Programme Specification: Undergraduate
For students starting in Academic Year 2022/2023

1.Course Summary

Name of programme & award title with UCAS code	Physics (with integrated year in industry) [F305]
Awarding Institution	Aberystwyth University
Individual Accreditation(s)	Accredited by the Institute of Physics (IOP) for the purpose of fully meeting the educational requirement for Chartered Physicist.
Final Award	Master in Physics
Date of Publication	September 2023
QAA Subject Benchmark	**Information provided by Department of Physics** This Programme Specification has been designed to conform to the QAA Benchmark Statement for Physics, Astronomy and Astrophysics. Institute of Physics accreditation to be requested for this new degree scheme.

How this information might change: Please read the important information at https://www.aber.ac.uk/en/study-with-us/ug-studies/terms-conditions/. This explains how and why we may need to make changes to the information provided in this document and to help you understand how we will communicate with you if this happens.

2: Duration

Programme	Years
Physics (with integrated year in industry) [F305]	5

3: Educational aims of the programme

Information provided by Department of Physics

1.To provide a thorough understanding of the core principles of physics within the general areas of classical and quantum physics.

2. To apply the core principles of physics to specialist areas.

3. To apply research activity to inform the learning and teaching.

4. To produce graduates with competence in subject-specific skills: problem solving, scientific methodology, experimental techniques, modelling, numerical and computational methods.

5. To provide training, and use of, in a wide range of transferable key skills needed for employment at a graduate level.

6 .To present advanced physics and enhanced subject skills that are informed by current research to students who wish to become professional physicists in academic research or industry.

7. To enable students to learn about an organisation and its area of work, providing an opportunity to evaluate future career paths.

4: Intended learning outcomes

Information provided by Department of Physics

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

5: Knowledge and understanding

Information provided by Department of Physics

By the end of their programme, all students are expected to be able to demonstrate:

A1-A6

A1 Understanding of fundamental concepts of a core of physics

A2 Ability to apply these fundamental concepts to advanced topics approaching the frontiers of the subject

A3 Appropriate working knowledge of mathematical techniques

A4 A range of skills in practical physics, including experimental work, data manipulation and numerical modelling

A5 Ability to interpret topics and results in terms of relevant literature and to construct and communicate the arguments logically

A6 Knowledge and understanding of advanced physics areas, and ability to apply enhanced subject-specific skills

Learning and Teaching

Teaching and learning methods used to enable the outcomes to be achieved and demonstrated encompass:

• Lectures (A1-A6)

• Problem-solving workshops (A1,A3-A4,A6)

• Feedback classes (A1-A3)

• Laboratory work (A4)

• Group and individual project work (A4-A6)

Assessment Strategies and Methods

Assessment methods include:

• Time-constrained examinations (A1-A3,A5-A6)

• Open- and closed-book tests (A1-A3)

• Examples sheets (A1-A3,A6)

• Laboratory diaries and reports (A4)

• Literature searches and reviews (A5-A6)

• Project reports (A4-A6)

• Oral presentations (A4-A6)

• Mathematical and numerical exercises (A1,A3,A6)

• Computational exercises (A4,A6)

• Essays (A6)

6: Skills and other attributes

Information provided by Department of Physics

10.2.1 Intellectual Skills

By the end of their programme, all students are expected to be able to demonstrate:

B1-B6

B1 Analytical and problem-solving skills

B2 Numerical skills

B3 Ability to plan, execute and report on an experiment or investigation

B4 Capability of independent work and group work in physics

B5 Ability to develop mathematical and computing skills used to model and describe the physical world

B6 Ability to plan, execute and report on an extended individual research-led project

Learning and Teaching

Teaching and learning methods used to enable the outcomes to be achieved and demonstrated include:

• Problem-solving workshops (B1-B2,B5)

• Laboratory classes (B3-B5)

• Group and individual projects (B1-B6)

• Lectures (B1-B2)

Assessment Strategies and Methods

Assessment methods include:

• Example sheets (B1-B2)

• Laboratory diaries and reports (B3)

