Students Association offer training on how to be an effective representative. The Committee considers anything that affects the teaching of the courses or Student-Staff relations. Problems that are personal to you should be raised with your Counsellor or Adviser. Matters affecting a group of students should be raised in the first instance with any staff member directly involved, but if this fails to resolve the matter, or if it raises wider issues, then ask your Student-Staff Committee Representative to raise it at their next meeting.

## Textbooks

Obtain your essential **textbooks** at the first opportunity. Book Trader in the Students Association holds over 1000 second hand books being sold by students at half price or less. You may wish to check here before venturing forth to pay the full price for your necessary textbooks. Book Trader can be found in ask4 on level 4 of the Students Union.

One of the textbooks is "University Physics (Revised Edition)" by Benson, Wiley 1996 (ISBN 0 471 00689-0) available from the University Bookshop, Curran Building on Cathedral Street. Buy this book as soon as possible since you will need it from week 1 onwards.

## REPORT WRITING

A key skill for any physicist is to communicate the outcomes of an investigation to a wider audience. During your course you will be expected to write formal reports on the practical work that you undertake in years 1 to 3 and the final year projects that you take in your 4<sup>th</sup> and 5<sup>th</sup> year of study. During the first three years of your study at Strathclyde the Department will give you the necessary training on how to write a report and this will include advice on the structure and content of the report, how to reference and how to avoid plagiarism.

## ADVICE FOR STUDENTS WITH SPECIAL NEEDS

The University is committed to supporting students with special educational needs, which may range from dyslexia to mental health problems. To this end the University has a dedicated unit, the Disability Service. Please refer to your University Handbook for further details and see <http://www.strath.ac.uk/disabilityservice/>

To ensure the department meet your needs as defined by the Disability Service, two Departmental Disability Contacts have been appointed. Should you have any questions then please do not hesitate to contact either Kirsten Munro ( [kirsten.munro@strath.ac.uk](mailto:kirsten.munro@strath.ac.uk) ) or Dr T. Han ( [t.han@strath.ac.uk](mailto:t.han@strath.ac.uk) ).

## SAFETY REGULATIONS

These apply to all parts of the University. Your attention will be drawn to these when they affect you. Particular care needs to be exercised in laboratories, and in general, you are not allowed to work in a laboratory unsupervised. For this reason, it is not usually possible to make up time lost for any reason during a laboratory session by putting in extra time later. The Department's safety rules are listed at the back of this handbook.

## INFORMATION TECHNOLOGY, PEGASUS AND SPIDER, AND PERSONAL TRANSFERABLE SKILLS

Expertise in *information technology* (IT) and well developed *personal transferable skills* are essential if you are to maximise your performance in the academic work of your chosen course. Essays, laboratory and project reports, for example, must normally be word processed while the ability to analyse and plot experimental data using available software packages is essential for progress in scientific research. Familiarity with IT also allows you to search the internet and electronic databases for reference material to assist in the writing of assignments and dissertations. In the later years of the course, the emphasis on project work trains you in the planning and performance of research, while the preparation and delivery of presentations, gives you the confidence to communicate your results and their relevance to both specialists and non-specialists as is required of professional scientists.

*Year 1: Laboratory reports, spreadsheets, e-mail, internet,*

*Year 2: Laboratory reports, library skills and the preparation and delivery of a talk.*

*Year 3: Laboratory reports, essay, project training, industrial project and its written and poster presentation, problem solving.*

*Years 4 & 5: Research project and its written and oral presentation, problem solving, research training and communicating physics.*

## PEGASUS and SPIDER

The University has developed its own information server known as PEGASUS that is used to provide services to both staff and students. Please refer to your University Handbook for further information. In addition to PEGASUS the Faculty of Science has its own information server, SPIDER, and this is used to provide copies of lecture notes, assignments, tutorial questions etc., as well as providing discussion forums for students. As with PEGASUS you will receive training on the use of SPIDER in the first weeks of your course and information relating to SPIDER can be downloaded from <http://spider.science.strath.ac.uk>

## ASSESSMENT and PROGRESS

There are a variety of methods by which classes are examined and the lecturer at the start of a class should give the relevant details. You should note that **the pass mark for classes at Levels 1 - 4 is 40% and for Level 5 classes it is 50%**. Note that the credits associated with a class are indivisible. You cannot be awarded a fraction of its credits for meeting part of its requirements.

The most common assessment method is by examination. The conduct of examinations is covered by University regulations including:

1. You need to produce your student identify card at exams.
2. You are forbidden to have with you in the exam room notes of any sort unless the exam instructions explicitly permit them. [Possession of such notes in the exam room is an offence, irrespective of whether use is made of them.]

