



UNIVERSITY OF
PORTSMOUTH

COURSE SPECIFICATION

MPhys (Hons) Physics, Astrophysics and Cosmology

Copyright

The contents of this document are the copyright of the University of Portsmouth and all rights are reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, such as electronic, mechanical, photocopied, recorded or otherwise, without the prior consent of the University of Portsmouth.

COURSE SPECIFICATION

Course Title	Physics, Astrophysics and Cosmology
Final Award	MPhys (Hons)
Exit Awards	BSc, CertHE, DipHE.
Course Code / UCAS code (if applicable)	U2547PYC
Mode of study	Full time
Mode of delivery	Campus
Normal length of course	5 years with placement
Cohort(s) to which this course specification applies	September 2023 onwards
Awarding Body	University of Portsmouth
Teaching Institution	University of Portsmouth
Faculty	Faculty of Technology
School/Department/Subject Group	School of Mathematics and Physics
School/Department/Subject Group webpage	https://www.port.ac.uk/about-us/structure-and-governance/organisational-structure/our-academic-structure/faculty-of-technology/school-of-mathematics-and-physics
Course webpage including entry criteria	https://www.port.ac.uk/study/courses/mphys-hons-physics-astrophysics-and-cosmology
Professional and/or Statutory Regulatory Body accreditations	Institute of Physics
Quality Assurance Agency Framework for Higher Education Qualifications (FHEQ) Level	Level 4,5,6,7
	Core Curriculum specification

This course specification provides a summary of the main features of the course, identifies the aims and learning outcomes of the course, the teaching, learning and assessment methods used by teaching staff, and the reference points used to inform the curriculum.

This information is therefore useful to potential students to help them choose the right course of study, to current students on the course and to staff teaching and administering the course.

Further detailed information on the individual modules within the course may be found in the relevant module descriptors and the Course Handbook provided to students on enrolment.

Please refer to the [Course and Module Catalogue](#) for further information on the course structure and modules.

Educational aims of the course

To develop competent physicists with a broad knowledge of physics and its application in astrophysics and cosmology

In addition, and more generally, the course aims to:

- Provide a stimulating programme to develop a critical and reflective knowledge and understanding of physics with particular emphasis on astrophysics and cosmology in some areas approaching the frontiers of research.
- 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, to think independently, analytically and creatively in some areas of physics to the frontiers of research.
- Develop the skills necessary for life-long independent learning to synthesise new and existing knowledge to generate ideas and develop creative solutions of benefit to the economy and society.
- Develop an appreciation of what constitutes ethical scientific behaviour and encourage a sense of social responsibility.
- Provide a supportive, challenging, stimulating and rewarding study environment to encourage curiosity and the ability to seize opportunities for development.
- Develop a range of key life, employability and communication skills through a range of individual and group opportunities to maximise their career potential and be very well placed to be immediately productive in pursuing a research related career in industry or academia.
- Cover in depth an area of contemporary astrophysics and cosmology enabling engagement with research publication
- Gain experience of working in a research group through project work requiring advanced experimental, theoretical or computational techniques and in-depth knowledge in contemporary physics and inspiring some originality.
- Be very well placed to be immediately productive in pursuing a research-related career in industry or academia.

Course Learning Outcomes and Learning, Teaching and Assessment Strategies

The [Quality Assurance Agency for Higher Education \(QAA\)](#) sets out a national framework of qualification levels, and the associated standards of achievement are found in their [Framework for Higher Education Qualifications](#) document.

The Course Learning Outcomes for this course are outlined in the tables below.

A. Knowledge and understanding of:

LO number	Learning outcome	Learning and Teaching methods	Assessment methods
A1	The principles of Mechanics and Relativity, Quantum Atomic and Nuclear Physics, Condensed Matter Physics, Oscillations and Waves, Electromagnetism, Optics, Thermodynamics and Statistical Physics. (QAP, IOP).	Lectures, Laboratory and Computational investigations, Problem sets.	Problem sets, Exam.
A2	The Physics of stars, galaxies and other astrophysical systems, and the principles of Cosmology.		
A3	The methods of solution of problems and the application of physics through the design and execution of practical experimental investigations, and mathematical and computational modelling with particular reference to astrophysics and cosmology	Lectures, Laboratory and Computational investigations, Problem sets.	Problem sets, Exam, Reports, Dissertations and

LO number	Learning outcome	Learning and Teaching methods	Assessment methods
			Presentations.
A4	Advanced practical and/or theoretical and computational physics knowledge, problem solving and presentation standards approaching the professional research level in astrophysics and cosmology.	Lectures, Laboratory and Computational investigations, Problem sets.	Problem sets, Exam, Reports, Dissertations and presentations.

