The University of Nottingham

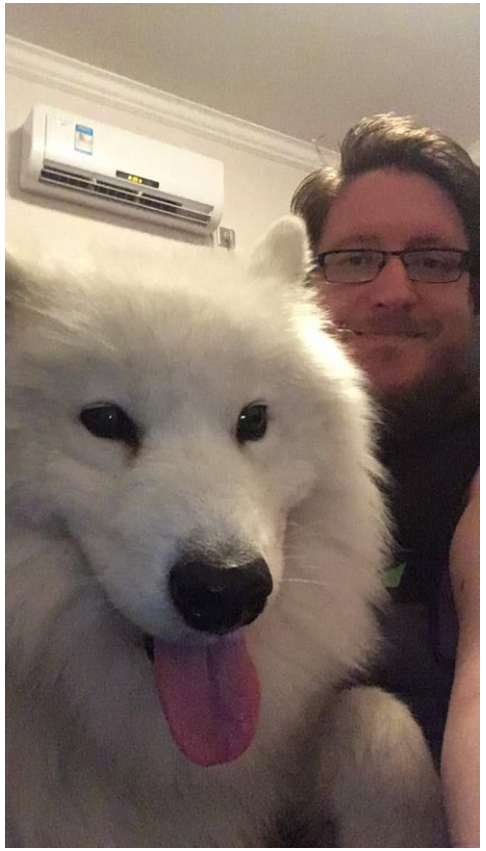
UNITED KINGDOM · CHINA · MALAYSIA

The Scientific Method

Introductory information

Teaching Staff

- **Module Convenor:** Matt Laidler
- Office TB315
- Studied Theoretical Physics at Newcastle University.
- Has an awesome dog (Jake).
- Interests include fencing, cycling, sledding and computer games.

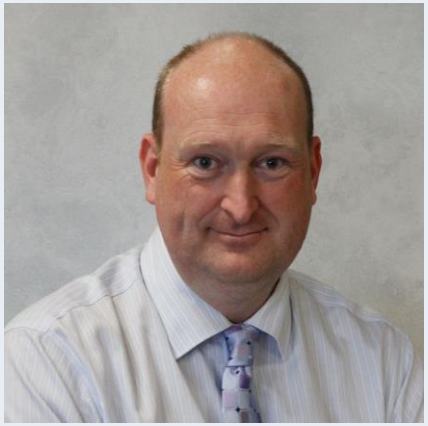


Email: Matthew-Steven.Laidler@nottingham.edu.cn

Teaching Staff

Seminar Tutors	Photo	Office
Neil Arnold		TB313
Zimei Rong		TB313

Teaching Staff

Seminar Tutors	Photo	Office
Zheng Wang		TB301
Brenden Theaker		TB301

Layout of the Course

Lectures

- Two lectures per week
- Lectures are where you meet the new ideas and concepts about the subject. There will also be examples of applying this new knowledge to different problems and situations.
- All of the lecture slides are available on Moodle, however to get the most out of the course you should still attend all the Lectures (even if they are difficult to begin with).

Layout of the Course

Lectures

- Two seminars per week
- In week 1 there will be two computer lab sessions with a further session in both weeks 2 & 3.
- The seminars give you an opportunity to work in small groups and discuss/utilize the knowledge you have gained from the lectures.
- It is therefore important to make sure you re-read through the appropriate lecture material before attending your seminars.

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Module Aims

- To provide students with the basic skills to understand and apply the scientific method in their chosen disciplines.
- To foster evidence-based, logical thinking.
- To develop the necessary communication skills to convey technical concepts with precision and flexibility.

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Learning Outcomes

Knowledge and understanding

- Awareness of the basic statistical knowledge necessary for scientific work.
- Understanding of the role of evidence in science.
- Awareness of the evolution of key concepts in engineering and science.
- Awareness of the importance of clarity and structure in scientific communication.

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Learning Outcomes

Professional practical skills

- The ability to analyse data using appropriate statistical techniques and convey findings clearly and concisely.
- The ability to produce a properly structured report in an academic register, within an engineering, architectural or computer science context.

Intellectual skills

- Familiarity with a range of appropriate data analysis techniques.
- A logical approach to problem-solving.

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Content

- The Scientific Method (as a process to gain knowledge).
- Data Analysis and Statistics
- Presentations
- Measurement and Uncertainty
- Famous Scientific Discoveries (through the framework of the scientific method).

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Assessment of the Module

20% Online Quizzes & Computer Lab Assignments

- A weekly series of online questions that you must complete on Moodle.
- There will be 8 Quizzes in total (starting at the end of timetable week 7) and one assignment for each computer lab
- Each new be quiz will become available at 5:00 pm on Friday and must be completed by the following Friday at 11:55 pm.

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Assessment of the Module

40 % mid-semester exam in semester week 12

- 1.5 hour long individual assessment.

- Tests your ability to;
  - Perform practical uncertainty calculations and statistical analysis
  - Analyse experimental data
  - Analyse a short scientific article/experiment

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Assessment of the Module

40 % group presentation

- Analyse and present a scientific article in a group of 3-4.
- Preparation and practice will take place in your scientific method seminars.

Attendance at seminars is compulsory.