MSc for HPC Welcome
Introduction and Orientation

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Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

MSc coordinators: one primary and two supporting

- Professor Kirk M. Soodhalter - soodhalk@tcd.ie (Primary)
- Professor Michael Peardon - mjp@maths.tcd.ie
- Professor Patrick Fritzsch - fritzscp@tcd.ie

One administrator who handles MSc affairs

- Jennifer Murray - jennifer.murray@tcd.ie

We take a moment to go around the room to introduce ourselves

- What is your name?
- Where are you from (country/region)?
- What interest led you to enroll in the MSc for HPC?
- Favourite hobby?

Electing a Class Representative

Students in every year of every course should elect a representative

- Representative can bring problems to attention of MSc coordinator and speak for the class
  - Allows complaints and requests to be brought anonymously by the representative
- Interested students should nominate themselves by emailing soodhalk@tcd.ie
  - Deadline for self-nomination: 16 September 2024

Note: it may be the case that the student union will organise the election, in which case you should nominate yourself through their process.

Sometime in October there will be an official MSc pub night

- Share some food and drink with lecturers
- Change to meet potential project supervisors informally
- Date to be announced toward end of September

You must take 60 ECTS of modules. You have some freedom in your module choices

- There are obligatory modules - automatically registered
- There are optional modules - you need to write to Jennifer Murray with Kirk Soodhalter in CC to request registration to those modules.
  - One free module in Fall Semester: two popular modules are Machine Learning and Data Visualisation from CSS
  - Two free modules in Spring Semester: both internal (GPU programming, Financial Mathematics) and external e.g., (Security and Privacy, Data Analytics, AI from CSS)
- You can look for other modules to take, **with permission**

Module Assessment

- Most modules are assessed via two components: continuous assessment (homework) and exam
- The weighting of the components is available in the TCD online system `https://my.tcd.ie`
- Exams are necessary even in programming modules
- If an exam is failed with mark below 40, then it must be retaken during the Supplemental Exam Period at the end of summer
- If continuous assessment is failed with a mark below 40, then it must be reassessed (however the lecturer chooses) over the summer

Exam procedures at Trinity College are unlike universities in other parts of the world

- Familiarise yourself with exam procedures at `https://www.tcd.ie/academicregistry/exams/exam-guidelines/`
- Bring **only** necessary materials to exams
- Exam booklets are anonymous; you are assigned an exam/seat number. You **must** put this number on each exam booklet

Academic Integrity

Trinity College takes academic integrity and honesty seriously

- Please get to know College-wide policies at https://www.tcd.ie/teaching-learning/academic-integrity/
- **Encouraged**: MSc students discussing problems with one another and helping each other understand concepts used to overcome a challenge
- **Not allowed**: do not give your code/solutions to your fellow students
- **Encouraged**: Finding online resources online with explanation of coding/mathematical concepts to help one understand how they might solve a problem themselves
- **Not allowed**: copying segments of code from online sources
- **Not allowed**: *any* use of tools like ChatGPT

MSc Projects

Your final 30 ECTS are achieved through the completion of a
final project

- Create a sufficiently-challenging HPC code and write a
  project report explaining what you have done and the
  results
  - Classically parallel
  - GPU
  - Highly-optimised serial code
  - Lots of flexibility

- Project can be from within the MSc or with an outside
  supervisor from University or Industry

- Begin your search for a project now

- Formally propose a project by January

- Hand in project at beginning of August

Finding projects and supervisors

We offer support to help you find a project

- If you come with a project already in mind, please contact a coordinator, and we can help you find a supervisor
- If you have no preconceived ideas, *no problem*!!
    - We are building a repository of project proposals:
      https://www.overleaf.com/read/xrmbyjfvyqsc#f9cae1
    - Still adding more projects
    - Still working to get more projects from outside the MSc
- If you want to look for interesting applications that might provide good HPC projects, look at past issues of SIAM News
- Talk to your lecturers about what they might be able to supervise
- If you have a contact from outside the MSc who has a project you would want to consider for an MSc project, please talk to a coordinator

We have a weekly research seminar that is meant for you to present and write about a research paper you read

- Each student presents *once per semester*
- You should present a paper about your project (or what you might want to work on for your project)
- You must then write three to five pages in LaTeX summarising the paper
- Presentations are held strictly to a 20-minute time limit

Aspects of the Tools for HPC module will support practical aspects moving your project forward

- Writing technical documents in LaTeX: seminar reports and introduction to project report
- Setting up a GIT repository for your project and storing your seminar reports and introduction there
- Setting up a Makefile for some codes you write
- etc...still being formulated

The pass mark for the MSc is higher than for undergraduate

- A mark of 50 or above is passing
- Students must pass at least 50 ECTS to graduate
    - A minimum mark of 40 is required for any failed module
- A student graduates *with distinction* if they fail no modules and have a minimum average of 70 in modules and a minimum mark of 70 for the MSc Project

There is a prize given for the best project

- Susquehanna Investment Group (SIG) has generously offered a small cash award for the best project
- This award will be given after project examinations in August/September 2025
- SIG will be holding an informational session about computational challenges in finance and investment for the MSc