



University of Glasgow | School of Physics & Astronomy



PHYS5009P

Physics M Project

Course Information Guide, updated August 2019

1 Welcome from the Head of School

As the Head of School of Physics and Astronomy, I would like to welcome you PHYS509P Physics projects. The School prides itself in providing an excellent and supportive learning and teaching environment that is fully integrated with our research: in your lectures, laboratories and project work you will have the opportunity to interact with world-leading researchers working at the cutting edge of a wide range of fields of physics and astronomy, who are tackling some of the biggest contemporary challenges in science and technology.

All of our undergraduate degree programmes and most of our postgraduate taught masters programmes are accredited or recognised by the Institute of Physics and our teaching was highly commended in our most recent Periodic Subject Review by the Senate of the University. Our teaching has also attracted enthusiastic endorsement in recent years from our students in the National Student Survey and other surveys and barometers.

The School is firmly committed to supporting equally the careers and development of all its students and staff, as exemplified by our receipt of an Athena Swan Silver award for our support of women's careers. We value the diversity of our student body and recognise that this diversity improves the quality of our work by allowing students to bring a range of skills and viewpoints to inform and enhance their collective achievements. We therefore expect that all staff and students will work productively and professionally together in an atmosphere of mutual respect.

To support this, all our staff and graduate students undertake equality and diversity training, our lab guides include a code of conduct for students, supplementing the University policy <https://www.gla.ac.uk/myglasgow/senateoffice/studentcodes/staff/studentconductstaff/>, and we support the University's Dignity at Work and Study policy <https://www.gla.ac.uk/myglasgow/humanresources/equalitydiversity/dignityworkstudyover/>. You can be assured that any instances of bullying, harassment, or offensive language or behaviour will be both taken seriously by the School and treated with sensitivity. Points of support for students are your adviser of studies, your Class Head and Lab Head, and in addition the School has two appointed Equality and Diversity offices (currently Mrs Angela Eden and Prof Stephen McVitie), to whom students may speak in confidence.

Although many of our classes are large in number, our teaching staff are friendly and approachable; if you have any questions about your course please don't hesitate to speak to them. They will do their very best to help.

I hope that you enjoy your time with us in the School of Physics and Astronomy and I wish you success with your current and future studies.

Best Wishes

Prof Martin Hendry, Head of School

2 Course Details

PHYS5009P is the 40 credit M level project to be undertaken in the final year of an MSci degree. It constitutes an independent piece of scientific work, usually embedded in one of the research groups within the School of Physics and Astronomy or an affiliated external research group. The project is supervised by senior members of the research group. Student will have to choose a project suited for their degree path.

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Time and place: Project work is able to be performed on Tuesdays and Thursdays from 11 am onwards, but working can be more flexible when agreed by the student and the supervisor. A total of 200h work plus time to prepare reports and presentations is expected. The work should be done in a period between October and March. A formative assessment (Technical Report) is expected early in November, a presentation in the beginning of March and the final report at the end of March. Detail on times and deadlines are posted on moodle.

Recommended Text: Scientific literature, original text and textbooks depending on the project.

3 Assessment

For all students the course will be assessed in three components, the work on the project (40% of the final marks), the project report (40% of the final mark) and an oral presentation (20% of the final mark). A technical report as part of formative assessment is expected as

well. This report should be 5-7 pages long. The final project report should not exceed 20 pages. The assessment and marking criteria are published separately on moodle.

Note that the Code of Assessment of the University states that 10% (or 2 marks on the 22 point scale) of the final mark shall be deducted per day of delay and that after a delay of five days the work will receive a grade of H. A submission later than the provision of feedback would normally be treated as a non-submission and may affect the requirements for course credit.

Students who are at risk of missing, or who have missed, a presentation task or report submission deadline for reasons of "Good Cause" (see Section 7) should contact the Project Coordinator at their earliest opportunity. In the case of reports, the Project Coordinator has the discretion to allow a deadline extension of up to five working days. If five working days are insufficient for particular circumstances, students should make a formal "Good Cause" claim on MyCampus.

You will need to achieve at least a grade of D3 in this course in order to graduate with an Honours degree. This has to be achieved at the first attempt. A reassessment of project work and components of continuous assessment is not possible

4 Required Knowledge

The Physics M Project is a core requirement. By its nature, the detailed requirements will vary between projects and are given in the project description. A solid foundation in undergraduate physics is expected.