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

LO number	Learning outcome	Learning and Teaching methods	Assessment Methods
B1	Plan, conduct and report on a programme of research at undergraduate level including the formulation and testing of hypotheses; critically evaluate arguments, assumptions and data, make judgements and frame questions to achieve a solution to a problem or identify a range of solutions	Project work, Laboratory and Computational investigations.	Reports, Dissertations and presentations.
B2	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 in an independent manner to synthesise new and existing knowledge within and across discipline boundaries with particular reference to astrophysics and cosmology.	Lectures, Tutorials, Laboratory work, Problem-based learning.	Problem sets, Reports, Exam.
B3	Be creative and innovative in the analysis and solution of physical problems and presentation of results questioning principles, practices and boundaries and seizing opportunities for development with particular reference to astrophysics and cosmology and the presentation of results	Supervised project work, Problem-based learning, Lecturer modelling of problem solution.	Problem sets, Reports, Exam, Written and Oral presentations.
B4	Work with confidence individually, and in groups, critically appraising recent topical published research and using advanced specialised theoretical, data analytical and computational techniques to understand, predict and test the behaviour of astrophysical and cosmological systems.	Supervised project work, problem-based learning, lecturer modelling of problem solution	Problem sets, Reports, Exam, Written and Oral presentations.

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

LO number	Learning outcome	Learning and Teaching methods	Assessment methods
C1	Plan, conduct and report on practical laboratory, computational or data analysis-based scientific investigations. Collect, record or generate and analyse	Laboratory, Computational and Data	Problem sets, Reports,

	data using a variety of suitable techniques, considering methodology, accuracy, precision and uncertainty in comparing real systems with theoretical or computational model predictions as appropriate.	analysis exercises, Project work, Problem-based learning.	Written and Oral presentations.
C2	Undertake laboratory and other investigations in a responsible and safe manner, paying due attention to risk assessment, rights of access, ethical practice, relevant health and safety regulations, and sensitivity to the impact of investigations on the environment, sustainability and human health.	Lectures, Laboratory, Computational and Data analysis exercises, Project work.	Reports, Written and Oral presentations.
C3	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.	Advanced project work.	Reports, Written and Oral presentations.

D. Transferrable (Graduate and Employability) skills, able to:

LO number	Learning outcome	Learning and Teaching methods	Assessment Methods
D1	Develop an adaptable and flexible approach to study and identify and work towards targets for personal, academic and career development including commercial awareness and opportunities for enterprise, incorporating skills necessary for self-managed and life-long learning.	Lectures, Tutorials, Project work.	Reports, Written and Oral presentations.
D2	Communicate appropriately to a variety of audiences in written, oral and graphical forms using a variety of media.	Lectures, Tutorials, Project work.	Reports, Written and Oral presentations.
D3	Identify individual and collective goals and responsibilities and perform in a manner appropriate to these roles.	Group work in practical, Computational or Data analysis problem-based learning exercises.	Reports, Written and Oral presentations.

Academic Regulations

The current University of Portsmouth [Academic Regulations](#) will apply to this course.

Support for Student Learning

The University of Portsmouth provides a comprehensive range of support services for students throughout their course, details of which are available at the [MyPort](#) student portal. Personal and project tutors provide academic and professional support throughout the course.

Evaluation and Enhancement of Standards and Quality in Learning and Teaching

The University of Portsmouth undertakes comprehensive monitoring, review and evaluation of courses within clearly assigned staff responsibilities. Student feedback is a key feature in these evaluations, as represented in our [Policy for Listening to and Responding to the Student Voice](#) where you can also find

further information.

Reference Points

The course and outcomes have been developed taking account of:

- [University of Portsmouth Curriculum Framework Specification](#)
- [University of Portsmouth Vision 2030 and Strategy 2025](#)
- [University of Portsmouth Code of Practice for Work-based and Placement Learning](#)
- [Quality Assurance Agency UK Quality Code for Higher Education](#)
- [Quality Assurance Agency Qualification Characteristic Statements](#)
- [Quality Assurance Agency Subject Benchmark Statement](#)
- [Quality Assurance Agency Framework for Higher Education Qualifications](#)
- Requirements of Professional and/or Statutory Regulatory Bodies: Institute of Physics
- Vocational and professional experience, scholarship and research expertise of the University of Portsmouth's academic members of staff
- National Occupational Standards

Disclaimer

The University of Portsmouth has checked the information provided in this Course Specification and will endeavour to deliver this course in keeping with this Course Specification. However, changes to the course may sometimes be required arising from annual monitoring, student feedback, and the review and update of modules and courses.

Where this activity leads to significant changes to modules and courses there will be prior consultation with students and others, wherever possible, and the University of Portsmouth will take all reasonable steps to minimise disruption to students.

It is also possible that the University of Portsmouth may not be able to offer a module or course for reasons outside of its control, for example, due to the absence of a member of staff or low student registration numbers. Where this is the case, the University of Portsmouth will endeavour to inform applicants and students as soon as possible, and where appropriate, will facilitate the transfer of affected students to another suitable course.

Copyright

The contents of this Course Specification are the copyright of the University of Portsmouth and all rights are reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, such as electronic, mechanical, photocopied, recorded or otherwise, without the prior consent of the University of Portsmouth.

Document details

Template Date	July 2022
Author	Hooshyar Assadulahi
Date of production and version number	18/05/2018 v1
Date of update and version number	September 2023
Minimum student registration numbers	20