

**LOUGHBOROUGH UNIVERSITY**

**DEPARTMENT OF PHYSICS**

**PROGRAMME HANDBOOK**

**for**

**Physics and Management (PMAN)**

**This document is for guidance purposes only. Students should always consult the current version of the Programme Regulations.**

**2011/12**

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## 1. Introduction

We welcome you to the University and give you our best wishes for a rewarding time here.

This document tells you the minimum you need to know, as a first year student, about the degree content of the *Physics and Management (PAM) programme*. The programme is of three years' duration, or four with industrial training or study abroad. This document will be updated each year; the current version can be downloaded from

<http://www.lboro.ac.uk/departments/ph/teaching/handbooks/PH>

The Department of Physics is responsible for the administration of this programme, which is taught jointly by the Department of Physics (PH) and the Business School (BS). In the next few pages you will find a list of those people most concerned with the administration of the programmes our *Aims* and *Intended Learning Outcomes* (what we hope you will get out of your time here) and a brief description of the content of each year. The *Programme Regulations* define the structure and content of the programme, and the *Module Specifications* describe the content of each module in more detail.

## 2. Sources of information

You will either be given the following, or will be able to access them through the Physics department web site <http://www.lboro.ac.uk/departments/ph/> Bookmark them now!

### Your Programme Handbook

This is the current document. It tells you about your programme.

#### ***The Physics Department Handbook***

This was given to you at induction. It gives information that is of common interest to students on all the Department's programmes.

The above two documents can be accessed from the Physics web site at

from <http://www.lboro.ac.uk/departments/ph/teaching/handbooks/PH>

#### ***The "Welcome to Loughborough University" Booklet***

This was sent to you before you arrived at Loughborough.

#### ***Programme Regulations***

These specify the requirements for all years of the degree programme: which modules are compulsory, which options are available, what you need to do to pass, etc. The details (such as option choices) will change from year to year, and the current version is accessible from the Physics web site.

#### ***Programme specifications***

These have further information about each degree programme and how the knowledge and skills you will acquire are delivered.

#### ***Module specifications ("modsspecs")***

These give the content for each module, the intended learning outcomes (what we expect you will get out of the module), a partial reading list and other useful information. You have the modsspecs for the modules you will be taking this year in your folder. You can consult the full list of the University's modules at <http://cisinfo.lboro.ac.uk:8081/CI/WR0015.MAIN>

#### ***The Learn server***

Resources for many of your modules are on the web at <http://learn.lboro.ac.uk/>, or will be placed there as the semester progresses.

### **The Student Handbook**

This is on the web at <http://www.lboro.ac.uk/admin/ar/student/handbook/index.htm>. It covers the University's facilities, regulations and policies. You will need to look at this.

### **The Study Guide**

This is produced by Professional Development. It is available on the web at

[http://www.lboro.ac.uk/service/ltd/st\\_guide.htm](http://www.lboro.ac.uk/service/ltd/st_guide.htm).

### **The Web**

The University and the Physics Department have put a lot of useful information for students on the Web. The two most useful places to start are

<http://www.lboro.ac.uk/students/index.html> (for University information)

<http://www.lboro.ac.uk/departments/ph> (for Department information)

Networked PCs are available in W2.75, the library and, 24 hours a day, in various other places around campus.

## **3. Communication between staff and students**

### ***It's good to talk***

A good time to catch members of staff is at the end of one of their lectures or in a teaching laboratory. If that is not convenient, then go and knock on their office doors and discuss your question or make an appointment; if they are not in, and leave a message by email, under the office door. Staff timetables are often placed on staff office doors.

### ***Electronic Mail***

This is often the easiest means of communication (unless your question requires a long discussion at the blackboard). Do check your e-mail frequently, preferably every day. For security and privacy reasons, we will only contact you through your [@student.lboro.ac.uk](mailto:student.lboro.ac.uk) address and not any other address you may have. All Physics staff check their email at frequent intervals; their addresses are listed in the Departmental handbook.

### ***The Physics Department Noticeboards***

The main noticeboards that you need to keep an eye on are the Part A Noticeboard outside the First Year Laboratory (W2.21) and the General Noticeboard outside the Second Year Laboratory (W2.24). You should check these frequently.

### ***The Physics Department Pigeon Holes***

These are outside the First Year Laboratory and should be checked frequently, as letters to you may be delivered there.

## **4. Staff**

The people listed here have administrative responsibility for the programme. The complete Physics staff list is in the Physics Department Handbook. We are all here to help you; please don't hesitate to ask if you have any problems.

