Physics (PH) modules

PH1011 Physics 1A

SCOTCAT Credits:	20	SCQF Level 7	**Semester**	1
Academic year:	2018/9			
Planned timetable:	12.00 noon lectures, one afternoon from five each week, 2.00 pm - 3.00 pm tutorial and 3.00 pm -5.30 pm lab			

This module covers the core subjects of mechanics, waves and optics, and also provides an overview of the physical properties of matter. It is suitable for those who have studied physics to the level of Higher Physics or equivalent. It includes lectures on Newton's laws, work and energy, simple harmonic motion, the different types of wave motion, geometrical and wave optics, and the nature and composition of nuclei, atoms, molecules and solids, and their interactions. Relevant laboratory work is an important part of the module.

Pre-requisite(s):	Student must have higher or A-Level physics and mathematics (both at grade b or better), or equivalent.	
Anti-requisite(s)	You cannot take this module if you take AS1002	
Learning and teaching methods of delivery:	**Weekly contact**: Typically 4 lectures, 1 problem-solving workshop, 1 tutorial and 1 x 2.5-hour laboratory.	
	Scheduled learning: 85 hours	**Guided independent study:** 115 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 75%, Practical Examinations = 0%, Coursework = 25%	
	As used by St Andrews: 2-hour Written Examination = 60%, Class Test = 15%, Laboratory Work = 25%	
Re-assessment pattern:	2-hour Written Resit Examination = 60%, combined with existing Laboratory Work = 25%, existing Class Test = 15%	
Module teaching staff:	TBC	
Additional information from Schools:	Please see also the information in the School's Handbook for First and Second Level modules available via st-andrews.ac.uk/physics/staff_students/timetables.php. This link also gives access to timetables for such modules.	

PH1012 Physics 1B

SCOTCAT Credits:	20	SCQF Level 7	**Semester**	2
Academic year:	2018/9			
Planned timetable:	12.00 noon lectures; One afternoon from up to five per week, 2.00 pm - 3.00 pm tutorial, 3.00 pm - 5.30 pm lab			
This module covers an introduction to quantum mechanics, the mechanics of rotation and gravity and an introduction to lasers. The module is suitable for those who have studied physics to the level of Higher Physics or equivalent. It includes lectures on the origins of quantum theory, its application to atoms and other small-scale systems; the principles of lasers, and some aspects of optical communication. The module also includes a set of group-based activities associated with the use of physics ideas to solve an interesting problem. Relevant laboratory work is an important part of the module.				
Pre-requisite(s):	Before taking this module you must pass PH1011			
Anti-requisite(s)	You cannot take this module if you take AS1002			
Learning and teaching methods of delivery:	**Weekly contact**: Typically 4 lectures, 1 workshop, 1 tutorial and 1 x 2.5 hr laboratory. Group Discovery Project replaces some lectures for part of the semester.			
	Scheduled learning: 82 hours		**Guided independent study:** 118 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%			
	As used by St Andrews: 2-hour Written Examination = 50%, Class Test = 10%, Laboratory work = 25%, Group Discovery Project = 15%			
Re-assessment pattern:	2-hour Written Resit Examination = 50%, combined with existing Laboratory work = 25%, and existing Group Discovery Project = 15%, existing class test 10%			
Module teaching staff:	TBC			
Additional information from Schools:	Please see also the information in the School's Handbook for First and Second Level modules available via st-andrews.ac.uk/physics/staff_students/timetables.php. This link also gives access to timetables for such modules.			

PH1501 Mathematics for Physicists 1A

SCOTCAT Credits:	20	SCQF Level 7	**Semester**	1
Academic year:	2018/9			
Availability restrictions:	Available only to those on the Physics and Astronomy (Gateway) Programme and the Physics and Astronomy International Gateway Programme.			
Planned timetable:	To be arranged.			

This module is designed to give physics students a secure base in elementary calculus and other mathematical tools to enable them to access the mathematics modules needed for progression into physics and astronomy degrees. Participants will learn to use this mathematics effectively and efficiently in the context of work in physics. Some of the work is a revision and practice of material that will normally have been seen in the Scottish Higher and some A-Level maths syllabuses. The content is similar to that in MT1001 and will allow students to progress to MT1002 in semester 2.

Pre-requisite(s):	Students must have gained entry to physics and astronomy (gateway) or international gateway programmes.	
Anti-requisite(s)	You cannot take this module if you take MT1001	
Co-requisite(s):	You must also take PH1011 and take PH1502	
Learning and teaching methods of delivery:	**Weekly contact**: 5 lectures, 1 tutorial and 1 workshop.	
	Scheduled learning: 72 hours	**Guided independent study:** 128 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 70%, Practical Examinations = 0%, Coursework = 30%	
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework (Class Tests, 20%, Other Coursework,30%) = 50%	
Re-assessment pattern:	2-hour Written Examination = 100%	
Module teaching staff:	TBC	
Additional information from Schools:	Please see also the information in the School's Handbook for First and Second Level modules available via st-andrews.ac.uk/physics/staff_students/timetables.php. This link also gives access to timetables for such modules.	

