Lecture 1
Introduction

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Info

- My web page: WWW.CSSE.MONASH.EDU.AU/~KORB
- unit guide: HTTP://WWW.INFOTECH.MONASH.EDU.AU/UNITS/
- MUSO: HTTP://MUSO.MONASH.EDU.AU/
Teaching

The teaching in this unit comes in three main forms:

1. *Lectures*: Lecture content will be the backbone of the subject, presenting the central material

2. *Tutorials*: The emphasis will be on working concrete examples and on discussion

3. *Workbook*: One chapter per tutorial (per two weeks), containing
   - Definitions, proofs, etc giving detailed backup to lecture notes.
   - Exercises. Some of these will be done in tutorials.

*Required Reading*: There is no assigned text. Lecture notes and workbook are required reading; I encourage you to explore beyond these, starting with recommended readings.
Tutorials

Tutor: Robyn McNamara and I

Tutorials:

<table>
<thead>
<tr>
<th>Time</th>
<th>Loc</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wed 4pm</td>
<td>S312/11</td>
<td>28/2, 14/3, 28/3, 18/4, 9/5, 23/5</td>
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<tr>
<td>Wed 4pm</td>
<td>S312/11</td>
<td>7/3, 21/3, 4/4, 2/5, 16/5, 30/5</td>
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<tr>
<td>Thr 3pm</td>
<td>TR3/12</td>
<td>1/3, 15/3, 29/3, 19/4, 10/5, 24/5</td>
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<tr>
<td>Thr 3pm</td>
<td>E362/11</td>
<td>8/3, 22/3, 5/4, 3/5, 17/5, 31/5</td>
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⇒ Sign up in Allocate+

There will also be Help Desk time . . .
Learning

In order to learn the material in this subject you should:

- Work through notes and the workbook regularly, applying the ideas to examples and exercises

- Follow up anything that seems unclear:
  - Ask questions
  - Read referenced material

- Form a study group
**Passing**

Assessment is:

30% Three assignments.

70% Final exam.

*Passing* will be easy if:

- You consistently work through subject material
- Attend and follow the tutorials
- Do the exercises in the workbook – and ask for help if you can’t do one of them

*Excelling* may require more.

*Passing* will be hard if:

- You consistently party through the semester
- Procrastinate your studies
- Sleep through lectures
Wikipedia, etc

Wikipedia is a popular source of information.

My advice:

   It’s an excellent *starting point* for learning.
   It’s a rather poor ending point.

- Referencing is good; stealing is bad
- Collaborating is good; copying is bad
Subject Goals

Acquire four tools for analysing and solving problems in computer science:

1. Analysis of algorithms.
   Basic techniques for studying time or space complexity of computer programs. E.g., what polynomial function limits time complexity?

2. Complexity theory.
   The (outer) limits of feasible computation.
   Computability vs non-computability. E.g., is there any polynomial function that limits time complexity?

   Deterministic and probabilistic search methods.

4. Simulation.
   Discrete-event simulation; artificial economics; artificial life simulation.

These topics will be be treated in two passes (progressive deepening!).
Subject schedule (rough)

1. Introduction
2. Analysis and Complexity Theory
3. Search and Simulation
4. Probability and Information
5. Search Algorithms
6. Heuristics Search & Dynamic Programming
7. Randomness
8. Stochastic Search
9. Computer Simulation
10. Economic Simulations
11. Computability
12. Complexity Theory
What is $[\text{Computer Science}]_W$?