In *Physics* examinations note that for the same reason you must not take into the exam graphic calculators with memory bank facilities, and in particular, no calculator with alphabetic input. (In *Physics* and *Mathematics* exams, *programmable* calculators are forbidden. Other Departments may have other special restrictions for their examinations.)

## PLAGIARISM

Please see the University Handbook for guidelines on plagiarism. If you are unsure of any aspect of this, please contact the department.

## EXAMINATION ATTEMPTS

All students will be entitled to TWO attempts only to gain the credits for any class. These attempts will normally comprise the First Attempt taken in either the January or the June Diet of Examinations and the Second Attempt taken in the August re-sit Diet of Examinations. For some classes, such as Practical classes or classes with significant elements of continuous assessment, both attempts may take place during the 1<sup>st</sup> and 2<sup>nd</sup> semesters. It is the lecturer's responsibility to outline the assessment procedure for the class at the start of the course.

## TARGETS

You should aim to obtain the credits for all your classes because progress to later years of the course and the award of the degree depend on your cumulative total.

In brief for progress for the various degrees is summarised in the tables below but full details can be found at <http://phys.strath.ac.uk/undergraduate/handbook>

**FOR ALL MSci DEGREES YOU MUST ACHIEVE AN APPROVED STANDARD OF PERFORMANCE WITH REGARDS TO LEVEL OF STUDY AND ACADEMIC ACHIEVEMENT.**

**THE DEPARTMENT DEFINES THIS LEVEL AS A CREDIT-MARK AVERAGE OF BETTER THAN 50 % FOR EACH YEAR OF STUDY.**

## Progression Requirements

	2 <sup>nd</sup> Year to 3 <sup>rd</sup> Year
Degree	Credit Requirements
All BSc Honours degrees	In order to progress to the second year of any Honours degree course, a student must normally have accumulated at least 210 credits from the course curriculum including at least 180 credits in Physics and Mathematics.
BSc Physics and Applied Physics	In order to progress to the third year of the Pass degree course, a student must normally have accumulated at least 180 credits from the course curriculum.
MSci Biophysics degree	At all stages of the course, a student must have achieved an approved standard of performance with regard to level of study and academic attainment.  In order to progress to the second year of the course, a student must normally have accumulated at least 220 credits from the course curriculum including no fewer than 180 credits from the compulsory classes.
MSci Physics and Mathematical Finance degree	At all stages of the course, a student must have achieved an approved standard of performance with regard to level of study and academic attainment.  In order to progress to the third year of the course, a student must normally have accumulated at least 220 credits from the course curriculum of which at least 150 credits must be from classes in Physics and Mathematics and must include those for the classes <i>AG151 Introduction to Finance and Accounting</i> , <i>EC111 Introduction to Economics</i>
MSci Physics degrees	At all stages of the course, a student must have achieved an approved standard of performance with regard to level of study and academic attainment.  In order to progress to the third year of the course, a student must normally have accumulated at least 220 credits from the course curriculum of which at least 180 credits in must be from classes in Physics and Mathematics, and, for students of Physics with Visual Simulation only, those for the classes <i>52 231 Programming Techniques</i> and <i>52 236 Algorithms and Complexity</i> .

Another alternative is to transfer to BSc Natural Sciences (Physics) or BSc Natural Sciences. These degree courses are administered by Dr. A. McCruden (Immunology Dept., SIBS 4.59) on behalf of the Faculty of Science. If you are considering such a transfer, you should discuss the matter with your Counsellor or Adviser.

The Honours degrees are classified into four grades, Class I (a "First"), Class II(i) (an "upper Second"), Class II(ii) (a "lower Second") and a Class III (Third).

MSci degrees require an extra year of study and are classified as for BSc Honours degrees, except there is no Class III.

Students who fail to qualify for a degree may be eligible for the award of the Diploma or Certificate of Higher Education.

## EXAMINATION BOARD DECISIONS

Whichever method of assessment is used an Examination Board will consider the results of your examinations. The Board meets first in June and also, to consider the results of August re-sit examinations, in September. The Boards of Examiners will take one of the following decisions which will then be notified to you by letter as well as by PEGASUS. (Make sure the University has your current address.) Whether you progress from one year to the next is determined by your performance in the examination diets. The Faculty of Science recognises good performance through the Faculty of Science Average Marks Scheme FoSAMS.

## FACULTY OF SCIENCE AVERAGE MARKS SCHEME(FoSAMS)

This is an additional progress route in which failures in individual classes can be compensated by a good overall performance. It operates alongside the existing progress regulations and determines progress on the basis of the average mark obtained each year at the first attempt. Students who progress via FoSAMS are assigned notional credits to bring the total passed up to the minimum number to be attempted for that year, excluding carried classes. Students who have not gained enough credits to proceed or the requisite FoSAMS average may still resit classes in the normal way to satisfy the progress regulations. See at <http://phys.strath.ac.uk/undergraduate/handbook> for details about FoSAMS.

