

**University of the West of Scotland
Module Descriptor**

Session: 2023/24

Title of Module: Principles of Physics			
Code: PHYS06001	SCQF Level: 6 (Scottish Credit and Qualifications Framework)	Credit Points: 10	ECTS: (European Credit Transfer Scheme)
School:	School of Computing, Engineering and Physical Sciences		
Module Co-ordinator:	Michael Bowry		
Summary of Module			
<p>The purpose of this module is to introduce students to the methods and practices employed in the discipline of Physics. This includes developing effective and reasoned solutions to problems, completing quantitative tasks accurately and competently, and demonstrating confidence in the manipulation of units. A secondary yet important goal is to expand the student's awareness and understanding of a range of physical phenomena, as well as the impact and reach of Physics in the modern world.</p> <p>Passing this module allows incoming students without the necessary attainment in the pre-requisite area (physics) to proceed to level 7 of their programme of choice.</p> <p>The content of this module is based upon the SQA Higher Physics Specification document (SCQF Level 6). However, parts of the module are designed to address specific 'skill gaps' typically observed for incoming SCQF Level 7 undergraduate students, particularly with regards to uncertainties and units. The module contains a snapshot of material encountered at level 7 and beyond.</p> <p><i>Principles of Physics</i> is delivered in Term 3. It consists of 5 teaching days, each comprised of a 2-hour morning lecture and a tutorial in the afternoon, for a total contact time of 20 hours. Formative exercises may take place towards the end of each lecture (e.g. a quiz-style review and/or Q&A) and during the tutorial sessions. Assessment is by online exam. Students must complete a total of x3 10-mark questions across two sections (A and B), with a choice of questions in section B. The nominal time for completion is 2 hours.</p> <p>The module begins by examining the role of Physics in relation to other STEM subjects and the types of skills utilised by Physicists. The landscape of forces and particles organised by the standard model will be briefly examined. The first lecture will focus primarily on dimensional analysis (L1), uncertainties, and the statistical analysis of experimental data (L2). These core skills will be revisited during subsequent sessions. Subsequent lectures will focus on physical phenomena, such as the basic principles of mechanics, relativity and special relativity (L3), atomic spectra (L4), electromagnetism (L5), and circuits. Elements of calculus may be introduced where appropriate. It is appreciated that together with the <i>Physics / Physics with Education</i> programmes, <i>Physics with Nuclear Technology</i> represents a destination for</p>			

prospective undergraduate students. Efforts will be made to include elements of nuclear physics in the curriculum where possible.

The independent study time (20 hours) matches the contact hours for this module and is very similar to the level 6 maths module. Although this probably represents a minimum commitment from students, it is perhaps appropriate given the accelerated timeframe of the module.

Module Delivery Method					
Face-To-Face	Blended	Fully Online	HybridC	HybridO	Work-based Learning
	✓				
<p>Face-To-Face Term used to describe the traditional classroom environment where the students and the lecturer meet synchronously in the same room for the whole provision.</p> <p>Blended A mode of delivery of a module or a programme that involves online and face-to-face delivery of learning, teaching and assessment activities, student support and feedback. A programme may be considered “blended” if it includes a combination of face-to-face, online and blended modules. If an online programme has any compulsory face-to-face and campus elements it must be described as blended with clearly articulated delivery information to manage student expectations</p> <p>Fully Online Instruction that is solely delivered by web-based or internet-based technologies. This term is used to describe the previously used terms distance learning and e learning.</p> <p>HybridC Online with mandatory face-to-face learning on Campus</p> <p>HybridO Online with optional face-to-face learning on Campus</p> <p>Work-based Learning Learning activities where the main location for the learning experience is in the workplace.</p>					

Campus(es) for Module Delivery						
The module will normally be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit)						
Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
✓						

Term(s) for Module Delivery
(Provided viable student numbers permit).