• Group and individual project reports (B3-B6)

• Time constrained examinations (B1-B2)

• Oral presentations (B3,B6)

• Open- and closed-book tests (B1-B2)

10.2.2 Professional practical skills / Discipline Specific Skills

By the end of their programme, all students are expected to be able to demonstrate:

C1-C7

C1 Competency in working in a practical laboratory

C2 Ability to estimate uncertainties in measurements and results

C3 Ability to assess and minimise risks in practical situations

C4 The use of numerical, IT and computing skills to support practical work

C5 Competency in recording practical work in laboratory diaries and reporting on the work in written accounts and oral presentations

C6 Competency in carrying out a literature review and reporting on an extended major project via written and oral presentations

C7 The use of industry-led approaches, concepts, skills, methods and theories in a work-based context.

Learning and Teaching

Teaching and learning methods used to enable the outcomes to be achieved and demonstrated include:

• Laboratory classes (C1-C5)

• Project work (C1-C6)

• Oral presentations (C5-C6)

• Lectures and workshops (C2-C6)

• Integrated year in industry (C7)

Assessment Strategies and Methods

Assessment methods include:

• Laboratory diaries and reports (C1-C5)

• Group and individual project reports (C1-C6)

• Oral presentations (C5-C6)

• Coursework examples (C2)

• Computational and numerical exercises (C4)

• Integrated year in industry reports (C7)

7: Transferable/Key skills

Information provided by Department of Physics

By the end of their programme, all students are expected to be able to demonstrate:

D1-D7

D1 Problem-solving, analytical and investigative skills

D2 Ability to work independently and in groups

D3 Time-management and planning skills

D4 Ability to communicate in writing and orally

D5 Ability to apply IT skills

D6 Professional behavior including appreciation of the requirements: to be objective, unbiased and truthful; to acknowledge the work of others; and to adopt a safe working environment.

D7 Valued transferable and professional skills during a work placement, providing a competitive edge in the graduate job market.

Learning and Teaching

Teaching and learning methods used to enable the outcomes to be achieved and demonstrated include:

• Project work (D1-D6)

• Laboratory classes (D1-D6)

• Lectures (D1)

• Workshops (D1)

• Integrated year in industry (D7)

Assessment Strategies and Methods

Assessment strategies and methods include:

• Group and individual project work (D1-D6)

• Laboratory diaries and reports (D1,D4-D6)

• Oral presentations (D4)

• Written project reports (D4,D6)

• Example sheets (D1-D2)

• Integrated year in industry reports (D7)

8: Work-based learning (where appropriate)

Information provided by Department of Physics

Year in Industry

9: What is the structure of the programme?

Year 1 Core modules

Core (110 Credits)

Name	Module Code	Credits	Semester
Calculus	MP10610	10	Semester 1
Further Algebra and Calculus	MP11010	10	Semester 2
Classical Physics	PH11010	10	Semester 1
Forces and Energy	PH11120	20	Semester 2
Forces and Energy	PH11120	20	Semester 2
Physics Career Planning and Skills Development	PH12910	10	Semester 2
Modern Physics	PH14310	10	Semester 2
Laboratory Techniques for Experimental Physics (20 Credits)	PH15700	0	Semester 1
Laboratory Techniques for Experimental Physics (20 Credits)	PH15700	0	Semester 1
Laboratory Techniques for Experimental Physics (20 Credits)	PH15720	20	Semester 2
Laboratory Techniques for Experimental Physics (20 Credits)	PH15720	20	Semester 2
Algebra and Differential Equations	PH16210	10	Semester 1
Classical Dynamics	PM14010	10	Semester 1

Year 1

Options Choose 10 credits

Name	Module Code	Credits	Semester
Astronomy	PH18010	10	Semester 1
Energy and the Environment	PH19010	10	Semester 2

Communication and Technology	PH19510	10	Semester 1

Year 2 Core modules

Core (120 Credits)

