

# MS4101

## Mathematics Laboratory

September 20, 2018

Material for this course is freely available via the Web at  
<http://jkcray.maths.ul.ie/ms4101.html>.

### Purpose of Course

- Introduce the Matlab numerical programming language
- Introduce the  $\text{\LaTeX}$  document preparation language
- Apply Matlab to the solution of simple numerical models
- Brief introduction to a symbolic algebra package

## 1 Introduction

### 1.1 Timetable

- Lectures: Monday 15:00 S1–16 (this may change) & Wednesday 16:00 S1–14.
- Labs: (from Week 2) Monday 17:00 & Tuesday 12:00 C2–062.
- A “catch-up” class (from Week 3) will be held in SG–17 at 13:00 on Tuesdays when needed.
- Office hours (from Week 2) Mondays 14:00–15:00 & 16:00–17:00 in B3–043.

### 1.2 Structure of Course

- The course is based on the document “Introduction to Matlab” which you can download from <http://jkcray.maths.ul.ie/ms4101/IntroMatlabGriffiths.pdf>
- This material is made freely available by its author, David Griffiths.
- It may be copied freely provided the author’s rights are preserved.

- You should print a copy for your own use.
- You should buy a USB stick/flash memory drive for use in this & other modules.
- In the two lectures every week, new material from the “Introduction to Matlab” will be covered.
- The class is divided into two Groups (2A & 2B) for lab purposes.
- You must attend your assigned lab class each week (from Week 2) in C2-062 where each student will work with Matlab on a PC with help from the lecturer.
- Before I assign your project, I will spend a week on an introduction to L<sup>A</sup>T<sub>E</sub>X, a free software package for mathematical document preparation.
- See <https://www.overleaf.com/> for a free cloud-based version of L<sup>A</sup>T<sub>E</sub>X (it doesn't need to be installed, just used from a web browser) and <http://jkcray.maths.ul.ie/ms4101/LaTeX-Files/> for the introductory L<sup>A</sup>T<sub>E</sub>X material for L<sup>A</sup>T<sub>E</sub>X.
- At the end of the introduction to L<sup>A</sup>T<sub>E</sub>X, you will have a free Overleaf account configured and will be able to use it to prepare documents that just contain text ([like this](#)) or mathematics like this:

$$\int_0^{\infty} e^{-x} dx = 1.$$

- Without familiarity with L<sup>A</sup>T<sub>E</sub>X, you will not be able to complete your project.
- A copy of the Matlab software package will be made available to you free of charge for use on your laptop both on-campus on and off-campus — details to be announced.

### 1.3 Assessment

- A Matlab project will be assigned midway through the semester for at least 30% of your grade for the module.
- A PC-based end-of-semester assessment will determine the remainder of your grade.
- An attendance record will be kept.