Mathematics CS1003

Dr. Meriel Huggard

Room 1.10 Lloyd Institute
School of Computer Science and Statistics
Trinity College Dublin, IRELAND
http://mymodule.tcd.ie
Meriel.Huggard@tcd.ie

Michaelmas Term 2018

Timetable

Weekly Schedule:

- We have 33 scheduled contact hours, these will be a mix of lectures and tutorials.
- There are THREE sessions when we are all timetabled together per week:
  - Monday 9am to 9.50am, Goldsmith Hall
  - Tuesday 3pm to 3.50pm, LB04, Lloyd Building
  - Tuesday 4pm to 4.50pm, MacNeil Lecture Theatre, Hamilton Building
- You will be assigned to one of three scheduled slots for tutorial classes:
  - Monday 12 noon to 12.50pm, Goldsmith Hall
  - Monday 3pm to 3.50pm, LB08, Lloyd Building
  - Monday 4pm to 4.50pm, LB04, Lloyd Building
- Known changes to this schedule are as follows:
  - VENUE CHANGE: Monday, 1st and Monday 8th October at 9am we will use LB04 in the Lloyd Building, instead of Goldsmith Hall.

Attendance will be taken!

Tutorials

- In tutorial sessions you will work through questions from the tutorial sheets.
- Separate group tutorials will take place most weeks. Please watch the webpage and listen in class for announcements of changes.
- These classes are a chance for you to spend an hour doing some mathematics problems related to the material covered in class. They provide you with an opportunity to ask questions, get one-to-one and small group assistance.
- Like swimming or playing a musical instrument, there is a difference between theory and practice. Lectures are about the theory, tutorials are about the practice. One analogy is the difference between standing watching me swim and actually getting in the water and swimming yourself.
- Class reps for CS&B and CSL please let me know when you are free.

Course Materials

Course webpage: http://mymodule.tcd.ie.

- All slides used, questions for tutorials, assignments, etc will be posted there.
- Please make sure you have a copy of the tutorial sheet available when you attend tutorials.
- Your attendance and assignment grades will be recorded online. If the assignment grade is incorrect, then you will need to let us know so that we can make the necessary changes.
- Please check this webpage, and your email, regularly for updates e.g. if a lecture or tutorial has to be cancelled or a venue changed at short notice, them information will be posted on the webpage.
- If you do not have access to the webpage then you should email me (Meriel.Huggard@tcd.ie) and I will add you to the class list on mymodule.tcd.ie.

Content of CS1003

- Linear Algebra
  - Linear systems
  - Matrices
  - Finding eigenvalues and eigenvectors
- Taylor Series

Content of CS1003

- The course is about both continuous and discrete mathematics, and is focused on those elements of mathematics at the foundations of many real-world applications in Computer Science, Engineering and the Social Sciences.

- The course is illustrated with applications.

- Objectives:
  - derive, formulate and apply solutions for linear systems;
  - develop Taylor Series expansions and recognise their limitations;

Assessment

- There will be five assignments a.k.a "homework", approximately one every second week. Each is worth 1% of your mark for this module.
- These are to be submitted online before the time indicated. We will do our best to mark these and return them to you promptly. This will depend on the demonstrator support made available by the School.
- You work should be handwritten. You can scan in your work or take good quality pictures with your phone etc. Please convert images to pdfs and submit your assignment as a SINGLE PDF file.
- Please DO NOT type up your work.
- There will be an 50 minute in-class test on Tuesday 27th November, worth 5% of your mark for the module.
- The final exam is in the Examination Period (April/May). This will test you on the material covered by both myself and Dr. Hugh Gibbons.
- Exam regulations... make sure you familiarize yourself with these.

Reading materials

General

- Course Webpage , `http://mymodule.tcd.ie`

General Mathematics


Mathematical Methods for Scientists and Engineers
D. A. McQuarrie, University Science Book, 2003.


Advanced Engineering Mathematics Erwin Kreyszig, Wiley


Engineering Mathematics through Applications
K. Singh, Palgrave Macmillan, 2011.

Reading materials

Linear algebra

- Linear Algebra
  J. Hefferon, Online textbook: http://joshua.smcvt.edu/linearalgebra/
- Elementary Linear Algebra
  K. R. Matthews, chapter 1, Online textbook: http://www.numbertheory.org/book/
- Elementary Linear Algebra
  Howard Anton, Chris Rorres, Wiley (any edition will do)

Non-course specific reading material

- How Not to Be Wrong: The Power of Mathematical Thinking Jordan Ellenberg, Penguin, 2014
- How to Read and Do Proofs Daniel Solow, Wiley, 2010.
- Birth of a Theorem: A Mathematical Adventure Cédric Villani, Random House, 2016
- How to Solve It George Pólya, Penguin.