BSc PHYSICS AND METEOROLOGY   UCAS Code FF39
Degree programme for students entering Part I in October 2004

Awarding Institution:	The University of Reading
Teaching Institution:	The University of Reading
Relevant QAA subject benchmarking group:	Physics
Faculty of Science	Programme length: 3 years
Date of specification:	20 March 2004
Programme Director:	Dr D Dunn
Programme Adviser:	Dr R Reynolds
Board of Studies:	MMP

Accreditation: This degree programme has been accredited by the Institute of Physics and by the Royal Meteorology Society.

Transferable skills
The University's Strategy for Teaching and Learning has identified a number of generic transferable skills that all students are expected to have developed by the end of their degree programme. In following this programme, students will have had the opportunity to enhance their skills relating to career management, communication (both written and oral), information handling, numeracy, problem-solving, team working and use of information technology.

By the end of the programme students are expected to have gained experience and show competence in the following transferable skills: IT (word-processing, using standard and mathematics software), scientific writing, oral presentation, team-working, problem-solving, use of library resources, time-management, career and management and planning.

Programme content
The profile that follows states which modules must be taken (the compulsory part), together with one or more lists of modules from which the student must make a selection (the "selected" modules). Students must choose such additional modules as they wish, in consultation with their programme adviser, to make 120 credits in each Part. The number of modules credit for and the level of each module are shown in brackets after its title.

PART 1 *(2004-2005)*
Compulsory Modules

Module Code	Module Name	Credits	Level
PH1001	Concepts in Physics	20	C
PH1002	Classical Physics	20	C
MA111	Mathematics for Scientists	20	C
PH1101	Current Research Topics I	10	C
PH1201	Problem-solving	10	C
MT11A	Introduction to Atmospheric Science	20	C
MT11B	Weather Systems Analysis	20	C

PART 2 (2005-2006)
Compulsory Modules

Module	Module Name	Credits	Level
PH2001	Thermal Physics	20	I
PH2002	Quantum Physics	20	I
PH2003	Electromagnetism	20	I
PH2501	Applied Physics	10	I
MT24C	Numerical Methods for Environmental Science	10	I
MT24A	Atmosphere & Ocean Dynamics 1	10	I
MT25A	Atmosphere & Ocean Dynamics 2	10	H
MT24B	Atmospheric Physics 1	10	I
MT25B	Atmospheric Physics 2	10	H

Note: PH2001 contains 5 credits of Career Skills

PART 3 (2006-2007)
Compulsory Modules

Module	Module Name	Credits	Level
PH3701	Relativity	10	H
PH3702	Condensed Matter	10	H
PH3703	Atomic & Molecular Physics	10	H
PH3801	Nuclear & Particle Physics	10	H
MT37B	Remote sensing	10	H
MT37C	Clouds radiation & climate	10	H
PH3709	Statistical Mechanics	10	H

Selected Modules
Group 1
Choose **EITHER**

PH3003	Physics Project	40	H

OR

MT37A	Meteorology Project, phase 1	20	H
MT38A	Meteorology Project, phase 2	10	H

Group 2
Choose EITHER

PH3809	Problem-Solving in Physics	10	H

OR

MT38E	General studies in Meteorology	10	H

Group 3
If Meteorology Project chosen, choose ONE from

MT26F	Atmospheric analogues	10	H
MT37G	Oceanography	10	H
MT38H	Global circulation	10	H
MT38L	Numerical weather prediction	10	H

Progression
To proceed to Part 2 of this degree it is sufficient to obtain an average of at least 40%; at least 40% in the Physics modules averaged together; and at least 40% in the Meteorology modules averaged together with no module mark below 30%.

Marks of less than 30% in modules to a total of 20 credits, except for modules PH1001, PH1002, MA111, MT11A and MT11B, may be condoned provided that the candidate has pursued the course for the module with reasonable diligence and has not been absent from the examination without reasonable cause.

To proceed to Part 3 of this degree it is sufficient to obtain an average of at least 40%, with no module mark below 30%.
Marks of less than 30% in modules to a total of 20 credits may be condoned provided that the candidate has pursued the course for the module with reasonable diligence and has not been absent from the examination without reasonable cause.

Summary of teaching and assessment
A wide variety of teaching/learning methods are used; lectures; problem-solving workshops; independent-learning; FLAP; practical laboratories; computational laboratories; projects.
The teaching is organised in modules: In a typical lecture-based module the teaching is supplemented by problem-solving workshops that provide interaction between student and lecturer.
Modules are assessed by a combination of continuous assessment and formal examinations. The aim of the continuous assessment is to provide feedback to each student as the module progresses.
The final-year project (under the guidance of a project supervisor) provides an opportunity for independent learning and investigation.

The contributions of Part 2 and Part 3 to the final assessment are in the proportion 1:2.