5 Intended Learning Outcomes

The Physics/Astronomy M-Project has the following aims:

- (1) To present an integrated course of study which describes, analyses and relates the principles of modern physics at a level appropriate for a professional physicist;
- (2) To provide the opportunity to study in depth a choice of advanced treatments and applications of aspects of modern physics and astronomy;
- (3) To provide further training and experience in the principles and practice of physical measurement techniques, using advanced instrumentation where appropriate, and in the critical analysis of experimental data;

- (4) To develop problem solving abilities, critical assessment and communication skills, to a level appropriate for a career of leadership in academia or industry, and to give student the experience of group work;
- (5) To offer the opportunity to apply measurement, problem solving and critical assessment, and communication skills in performing and writing a report on an extended and demanding project;
- (6) To encourage students to work effectively, to develop a professional attitude to what they do and to take full responsibility for their own learning.

6 Course Outline

All MSci 5M students on courses involving Physics and/or Astronomy are required to do a 40 credit project. For courses involving other Schools (Combined Honours and Joint Honours: Chemical Physics), students can choose to do their project either in Physics and Astronomy or in their other school. The final year M-Projects in the School of Physics and Astronomy are worth 40 credits. They will normally be carried out individually and include the following parts: a literature survey and technical essay; the practical experimental work; project report and an oral presentation. The first five weeks of the project should be dedicated to performing a literature survey on the research topic and to writing a technical essay (5-7 pages), which will form the basis of the introduction to the final report and which should take ~50 hours. During this period, the student should also receive essential training to carry out the projects (for example, safety training, training in experimental methods, or specialist computational or mathematical training, etc.). The technical essay must be normally submitted by the end of week 7, although the date may shift depending on each year's timetable. The relevant deadlines are published on the project moodle pages. Details are usually provided on the assessment calendar. Students taking the Theoretical option must take a project suitable for theory.

The project work encompasses ~200 bench hours (including experimental, computational and analysis time) over a total period of 20 weeks. An individual project report will be submitted by each student 3-4 weeks after the end of the project work (normally around Easter time) and should be a high quality presentation of the work carried out, including an introduction based on the technical essay, with appropriate references. The length of the report is 20 pages or less. A template based on a scientific journal is provided on the project moodle site. Note that to avoid possible bias in the marking process, all filenames, cover sheets etc. should only refer to your matriculation number and project title and not to your first name or surname. Additionally, there will be a 20 minute oral presentation of the work performed in front of an independent panel, who will ask questions about the work.

Between weeks 2 and 24, the student shall carry out the project under the guidance of the appointed supervisors. After the preliminary goals to be achieved during the project have been set and the appropriate safety assessment for the work proposed has been carried out, the student will analyse with the supervisors what experimental, theoretical and/or

computational methods might be necessary to achieve the goals of the project and hence decide how the practical phase of the project should be organized. The practical part of the investigation shall be carried out during this period of time, with regular meetings with supervisors to revise the goals and strategies for completion of the project in the light of results achieved and difficulties encountered. Throughout the work, the student shall take into account experimental errors of measurement, possible assumptions and approximations in analytical and computational work as appropriate, with a critical discussion of any errors or assumptions made.

The student will be required to prepare an oral presentation describing the work performed in front of a panel of three members of staff. The presentation shall be 15 minutes long and would normally be carried out using electronic media and an appropriate software package such as Powerpoint or similar. A computer, projector and screen shall be provided by the school, or, alternatively, the student may wish to use his/her own computer for the presentation. This will be followed by some detailed questions from the panel, based on the presentation of the work carried out. The panel will assess the presentation and the response to the questions.

All project work should finish by week 24. The student will be given a further 3-4 weeks (depending on the Easter holiday dates) to write the final version of their report, which should be at maximum 20 pages long. The report is an in-depth account of a detailed piece of scientific work, and should be tailored to suit the individual project. Students should discuss the style, content and level of their report with their supervisor. The report should integrate the material in the technical essay carried out at the beginning of the project. This will provide a summary of the professional literature in the chosen area, including a critical comparison of the material presented. This will be followed by a written analysis of the work carried out in the project, in which the aims of the project, research method, results, discussion and conclusions are clearly shown. A critical evaluation of the significance of the work, in the context of the literature survey carried out should also be provided. The project report should contain an abstract of the work performed, of length around 250 words, in the accepted scientific format and should contain a detailed list of references at the end. The project work will be assessed by the project Supervisor and the report will be assessed by an independent staff member.

7 Attendance and Performance Affected by Good Cause

If you are absent for a significant period of time (greater than a few days) and unable to perform your project work, it is important to inform your project supervisor. Prolonged absences, due to illness for example, should be recorded through a Good Cause claim as these will ultimately affect the progress and achievements on the project.

If you miss an assessment deadline, or if you believe your assessment performance has been affected by adverse circumstances, you should submit a **Good Cause Claim**, and this must be via MyCampus.

Submission of a Good Cause Claim is the mechanism that allows your circumstances to be considered by the Board of Examiners. Please note all Good Cause Claims must be submitted within **one week** of the date of the affected assessment.

