

## Computer Science Internships

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Together with Dr Duncan Mackay from the School of Mathematics and Statistics, we will develop a web-based information resource to facilitate learning programming concepts. This interactive and visual web-system will be aimed at novice programmers and complement programming modules, such as CS1002, CS5001 and CS5002. The system will present programming concepts and underlying connections in a visual way and facilitate the self-guided exploration of these concepts through intuitive interaction techniques.

We are looking for 2 interns who are enthusiastic about software development, web and visual design to work with us, mainly over summer 2016. One internship will focus on the design and development of the interface and backend of the web resource, the other will focus on preparing content for this resource. This is a Research and Development (R&D) project - interns will be responsible for the practical design and implementation activities, but are asked to actively contribute their own ideas and to be involved in framing the research perspectives of this project which relate to the areas of software engineering, human computer interaction, information visualisation and teaching programming concepts.

### Internship details

- Start ASAP after the exams in May.
- Internship 1 will be about 200 hours in total; Internship 2 around 80 hours. This division may be negotiable depending on applicants' availability and experience.
- Pay is £13.67/hour (this amount is set by the University).
- Exact period of internship is flexible.

## Internship 1

### Duties

- Design an architecture for a web-based resource that can be easily customised and extended.
- Design a visual user interface to represent connections between the different programming concepts (e.g., name, description, applicable constructs and example code for programming concepts, as well as different types of relationships between them).
- Implement a web-based prototype of these designs.

### Necessary Experience

- Web design (HTML 5, Bootstrap, etc.).
- JavaScript.
- MySQL or other relevant database.
- Basic concepts of software engineering.
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### Ideal Experience

- Knowledge of information visualisation concepts.
- JavaScript development and visualisation frameworks (e.g.D3.js).
- Design and development of a substantial piece of software (non-trivial software development).

## Internship 2

### Duties

- Create the content for the resource for Python and Java.
- Populate the resource with content.
- Carry out testing from different devices.

### Necessary Experience

- Good knowledge and experience of Java and Python.

### Ideal Experience

- Experience and/or interest in teaching programming concepts.

We are happy to consider students from any year as long as they can demonstrate sufficient knowledge and experience. These internships may be particularly suitable for students who have completed CS2003 and CS2006, although if you have relevant experience from other quarters, that is fine too.

## How to Apply

If you are interested, please reply **before Friday 22 April** with:

- Your name, degree and year.
- Any relevant experience and/or work samples (ideally with evidence such as modules taken, URLs or repositories).
- A statement of interest that describes why you think you would be a good fit for this internship.

Applications are particularly welcome from women who are under-represented in Research and Development posts at the University.

The University of St Andrews is committed to promoting equality of opportunity for all, which is further demonstrated through its working on the Gender and Race Equality Charters and being awarded the Athena SWAN award for women in science, HR Excellence in Research Award and the LGBT Charter; <http://www.st-andrews.ac.uk/hr/edi/diversityawards/>.

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