

CSC231 Programming Languages Spring 2017

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Office Hours: Mon. and Wed. 3:30 to 4:30, Thu. at 2:00 to 4:30 and by appointment.

Text: Programming Language Pragmatics, Fourth Edition, by Michael Scott, Elsevier, December 2015.

Facilities: gottlieb.cs.wfu.edu. Xubuntu (Linux), XFCE Desktop, X2Go remote desktop software, Undergraduate Computing Lab, WFU issued laptops, your personal computers, “The Bridge” in Z. Smith Reynolds Library, WFU loaner laptops, menehune web server, and the WFU C.S. Center.

Web page: <http://menehune.opt.wfu.edu/csc231>

Topics:

1. Programming Language Design Overview
2. Compilers, Interpreters, and the Compilation Process
 - (a) Theoretical foundations: DFA, NFA, Regular Expressions
 - (b) Lexical Analysis
 - (c) Theoretical foundations: Grammars and parsing algorithms
 - (d) Parsing, parse trees
 - (e) Attribute grammars and semantic actions
 - (f) Intermediate representations: syntax trees, 3-address code
 - (g) Type checking
 - (h) Semantic checking
 - (i) Limits to compile-time analysis
3. Language Design Concepts and Implementation
 - (a) Data Types
 - (b) Binding time
 - (c) Object lifetime and memory management
 - (d) Scope and scope rules
 - (e) Flow control and subprogram control
 - (f) Exceptions and error management
 - (g) Separate compilation and linking
4. Survey of different languages
 - (a) Imperative languages (e.g., C++/Java)
 - (b) Functional languages and λ -calculus (e.g., lisp)
 - (c) Logic programming and Rule-based languages (e.g., Prolog)
 - (d) High level, special-purpose languages (e.g., Octave/Matlab)

Expectations:

- Class participation; communicate if things get complicated.
- Use of good coding practices and some basic coding standards in programming projects.
- Your best effort.

Excused Absences:

- Missing an exam is only excused for a limited number of reasons and circumstances must be verifiable. Acceptable circumstances include only:
 - Excused absences approved by the dean, e.g., varsity sports, dance team, marching band, etc.
 - A medical reason.
 - Childbirth (by you or your spouse/partner).
 - Military duty.
 - The passing of a family member.
- The final exam date is Tuesday May, 2, 2017 at 2:00pm. Early exam times are not available to accommodate travel plans.

Grading:

Three exams (65%), programming assignments and take home problem sets (35%). Programming assignment(s) **must** be submitted ready to compile and run under Linux.

Disability Notice:

If you have a disability that may require an accommodation for taking this course, then please contact the Learning Assistance Center (758-5929) within the first two weeks of the semester.

Pandemic Planning Notice:

The University has requested that faculty collect personal contact information as part of emergency planning and preparation. The information you provide is strictly confidential.