PH1502 - Gateway - Physics Skills 1A

Credits: 20.0  Semester: 1
Number of Lectures:  
Lecturer: Dr Lucy Hadfield, Dr Graham Smith and Dr Janet Lovett
Academic Year: 2016-17

Overview
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)".

Aims & Objectives
Students will develop their understanding of the core subjects that a Physics degree programme builds upon in addition to developing laboratory and problem solving skills. Students will undertake a series of workshops designed to develop basic computer programming skills in Mathematica as well as completing a short astronomy course to allow students to be eligible for AS2001. This module consists of a series of workshops, supported self-study sessions as well as group exercises covering topics designed to run alongside material developed in PH1011 and PH1501/MT1002.

Learning Outcomes
By the end of this module, should

- have experienced different methods of studying;
- be able to work independently or as part of a group;
- be able to express scientific ideas to their peers;
- be able to complete basic tasks and solve simple problems using Mathematica;
- have gained an understanding of the structure and evolution of stars and galaxies as well as the origin and fate of the universe. In addition, students should be able to calculate astrophysical properties of stars using basic physical models and simplified data.

Synopsis
Problem solving: problem solving strategies, peer instruction tutorials and regular problem solving workshops relevant for the material covered in PH1011. Practical Laboratory work to develop basic lab skills.

Study skills and Communication: The production of weekly revision summaries, regular reflection of own learning and supported study sessions. Scientific writing with the production of a short essay on a popular Physics topic.

Astronomy short course Stars and elementary astrophysics including stellar brightness, magnitudes, distance, colours, Hertzsprung-Russell diagram, stellar spectra and classification, stellar evolution. Structure of the Milky Way: structure of the Milky Way, populations, rotation curve. The Universe: types of galaxies, expansion of the universe, birth, evolution and fate of the universe.

Introduction to Mathematica: Introduction to basic programming techniques in Mathematica and solving simple physical and mathematical problems using Mathematica.

Pre-requisites
Entry to Gateway to Physics and Astronomy Programme

Anti-requisites
None

Assessment
Coursework = 100%
Made up of problem solving and study skills exercises (25%), practical work (25%), Astronomy short course (25%), Mathematica course (25%)

(Reassessment 60% new assignments, 40% carried through from semester)

**Additional information on continuous assessment etc**

**Recommended Books**
Please view University online record:
http://resourcelists.st-andrews.ac.uk/modules/ph1502.html

**General Information**
Please also read the additional information in the School’s pre-honours handbook.