PH1502 Physics Skills 1A

SCOTCAT Credits:	20	SCQF Level 7	**Semester**	1
Academic year:	2018/9			
Availability restrictions:	Available only to those on the Physics and Astronomy (Gateway) Programme and the Physics and Astronomy International Gateway Programme			
Planned timetable:	To be arranged.			
This module develops academic and transferable skills in problem-solving, team-working, information retrieval and analysis, and study skills. It is a core module of the level one programme Physics and Astronomy (Gateway).				
Pre-requisite(s):	Students must have gained entry to physics and astronomy (gateway) or international gateway programmes.			
Anti-requisite(s)	You cannot take this module if you take AS1101			
Co-requisite(s):	You must also take PH1011 and take PH1501			
Learning and teaching methods of delivery:	**Weekly contact**: 2 lectures, 3 x 1.25-hour workshops, 1 x 3-hour lab, 1 x 2-hour supported study session.			
	Scheduled learning: 108 hours		**Guided independent study:** 92 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-assessment pattern:	60% new assignments, 40% marks for the assignments that make up the first assessment specification of the module.			
Module teaching staff:	TBC			
Additional information from Schools:	Please see also the information in the School's Handbook for First and Second Level modules available via st-andrews.ac.uk/physics/staff_students/timetables.php. This link also gives access to timetables for such modules.			

PH1503 Physics Skills 1B

SCOTCAT Credits:	20	SCQF Level 7	**Semester**	2
Academic year:	2018/9			
Availability restrictions:	Available only to those on the Physics and Astronomy (Gateway) Programme and the Physics and Astronomy International Gateway Programme			
Planned timetable:	To be arranged.			
This module develops academic and transferable skills in problem solving in physics, in mathematical modelling of physical systems, in numerical/computational work applied to physics, and in study skills. It is a core module for the level one programme Physics and Astronomy (Gateway).				
Pre-requisite(s):	Students must have gained entry to physics and astronomy (gateway) or international gateway programmes.			
Co-requisite(s):	You must also take PH1012			
Learning and teaching methods of delivery:	**Weekly contact**: 2 lectures, 3 x 1.25-hour workshops, 1 x 3-hour lab, 1 x 2-hour supported study session			
	Scheduled learning: 118 hours		**Guided independent study:** 82 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-assessment pattern:	60% new assignments, 40% marks for the assignments that make up the first assessment specification of the module.			
Module teaching staff:	TBC			
Additional information from Schools:	Please see also the information in the School's Handbook for First and Second Level modules available via st-andrews.ac.uk/physics/staff_students/timetables.php. This link also gives access to timetables for such modules.			

PH2011 Physics 2A

SCOTCAT Credits:	30	SCQF Level 8	**Semester**	1
Academic year:	2018/9			
Planned timetable:	10.00 am lectures; one problem solving workshop and lab chosen from Tue, Thu or Fri (2.00 pm - 5.30 pm); one tutorial to be arranged.			

This module covers the subjects of mechanics, special relativity, oscillations, and thermal physics. It is suitable for those who have taken the specified first year modules in physics and mathematics, or have good Advanced Higher or A-level passes or equivalent in physics and mathematics. It includes lectures on the dynamics of particles and rigid bodies, Einstein's special theory of relativity, free, forced and damped harmonic motion, and lectures on thermal physics including elementary thermodynamics and the notion of entropy.

Pre-requisite(s):	Students should also have passed PH1011, PH1012 and MT1002 or have passes in advanced higher physics and mathematics or A-Level physics and mathematics, both normally at grade a or equivalent.	
Anti-requisite(s)	You cannot take this module if you take AS1002	
Learning and teaching methods of delivery:	**Weekly contact**: 4 or 5 lectures, 1 workshop, 1 tutorial and 1 x 2.5-hour laboratory.	
	Scheduled learning: 97 hours	**Guided independent study:** 203 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 70%, Practical Examinations = 0%, Coursework = 30%	
	As used by St Andrews: 3-hour Written Examination = 60%, Class Test = 10%, Laboratory work = 25%, lectures and pre-lecture questions = 5%	
Re-assessment pattern:	3-hour Written Resit Examination = 60%, combined with existing Class Test = 10%, Laboratory Work = 25%, and lecture and pre-lecture questions = 5%.	
Module teaching staff:	TBC	
Additional information from Schools:	Please see also the information in the School's Handbook for First and Second Level modules available via st-andrews.ac.uk/physics/staff_students/timetables.php. This link also gives access to timetables for such modules.	

PH2012 Physics 2B

SCOTCAT Credits:	30	SCQF Level 8	**Semester**	2
Academic year:	2018/9			
Planned timetable:	10.00 am lectures; one problem solving workshop and lab chosen from Tue, Thu or Fri (2.00 pm - 5.30 pm); one tutorial to be arranged.			
This module covers the subjects of quantum physics, electricity and magnetism and classical waves. It is suitable for those who have taken the specified first year modules in physics and mathematics, or have good Advanced Higher or A-Level passes or equivalent in physics and mathematics. It includes lectures on the origin of Schroedinger's equation in quantum mechanics and its solution for simple one-dimensional potentials; an elementary introduction to the electromagnetic field comprising electrostatics, magnetostatics, electromagnetic induction and circuit theory; and lectures on waves, acoustics, polarisation of light, and interference.				
Pre-requisite(s):	Before taking this module you must pass PH2011			
Learning and teaching methods of delivery:	**Weekly contact**: 4 or 5 lectures, 1 workshop, 1 tutorial and 1 x 2.5-hour laboratory.			
	Scheduled learning: 105 hours		**Guided independent study:** 195 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 70%, Practical Examinations = 0%, Coursework = 30%			
	As used by St Andrews: 3-hour Written Examination = 60%, Class Test = 10%, Laboratory work = 25% , lecture and pre-lecture questions = 5%			
Re-assessment pattern:	3-hour Written Resit Examination = 60%, combined with existing Class Test = 10%, Laboratory Work = 25% and lecture and pre-lecture questions = 5%.			
Module teaching staff:	TBC			
Additional information from Schools:	Please see also the information in the School's Handbook for First and Second Level modules available via st-andrews.ac.uk/physics/staff_students/timetables.php. This link also gives access to timetables for such modules.			