Induction to MPhys project course:

In PHYS6006 students undertake a major research project which extends over both semesters.  Students normally work in pairs, in close collaboration with a member of staff.  The aim of the project is to further develop the skills necessary for experimental or theoretical research, along with written and verbal communication skills.

**Learning outcomes**

At the end, students should

* have developed their initiative and originality.
* have developed their organisational skills in the allocation of areas of responsibility and the preparation of a schedule allowing completion of the project on time.
* have developed skills in decision making and the determination of priorities.
* have further developed their literature searching and comprehension skills.
* have developed team working skills through the interaction of the two students and the project supervisor.
* have extended skills in laboratory or theoretical work such as the application of scientific method, the keeping of systematic records and the critical analysis of results.
* have developed the ability to discuss the results in a broader context.
* have developed communication skills through the presentation of written accounts of their work.
* have developed IT skills through the preparation of word processed reports including equations, figures and tables.
* have developed personal confidence and verbal communication skills through the defence of their work in an oral examination.

**How to start**

Your first task is to meet your supervisor to discuss the aims and background of the project. To avoid losing time on irrelevant work, it is essential that you understand clearly the aims of the project at this point.

If your project is experimental in nature, decide with your supervisor on a suitable place to locate it (i.e. the Teaching Laboratories, the supervisor's laboratory, clean room etc....).

**Supervision**

The role of the supervisor is to give general guidance and help. The supervisor is definitely not there to tell you what to do on each occasion (one of the aims of the project is to learn how to make such decisions yourself!)

It is important to arrange regular meetings with your supervisor to discuss progress and problems. This should normally be at the **same time each week**. Find out how to contact your supervisor by e-mail, telephone and pigeonhole.

Further help on practical matters may be obtained from the laboratory technician and, in many cases, from the members of the relevant research group.

**The log-book**

To keep track of the details of your project work, you should record your work in a log-book. Use a bound notebook not a looseleaf file. The log-book is a detailed day-to-day record of the project, including your ideas and plans, records of measurements and calculations, sketches and graphs, decisions and conclusions. Always put the date of an entry in the margin. A good log-book will be of great help in the preparation of the project report. **The log-book must be made available to your supervisor and should remain in the lab after the end of your project.**

**Time Management**

At the start of the year the amount of time before the report has to be handed in may seem infinite. Don't suddenly wake up to find time has run out and no results obtained. At least nine hours per week should be spent on the project. **Write some regular times for the project in your timetable.**

Be sure to identify the aspects of your project which may cause delays. Examples are the ordering of equipment with long delivery times and complex construction jobs for the workshop. Put these in hand as soon as possible.

**Publishing a numerical result without quoting an error is of no value.** The paper would be rejected by the referee. From what you learnt in the Data Handling modules, you should be well aware of the importance of assessing errors and repeating readings and you should know how to calculate the errors in the results.

**Laser Safety**

If you will be using Lasers, before you commence any work in the Laser Lab, you will need to book a Laser Safety Induction with the University of Southampton Scientific Safety Advisor: Dr Neil Lloyd. To check availability and to arrange a booking, visit the Health, Safety & Risk Intranet at: https://sotonac.sharepoint.com/teams/HealthSafetyRisk/SitePages/Training.aspx?web=1

For all General Enquiries and Booking enquiries please Email: HStrain@soton.ac.uk

For all General Laser Safety and Advice please contact the Physics and Astronomy Laser Safety Advisor : Professor Hendrik Ulbricht (Room 5027) Ext. 22073.

**The Student Workshop**

An experimental project may need some mechanical construction. The Student Workshop, Room 1001 provides facilities for working with hand-tools, machining, soldering and welding. It is in the charge of Mr Mark Scully. No previous experience is necessary as appropriate training and supervision is given. Assistance can also be given on the preparation of engineering drawings.