Students should note that the University's Code of Assessment allows grades to be awarded only on the basis of demonstrated work. So, if you feel that some piece of assessed work has been affected by adverse circumstances, and if staff agree, then the only course of action available is for the grade for that piece of work to be set aside (in the case of continuously assessed work and Class Tests) or to allow a resit (in the case of Degree Exams) – marks cannot be adjusted.

To submit a Good Cause Claim on MyCampus:

1. Go to the 'Student Centre' and select *My Good Cause* from the Academics menu.
2. Select the relevant course(s).
3. Complete the report in MyCampus (there is provision for particularly sensitive information to be provided separately, outwith the system, but a claim report must still be entered into MyCampus).
4. Add supporting evidence by uploading documents. (Scanners are available on level 3 of the University Library.) It is the responsibility of the student to keep all original documentation and submit it to the Class Head on request.

If you encounter any difficulties with this process please contact the Class Head immediately to let him or her know you have a problem with your Good Cause Claim.

What will happen to your Good Cause Claim

The Course Administrator and/or Class Head will ensure that your claim is considered and this will be in accordance with the section of the Code of Assessment which covers incomplete assessment and good cause (paragraphs 16.45 to 16.53). The outcome of your claim will be posted into the Approval Information section on your Good Cause Claim in MyCampus. If it is accepted that your assessment was affected by good cause, the work in question will be set aside and you will (as far as is practicable) be given another opportunity to take the assessment with the affected attempt discounted.

For absences that are significant but for which a good cause claim is not being filed, students must complete a **MyCampus absence report**. A significant absence is defined to be:

- (7) an absence of **more than seven consecutive days** during working periods
- (8) an absence of **any duration** if it prevents a student from for example fulfilling any minimum requirement for the award of credit (e.g. missing attendance at one day of a two-day laboratory, but where the work was nonetheless submitted and therefore not involving a Good Cause claim).

All potentially significant absences should be reported as soon as is practical, by completing part 1 of the MyCampus absence report. Part 2 of the MyCampus absence report should be completed on return to university. The normal submission deadline for the completed absence report is 7 days after return to university. Documentary evidence is required when reporting any significant absence.

See also the Senate Office Absence Policy:

<http://www.gla.ac.uk/services/senateoffice/policies/studentsupport/absencepolicy/>

8 Code of Professional Conduct in the Laboratory

Our aim is to provide a safe and enjoyable learning experience for all students in the laboratory. Whilst we as staff will do everything we can to help with this, students also have an important role to play in ensuring that this is achieved. We would specifically like to highlight the following points:

- 1) The laboratory is a professional working and studying environment. We therefore expect you to behave in a professional manner towards one another and towards the lab demonstrators and staff at all times
- 2) Follow all safety instructions, in terms of both general good practice, and with regard to experiment-specific points. This is critical both for your own health and for that of your fellow students. Specifically, safety instructions given by technicians or the lab demonstrators **must** be adhered to.
- 3) We value the diversity of our student body and recognise that this diversity improves the quality of our work by allowing students to bring a range of skills and viewpoints to inform and enhance their collective achievements. We therefore expect that students will work productively and professionally together in an atmosphere of mutual respect.
 - a. With this in mind, **any** form of bullying and harassment – such as on the basis of any personal characteristic (including, but not limited to: nationality, race, disability, gender or gender identity, religion [or proxies for this, e.g. football team allegiance], sexuality, appearance, or age) – is unacceptable.
 - b. Please avoid at all times potentially offensive "banter" with your fellow students, which may be hurtful and problematic for some, including those who witness it. Please note that claiming something was "banter" is in no way an excuse for bullying or harassing behaviour.
- 4) Any reports of bullying, exclusion, or discriminatory behaviour will be taken very seriously by the School of Physics and Astronomy. If anyone wishes to report any untoward behaviour, speech or social media content from any person or group of people in the laboratory, they may do so in confidence to the lab head, his/her deputy, to the School Equality and Diversity officers (currently Mrs Angela Eden and Prof Stephen McVitie), or (in the case of staff) to a trade union representative. All such concerns will be treated seriously and in confidence. (This includes incidents where students or staff are the targets or the perpetrators of such behaviour).
- 5) Some of these points are also included in the University of Glasgow *Dignity at Work and Study Policy* and the *Code of Student Conduct* and can result in disciplinary proceedings, where appropriate. For further information see:

<https://www.gla.ac.uk/myglasgow/humanresources/equalitydiversity/policy/dignityatwork/>

<https://www.gla.ac.uk/myglasgow/senateoffice/policies/calendar/calendar2017-18/feesandgeneral/studentsupportandconductmatters/reg33/>