MA40001

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Week 5

Recap

1. Quarto
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   - ▶ Add document elements (sections,figures,tables, cross references, citations, schematic diagrams etc.)

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   - ▶ Integrate Python code in a Quarto document
   - ▶ Use Python libraries
3. Github
   - ▶ Create and clone repositories
   - ▶ Fetch,pull, commit and push
   - ▶ Fork repositories
4. Install VSCode/Python/Github on your own computer/H1 desktop.

Tasks for this week

▶ *Fork* blog and final report templates from github
▶ Using the terminal in VSCode
▶ Render blog and final report
▶ Use Python libraries (e.g. Pandas, Matplotlib, numpy, sympy, scipy)

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- ▶ copying another's work;
- ▶ the use of another's ideas without acknowledgement.

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Generative AI

Generative AI uses statistical patterns in data upon which it has been trained to provide responses to natural language queries.

You might use it:

- ▶ to generate graphics/visual content
- ▶ to summarise long texts to check your understanding
- ▶ as a debating partner
- ▶ to generate questions from an article/text to check your understanding
- ▶ for debugging code
- ▶ for improving grammar

1. Fill in an AI statement in report appendix
2. Provide a record of
   - prompts
   - responses
   - how you used the output.
3. Be able to defend the work that you present.

Week 4

Tasks

1. Install software on H1 pc (see Chapter 1)
2. Learn to use github for file management (see Chapter 6 in notes)
3. Continue with Python exercises (Chapter 5)
4. Learn how to write a blog using the template
5. Submit a pdf: a quarto write up of your work so far in Python.

Week 3

Tasks

General:

▶ If you do not already have one, sign up for an account on https::/github.com. We will use this next week.

▶ Install VSCode on your personal computer. Then install the Quarto extension on VSCode.

▶ Fill in feedback form linked on MyDundee announcement.

Python:

▶ Start embedding Python codes in your Quarto document

▶ Work through the exercises up to for loops and if statements.

Week 2

Tasks

Use Quarto to generate a pdf with:

- ▶ title, author
- ▶ section headings
- ▶ figures
- ▶ tables
- ▶ equations using latex
- ▶ schematic diagrams
- ▶ cross referencing of different objects
- ▶ bibliography
- ▶ appendices

Project narrative (suggestion)

▶ One sentence summary of your project
▶ Why is the topic important?
▶ What is the background to your project (place the work in historical context)?
▶ What are the project Aims?
▶ What work did you do to address the Aims?
▶ Outlook, reflection (recap the project, were the aims addressed?, what are the limitations of the work? what would come next?)

Disclaimer: there are other ways to structure a project narrative. Discuss this with your project supervisor.

Weeks 1 and 2

Tasks

- Get assigned your project
- Set up a meeting with your project supervisor
- Devise a plan for how you are going to work on your project
- Read Chapter 1 of lecture notes
- Start using Quarto (Chapter 2 of lecture notes)

Modules Aims:

- ▶ investigate a new mathematical topic
- ▶ develop communication skills
- ▶ develop independent study skills
- ▶ critical analysis
- ▶ develop programming skills

Module Structure

Your project content
- work independently
- meet with your project supervisor (you need to discuss and arrange a meeting schedule).

Writing/presentation
- weekly sessions developing communication/writing/programming skills (see timetable).

Optional
- 2 p.m. on Monday is Maths seminar - you are encouraged to attend but it is optional.

Module assessment

- presentation (10%)
- interim report (15%)
- poster (10%)
- final report + *viva* (65%)

Template projects and presentations will be available.

How did projects get assigned?

▶ Algorithm maximises overall satisfaction (tries to get as many students as high up preference list as possible) and is constrained by supervisor workload
▶ If you are not satisfied, please come and discuss with me.

Feedback

- Formative assessment. You will receive feedback
  - on submitted weekly work
  - practice presentation sessions
  - from your supervisor in meetings
  - documents that your supervisor reads in advance of submission
- Summative assessment
  - You will receive an email with grades and feedback from examiners

Any potential issues

- It's a 30 credit module
- Speak with your project supervisor
- Come and speak with me
- SSLC