Term 1		Term 2		Term 3	✓
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Learning Outcomes: (maximum of 5 statements)

On successful completion of this module the student will be able to:
L1. Understand and use various units of measurement appropriately
L2. Comprehend and calculate uncertainties and apply simple statistical analyses
L3. Understand and apply Newton's laws and the concept of relativity
L4. Appreciate the discrete nature of the atom and the detection of emission lines
L5. Understand the behaviour of charged particles in electric and magnetic fields

Employability Skills and Personal Development Planning (PDP) Skills

SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	SCQF Level 6 Students will become familiarised with the 'language' of physics, particularly experimental physics (e.g. units, statistics, uncertainties) and problem solving. Students will obtain foundational knowledge regarding classical and modern physics including mechanics, electromagnetism, and special relativity.
Practice: Applied Knowledge and Understanding	SCQF Level 6 The applications of key concepts (e.g. in technology and/or research) will be discussed and in some cases demonstrated directly during the lecture. Students will have ample opportunity to apply their knowledge and practice a range of physics problems during the tutorials.
Generic Cognitive skills	SCQF Level 6 Students will enhance their numeracy and logic abilities, as well as their overall preparedness for university study.
Communication, ICT and Numeracy Skills	SCQF Level 6 Collaborative group working at the whiteboard during tutorial sessions will be encouraged. Peer teaching will happen naturally during these interactions. Tutorial problems will develop a range of abilities, including accurate manipulation of physical data. Students may use the National Instruments ELVIS control software to examine electronic circuits.
Autonomy, Accountability and Working with others	SCQF Level 6 Those choosing to attend this summer school module will have already displayed ownership of their own learning. These qualities will be further developed, with students being encouraged to identify and address their own knowledge gaps, thereby enhancing their preparation for future study. The importance of academic honesty will be instilled throughout the module.

Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code:	Module Title: N/A
	Other:	
Co-requisites	Module Code:	Module Title: N/A

* Indicates that module descriptor is not published.

Learning and Teaching	
<p>Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:</p>	<p>Student Learning Hours (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)</p>
Lecture/Core Content Delivery	10
Tutorial/Synchronous Support Activity	10
Laboratory/Practical Demonstration/Workshop	
Independent Study	20
**Indicative Resources: (eg. Core text, journals, internet access)	
<p>The following materials form essential underpinning for the module content and ultimately for the learning outcomes:</p> <p>Module materials will be sufficient and self-contained, however any textbook in introductory level university physics will contain sufficient information regarding physical phenomena. For example, <i>University Physics with Modern Physics 15th Ed.</i>, <i>Hugh D. Young and Roger A. Freedman (Pearson)</i>. Other resources may be provided where appropriate.</p>	
<p>(**N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)</p>	
Engagement Requirements	
<p>In line with the Academic Engagement Procedure, Students are defined as academically engaged if they are regularly engaged with timetabled teaching sessions, course-related learning resources including those in the Library and on the relevant learning platform, and complete assessments and submit these on time. Please refer to the Academic Engagement Procedure at the following link: Academic engagement procedure</p>	

Supplemental Information

Programme Board	CEPS School Board
Assessment Results (Pass/Fail)	No – graded
Subject Panel	Physical Sciences
Moderator	Ryan Meeten
External Examiner	Helen Boston
Accreditation Details	N/A
Changes/Version Number	V 1.0

Assessment: (also refer to Assessment Outcomes Grids below)

Open book individual class test (online) (100%)

(N.B. **Assessment Outcomes Grids** for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed.

Assessment Outcome Grids (Footnote A.)

Component 1							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Learning Outcome (5)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Class Test	✓	✓	✓	✓	✓	100	3
Combined Total For All Components						100%	3

Footnotes

- A. Referred to within Assessment Section above
- B. Identified in the Learning Outcome Section above

Note(s):

1. More than one assessment method can be used to assess individual learning outcomes.
2. Schools are responsible for determining student contact hours. Please refer to University Policy on contact hours (extract contained within section 10 of the Module Descriptor guidance note).
This will normally be variable across Schools, dependent on Programmes &/or Professional requirements.

Equality and Diversity

The module is suitable for any student satisfying the pre-requisites.

[UWS Equality and Diversity Policy](#)

(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)