MPhys (Hons) Applied Physics

Programme Specification

Primary Purpose

Course management and quality assurance.

Secondary Purpose

Detailed information for students, staff and employers. Current students should refer to the related Course Handbook for further detail.

Disclaimer

The University of Portsmouth has checked the information given in this Programme Specification. We will endeavour to deliver the course in keeping with this Programme Specification; however, changes may sometimes be required arising from annual monitoring, student feedback, review and update of units and courses. Where this activity leads to significant changes to units and courses, there will be prior consultation of students and others, wherever possible, and the University will take all reasonable steps to minimize disruption to students. It is also possible that the University may not be able to offer a unit or course for reasons outside of its control, for example; the absence of a member of staff or low student registration numbers. Where this is the case, the University will endeavour to inform applicants and students as soon as possible. Where appropriate, the University will facilitate the transfer of affected students to another suitable course.

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Course Details

1. Named Awards

MPhys (Hons) Applied Physics.

2. Course Code (and UCAS Code if applicable)

C2546F

3. Awarding Body

University of Portsmouth

4. Teaching Institution

University of Portsmouth

5. Accrediting Body

Institute of Physics (course now recognised; accreditation in progress)

6. QAA Benchmark Groups

QAA Physics, Astronomy and Astrophysics

7. Document Control Information

June 2017

8. Effective Session

2017 - 2018

9. Author

Dr Chris Dewdney.

10. Faculty

Science

11. Department

School of Earth and Environmental Sciences

Curriculum

12. Educational Aims

To develop competent applied physicists with a broad knowledge of physics and its application.
In addition, and more generally, the course aims to:

- Provide a stimulating programme in physics to develop a sound base of knowledge and understanding with particular emphasis on applications
- Develop critical, analytical, practical, professional, problem solving, research and communication skills and prepare students for postgraduate study and / or professional qualifications in employment

- Provide insight and experience, in some areas of physics, to the frontiers of research.
- Develop the skills necessary for life-long independent learning.
- Develop an appreciation of what constitutes ethical scientific behaviour.
- Provide a supportive, challenging, stimulating and rewarding study environment.
- Develop a range of key life and employability skills through a range of opportunities provided in the study units.
- Accommodate student needs in relation to maximising their career potential by enabling them to develop knowledge, understanding and skills in their chosen areas of interest.
- Gain experience of working in a group or individually on an open-ended applied physics project of current interest in industry or research.
- Cover in-depth an area of contemporary applied physics enabling engagement with research publications.
- Gain experience of working in a research group through project work requiring advanced experimental, theoretical or computational techniques and inspiring some originality.
- Be very well placed to be immediately productive in pursuing a research related career in industry or academia.

13. Reference Points

The major reference points for the development of this programme were:

- University of Portsmouth Curriculum Framework Document (2014)
- The revised (2011) curricula requirements of the Institute of Physics (IOP) have been instrumental in the design of the programme.
- The scholarship and research expertise of academic members of staff
- QAA Code of Practice for the Assurance of Academic Quality and Standards in Higher Education
- Framework for Higher Education Qualifications (FHEQ)
- National Qualifications Framework
- QAA Subject Benchmark Statement, Physics, Astronomy and Astrophysics (QAP)
- University of Portsmouth Examination and Assessment Regulations (2015)
- University of Portsmouth Employability Strategy (2009)

14. General Learning Outcomes

Level 4

Certificates of Higher Education are awarded to students who have demonstrated:

- knowledge of the underlying concepts and principles associated with their area(s) of study, and an ability to evaluate and interpret these within the context of that area of study
- an ability to present, evaluate and interpret qualitative and quantitative data, in order to develop lines of argument and make sound judgements in accordance with basic theories and concepts of their subject(s) of study

Typically, holders of the qualification will be able to:

- evaluate the appropriateness of different approaches to solving problems related to their area(s) of study and/or work
- communicate the results of their study/work accurately and reliably, and with structured and coherent arguments
- undertake further training and develop new skills within a structured and managed environment