Name	Module Code	Credits	Semester
Thermodynamics	PH21510	10	Semester 1
Optics	PH22010	10	Semester 2
Electricity and Magnetism	PH22510	10	Semester 2
Principles of Quantum Mechanics	PH23010	10	Semester 2
Sensors, Electronics & Instrumentation	PH24520	20	Semester 1
Practical Research Skills	PH25720	20	Semester 2
Numerical Techniques for Physicists	PH26600	0	Semester 1
Numerical Techniques for Physicists	PH26620	20	Semester 2
Mathematical Physics	PM26020	20	Semester 1

Year 3 Core modules

Core (120 Credits) During your Year in Industry your registration will be:

Name	Module Code	Credits	Semester
Year In Industry	PHS0100	0	Semester 1
Year In Industry	PHS0160	60	Semester 2
Year In Industry	PHS0200	0	Semester 1

Year In Industry	PHS0260	60	Semester 2

Year 4 Core modules

Core (100 Credits)

Name	Module Code	Credits	Semester
Concepts in Condensed Matter Physics	PH32410	10	Semester 1
Particles, Quanta and Fields	PH33000	0	Semester 1
Particles, Quanta and Fields	PH33020	20	Semester 2
Semiconductor Technology	PH33610	10	Semester 2
Materials Physics	PH33810	10	Semester 2
Modern Optics and Photonics	PH34510	10	Semester 1
Project (40 Credits)	PH37500	0	Semester 1
Project (40 Credits)	PH37540	40	Semester 2

Year 4

Options Choose 20 credits at Level 3, subject to pre-requisites, timetable and approval by the Degree Scheme co-ordinator

Final Year Core modules

Core (120 Credits)

Name	Module Code	Credits	Semester
Electromagnetic Theory	PHM2510	10	Semester 1
Advanced Quantum Physics	PHM3010	10	Semester 1
Major Project	PHM5800	0	Semester 1

Major Project	PHM5860	60	Semester 2
Advanced Skills in Physics	PHM6420	20	Semester 1
Advanced Research Topics	PHM7020	20	Semester 2

10: University Regulations

Details of University Regulations can be found at https://www.aber.ac.uk/en/academic-registry/handbook/regulations/

11: Support for students and their learning

Information provided by Department of Physics

12: Entry Requirements

Information provided by Department of Physics

Details of entry requirements for the scheme can be found at http://courses.aber.ac.uk

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13: Methods for evaluating and improving the quality and standards of teaching and learning

Information provided by Department of Physics

All taught study schemes are subject to annual monitoring and periodic review, which provide the University with assurance that schemes are meeting their aims, and also identify areas of good practice and disseminate this information in order to enhance the provision.

14: Regulation of Assessment

Information provided by Department of Physics

Academic Regulations are published as part of the Academic Quality Handbook: https://www.aber.ac.uk/en/aqro/handbook/

15.1 External Examiners

External examiners fulfill an essential part of the University's Quality Assurance. Annual reports by external examiners are considered by Institutes and by the Quality Assurance Committee at university level.

Academic Regulations are published as Appendix 2 of the Academic Quality Handbook: https://www.aber.ac.uk/en/aqro/handbook/app-2/

15: External Examiners

External Examiners fulfill an essential part of the Universityâ€™s Quality Assurance. Annual reports by External Examiners are considered by Faculties and Academic Board at university level.

16: Indicators of quality and standards

Information provided by Department of Physics

The Institute / Department Quality Audit questionnaire serves as a checklist about the current requirements of the University's Academic Quality Handbook. The periodic Institute and Department Performance Audit (IDPA) provides an opportunity to evaluate the effectiveness of quality assurance processes and for the University to assure itself that management of quality and standards which are the responsibility of the University as a whole are being delivered successfully.

In addition to standard University procedures and audits the Physics principle quality standards are those provided through accreditation of degrees by the Institute of Physics.

The Department Quality Audit questionnaire serves as a checklist about the current requirements of the Universityâ€™s Academic Quality Handbook. The periodic Department Reviews provide an opportunity to evaluate the effectiveness of quality assurance processes and for the University to assure itself that management of quality and standards which are the responsibility of the University as a whole are being delivered successfully.Â