The average marks that you need to achieve for progress from one year to the next are tabulated below

Degree Course	Credit-Mark Average
<b>2<sup>nd</sup> to 3<sup>rd</sup> Year</b>	
All MSci Degrees	50 %
All BSc (Hons) Degrees	45 %
BSc Physics and Applied Physics (Pass Degree)	40 %

Note that the Board **only** gives decisions relating to your *present* course, so "Withdraw", "Resit" etc. need to be understood in this context. But if you *change* course (for example, to a Pass Degree course) these decisions do not necessarily still apply. Ask for advice from your counsellor or adviser if in doubt.

### PASS

This means that you have passed in all the examinations in your curriculum, and that you are free to progress to the next year of your degree course without any resit examinations.

### MAY PROCEED FoSAMS

This means that although you have not passed in all of your examinations, but have performed at a satisfactory level for you to be awarded the minimum number of credits, excluding carried classes, for the current year of study. You are free to progress to the next year of your degree course without taking any resit examinations but those classes that you have failed will be shown on your transcript. It is therefore in your best interest to attempt the resit classes.

### MAY PROCEED

This means that although you have not passed in all of your examinations, you have obtained enough passes to go on to the next year of your course. This will apply only after the resit diet of examinations.

### RESIT

This decision indicates that you have to resit and pass the examination(s) in the class or classes specified before you can be permitted to proceed to the next year of your course. Only the first attempt is normally permitted in the Final Honours examinations. If you have had an attempt discounted then FoSAMS progression will be considered at the September Examination Board.

**DO NOT PROCEED (SUSPEND)**

If by the September Examination Board you have not satisfied the progress regulations, your registration will be suspended and you will not be permitted to attend classes for the following session. Instead, you must first resit and pass in enough classes in order to be allowed to continue on your course of study.

**TRANSFER**

A student who does not obtain sufficient passes to meet the requirements for progress on an Honours degree course may be required to transfer to the corresponding Pass Degree in the subject

**WITHDRAW**

A student whose performance is considered to be so bad that none of the above alternative decisions would be appropriate will be required by the Examination Board to withdraw from his or her present degree course.

Students who are suspended or required to withdraw from Honours courses will receive details of the BSc degree course in Natural Sciences. Many students have transferred to this degree after failing to meet the progress requirements of the course of their first choice, and have then succeeded in completing a course more appropriate to their needs.

Alternatively, it may be feasible to transfer to an alternative course in a subject that is more closely aligned to your present career intentions.

**REGISTRATION WITH ATTENDANCE**

A student who has been placed in academic suspension may re-attend the year that has just passed on a part-time basis. Up to half the curriculum of the previous year may be studied. Details of the registration with attendance scheme can be obtained from Registry.

**AWARD CERTIFICATE or DIPLOMA OF HIGHER EDUCATION**

The Certificate or Diploma of Higher Education has been awarded.

**ERASMUS SCHEME****Student Exchange Abroad**

The Department has exchange agreements with a number of Universities in Europe, in Austria, Germany, France, Poland, and Switzerland that allow students to spend up to a year studying abroad during their 3rd or 4<sup>th</sup> year. There are many benefits to studying abroad, from help with foreign language skills to enhancing your CV. You can find more information on the scheme at the Erasmus website <http://www.britishcouncil.org/erasmus-benefits.htm>.

If you are interested and would like to know more, see Dr F. Papoff before November. The number of such places is limited and preference is given to those whose academic progress suggests they will benefit from the extra challenge of study abroad.

**PRIZES**

A number of prizes are given at the end of each year of each course. The value of the prizes is usually quite modest: they are intended only as an incentive and encouragement as you work towards your degree. Details of the prizes can be found at <http://phys.strath.ac.uk/undergraduate/handbook>

## MOVING HOME?

It is important to keep **both** the University Registry and the Department informed of **any change in your address**, else important information (like examination and graduation information) might go astray. Change of Address forms are available from the Student Office, JA 8.31. Please always advise the Department of any change of address, that way you can ensure that we keep our records up to date.

## DIFFICULTIES

If you find yourself with a problem or in difficulty the University has people and procedures in place to help (please refer to the University Handbook for contact details of all the main University services) but within the department help is also available. You can go and see your counsellor or adviser in the first instance. Do not delay getting help as often the problems are much reduced if tackled early enough. If they cannot give help themselves, they will often know of others who can help.

## CLASS DESCRIPTORS

Details of the classes you will take can be found at <http://phys.strath.ac.uk/undergrad/classes.php>

## SAFETY

Safety is YOUR business and responsibility at all times. These notes supplement the Department's Safety Regulations and should be read carefully.