And holders will have:

- the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility

Level 5

Diplomas in Higher Education are awarded to students who have demonstrated:

- knowledge and critical understanding of the well-established principles of their area(s) of study, and of the way in which those principles have developed
- ability to apply underlying concepts and principles outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context
- knowledge of the main methods of enquiry in the subject(s) relevant to the named award, and ability to evaluate critically the appropriateness of different approaches to solving problems in the field of study
- an understanding of the limits of their knowledge, and how this influences analyses and interpretations based on that knowledge

Typically, holders of the qualification will be able to:

- use a range of established techniques to initiate and undertake critical analysis of information, and to propose solutions to problems arising from that analysis
- effectively communicate information, arguments and analysis in a variety of forms to specialist and non-specialist audiences, and deploy key techniques of the discipline effectively
- undertake further training, develop existing skills and acquire new competences that will enable them to assume significant responsibility within organisations

And holders will have:

- the qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and decision-making

Level 6

Bachelor's degrees with honours are awarded to students who have demonstrated:

- a systematic understanding of key aspects of their field of study, including acquisition of coherent and detailed knowledge, at least some of which is at, or informed by, the forefront of defined aspects of a discipline
- an ability to deploy accurately established techniques of analysis and enquiry within a discipline
- conceptual understanding that enables the student:
  - to devise and sustain arguments, and/or to solve problems, using ideas and techniques, some of which are at the forefront of a discipline
  - to describe and comment upon particular aspects of current research, or equivalent advanced scholarship, in the discipline
- an appreciation of the uncertainty, ambiguity and limits of knowledge
- the ability to manage their own learning, and to make use of scholarly reviews and primary sources (for example, refereed research articles and/or original materials appropriate to the discipline)

Typically, holders of the qualification will be able to:

- apply the methods and techniques that they have learned to review, consolidate, extend and apply their knowledge and understanding, and to initiate and carry out projects
- critically evaluate arguments, assumptions, abstract concepts and data (that may be incomplete), to make judgements, and to frame appropriate questions to achieve a solution - or identify a range of solutions - to a problem
- communicate information, ideas, problems and solutions to both specialist and non-specialist audiences

And holders will have:

- the qualities and transferable skills necessary for employment requiring:
  - the exercise of initiative and personal responsibility
  - decision-making in complex and unpredictable contexts

- the learning ability needed to undertake appropriate further training of a professional or equivalent nature

Level 7

Master's degrees are awarded to students who have demonstrated:

- a systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study or area of professional practice
- a comprehensive understanding of techniques applicable to their own research or advanced scholarship
- originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline
- conceptual understanding that enables the student:
  - to evaluate critically current research and advanced scholarship in the discipline
  - to evaluate methodologies and develop critiques of them and, where appropriate, to propose new hypotheses

Typically, holders of the qualification will be able to:

- deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate their conclusions clearly to specialist and non-specialist audiences
- demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level
- continue to advance their knowledge and understanding, and to develop new skills to a high level

And holders will have:

- the qualities and transferable skills necessary for employment requiring:
  - the exercise of initiative and personal responsibility
  - decision-making in complex and unpredictable situations
- the independent learning ability required for continuing professional development

15. Learning Outcomes

A. Knowledge and Understanding of:

A.1 The principles of Mechanics and Relativity, Quantum Physics, Condensed Matter Physics, Oscillations and Waves, Electromagnetism, Optics, Thermodynamics and Statistical Physics (QAP, IOP).

A.2 The mathematical and computational principles and techniques necessary for A1.

A.3 The application of physics in a variety of contexts.

A.4 The methods of solution of problems through the design and execution of practical experimental investigations, and mathematical and computational models.

A.5 Advanced practical or theoretical and computational applied physics topics and presentation standards appropriate to the professional research level.

