Welcome to CES

Lecture 0: Introduction

Dr Wei Liu
CSSE Rm 2.18
wei@csse.uwa.edu.au
What’s it About?

• Solving engineering and scientific problems
  – computers and programming
    • data types, operators, control flow, i/o
  – structured approach, software engineering principles
    • functional decomposition, modularity, reuse, documentation
  – data visualisation, interpreting solutions
  ‣ Matlab
This Lecture

• Introductory information
  – teaching staff
  – teaching sessions
  – getting help
  – assessment
  – on-line resources
  – workshop/consult

• Matlab for data analysis
Teaching Staff

• Unit Lecturer and Coordinator
  – Wei Liu and Du Huynh

• Lab Demonstrators
  – Wei Liu
  – Du Huynh
  – Bob Hastings
Weekly Overview of the Unit Activities

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-10</td>
<td></td>
<td></td>
<td>Lab 3 (2.03)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-11</td>
<td></td>
<td></td>
<td>Lab 3 (2.03)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-12</td>
<td>Lab 2 (2.03)</td>
<td>Lab 4 (2.03)</td>
<td>Lab 5 (2.03)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-1</td>
<td>Lab 1 (2.03)</td>
<td>Lab 2 (2.03)</td>
<td>Lab 4 (2.03)</td>
<td>Lab 5 (2.03)</td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>Lab 1 (2.03)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3</td>
<td></td>
<td></td>
<td>Lecture (ROSS)</td>
<td>Lab 6 (2.03)</td>
<td></td>
</tr>
<tr>
<td>3-4</td>
<td>Lecture (ROSS)</td>
<td></td>
<td></td>
<td>Workshop/Consult (ROSS)</td>
<td>Lab 6 (2.03)</td>
</tr>
<tr>
<td>4-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lectures

- Two one hour lectures every week
- PDFs of lecture slides available on website
- Lectures are recorded using Lectopia
- Try to keep informal/interactive
  - fairly large class
  - please give colleagues courtesy of quiet during lectures
Laboratories

- Two hours every week from Week 2
- Supervised for two hours initially, then for first hour and longer if needed
- Make the most of the lab demonstrators!
  - try problems beforehand
  - bring problems from last week
  - welcome to seek help from demonstrators even if its not your scheduled lab
Laboratories

• You may attend extra lab classes if there is room.

• Those doing CES work have priority for the use of spare machines

• You are expected to complete lab work outside of scheduled sessions.
Laboratories

• Road to success in CITS1005...

Make sure you do the lab work!!!
Lab Rules for Common Good

• A variety of users
  – **scheduled user** — someone who has signed up for the lab *and* is working on that lab’s material.
  – **CES user** — someone working on the lab’s material.
  – **legitimate user** — someone carrying out other work assigned by a CSSE unit.
  – **sadly misdirected user** — someone who is playing games, surfing the web, etc, during scheduled lab sessions.

• Scheduled users should occupy machines contiguously from 1 upwards

• Second priority for machines goes to CES users, then other legitimate users (who work unsupervised and should not dominate the time of the demonstrator)

• Sadly misdirected users are not allowed in lab time!
Workshops

• Reserved for extra help as required
• Can be used to reinforce material in lectures, do worked examples, additional exercises
  ➡ Please let the lecturer know if you have difficulty with a topic!
• When there is no workshop the lecturer will be available for office consultation (work and/or personal issues)
Obtaining Help

• No student should ever find (providing they keep up with the work and don’t leave it too late!) that she or he cannot obtain help with any difficulties encountered with the course.
  – Make use of Lectures/Labs/Workshop
  – Online discussion forum (help1005)
  – Consultation - personal and private matters (admin1005@csse.uwa.edu.au)
help1005

- help1005 discussion forum
  - Announcements (including release of projects, updates, etc)
  - Allows students and staff to share questions and solutions
  - If you encounter a problem one of the first steps should be to check help1005 to see if it has been encountered before
  - You can also post problems or suggested solutions for discussion (not full code for assessed work)
  - You are advised to subscribe for email alerts
- Note: The help1005 forum is not a substitute for face-to-face teaching and does not have a guaranteed “response time”. You should attend one of the face-to-face sessions.
Assessment

- Two projects, each worth 15%
- Examination, worth 70%
- Passing this unit requires achieving a 50% overall mark, with a minimum score of 40% in both the final examination and the in-semester coursework (projects mark).

<table>
<thead>
<tr>
<th>Item</th>
<th>%</th>
<th>Rough Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project I</td>
<td>15</td>
<td>Mid-semester</td>
</tr>
<tr>
<td>Project II</td>
<td>15</td>
<td>End of semester</td>
</tr>
<tr>
<td>Exam</td>
<td>70</td>
<td>November Examination Period</td>
</tr>
</tbody>
</table>
Lateness Penalty

- Penalised 10% per day late or part thereof as per school policy (see unit outline).
- Problems with illness etc must be discussed with the Unit Coordinators and medical evidence supplied prior to the submission deadline.
Plagiarism

- While students are encouraged to discuss the concepts covered in the exercise sheets, work submitted for assessed laboratories or projects must be written, from scratch, by the person(s) submitting.

- Submissions will be checked by sophisticated similarity checking software.

- Where any collusion is found all parties will receive zero, regardless of who the original author was, and the matter referred directly to the Faculty academic misconduct officer.
On-line Resources

• The CES Website
  http://undergraduate.csse.uwa.edu.au/units/CITS1005/
  – Unit outline
  – Electronic copies of lecture notes
  – Lab sheets, project sheets
  – Programs/code needed for exercise sheets
  – Marks obtained during semester (csmarks)
  – Links to resources such as help1005, lectopia recordings, etc
What you should do this week

• Try out the computer systems in the School’s labs, the login for the computer labs should be
  – your student number and pheme password
  – if not working, use bookings/bookings to log in, it will tell you what to do.

• Begin to familiarise yourself with the Unit’s web site. (Introduce yourself on help1005!)

• Labs start in Week 2.
Aims of the Course

• To give you skills to use computers as a tools for solving engineering and scientific problems
  – Take the problem
  – Identify its components
  – Express the solution in computational terms

• Language used – MATLAB

• Will cover general programming constructs to enable you to subsequently move onto other languages.
Why Matlab?

• There is no single “best” programming language.
• Different programming languages have different strengths.
• What are the most common tasks in an Engineering role...?
Data Analysis
Data Analysis

Access
Data Analysis

Access
Explore
Data Analysis

Access  Explore  Share
Data Analysis

Access  Explore  Share

Automate
MATLAB for Data Analysis

Access

Explore

Share

Automate
Demo

• Matlab for Data Analysis
• Demos
  – analysing data
  – visualising data

  – feel free to view others yourself...
Quick Demo

- Matlab for Data Analysis
- Demo Data and Resources:
  - Webinar:
    http://www.mathworks.com/company/events/webinars/wbnr37971.html
  - Energy Forecast Demo Data
    http://www.mathworks.com/matlabcentral/fileexchange/loadFile.do?objectId=14215&objectType=file
Some other Strengths of Matlab

• Matrix data type is fundamental
  – work with matrices directly
  – efficient and concise, avoid nested loops, etc

• Fast prototyping
  – mix stored programs and interactive use

• Visualisation “built-in”
  – quick feedback, “what-if” analysis
  – presentation of results - make yourself look good!
Coming Up...

- Introduction to Programming
- How computers work
- Programming in Matlab