PH4111 - Physics Project (BSc)

Credits: 30.0  Semester: Whole Year
Number of Lectures:  Co-ordinator: Dr Philip King
Academic Year: 2017-18

Overview
The project aims to develop students' skills in searching the physics literature, in designing/devising appropriate experiments/simulations/calculations, and in the evaluation, interpretation, and presentation of the results of these. The main project is preceded by a review essay on a topic which will typically be related to the theme of the project. There is no specific syllabus for this module. Students taking the BSc degree usually 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 present students with the opportunity to enhance and develop their research/development skills through extended scientific investigation. The aim is to prepare the student for research and development in a professional environment where reviewing literature effectively, planning, critical thinking and the final presentation of data are key elements.

Learning Outcomes
At the end of this module the student should have:

- Developed a level of confidence to plan and work independently in a research/development environment.
- Developed their literature review skills to effectively emphasise the relevance and context of a research topic.
- Acquired technical skills to record and analyse data appropriately or perform appropriate calculations or simulations.
- Developed critical thinking skills in order to progress their own work through reasoned evaluation of data.
- Gained experience of the collaborative exchange of ideas in an active research environment.
- Have further enhanced their communication and presentation skills to enable them to emphasise the key outcomes of their work effectively and to support their conclusions when questioned.

Synopsis
The module is project-based and the scheme of work will be dictated by the nature of the project itself.

Pre-requisites
PH2011, PH2012, MT2001 or (MT2501 and MT2503), (PH3081 or PH3082 or [MT2003 or (MT2506 and MT2507)]). At least one of PH3101, PH4105

Anti-requisites
AS4103, AS5101, PH5101, PH5103, PH5104, PH4796

Assessment
Coursework (Review essay, Report, Oral Examination, Supervisor Assessment) = 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 trialling 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 physics and/or its application. The work may be experimental, computational, observational, or theoretical. The supervision, experience, and personal reflection should allow these skills to be developed further. The student will meet with their supervisor, and possibly other members of the research group, regularly throughout the semester. In order to provide some additional support students will meet with their peer-support group every two weeks.

A project report of approximately 10-15 pages is submitted in week 11 of semester two. 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/ph4111.html

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