B. Cognitive (Intellectual or Thinking) Skills, able to:

B.1 Plan, conduct and report on a programme of research including the formulation and testing of hypotheses using appropriate research methods. Critically evaluate arguments, assumptions and data, make judgements and frame questions to achieve a solution to a problem or identify a range of solutions.

B.2 Select, apply and evaluate appropriate mathematical, scientific, laboratory and computer-based methods and principles in the analysis and solution of a variety of physical problems.

B.3 Be creative and innovative in the analysis and solution of physical problems and presentation of results.

B.4 Generate, analyse and process data to test a hypothesis and to assess the reliability of data in order to critically assess the significance of results, and to generate, analyse and relate results from numerical modelling or experiment, to the relevant theory.

B.5 Work with confidence from basic core physics principles to develop an understanding of physical processes in a wide variety of contexts and, on the basis of such understanding, to propose and assess solutions to topical problems.

B.6 Work with confidence individually, and in groups, critically appraising published research and using advanced specialised equipment and/or theoretical and computational techniques to understand, predict and test the behaviour of novel complex physical.

C. Practical (Professional or Subject) Skills, able to:

C.1 Plan, conduct and report professionally on practical laboratory, field or computational scientific investigations using appropriate research methods.

C.2 Collect, record and analyse data using a variety of suitable techniques critically comparing real systems with theoretical or computational model predictions as appropriate.

C.3 Undertake field and laboratory investigations in a responsible and safe manner, paying due attention to risk assessment, rights of access, relevant health and safety regulations, and sensitivity to the impact of investigations on the environment and human health.

C.4 Critically evaluate and use scientific literature appropriately and cite references correctly.

C.5 Identify and work towards targets for personal, academic and career development including the ethical dimension and commercial awareness and opportunities for enterprise.

C.6 Develop an adaptable, flexible and professional approach to study and work.

C.7 Develop the skills necessary for self-managed and lifelong learning including an opportunity to develop second language skills.

C.8 Prepare a concise, informative and accurate written report with an advanced treatment of errors and evaluation of significance, based on work carried out during the project, in the style of a scientific paper in a relevant research journal.

C.9 Prepare a professional referee report on another’s paper.

C.10 Manage individual activity and ensure coherence of personal contribution whilst working collaboratively in a research team to ensure progress of a major extended research-based project in applied physics using appropriate research methods and techniques.

D. Transferable (Graduate and Employability) Skills, able to:

D.1 Communicate appropriately to a variety of audiences in written, oral and graphical forms using a variety of media.

D.2 Critically evaluate data considering sample selection, accuracy, precision and uncertainty during planning, collection, recording and analysis of data in the field and laboratory.

D.3 Retrieve, evaluate and combine data from a variety of sources.

D.4 Identify individual and collective goals and responsibilities and perform ethically and in a manner appropriate to these roles.

D.5 Recognise and respect the views of others and evaluate performances as an individual and a team member.

D.6 Analyse and solve problems using theoretical, computational and practical techniques.

