

## Computational Physics 2019/20 Projects: Submission Guidelines

You only need to complete ONE of Projects 1–4.

Some points to consider when preparing your project and submitting:

- Submission deadline is **Monday, December 16<sup>th</sup> 2019 at 12:00 (noon)**.
- The word limit for the Project is **2500 words** (excluding figure captions, appendices, references etc.)

Report-writing guidelines

- 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 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.)
  - 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 not a coding project with a bit of explanatory text to be submitted alongside it; rather, it is a full 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 from the main text. Make sure axes are labelled, a legend is present if needed, the caption is 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 [A], and it can be seen that the XXX algorithm is the most stable of the four that were implemented.”), fonts are not tiny, etc. 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 lectures that are not used in the main project tasks will be considered as further evidence for good understanding and presentation.
- Make use of the feedback you received on the Assignment.
  - 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 project report must be in PDF format and submitted via the relevant assignment link on Blackboard Learn. For instance for Project 3 you would submit under Computational Physics (2019–20)
    - > Course Content
    - > Projects
    - > Project 3
    - > Computational Physics (2019–20) -- 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 “*Computational Physics (2019-20) – Project – Source Code Submission*” assignment 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.

The source code can be .py, .cpp, .c, .h, .m, etc., source files. “Notebook”-style files (e.g., Jupyter notebook .ipynb files) are also acceptable. Multiple files must be combined into a single ZIP file before

uploading. Its name should include your surname & initials, e.g., `Other_AN_Project?.zip` where ? is 1, 2, 3 or 4. All files required to compile (e.g. including header files in C) must be present. It is advisable to include a README text file explaining how to generate results presented in your report with your code(s). It must be made trivial for your marker to be able to run 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 some onerous instructions to be able to run the code and reproduce your results; you do the work for them. This is not simply for the benefit of the markers; in real life—in physics and elsewhere—packaging your code and documenting it in a way that makes sure there is no guesswork involved in using it is common practice, and we would like you to acquire this skill too.

- We suggest using  $\text{\LaTeX}$  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  $\text{\LaTeX}$ .
- 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; your life will be a lot easier if you switch to some other plotter +  $\text{\LaTeX}$ .

## Marking Scheme

- Organisation of report – 10%.
- Presentation – 10%.
- Understanding of Physics and numerical methods – 25%.
- Quality of programming – 15%.
- Results – 40%.

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

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 with feedback by Monday Jan 27, 2020.

## 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/elearning-services/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 prose 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. Occurrences of plagiarism are taken very seriously and can have serious consequences. See the Departmental Policy on Plagiarism under <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.<sup>1</sup>

## Mitigating Circumstances

See <https://www.imperial.ac.uk/natural-sciences/departments/physics/students/current-students/student-welfare/mitigating-circumstances/> for the Departmental policy on 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.”*

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<sup>1</sup>Note that we also know the sorts of haunts that students (#notallstudents) frequent to solicit paid help do such assignments, and have been known to pose as potential helpers to catch cheats... (just saying, y’know)