

## Research Skills

This compulsory module provides training in the key skills required for research: reading, writing, presenting, and experimenting.

Required reading: Writing for Computer Science, Justin Zobel, Springer, 2004

### 1. How to read a research paper. [1.5 sessions]

Several of the other modules require you to read and comment on research papers. The first topic in this module therefore explains how to read a paper and how to review one. In particular, we consider what questions you should ask yourself when reading. Beyond the issues in reading a single paper, we also consider how you decide which papers are worth reading, how you prioritise your reading time, and how papers are reviewed for conferences and journals.

Assessed practical work: reading and commenting on three short papers.

### 2. The research process. [0.5 sessions]

Research consists of undertaking original work, understanding the context in which your original work fits, and presenting your original work to other people. We will look at the process of research, discuss common misconceptions and pitfalls, and consider the ethical issues that surround research.

### 3. How to write a research paper. [5 sessions]

Your brilliant ideas are of no use unless you communicate them. This, longest, section of the module explains how to present your ideas in writing. We will consider how to structure a paper, how to write the first draft, and how to edit. I will also give advice on writing style and on how, and how not, to comment on a colleague's writing.

Assessed practical work: writing two short pieces.

4. How to give presentation. [2 sessions now + 4 sessions of student presentations at the end of the course]

Having had your original paper accepted, you will need to present your ideas to your research group, to workshops, and to conferences. We discuss how to prepare a presentation how to keep your audience interested, and how to leave them wanting to read your paper. We will consider how to structure a good presentation and how to avoid the pitfalls that send your audience to sleep.

Assessed practical work: preparing and giving a short presentation.

5. How to design, analyse, and report an experiment. [3 sessions]

Most scientific work is informed by experiment. We discuss experimental design, including the common pitfalls. Once you have your experimental results, you need to analyse them. We consider the standard statistical tests for determining whether your results are significant.

Assessed practical work: analysing and reporting on a set of experimental data provided by the lecturer.

Note: the number of sessions devoted to each section, and the precise nature of the practical work, are estimates and may change.