16. Learning and Teaching Strategies and Methods

- Physics is a hierarchical subject and the core of physics (A1) is developed as the course progresses. Subject knowledge and understanding is acquired through a blended range of lectures, seminars, desk studies, field, laboratory and coursework practical individual and group exercises. The core belief that active learning generates deep learning is reflected in many of the pedagogic methodologies employed.
- Mathematical principles and techniques are developed specifically within the physics context in particular units at level 4 and level 5 (A2).
- Although application of physics is stressed throughout all units, specialist optional units at levels 5 and 6 develop a knowledge and understanding of broader issues, for example Materials Science, Energy Resources and Climate Change, and the essential role of core physics within such topics. There is a strong emphasis on applied problem solving throughout the course. (A3)
- Knowledge of instruments and experimental techniques is developed through the practical units, but practical work is also a vehicle for developing a deep understanding of the core of physics in some units (A3, A4). Complementary to instrumental methodologies, computer modelling and simulation play a vital role in understanding complex physical systems and these skills are developed explicitly within the Computational Physics units at level 4, 5 and 7 and in specific contexts throughout the degree.
- In addition to units that develop appropriate general methodologies many units develop a series of problem-based investigations also intended to extend deep learning of the core of physics (A4).
- Research papers in the field of study inform the advanced applied physics units at level 6 and 7. Students are expected to read and appraise research papers independently and discuss and critically appraise possible new ideas to develop novel applications. (A5)
- Advanced professional practical or theoretical and computational techniques and understanding suitable for research in advanced topics at the forefront of the discipline are developed through individual and group problem solving and modelling activities in the units at level 6 and 7. (A5)
- Cognitive skills are embedded throughout the programme and are developed through the teaching and learning programme.
- Research methods are initially explicitly introduced in Space Science and Applications of Physics that requires critical use and combination of a variety of sources of information. Research methods are also taught embedded within many units and especially in the laboratory units where problem-based learning requires the use of a variety of research methodologies.
- B1 is particularly developed during the level 6 and 7 projects. The major level 7 project should be starting to approach a professional standard and in a style suitable for publication in a relevant journal.
- Problem analysis and solution is the basis of applied physics and so B2 is developed in a variety of contexts through all units.
- B3 is encouraged through many units; including in particular the practical, laboratory and field units at levels 4 and 5 as well as the projects.
- B4 is primarily developed through the practical units and the projects, although other units will also contribute in this respect.
- B5 is demonstrated within many units especially the level 5, 6 and 7 options (for example Multiferroic Materials and Their Applications, Energy Resources and Climate Change).
- B6 is demonstrated in the level 7 project and other units at level 7.
- Laboratory classes involving all aspects of C1-C4 are a feature of many units within the Applied Physics course. C1-C3 are particularly stressed in the Practical Laboratory units and Computational Physics at levels 4 and 5 and the level 6 and 7 project.
- C4 is developed in all units where essay or report coursework is a requirement and where students are taught and required to use an appropriate referencing standard. Specific examples of such units are the level 7 units and the level 6 and 7 projects. Skill in the use of a variety of

research methods is developed explicitly through the problem-based learning activities undertaken in the level 5 laboratory unit.

- C5-C7 are introduced at level 4 in the Space Science and Applications of Physics unit at level 4 and form a major component of the level 5 Practical Laboratory and Field Physics unit. There is an elective slot at level 5 where students may choose to study a second language.
- As the course progresses through the stages students develop skills appropriate to C6 and C7 and by level 6 are required to embrace flexible approaches for self-managed learning (specifically in self-managed project work in the project and the options).
- C8-C10 are developed during individual tutorial supervision sessions during the major project at level 7.
- D1 is developed in a number of units where students are required to give oral and graphical presentations to staff and their peer groups. The project also requires both an oral and written presentation of the results of the work.
- D2 is addressed in a number of units where there is a laboratory component. Specifically, the Practical Laboratory and Field Physics units address this requirement.
- D3 is addressed in the preparation for the project and the project itself and in many other units where research work is required. Critical use of a variety of sources of information and research methods is essential within a number of units though out the degree including the project.
- D4 and D5 are addressed specifically in the units requiring group work, for example Applications of Physics in Astronomy and Industry and the group project unit. Many other units also require students to work in groups and assess their own and group members' performance.
- D6 is a vital component of all of the units as may be expected in any Physics degree. Problem solving techniques and practice is provided through the on-line Mastering Physics system at levels 4 and 5.

17. Assessment Strategy

Assessment of the knowledge base and subject understanding is through a combination of:

- Unseen examinations, in-class tests [A1, A2, A3]
- Assessed coursework that takes the form of essays, coursework reports, laboratory reports, oral examinations and presentations as appropriate to the units studied. [A4-4]
- Assessment is also through level 6 and 7 projects. [A1-4]
- The outcome of the level 7 project will be a written report, approaching the professional standard, in the style of a scientific publication in a relevant research journal and in addition a professional conference style oral presentation.
- The VLE will be used appropriately to facilitate assessments.

