School of Computer Science: **Advanced Programming Projects (CS2006)**

CS2006 is a second-level first-semester module. In our first-year modules students are only introduced to a single programming language, Java. In CS2006 they are quickly introduced to two completely different programming paradigms in two different programming languages: Python and Haskell. In six weeks of intensive lectures and lab sessions they have to quickly get to grips with new ways of programming that are very different to what they have experienced thus far. At the same time they are divided into groups of three and have to build four substantial software projects; two in Haskell and two in Python.

Students do not get to choose their groups. The groups are changed for the second set of projects. This means that they have to quickly learn how to manage their time and manage each other. Each week they have to present their current progress to the module lecturer; this means that they have to keep on top of the projects every week and cannot wait until 24 hours before the hand-in date. The projects are substantial and often have a research component. For instance this year they had to work on a Twitter data corpus from the London Olympics, formulate some research hypotheses and build efficient and scalable pieces of software to test these hypotheses. Some of the projects were excellent and the students will have picked up useful skills should they choose a career in research or data science.

**Benefits/impact on students/staff**

The benefits for students are that they quickly pick up two new programming languages, which have proven to be useful for the rest of their degree, and for obtaining internships at companies etc during the summer.

**Contact:** Tristan Henderson, School of Computer Science [email: tnhh@st-andrews.ac.uk]

**Date submitted:** June 2013