<b>Responsibility</b>	<b>Name Email</b>	<b>Room Phone</b>
<i>Head of Department of Physics</i>	Prof Feo Kusmartsev	W215

	F.Kusmartsev@lboro.ac.uk	223316
<i>Programme Tutor</i> Overall responsibility for programmes Advice on module choices	Dr Boris Chesca B.Chesca@lboro.ac.uk	W217 223985
<i>Administrator</i> Timetables, module registrations, etc	Mrs Meredith Coney M.R.Coney@lboro.ac.uk	W184 222880
<i>Industrial Tutor</i> Industrial placements	Dr Cyril Alekseev K.Alekseev2@lboro.ac.uk	W138 223311
<i>European Mobility Coordinator</i> Study abroad	Dr Klaus Neumann K.U.Neumann@lboro.ac.uk	W1.48 223310
<i>Business School contact for Physics and Management</i>	Dr Laurie Mcaulay L.Mcaulay@lboro.ac.uk	222431

## 5. Aims and Intended Learning Outcomes

Your programme has been designed with some specific aims and outcomes in mind. These are listed below and provide the motivation for the content of your degree programme, and list the knowledge and skills you should get out of it. They differ somewhat between programmes: consult the Programme Specifications for details.

### 5.1. Aims

The University's mission is "education, academic enquiry and the advancement of knowledge, to provide the highest quality of educational experience and the widest opportunities for students, to advance industry and the professions, and to benefit society".

Within the context of this Mission Statement, the Department aims

- (i) to communicate to students the laws and phenomena that comprise the world view of the physicist.
- (ii) to educate students as physicists in preparation for employment in industry, public service or academic research: to provide the knowledge, competence and skills expected of a physicist.
- (iii) to provide an environment that gives students opportunities to develop their own interests, self-reliance and career aspirations.
- (iv) to enable students to apply a broad understanding of the basic principles of physics to the solution of physical problems.
- (v) to provide the student with enhanced skills in mathematics, problem solving, experimental techniques, scientific report writing and the collection and analysis of information.
- (vi) to provide the student with enhanced skills in presenting information and the use of information technology.

### 5.2. Intended Learning Outcomes

### **5.2.1. Knowledge and Understanding**

The degree programmes cover the fundamental topics of physics, provides a selection of advanced topics and develops experimental, mathematical, computational and other transferable skills. On successful completion of these programmes students should have demonstrated

1. knowledge and understanding of most fundamental physical laws and principles and competence in the application of these principles to diverse areas of physics.
2. an ability to solve problems in physics using appropriate mathematical tools.
3. an ability to identify physical principles relevant to a problem and to make approximations necessary to obtain solutions.
4. an ability to execute and analyse critically the results of an experimental investigation and to draw valid conclusions with an estimate of the uncertainty in the result. The ability to critically compare experimental results with the predictions of theory.
5. an ability to use competently IT packages and a knowledge of computer programming.
6. an ability to communicate scientific information especially in the form of clear and accurate scientific reports.
7. Foundation disciplines of management, including economics, business mathematics and statistics.
8. An understanding of business finance and reporting.

### **5.2.2. Skills and Attributes**

*Subject specific cognitive skills:*

On successful completion of the programme students should be able to

1. demonstrate knowledge and understanding of essential facts, concept, principles and theories relating to the areas listed.
2. apply such knowledge and understanding to the solution of qualitative and quantitative problems of a familiar and unfamiliar nature.
3. recognise and analyse novel problems and plan strategies for their solution.
4. evaluate, interpret and collate information and data.

*Subject specific practical skills:*

On successful completion of the programme students should be able to

1. observe, accurately record and analyse, including estimates of accuracy, the results of experiments into physical processes.
2. design an experiment to test a physical theory.
3. communicate ideas effectively by means of written reports and orally.
4. plan and execute a research project on a topic of current scientific interest.
5. apply appropriate mathematical or computing tools to a physical problem.
6. Prepare and interpret financial reports.

7. Apply techniques for understanding and managing people at work.
8. Apply the principles of marketing.

*Key/transferable skills:*

On successful completion of the programme students should be able to

1. formulate problems in precise terms and identify key issues, construct logical arguments and use technical language correctly.
2. use standard IT packages (word processors, spreadsheets) and write computer programs.
3. listen carefully, read demanding texts and present complex information in a clear and concise manner.
4. demonstrate study skills for continuing professional development.
5. demonstrate retrieval skills for directly taught and independently acquired information and for primary as well as secondary information sources.

More details of how the programmes deliver and assess these are in the *Programme Specifications*.

## **6. Understanding your Programme Regulations**

Your programme of study (i. e., your degree course), consists of a series of modules (individual subjects). In each year of the programme, you are required to take modules having a total modular weight of 120; most modules have weight 10, but the final-year project and a few other modules have a larger weight. For each module the pass mark is 40%. If you get 40% or above in a module of modular weight 10 you accumulate 10 credits; if you get below 40% you get no credits for the module. You need **at least 100 credits to pass each year**; in addition, you need **at least 30% in all modules**. There are additional requirements for some years of some programmes, described below.

All of the modules in the first three semesters are compulsory; you will have more choice in the final year. At the beginning of each academic year you will register for all the modules you will be taking (although you can make changes at the beginning of the relevant semester). The *Programme Regulations* contain the module codes and titles. These regulations and the range of modules offered can change from year to year. You will be supplied with updated regulations as needed.

This handbook contains most of the module specifications relevant to your option choice. If you need to see others then you will need to consult the module database at <http://lusi.lboro.ac.uk/epublic/wp5016.main?dept=PH&dept2=ph> The Learn server <http://learn.lboro.ac.uk> may also have useful information about the module content.