Assessment of the cognitive skills is through a combination of:

- Integrated scientific reports of investigations and solutions of laboratory, field and theoretical and computational applied physics problems [B1-4]
- Formal open and closed book examinations requiring time-limited intellectual response [B2,B3, B5]
- Presentations requiring the transformation and representation of ideas in clear, concise and verbal and visual form [B3]
- Extended project work requiring deeper intellectual reflection and knowledge of topical physical concerns and problems [B1-6].
- Practical and professional skills are assessed through
- Coursework and laboratory tasks and reports, appropriate to the particular units. [C1-C7]
- Project reports and defended presentations. [C1-C9]

Many of the laboratory and problem-based learning exercises will constitute practical examples of developing professional practice.

Transferable skill assessment is embedded in the formal assessment of most units through:

- Open and closed book formal and in-class examination [D6]
- A variety of individual and group [D4-5] coursework, computer based assessments, report writing and oral and poster presentations [D1-6].
- Use of the VLE support improves students' IT skills and provides essential learning support, by way of formative and summative assessments and to facilitate collaborative engagement. [D1-6]
- Many transferrable and key skills are assessed in extended project work across the units [D1-6]

18. Course Structure, Progression and Award Requirements

See Unit Web Search[1] for full details on the course structure and units

This course brings together the University's expertise in teaching physics and its applications, research experience in applied physics and cosmology to address identified regional and national shortage of graduates through degrees relating to physics. The MPhys degree has been designed specifically for those students wishing to become professional applied physics researchers in industry or academia.

The QAA benchmarks for Physics and Astronomy have been consulted and used to inform the units. The Institute of Physics (IOP) also issues a set of benchmarks and criteria for accredited Physics degrees that are also satisfied. The course will be compatible with existing teaching provision in SEES and various Faculty of Technology programmes. There will be sharing of core units with MPhys Physics, Astrophysics and Astronomy within SEES and of optional units both within and without SEES.

The Applied Physics BSc degree was originally designed in 2009. In 2010 it admitted its first students. The MPhys degree builds on the BSc, the fourth year giving experience of working in a research group and developing high professional standards. The degrees contains mainly 20 credit point units with a level 6 (BSc) project rated at 40 credit points and a major level 7 project rated at 80 credits. The first stage of the course offers no choice in units – this is necessary as students are expected to enter the course from a wide variety of backgrounds and there is a need to bring them all to a common standard. At level 5 and especially level 6, students have a range of optional units to choose from that enables them to tailor the course towards their individual interests.

At level 7 students can choose either an experimental or theoretical and computational basis for their professional specialisation.

- Standard University rules apply – 360 credits required for the BSc honours degree and 480 credits for the MPhys degree. The regulations must be consulted for a full description of exit awards.
- Units through the course are rated at 20 credits except the projects at 40 (level 6) and 80 credits (level 7).
- 3 year full time for BSc
- 4 year full time for MPhys

Exit awards include:

Certificate in Higher Education in Applied Physics (120 credits)

Diploma in Higher Education in Applied Physics (240 credits)

BSc in Applied Physics (300 credits)

BSc (Hons) in Applied Physics (360 credits)

MPhys (Hons) in Applied Physics (480 credits)

[1] www.port.ac.uk/unitwebsearch

19. Employability Statement

The BSc course is recognised by the IOP and it is intended that both degrees will be accredited by the IOP at the earliest opportunity and so will provide graduates with a vocational route into a professional career as a chartered physicist (although no employers require this) Physics graduates are highly regarded in many areas of industry, the civil service and other areas. Physics graduates work in the IT, electronics, defence, health, energy, aerospace and most other industries. Graduates will always be numerate and particularly for those who have developed good mathematical and computational modelling skills, there have always been openings in the financial industries too. Many BSc graduates will develop and specialise via study at masters' level and some may choose to study on to a PhD. Research opportunities for physicists are numerous and varied in nature. The courses have been designed to embed employability skills that have been identified as in deficit by industry and by newly employed graduates themselves. There is opportunity at every level to develop communication skills and through project work to develop project management and self-management skills. Progress rates to employment and further study are very high from the BSc Applied Physics.

