Computational Physics 2025/26 Projects: Guidelines

You only need to complete ONE of Projects 1–3.

Submission

- The submission deadline is **Friday, 12th December 2025** at **17:00 (5pm)**.

- The usual Departmental rules on late submission – **zero marks after 24 hours, pass mark-only up to 24 hours** – will be applied unless formal mitigating circumstances are lodged. Strict timekeeping will be applied in determining if a submission is late.

- **Report Submission** – The report must be a single PDF file called **"CID_ProjectX_Report.pdf"**, replacing "CID" with your 8-digit CID number and "X" with the relevant project number. The PDF file must be submitted via the relevant assignment link on Blackboard Learn. For instance, if you choose Project 3 you would submit under
```
Computational Physics (2025-26)
 > Course Content
  > Projects
   > Project 3
    > Computational Physics (2025-26) -- Project 3 -- Report Submission
```
This component of your submission will be checked for plagiarism via **TurnItIn**.

- **Source code Submission** – Your source code must also be uploaded via the relevant assignment link which is different from the report link, e.g. for Project 3
```
    > Computational Physics (2025-26) -- Project 3 -- Source Code Submission
```
on Blackboard Learn (in the same folder as above). This component of your submission will be also be checked for plagiarism by a code similarity analysis system.

  All code files (even if there is only one) must be combined into a single ZIP file before uploading called **"CID_ProjectX_Code.zip"**, again replacing "CID" with your 8-digit CID number and "X" with the relevant project number. All files required for your code to compile (e.g. including header files in C) must be present. It is advisable to include a README text file explaining how to run your program(s). It must be made trivial for your marker to be able to check your code in the appropriate manner—no "comment out line 15, and uncomment line 27, then compile..." etc. The idea is that the marker should not have to figure anything out, or have to follow onerous instructions to be able to run the code if they need to reproduce the results in your report; you must do the work for them.

Report-writing guidelines

- The page limit for the project report is **six pages** which includes all elements of the report, i.e. figures, captions, appendices, references, etc. The report must be written in 12pt font. The six pages is a limit, not a target; a good report can be written in less. Any reports using a smaller font and/or going over six pages will automatically get **zero marks** for presentation.

- We suggest using LATEX to write your report, if possible. This will improve the presentation, look, organisation, and figure and equation handling. PDF output comes as a standard feature in LATEX.

  If you use Microsoft Word, please do not drag and drop Excel graphs directly into your Word documents. This will make the file too large and it may not be printed to PDF correctly. Instead save or export the plot into a PDF file or other image standard and import it into your Word document. We do strongly recommend that you try to move your workflow away from Excel and Word though; you will find technical report writing is a lot easier if you switch to some other plotting software and use LATEX.

- Any reports which fail to work with TurnItIn will not be accepted. In particular, **handwritten reports are not acceptable** as they cannot be run through the plagarism checks. These will be treated as if no report has been submitted. This also includes converting text to pictures or scanning short handwritten sections which are then included like figures.

  It is your responsibility to check you format the report in a way which can be interpreted by TurnItIn. We strongly recommend submitting a preliminary version well in advance to ensure this.

- Your report should include the following elements; an abstract, brief descriptions of the aims of the investigation and numerical methods used to achieve this, details of how you validated your code, a summary of the results, a discussion of the results, and a conclusion. (If there are several distinct & substantial investigations, then split/arrange the results and discussion at your discretion.)

- With the 'Results' block of marks there are marks allocated for each of the tasks in the script. Therefore it is prudent to ensure that you cover these in the report and give 'evidence' of the 'outcome' of each task. (See 'Marking Scheme' below, for more details.)

- State the numerical methods used if not fully defined in the script and document any results which led to choosing those particular methods. Give details and/or results explaining any other choices you made. Relate your numerical results to the physics of the system under investigation.

- Ensure the report is readable, the meaning of the text is unambiguous and the document is coherent in its entirety with good linkage and logical flow. This is a physics project where the exploratory studies happen inside a computer, and the report is a full write-up describing this.

- Make sure figures are numbered and referred to in the main text. Make sure axes are labelled, a legend is present if needed, the label and legend fonts are not tiny, etc. Unreadable figures will lose marks for presentation so do not shrink them to fit your report into six pages. In particular, the caption must be meaningful; not "A graph of voltage versus current", but "The dependence of the voltage on the current, where the curve is the expectation from the analytical solution, and the points are the results of the numerical calculations. The behaviour of the different algorithms starts to diverge from about $X\,\mu$A, and it can be seen that the XXX algorithm is the most stable of the four that were implemented." Ensure plots are of an adequate size to be clear when the document is printed.

- For those who have completed all the tasks listed in the project: additional work that makes use of computational techniques from the notes (which could include the non-examinable sections) that are not used in the main project tasks will be considered as further evidence for good understanding.

