Course Contact Information

Professor: Drew Hilton (adhilton@ee.duke.edu)
Office: Hudson 211
Office hours: M 11–12, Th 12:30–1:30

TA: Ralph Nathan ralph.nathan@duke.edu
Office hours: TBA


Textbook

**Required.** “Modern Compiler Implementation in ML.” by Andrew Appel.

- Be sure to get “in ML” (blue) version.
- Errata: http://www.cs.princeton.edu/~appel/modern/ml/

**Optional.** “ML for the Working Programmer.” by L.C. Paulson

Assignments and Grading

Your grade for this course will be comprised of three components:

- SML Warmup: 2%
- Course Project: 35%
- Midterm Exam: 29%
- Final Exam: 34%

Course Project

Over the course of the semester, you will write a compiler start to finish. Important information about the project:

**Deadline** Your compiler is due Tuesday, April 23\(^{nd}\), 2013 at 11:59 PM (the day before LDOC).

You may use any remaining late days on the submission of your final compiler.

**Partners** You will work in pairs, or groups of 3.
Phases  The compiler will be broken down into individual phases. Each phase of the compiler will be assigned as we cover the relevant course material. These phases will be:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Points</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexical Analysis</td>
<td>10</td>
<td>1/28</td>
</tr>
<tr>
<td>Parsing</td>
<td>15</td>
<td>2/13</td>
</tr>
<tr>
<td>Semantic Analysis</td>
<td>20</td>
<td>3/4</td>
</tr>
<tr>
<td>Frame Analysis and Intermediate Representation</td>
<td>15</td>
<td>3/20</td>
</tr>
<tr>
<td>Instruction Selection</td>
<td>15</td>
<td>4/1</td>
</tr>
<tr>
<td>Register Allocation</td>
<td>15</td>
<td>4/15</td>
</tr>
<tr>
<td>Working compiler, produces assembly</td>
<td>10</td>
<td>4/22</td>
</tr>
</tbody>
</table>

Late Policy  You have 5 late days (days, not classes) that you may use as you see fit. Each phase is due at 11:59:59 PM on the date listed above. We will grant 15 minutes of “grace” to account for clock differences. Anything submitted after 12:15 AM on the next day uses an entire late day (no fractions). Late days are counted during weekends, but not during other school holidays (MLK, Spring break). Note that you may use late days to submit the final phase/entire compiler late if you have any remaining. You do not need to ask permission in advance, justify a reason, etc. to use late days: they are yours to use; there is no penalty for using them. There is no benefit to keeping leftovers.

Improvement  When you submit each phase, the TA will grade it, and give you feedback. If you have problems that need to be addressed with a particular phase, you are encouraged to improve that phase before submitting your final compiler. Your grade-of-record on each phase will be the average of your grade on the initial turn-in of that phase, and the grading of that phase in your final compiler submission. For example, if you earn an 8/10 on the lexer when you initially submit, but fix all of your problems in your final compiler (i.e., 10/10), you will receive a 9/10 on that phase in your grade calculation. If you improve a phase in your final submission please inform your TA so he can be sure to re-examine that phase.

Warning  Writing a compiler is a large, complex project. Most of these phases require significant work. Do not wait until the last minute to start a phase.

Programming Language  You will write your compiler in SML-NJ. You may not be familiar with SML-NJ, but it is an excellent language for writing compilers. There will be an “SML warmup” assignment at the start of the semester for a small portion of your overall grade. This assignment is due Friday 1/18. You may use late days for this assignment.

Exams

You will have one mid-term exam (in class, Wednesday February 20\textsuperscript{th}), and one final exam (during the scheduled final exam time slot). These exams will be individual effort. You may bring one page (8.5x11) of notes to use during the exam. This page may be hand-written, typed, or a combination of each; however, it must be produced by you. The exams will be closed book.

Cheating Policy

Your work is expected to be your own (exams) or your group’s (projects). If you commit academic misconduct in this course and are caught, you will face the appropriate disciplinary procedures
(undergraduates: referal to the Office of Student Conduct. graduate students: referal to the Associate Dean in charge of your program).

If you are unsure whether a certain course of action is permissible or not, please ask. If you think that asking is a bad idea because I would probably say “no,” you can be fairly certain it is not permissible.