MAS115: Mathematical Investigation Skills

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About the course

MAS115 is a 20-credit, year-long module. During the year you will develop important skills for investigating and reporting on mathematical problems. These skills will be useful during your degree and beyond; such *transferable skills* are very useful in the workplace and valued by employers.

Computers can be very helpful with mathematics, so in Semester 1 you will learn the basics of the programming language *Python*. Python is a good first language to learn and also has powerful mathematical capabilities.

To create professional-quality mathematical documents requires using the LaTeX system, which you will also do in Semester 1. Another way of presenting results is online, and this involves making webpages using HTML, which you will also do in Semester 1.

In Semester 2 you will learn further programming (more details to follow). You will use all of the techniques you have learned in the investigation and presentation of three mathematical projects during the year.

Semester 1 timetable

In Semester 1 there are two streams running per week:

- Tuesday, 11am: pre-recorded lecture (Sam Marsh on Presentation)
- Tuesday, 2-5pm: Presentation classes
- Friday, 10am: pre-recorded lecture (Alex Fletcher on Python)
- Friday, 2-5pm: Python classes

Alex Fletcher's lectures are in Weeks 1, 3, 5, 6 and 12 only. (Week 12 is the Python test.) All other classes happen every week. Week 7 will be a reading week with no lectures or classes. To find out which computer classes you should attend, visit `http://maths.dept.shef.ac.uk/maths/tutorials.php`.

Assessment

The assessment for the course take place throughout the module as follows:

- Semester 1 mid-semester mini-project (10%)
- Semester 1 programming test (10%)
- Semester 2 mid-semester mini-project (10%)
- Semester 2 programming test (10%)

- Group projects (50% total)
- Weekly homeworks (10%)

To pass the module, you must get a passing mark overall, *and* participate satisfactorily in both group projects.

Semester 1 mini-project

The mini-project in Semester 1 will use the Python programming and LaTeX presentation skills in a small mathematical investigation. The project will be peer assessed (that is, marked by fellow MAS115 students). Part of the mark will be awarded for the assessing of other people's projects. The mini-project will be released in Week 6 and will be submitted in Week 8.

Group projects

You will spend a good proportion of this course working on group projects. (The exact dates for these projects are to be confirmed.)

- Project 1 will be released in Week 11, and due in the January exam period.
- The remaining project(s) will be set in Semester 2.

You will work on the projects in small groups. You will be required to create webpages (using HTML and LaTeX), and make a presentation to a small number of fellow students.

Other information

- There is no end-of-year exam, so it is important that you keep up with the work so that you pass the module first time. Failing the module could lead to you repeating Level 1.
- You *must* participate in all the group projects in order to pass the module.
- There are no books that are essential for doing this course, but there might be some background texts that your lecturers will recommend.
- The course website will be filled with materials for the course and is at `http://mas115.group.shef.ac.uk`.
- Check your email regularly for messages about the course.

Accessing support

You can access support in several ways:

- Computer classes: The demonstrators are there to help! Please ask them questions.
- Discussion board: This is a forum on Blackboard to ask and answer (anonymously, if preferred) questions. Alex and Sam will look at it too and be notified of new posts.
- Office hours: Alex and Sam have online office hours at 12pm on Thursdays. To book appointment slots for either of these office hours, please use the links provided in Blackboard.