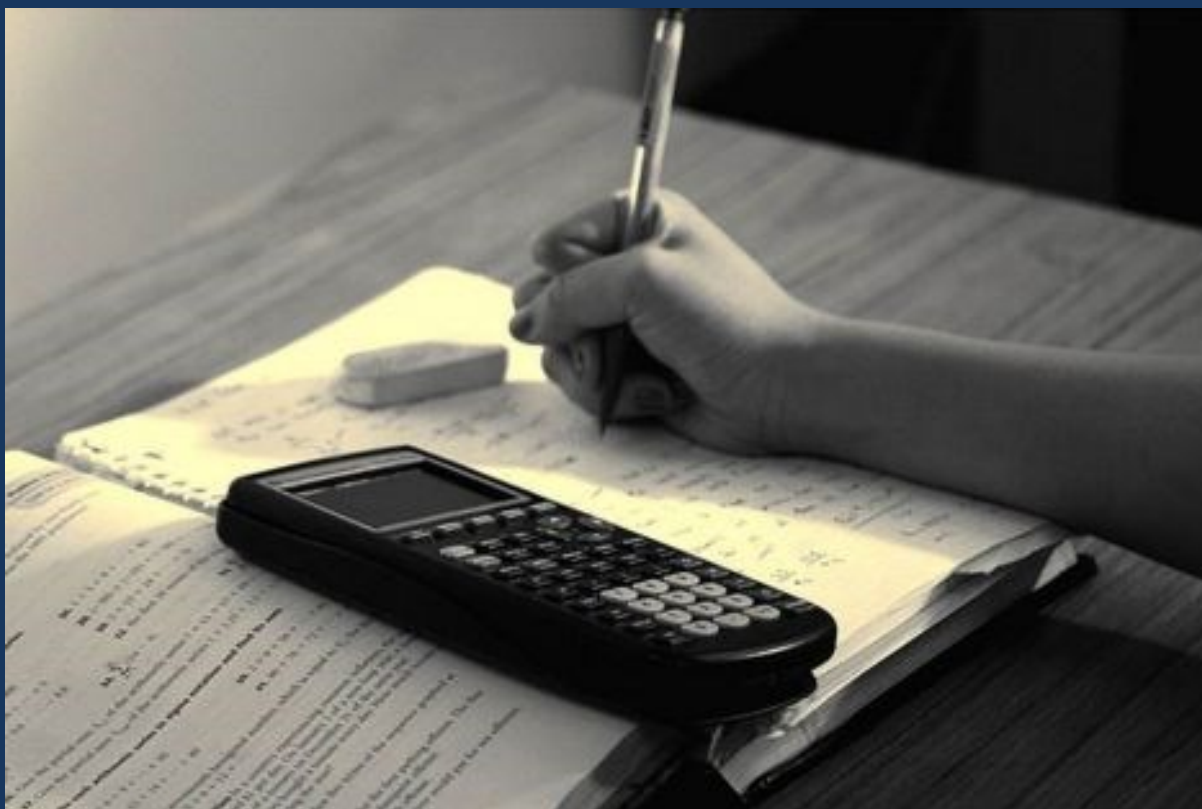




University
of Glasgow | School of Physics
& Astronomy



PHYS5012 Problem Solving Workshop

Course Information Guide 2023/24

1 Course Details

PHYS5012 Problem Solving Workshop is a level 5 Physics masters-level course. It is compulsory for all MSci Physics students, including those on combined degrees. It is an elective course for most Physics & Astronomy MSc degrees. It is composed of 2 workshops of 3 hours each in semester one followed by a Class Test in the December exam period. In semester 2, there is an additional 3-hour workshop, where detailed feedback will be provided on the Class Test, in preparation for the final course examination in April/May.

Lecturer: Dr Sarah Croke
Room 528, Kelvin Building
Email: sarah.croke@glasgow.ac.uk



Recommended Text: All the physics undergraduate texts recommended for core courses!

Course slides and sample problems are made available on Moodle.

2 Assessment

25% of the course mark will be assigned to the Class Test in December, with the remaining 75% assessed via an Examination in the April/May examination diet. This course provides 10 M-level credits.

3 Required Knowledge

Due to the nature of the course, students will be expected to have a good knowledge of undergraduate physics, in all core areas. Students will not be expected to be familiar with elective material, but any compulsory material may be used in problem solving.

4 Aims and Intended Learning Outcomes

This course aims to provide students with training and practice in how to address complex physics questions and solve unseen problems, drawing upon their broad knowledge and experience of the subject. We further aim to develop students' ability to study and revise effectively and to reinforce their individual responsibility for their own learning. Students should develop their critical assessment and communication skills, in the context of working in a small group, to a level appropriate for a career of leadership in academia or industry.

By the end of the course, students will be able to: carry out effective self-study and general revision of their Physics courses, in order to answer general physics questions and solve unseen physics problems based on their contents; carry out formative self-assessment of their performance when attempting previous examination questions; work effectively within a small group, sharing ideas, organising / prioritising results and delivering short oral presentations.

5 Course Outline

The first two workshops will be given in Semester 1. In the first workshop, an initial introduction to Problem Solving will be given. This will include explanation of a five-step problem-solving plan, originally designed for troubleshooting in industry and adapted here for physics. It will be demonstrated how to use this plan to tackle a wide range of physics problems with several detailed worked examples.

In the remainder of the first workshop, and in the second, students will be given an opportunity to try out this method of problem solving in small groups and individually. For the group sessions, one member of each group will present their solution of their problem to the class. For the individual problems, students will mark the solutions of their fellow students, providing insight into how marks are awarded.

The third workshop will be held in the second semester, after the December Class Test. Its purpose is to highlight lessons arising from the Class Test and to provide students with detailed feedback on their performance. The test scripts will be (temporarily) returned so that students can see where they did well and where marks were gained or lost. Sample solutions of the exam problems will be presented and students will have the opportunity to discuss.