AS4103 - Astrophysics Project (BSc)

Credits: 30.0  Number of Lectures: Co-ordinator: 2016-17  Semester:  Whole Year  Dr Christiane Helling

Overview
The project aims to develop students’ skills in searching the appropriate literature, in experimental and observational design, the evaluation and interpretation of data, applying their knowledge of physics, and the presentation of a report. The main project is preceded by a review essay. There is no specific syllabus for this module. Students taking the BSc degree select a project from a list of those available and are supervised by a member of the academic staff. Students taking an MPhys degree are not normally permitted to do this module.

Aims & Objectives
This module aims to enhance student’s research skills and experience through the development of a research project in Astrophysics. A key aim is to develop confidence in, and meaningful experience of, independent research. Presentation of research results is given emphasis through the production of a written report and an associated oral presentation by the student.

Learning Outcomes
At the end of the module students should have:

- carried out a substantial independent research project
- developed their critical understanding of core science through independent study and research
- further enhanced their communication skills especially in writing up the project and in presenting it at level appropriate for a final year student
- developed their confidence in relation to personal research skills and undertaking research at an appropriate level

Synopsis
This module is project based.

Pre-requisites
PH2011, PH2012, MT2001 or (MT2501 and MT2503), (PH3081 or PH3082 or [MT2003 or (MT2506 and MT2507)]), AS3013, PH3012, Entry to final year of BSc Astrophysics programme.

Anti-requisites
AS5101, PH4111, PH5101, PH5103, PH4796

Assessment
Coursework (Review Article, Project Report, Presentation and Oral Examination) = 100%

Additional information on continuous assessment etc
Please note that the definitive comments on continuous assessment will be communicated within the module. This section is intended to give an indication of the likely breakdown and timing of the continuous assessment.

The topic of the project is normally chosen from a list provided by academic staff in semester one. The project often involves working on a topic within one of our research groups, exploring or developing new materials for our teaching, or developing and trialing new outreach activities. There is some work in semester one liaising with the supervisor to plan ahead to ensure that work can start promptly near the start of semester two. The first week of second semester is spent doing literature research and writing a 2000 word pre-project review that is intended to help prepare for the main project work. This document will focus on questions such as “Why am I going to do this project?, “What am I going to do”, and “What evidence/science is there that will help get me there?”. Thus whilst a review of the relevant literature is required, there is also a strong forward-look towards the main part of the project. This pre-project review counts for 3 out of the 30 credits allocated to the full
module, and will need to be submitted by the end of week one of semester two.

The main part of the project is intended to allow the student to use their knowledge and skills to explore some aspect of astrophysics and/or its application. The supervision, experience, and personal reflection should allow these skills to be developed further. The student will meet with their supervisor at least weekly, though interaction with their supervisor and other members of the group will often be more frequent than this. In order to provide some additional support students will meet with their peer-support group every two weeks.

A project report is submitted in week 11 of semester two. This is approximately 4000 words, and typically consists of a review of relevant literature, a section on observational or computational methods, a section on results, and a discussion/conclusions section. Late in the semester each student will give a presentation on their project work to an assessment panel. This is followed by the student being asked a number of questions about the science and methods etc associated with their project work.

**Accreditation Matters**
This module contains students developing skills and experience in project work that is required for IOP accreditation of the degree.

**Recommended Books**
Please view University online record: [http://resourcelists.st-andrews.ac.uk/modules/as4103.html](http://resourcelists.st-andrews.ac.uk/modules/as4103.html)

**General Information**
Please also read the general information in the School's honours handbook.