The specialist applied physics nature of the level 7 units will place students at the forefront of the rapidly expanding and internationally important field of functional materials. The deep project and research experience and professional skills developed at level 7 will ease students' progression to academic or industrial research positions and enable them to add value straight away.

The course also optionally allows an emphasis on environmental issues and so graduates will be able to access many different physics-based careers within the broad and expanding environmental sector. The environmental sector is likely to continue to grow due to increasing government and public interest in the environment and its problems. The redevelopment of the UK's nuclear industry will also produce a demand for physicists with an understanding of environmental monitoring and impacts.

Careers education is initiated at level 4 in the unit Space Science and Applications of Physics that focuses on the role of physics in employment. Students will be exposed to visiting lecturers from industry, will undertake industrial and other visits throughout the degree and may have the opportunity to undertake their level 6 or 7 project in collaboration with research groups or space-related industry. This unit also has also a contribution to the curriculum delivered by the university's professional careers and employability staff (Purple Door) and forms the context for part of the assessment of the unit.

Students enhance their employability considerably by undertaking industrial or research placements and hence are encouraged to engage with the South East Physics Network Summer Bursary Scheme and with other such opportunities that arise. Students are supported by a dedicated Employer Engagement Fellow who assists with finding placements and with advice on CV's and applications.

Personal Development Planning will include the identification and review of skills at all levels of study and will be delivered and progress monitored through the tutorial system. Students, from the start, will be expected to keep a personal development e-portfolio that will act both as a focus for PDP activity and will also introduce them to CPD practice.

Course Management

20. Support for Student Learning

- The Course is managed by a Course Leader.
- All learning will be facilitated by the Moodle environment and other bespoke on-line learning resources such as those provided by IOP, HEA Physical Sciences, National Instruments accredited programmes and on-line tutoring and other materials associated with the required texts.
- Extensive induction programme introduces the student to the University and their course.
- Each student has a personal tutor, responsible for pastoral support and guidance.

- University support services include careers, financial advice, housing, counselling etc.
- The SEPnet Employer Engagement Fellow supports students in finding and applying for placements.
- The Academic Skills Unit (ASK).
- The Maths Café.
- The Additional Support and Disability Advice Centre (ASDAC).
- Excellent library facilities.
- The University of Portsmouth has consistently been awarded an excellent rating for student support and guidance in a number of Quality Assurance Agency inspections.
- Student course and unit handbooks provide information about the course structure and University regulations etc.
- Feedback is provided for all assessments.
- Personal Development Planning (PDP) for all awards.

21. Admissions Criteria

A. Academic Admissions Criteria

- Students are normally expected to have GCSE Maths and English at grade C or above, or equivalent.
- Generally, admission offers will be made in the range 112-128 points which may include the Science 14-19 diploma, A-levels, AS-levels, vocational A-levels and other point-rated qualifications. Students will normally be expected to have both Physics and Mathematics to A2 standard at grade B or equivalents.
- Students will be admitted if they have completed a recognised appropriate Access course. HE Diploma: achieved merit or distinction in at least 32 credits at level 3, or equivalent, with appropriate mathematics and physics content.
- Professional skills and experience will be recognised.
- Other qualifications and experience will be considered on an individual basis.
- Current University policy on APL and APEL is applied in an individual basis.
- Applications from mature and international students and students from under represented groups are encouraged.
- International applicants will be required to have IELTS requirements at 6.0 (or equivalent).
- If appropriate, prior learning may be assessed and accredited.