The first-year assessment is for progression only and does not contribute to your degree classification. After Part A, all the modules you take count towards your degree classification.

### 6.1. Part A (First year)

For the time being you need to study the following parts of the *Programme Regulations*: section 1 (about the programme structure), section 2 (1) (about the content of Part A, i.e. your first year) and section 3 about the requirements for progression to Part B (i.e. your second year).

In section 2 (1) you will see various modules listed together with their codes (e.g. “PHA101”) and modular weights. Each of these modules has a modular weight of 10. Paragraph 3 of your Programme Regulations and the General Regulations for Undergraduate Awards say that at the end of this academic year you need to satisfy all three criteria below to progress to Part B (i.e. the second year):

**(i) You need to accumulate 100 credits, i.e. you need to get a mark of 40% or more in at least ten modules.**

**(ii) You also need to get a mark of at least 30% in all modules.**

If you fail either of these criteria then you will have the right to resit some modules, but once only and (with a few exceptions) the minimum number of modules required to pass. Details are in the *Student Handbook*. You may resit either in the Special Assessment Period (SAP), around the end of August/beginning of September, or when the module is next taught in the following year (in which case you will not be able to progress for another year).

The modules available in each semester of Part A are given in the Programme Regulations. Physics lecture modules usually comprise two lectures a week and one problem class a fortnight. This pattern continues for all three years.

As indicated in the *Departmental Handbook*, Part A students have weekly small-group Physics tutorials that are related to the topics in the Physics modules. A list of groups will be posted at the beginning of each semester. You should contact your *Academic Tutor* (the member of staff you will meet for tutorials) to arrange a mutually convenient time for these tutorials.

You will see in paragraph 3 that your final degree classification does not depend on your performance in part A (so long as you pass the year). However it needs to be strongly emphasised that in physics we are continually building one idea on another, so you will need to have a good mastery of all your first year modules in order to be able to cope with second year modules. You will also receive a transcript detailing marks received in all modules in all years.

There are five Physics (PH), two Mathematics (MA) and five Business School (BS) modules; there are no optional modules.

### 6.2. Part B (Second year)

The Modules are as given in the *Programme Regulations*. There are five Physics (PH) one Mathematics (MA), five compulsory and one optional Business School (BS) modules giving a range of essential core Physics, Mathematics and Business subjects. As in Part A, most PH modules also include one problem class for every four lectures. *Please note that we cannot set a resit in the laboratory module*; if you get less than 30% in this then it is impossible to progress to Part C next September and you will have to re-attend the laboratory classes next year.

### 6.3. Part I (Industrial Training/European Mobility)

In the sandwich programme (4-year BSc), you spend a year between Part B and C either in industry or in a research establishment (in the UK or elsewhere) or at a university in Australia, Austria, France, Germany, Poland, Spain or the USA. You should consult the relevant pages in the *Departmental Handbook* and contact the *Industrial Tutor* or *European Mobility Coordinator* early in your second year. If you are registered on the non-sandwich programme and wish to transfer to the sandwich programme, you should inform your Local Education Authority by the

end of your first year. On successful completion, you will be awarded a Diploma in Industrial Studies or a Diploma in International Studies on graduation.

#### 6.4. Part C (Final year)

The Physics and Management Project, which is a 20-credit module and spread over both semesters, as well as three other Physics Modules and BSC570 Strategic Management Module (20 credits) are all compulsory. The modules available in each semester of Part C are given in the Programme Regulations. You must choose optional Physics modules (PH or MA code) of total weight at least 20 and optional Business School modules (BS code) of total weight at least 20 to make up a total modular weight of 120.

To pass Part C, you need to pass modules of weight at least 100 credits. If you fail the final year, you can only resit the following year; there is no final-year SAP for summer resits. You can resit all failed modules in the following year.

#### 6.5 Your Degree Result

Regulation 3 specifies how your final degree mark and honours classification will be calculated. For each Part your average mark is calculated (in which each module mark is weighted by the modular weight, and resit marks are capped at 40%).

The overall degree mark is  $0.4 \times (\text{Part B mark}) + 0.6 \times (\text{Part C mark})$

Candidates who have enough credits are then awarded honours as follows:

Honours classification	Threshold mark
1st class	70%
2nd class, upper division	60%
2nd class, lower division	50%
3rd class	40%
Pass (unclassified)	< 40%

Module Marks below 40% for degree level modules will be included in the calculation, even though no modular credit has been awarded for these modules. The classification thresholds may be lowered by up to 3% at the discretion of the final-year Programme Board, which meets to determine degree classifications after the exams have been marked. Some students (often those just below a borderline) may be called to a viva voce examination. A good performance here can bring you above the borderline.

## 7. Accreditation by the Institute of Physics

These programmes have been accredited by the Institute of Physics <http://www.iop.org/>, the professional body for British physicists. This means that they are recognised as part of the necessary qualifications for becoming a Chartered Physicist (CPhys) and Member of the Institute of Physics (MInstP).