Advanced Programming Languages - Course Outline

SWEN 431: 2014 Trimester 2

This document sets out the workload and assessment requirements for SWEN 431. It also provides contact information for staff involved in the course. If the contents of this document are altered during the course, you will be advised of the change by an announcement in lectures and/or on the course web site. A printed copy of this document is held in the School Office.

Objectives

By the end of the course, students should be able to:

1. Read, understand and synthesize inductive definitions using meta-rules. (3(b), 3(c))
2. Understand the theoretical foundations of programming languages, including Lambda Calculus, a simple Expression Language and Featherweight Java.
   We will explore techniques to formally define both semantics and type systems. (3(b), 3(c))
3. Understand advanced aspects of functional programming, including monads, monad transformers and categories. (3(b), 3(c), 3(f))

Textbook

There is no textbook for SWEN 431. The course will be based on lecture notes and other handouts distributed in class. Thus presence to the lecture is fundamental for this course.

However, we suggest the following text:
Types and Programming Languages
Benjamin C. Pierce (Author)

I "hope" it can be found in the library for free, otherwise I will try to manage to get you one if you want to attempt reading this masterpiece.
(It is a great book, but is very hard, so it is a suggested reading but is not mandatory)

Lectures, Tutorials, Laboratories, and Practical work

A schedule of lecture topics, readings, and assignment due dates is available online

The timetable of lectures for SWEN 431 is available here: h*ttp://www.victoria.ac.nz/ecs/study/courses/swen-431*

Timetable for any tutorials and/or labs, and help desks

Assignments and Projects

Description of assignment/project work, including submission, and how the assigned work relates to the course objectives

Workload

In order to maintain satisfactory progress in SWEN 431, you should plan to spend an average of at least *10* hours per week on this paper. A plausible and approximate breakdown for these hours would be:

- Lectures and tutorials: 3 hours per week
- Personal exercises and readings: 3 hours per week
- Assignments: 3-4 days to write each assignment.

Achieving a higher mark may require more workload

School of Engineering and Computer Science

The School office is located on level three of the Cotton Building (Cotton 358).

The notice board for SWEN 431 is located on the second floor of the Cotton Building.

Staff

The course organiser for SWEN 431 is Marco Servetto. The lecturers for the course are Marco Servetto and Timothy Jones. Their contact details are:

- *Marco Servetto*
- Cotton 258
- +64 4 463 5820
- Marco.Servetto@ecs.vuw.ac.nz

- *Timothy Jones*
- Cotton 254
- +64 4 463 5233 x8485
- tim@ecs.vuw.ac.nz

Announcements and Communication

The main means of communication outside of lectures will be the SWEN 431 web area at http://ecs.victoria.ac.nz/Courses/SWEN431_2014T2/. There you will find, among other things, this document, the lecture schedule and assignment handouts, and the SWEN 431 Forum. The forum is a web-based bulletin board system. Questions and comments can be posted to the forum, and staff will read these posts and frequently respond to them.

Assessment

Your grade for SWEN 431will be determined based on the following assessment weightings:

Item	Weight
Assignment 1 - Lambda Calculus - Out 24/7 -Due 6/8	15%
Assignment 2 - Expression language - Out 6/8 -Due 19/8	15%
Assignment 3 - Featherweight Java - Out 20/8 -Due 22/9	40%
Assignment 4 - Haskell -Out 23/9 -Due 17/10	30%

Assignments 1, 2 and 3 assess Learning Objectives 1 and 2, while Assignment 4 assess Learning Objective 3.

Assignments 1,2 and 3 will require a short essay formatted in Latex showing formal understanding on the respective topic, and showing the ability to independently and formally design some extentions.

Tests and Exams

SWEN431 is internally assessed, so there is no final exam.

Practical Work

Description of assignments / projects / etc, including rough dates and submission processes

Policies and penalties for late submission

Plagiarism

Working Together and Plagiarism

We encourage you to discuss the principles of the course and assignments with other students, to help and seek help with programming details, problems involving the lab machines. However, any work you hand in must be your own work.

The School policy on Plagiarism (claiming other people's work as your own) is available from the course home page. Please read it. We will penalise anyone we find plagiarising, whether from students currently doing the course, or from other sources. Students who knowingly allow other students to copy their work may also be penalised. If you have had help from someone else (other than a tutor), it is always safe to state the help that you got. For example, if you had help from someone else in writing a component of your code, it is not plagiarism as long as you state (eg, as a comment in the code) who helped you in writing the method.

Mandatory Requirements

1. *Submit a reasonable attempt to all 4 assignments.*
2. *Gain at least a D on 3 assignments.*

Passing SWEN 431

To pass SWEN 431, a student must satisfy mandatory requirements and gain at least a **C**- grade overall.

Withdrawal

The last date for withdrawal from SWEN 431 with entitlement to a refund of tuition fees is Friday 25 July 2014. The last date for withdrawal without being regarded as having failed the course is Friday 26 September 2014 -- though later withdrawals may be approved by the Dean in special circumstances.

Rules & Policies

Find key dates, explanations of grades and other useful information at http://www.victoria.ac.nz/home/study.

Find out about academic progress and restricted enrolment at http://www.victoria.ac.nz/home/study/academic-progress.

The University's statutes and policies are available at http://www.victoria.ac.nz/home/about/policy, except qualification statutes, which are available via the Calendar webpage at http://www.victoria.ac.nz/home/study/calendar (See Section C).

Further information about the University's academic processes can be found on the website of the Assistant Vice-Chancellor (Academic) at http://www.victoria.ac.nz/home/about/avcacademic

All students are expected to be familiar with the following regulations and policies, which are available from the school web site:

Grievances
Student and Staff Conduct
Meeting the Needs of Students with Disabilities
Student Support
Academic Integrity and Plagiarism
Dates and Deadlines including Withdrawal dates
School Laboratory Hours and Rules
Printing Allocations
Expectations of Students in ECS courses

The School of Engineering and Computer Science strives to anticipate all problems associated with its courses, laboratories and equipment. We hope you will find that your courses meet your expectations of a quality learning experience.

If you think we have overlooked something or would like to make a suggestion feel free to talk to your course organiser or lecturer.

Course Outline as PDF