**Potential hazards in physics laboratories** include fire, electrical, materials and chemicals, machinery, gas cylinders, "common" accidents, ionizing radiation, laser UV, and microwave radiation. Special precautions are necessary for work on the roof of the John Anderson Building.

### Fire

Unlikely but potentially fatal to many people if it should happen. No smoking in labs. Do not let waste paper accumulate. Do not leave gas burners on unattended. Electrical equipment, especially older power supplies can go on fire if short circuited and wrongly fused. Rotary pump motors can seize (i.e. jam) and go on fire if not properly protected. In general switch off unattended equipment unless there is a good reason for leaving it on. Know where the fire exits are.

### Electrical

Current through heart stops operation of heart. Use safety equipment (see below). When adjusting equipment keep one hand away from equipment and away from any earthed conductor. This reduces current through heart from two-handed contact from 'live' to 'earth'. Know about resuscitation procedures - see notices displayed in every lab.

- Mains operated equipment including 5V power supplies, desk lamps etc.: Safety depends on correct wiring of plug, good quality cable, right fuse, proper earthing. "Tingly feeling" in finger when touching equipment indicates that it is not earthed properly. Report defects to demonstrator or lab technician - do not leave it for someone else.
- High voltage capacitor banks are very dangerous. Lethal charge is stored long after power supply switched off if fault occurs in protection circuits. Safety depends on good insulation and safety checks before alteration or maintenance (forbidden to students).
- Any high voltage equipment. "Tracking" occurs across surface of insulator. High voltage can then appear at unexpected places. Switch off power supply when altering circuit.
- Darkroom equipment - e.g. safety lights, driers etc. Dangerous because the darkroom is usually small, badly lit and wet (you are well earthed and hence at risk).

### Materials and chemicals

- Many common chemicals and solvents are toxic - cancer an important risk, e.g. Benzene, Carbon Tetrachloride, Chloroform. Good ventilation important. Tap water is not necessarily drinking water.
- Many solvents are inflammable - especially Benzene.
- Do not tip solvents down sink unless it is certain they will do no harm.
- Unless you have good knowledge of chemistry, do not mix chemicals without first getting expert advice.
- Alkali metals (e.g. sodium, potassium) react explosively with water.
- Mercury fumes are poisonous. If mercury gets spilled, inform demonstrator.
- Liquid nitrogen is cold but causes burns. Make sure it cannot splash into your eyes or onto your clothing.

- Asbestos fibres can lodge in lungs - cancer years later. Be cautious with asbestos and seek advice (there shouldn't be any asbestos in the lab).
- Many chemicals can cause dermatitis or other skin ailments (some people more susceptible than others). Keep your hands away from chemicals (gloves available if needed). Wash your hands if they should come into contact with chemicals of any sort.
- In general - do not eat in labs. Wash hands after leaving lab and before eating. Label all containers of chemicals and never use lemonade or similar bottles to store chemicals in.

### Machinery

- In lab, rotary pumps have powerful electric motor with drive belt. Belt guard is not infallible protection against long hair or tie being caught up in belt. Fans on diffusion pumps are also a hazard.
- In machine shop - get expert advice. You should not use machines without supervision.

### Gas cylinders

Contain gas at high pressure (~ 200 atmospheres). If a cylinder topples over, the danger results from its large weight and from the possibility that the cylinder neck may fracture (ejecting the valve). Gas cylinders should be secured to wall. Two valves to operate - get advice from demonstrator the first time you use one.

**"Common" accidents** e.g. falling down stairs, tripping over obstacles etc. Keep passageways clear of obstacles (e.g. bench stools, books, unused equipment) - especially in darkened labs. No horseplay in labs.

**Radioactive** or X-ray sources are covered by special rules. They must not be used without an approved scheme of work signed by the Department Radiation Protection Advisor.

**Lasers** are divided into classes:

1	Harmless
2 or 3A	Low power but precautions needed
3B	Medium power - severe eye damage possible
4	Severe eye and skin damage possible

Before using any laser other than a class 1 you must have permission from your Supervisor who will arrange for an approved scheme of work signed by the Departmental Radiation Supervisor.

**Roof of the John Anderson Building** – You are forbidden to go onto the roof unless you have permission in writing from your Project Supervisor. He will tell you the current procedures.

Finally your first accident may be one we have not thought of yet. So be careful.

*We believe the information provided in this handbook is correct at the date of publishing but may be subject to revision.*

N.B. THIS HANDBOOK CAN BE SUPPLIED IN A VARIETY OF FORMATS TO SUIT YOUR NEEDS. PLEASE CONTACT THE DEPARTMENT FOR MORE INFORMATION