B. Disability

The University makes no distinction in its admissions policy with regard to disability and will endeavour to make all reasonable adjustments in order to make it possible for students to study at Portsmouth on a course of their choice.

22. Evaluation and Enhancement of Standards and Quality in Learning and Teaching

A. Mechanisms for Review and Evaluation

- Course Leader's Annual Standards and Quality Evaluative Review.
- Head of Department's Annual Standards and Quality Evaluative Review.
- Unit and Course Level student feedback considered at Board of Studies.
- Unit Assessment Board consideration of student performance for each programme.
- Annual Standards and Quality Reports to Board of Studies, including consideration of Subject and Award External Examiner Reports.
- Periodic Programme Review.

- Student Representatives and Student/Staff Consultative Committees.
- National Student Survey.
- Staff Performance and Development Review.
- Peer Review and Development Framework.
- Faculty Learning and Teaching Committee.

B. Responsibilities for Monitoring and Evaluation

- Unit Co-ordinators for unit content and delivery.
- Course Leader for day-to-day running of course.
- University Contact for day-to-day running of course.
- Board of Studies with overall responsibilities for operation and content of course.
- Head of Department.
- Associate Dean (Academic).
- Associate Dean (Students).
- Quality Assurance Committee.
- Unit, Award and Progression Board of Examiners.

C. Mechanisms for Gaining Student Feedback

- Student Representation on Board of Studies.
- Student Staff Consultative Committees.
- Unit and Course level student feedback questionnaires.
- University participates in external student surveys, e.g. National Student Survey (NSS), Postgraduate Research Experience Survey (PRES) and International Student Barometer (ISB).

D. Staff Development Priorities

- Academic staff members undertake activities related to research, scholarship, teaching and learning and student support and guidance.
- Annual staff performance and development reviews match development to needs.
- Managers undertake a variety of management development programmes.
- All academic staff encouraged to seek Higher Education Academy Fellowship or higher.
- Academic staff new to teaching required to undertake APEX training to attain Fellowship of the Higher Education Academy.
- Support and Technical Staff members are encouraged to attend appropriate short courses, conferences and training.

23. Assessment Regulations

The current University of Portsmouth academic regulations will apply to this programme (*see Assessment and Regulations*[2]).

24. Role of Externals

Subject External Examiners who will:

- Oversee unit assessment and usually attend Unit Assessment Boards
- Review unit assessment strategy
- Sample assessment artefacts
- Present report to Unit Assessment Boards

Award External Examiners (usually also a Subject External Examiner) who will:

[2] www.port.ac.uk/departments/services/academicregistry/qualitymanagementdivision/assessmentandregulations/

- Oversee and attend Award/Progression Boards
- Scrutinise and endorse the outcomes of assessment
- Ensure that the standard of the award is maintained at a level comparable with that of similar awards elsewhere in the United Kingdom

25. Indicators of Standards and Quality

A. Professional Accreditation/Recognition

Currently recognised by the Institute of Physics. Full accreditation will be sought at the earliest opportunity.

B. Periodic Programme Review (or equivalent)

The course will be subject to normal monitoring and review policy and procedures.

C. Quality Assurance Agency

QAA Higher Education Review, March 2015, judgements about standards and quality meet UK expectations (*for full report see Higher Education Review of the University of Portsmouth, March 2015*[3]).

D. Others

None.

26. Further Information

Further information may be found in:

- Student Handbook
- University of Portsmouth Curriculum Framework Document
- University of Portsmouth Prospectus
- University of Portsmouth[4] and School[5] websites

[3] www.qaa.ac.uk/en/ReviewsAndReports/Documents/University%20of%20Portsmouth/University-of-Portsmouth-HER-15.pdf

[4] www.port.ac.uk/

[5] www.port.ac.uk/school-of-earth-and-environmental-sciences/