Admission requirements
Entrants to this programme are normally required to have at least:
UCAS Tariff 280 pts, including 180 pts in physics and mathematics.
There is no points distinction between BSc and MPhys entry but MPhys has more stringent progression rules at the end of the second year.

Admissions Tutor: Dr M Hilton.

Support for students and their learning
University support for students and their learning falls into two categories. Learning support includes IT Services, which has several hundred computers and the University Library, which across its three sites holds over a million volumes, subscribes to around 4,000 current periodicals, has a range of electronic sources of information and houses the Student Access to Independent Learning (S@IL) computer-based teaching and learning facilities. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme. Student guidance and welfare support is provided by Personal Tutors, the Careers Advisory Service, the University's Special Needs Advisor, Study Advisors, Hall Wardens and the Students' Union.

Within the contributing departments additional support is given though practical classes in Part 1. The development of problem-solving skills is assisted by extensive provision of model solutions to problems. There is a Course Adviser to offer advice on the choice of modules within the programme.

Career prospects
In recent years the graduates on Reading physics-based degrees have progressed to careers in
- Scientific Research in Government and Industrial Laboratories
- Computing and IT industry
- Electronic engineering
- Production engineering
- Management in industry
- Accountancy and Financial Sector

and also to Further education (PhD, MSc and BEd degrees).

Opportunities for study abroad
There are no formal arrangements for this degree programme but a transfer to the degree *Physics with a Year in Europe* may be possible.

Educational aims of the programme
To provide graduates with a secure and demonstrable knowledge and skills base in physics, an appreciation of the context and impact of physics and the ability to apply the power of scientific methodology.

Programme Outcomes
The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas:

Knowledge and Understanding

A. Knowledge and understanding of:	Teaching/learning methods and strategies
1. The empirical nature of physics: that theories must be testable and must be tested quantitatively. 2. The core topics of physics: classical and quantum mechanics; thermal and statistical physics; wave, optics and electromagnetism; particle physics. 3. The application of physical and mathematical methods to the description, modelling and prediction of physical phenomena.	The knowledge required for the basic topics is delineated in formal lectures supported by problem-solving workshops. The knowledge required for more specialist topics is enhanced through self-learning based on guided reading, problem solving and project work. *Assessment* Most knowledge is tested through a combination of coursework and unseen formal examinations. Practical work is assessed by means of logbooks, reports and viva examinations. Dissertation and oral presentations also contribute.

Skills and other attributes

B. Intellectual skills – the ability to:	**Teaching/learning methods and strategies**
1. Recognise and use subject-specific theories, paradigms, concepts and principles 2. Analyse, synthesise and summarise information critically 3. Apply knowledge and understanding to address familiar and unfamiliar problems 4. Collect and integrate evidence to formulate and test hypotheses	Most modules are designed to develop 1 and 2. 1, 2 and 3 are enhanced through the use of coursework assignments, and project work. 4 is enhanced mainly by project work. *Assessment* 1-3 are assessed indirectly in most parts of the programme. 3 is also assessed by a general problem-solving paper in finals. 4 is assessed in the final-year project.

C. Practical skills	**Teaching/learning methods and strategies**
1. Planning, conducting, and reporting on experimental investigations 2. Planning, conducting, and reporting on theoretical/computational investigations 3. Referencing work in an appropriate manner	Laboratory work, projects and IT classes are designed to enhance skills 1 and 2. 3 is emphasised through guidelines and advice given to students in connection with projects. *Assessment* 1 and 2 are tested in laboratory and project modules. 3 is included within the assessment of laboratory and project reports.

D. Transferable skills	**Teaching/learning methods and strategies**
1. Communication: the ability to communicate knowledge effectively through written and oral presentations. 2. Numeracy and C & IT: appreciating issues relating to treatment of laboratory data; preparing, processing, interpreting and presenting data; solving numerical problems using computer and non-computer based techniques; using the Internet critically as a source of information. 3. Interpersonal skills: ability to work with others as a team, share knowledge effectively; recognise and respect the views and opinions of other team members. 4. Self management and professional development: study skills, independent learning, time management, identifying and working towards targets for personal, academic and career development 5. Library skills: the effective use of library and internet resources.	Skill listed under 1 and 2 are developed throughout most of the programme, but especially through practical and project work. 3 is encouraged through team-working within several modules. 4 is enhanced partly through the provision of a Career Development Skills module during part 3, and partly through a PAR tutorial system. 5 is covered by *study skills* incorporated in Part I modules. *Assessment* 1 is assessed directly as an outcome of project work, and contributes to the assessment of practical work. 2 is assessed directly in the *Computational Physics* module and indirectly in most laboratory modules. Skills in 3, 4 and 5 are not assessed but their effective use will enhance performance in H level modules.