

Overview of CPSC 421/501 (Introduction to Theory of Computing)

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Class: MWF 8:00–8:50
 Dempster 301
 Office Hours: TBA or by appointment

<http://www.math.ubc.ca/~jf/courses/CS421> is the location of the most up-to-date versions of all handouts for this course, including this document, homework and solutions, sample exams and solutions, etc.

Overview: This course will cover introductory computer science theory, using the text *Introduction to the Theory of Computation* by Michael Sipser, 3rd Edition; some additional handouts and references will be given. Formally, the prerequisites are CPSC 221 or both of CPSC 216 and CPSC 220; CPSC 320 is not a prerequisite but is recommended; however, this course develops almost all concepts from scratch, so students outside computer science with enough exposure to math may also be able to take the class (see me). The rough schedule is below:

1. The handout “Computability and Self-Referencing in CPSC 421,” Sections 1–4; roughly 1–2 weeks.
2. **Turing Machines and Computability:** Chapters 3–5, roughly 2–3 weeks.
3. The handout “Computability and Self-Referencing in CPSC 421,” Sections 5–6; roughly 1–2 weeks.
4. **Complexity Theory and NP-Completeness:** Chapter 7, maybe 8,9. roughly 2–4 weeks.

Midterm: Friday, October 30, covering material up to October 16.

5. **Regular Languages:** Chapter 1, roughly 1–2 weeks.
6. **Context Free Languages:** Chapter 2, roughly 1–2 weeks.
Essay: CPSC 501 students will have an essay due on Friday, December 4.
7. **Complexity Theory:** I may put some topics in complexity theory at the end of the course, time permitting.

Classes End: Friday, December 4.

Homework: Homework will be assigned roughly weekly. Late homework will not be graded; I will drop your lowest three homework scores in computing your average homework mark.

Midterm and Final: Both exams will consist of some calculations and some more conceptual questions.

I will give only one midterm and only one final during the semester; there are no “make-ups” or alternates. Please make sure you do not make travel plans, work plans, etc. without regard for the midterm and final dates; also, do not make such plans assuming that the preliminary exam schedule will not change. A missed midterm normally results in a grade of 0; if documentation is provided for a legitimate excuse (e.g., medical emergency), the midterm grade will be the final exam grade (after any scaling).

Course Grade: For CPSC 421 students, your grade for the course will be

$$(.55)f + (.35)\max(f, m) + (.10)\max(f, m, h),$$

where f, m, h are, respectively, your final exam grade, your midterm grade, and your homework grade. For CPSC 501 students your course grade will be 80% of the CPSC 421 grade plus 20% of the essay grade. The homework grade computation will drop your lowest two homework scores.