- Do not include blocks of code in your report; these will not be marked. Instead, if you really need to explain the methods, use plain text or reference the lecture notes. Similarly, do not dump raw printout from your programs into your report; format the results appropriately.

Marking Scheme

- Organisation of report – 10%.

- Presentation of report – 15%.

- Results and understanding – 75%.

The 'Results' are outputs from the tasks that you are prompted to do in the project script. These can include implementation & testing of a numerical method, numerical results (values, plots, tables) obtained from your investigation, analytical work you are asked to do, etc.

Marks are only awarded for the contents of the report, not the code or its output. Therefore, all result must appear in the report; the markers will not give any credit for code output (numbers or plots) which are not already included in the report.

Your project will be **first and second marked** by the team of demonstrators and we aim to get back to you with a preliminary mark and feedback in early February, 2026. The actual overall course marks will be finalised in the summer at the same time as all other exams.

Marking Rubric

Category	Description
Organisation	This covers your selection of material included in the report, the logical flow and readability of the report, the writing style and spelling and grammar. The report should contain a description of the aims, methods, results, discussion and any conclusions you draw from them. It should be written concisely in the style of a scientific publication.
Presentation	This covers the presentation of your report, including the general quality of the figures (resolution, labelled axes, number of significant figures on the axis, well captioned, etc.), presentation of the results (number of significant figures for errors and measures, table formatting, etc.), equation formatting and your use of citations.
Results	The details depend on the project but in general will relate to how well you complete the tasks in the project script. This will include the implementation, validation and results from various computational methods you use in the project, as well as the discussion and analysis of these results in the context of the physics problem being studied. There are multiple grades for the Results section, with the total number depending on the project.

For each category you will be awarded a grade based on how well you have completed a set of tasks or met the category description above. These grades are described below.

Grade	Description
Well above average	You completed the tasks without any errors and have shown a profound understanding of the course materials in both your analysis and choice of computational methods, going significantly beyond the course where appropriate. Your report is at a suitable standard for publication in a professional journal.
Above average	You completed the majority of tasks without errors and have shown a good understanding of the course materials in your analysis and choice of computational methods, going beyond the course where appropriate. Your report could be published in a professional journal after a few minor improvements.
Average	You completed the majority of tasks with few errors and have shown reasonable understanding of the course materials in your analysis and choice of computational methods. Your report conveys all of the necessary information but would need some work to meet the standard for publication.
Below average	You completed most of the tasks without major errors and have shown some understanding of the course materials in your analysis and choice of computational methods. Your report conveys most of the necessary information but would need substantial work to meet the standard for publication.
Well below average	You completed some of the tasks without major errors and have shown some understanding of the course materials by doing so. Your report does not include some of the essential information needed to understand your study and would not be suitable for publication.
Fail	You have not completed the majority of the tasks. Your report does not convey the necessary information about your project.

Trouble submitting with Blackboard Learn?

- Submissions can be made any number of times up to the deadline, and the most recent one will count. Do not leave it until the last minute! If you do let yourself fall into the situation that you are having problems submitting a file as the deadline approaches, please email us a copy of both the source code and report, so that you can prove that they were ready on time.

- **Blackboard Learn help pages** – Guidance on fixing problems;
  https://www.imperial.ac.uk/admin-services/ict/self-service/teaching-learning/blackboard/

- **O/S + web-browser compatibility?** – On the help pages above it says:
  "Blackboard Learn works with a variety of web browsers. If your browser does not work with Blackboard, update it or try another one."

- **Java & pop-up blockers?** – On the help pages above it says:
  "Make sure you have a recent version of Java and that popups are not disabled in your browser."

Plagiarism

All the work that you submit for assessment – the text in the report, the code, the results and plots – must be your own. Any help from your colleagues or others must be clearly acknowledged in your submitted work. No pre-packaged code to perform the main project tasks must be used; it must all be written by you. Occurrences of plagiarism are taken very seriously and can have serious consequences. See the Departmental Policy on Plagiarism at https://www.imperial.ac.uk/natural-sciences/departments/physics/students/current-students/undergraduates/lecture-courses/plagiarism/ for more information.

As mentioned above, both the report and code will be checked by plagiarism detection systems. Note that coursework submissions from previous years are in the databases of these systems, so do not risk copying from previous cohorts!

Unfortunately, a small minority of students have been caught out in recent years. Hopefully this will not happen this year.

Mitigating Circumstances

The Departmental policy on Mitigating Circumstances is at https://www.imperial.ac.uk/physics/students/current-students/student-welfare-and-wellbeing/mitigating-circumstances/.

In particular since Computational Physics coursework is classed as a **major piece of assessed coursework**, the following applies;

- *"If you have extenuating/major mitigating circumstances that could affect your examinations or major pieces of assessed coursework/projects, please complete a 'Request for Mitigation Form'. Please note, you are expected to have contacted the Senior Tutor in the first instance, reporting your mitigating circumstances and to schedule an appointment."*