

CSC 7700 Study Guide

Programming Languages

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Reading

- Slides on course web page: <http://www.csc.lsu.edu/~gb/csc7101/> .
- CSC 4101 textbook:
Michael Scott, *Programming Language Pragmatics*, 2nd ed., Morgan Kaufmann Publishers, 2005.

What to Study

The general exam will concentrate primarily on material from 7101. Since denotational semantics has not been covered in much detail, there won't be difficult denotational semantics questions. There may also be basic questions about CSC 4101 material. The topics are:

- Attribute grammars
See the material on slides, homework, and old exams.
- Axiomatic semantics
See the material on slides, homework, and old exams.
- Operational semantics
See the material on slides, homework, and old exams.
- Denotational semantics
We didn't cover this in much detail, so only the basics would be on the exam (esp., bottom and the notation). See the material on slides, homework, and old exams.
- Type systems
You should understand the different forms of polymorphism, ML-style type expressions, and how functional and object-oriented languages are related. See the material on slides, homework, old exams, and the introduction of the Cardelli-Wegner paper.
- ML and Prolog
You should be able to read simple ML and Prolog programs.
- CSC 4101 Material
There might be questions about basic programming language material from CSC 4101. In particular, you should understand LL(1) grammars, static vs. dynamic scoping, overloading, and semantics and the basic implementation of virtual function calls. See the 4101 textbook and homeworks and exams on the 4101 course web page.

- Implementation of programming languages

You should have a general understanding of typical C-style language constructs and their implementation. In particular, you should understand what analyses, checks, etc. can be done at compile time and what needs to happen at run time. See the slides on attribute grammars or the overview of compilation in the 4101 textbook.