

CSE 655
Introduction to the Principles of Programming Languages
Winter 2009

www.cse.ohio-state.edu/~rountev/655

Syllabus

Instructor: Atanas (Nasko) Rountev

Course Summary

This course discusses various programming language concepts; design and implementation issues for different language families; grammars and parse trees; interpretation versus compilation; data types; binding and scope rules; language constructs for control and data abstraction. Four credit hours.

Prerequisites

- CSE 560: Elements of Computer Systems Programming
- CSE 625: Introduction to Automata and Formal Languages

General Information

- Call number: 04204-8 (CSE 655M); 04203-2 (CSE 655)
- Credits: 4
- Place and time: Monday, Wednesday, Friday 9:30 am – 10:18 am, Dreese Labs (DL), room 357
- Instructor: Atanas (Nasko) Rountev, rountev@cse.ohio-state.edu, 292-7203
- Instructor's office hours: DL 685, ?, , ?, or by appointment
- Grader: ?, ??@cse.ohio-state.edu, ?
- Grader's office hours: ?, ?, or by appointment.
- Course web page: www.cse.ohio-state.edu/~rountev/655

Topics

- Syntax analysis: grammars and parse trees
- Recursive descend: parsing, printing, interpretation, code generation
- Functional programming, Scheme
- Data types
- Object-oriented programming
- Scoping rules

- Procedure implementation, parameter passing
- Other topics

Objectives

- Master using syntax-related concepts including context-free grammars, parse trees, and recursive-descent parsing, printing, execution and code generation
- Master analyzing programming language design issues related to data types, expressions and control structures
- Master analyzing variable binding and scope rules
- Master analyzing parameter passing methods
- Master implementation techniques for imperative languages
- Master analyzing issues related to data abstraction
- Be familiar with principles of object-oriented languages
- Be familiar with implementing object-oriented languages
- Be familiar with using functional programming languages
- Be familiar with implementing functional programming languages

Reading

- Robert Sebesta, *Concepts of Programming Languages*, 8th/7th/6th/5th edition
- Not all the material we cover will be from the book, nor will the order in which we cover this material be the same as in the book. You will have to refer to copies of the slides (which I will distribute in class and on the course web page), your own notes, as well as the book in order to keep up with the course.

Course Web Page

www.cse.ohio-state.edu/~rountev/655: the course web page will contain all notes, handouts, assignments, a detailed schedule, pointers to reading materials, etc. Copies of assignments etc. handed out in class become official, regardless of whether they are on the web page or whether you are able to access the page. Occasionally I will post on the page some up-to-date announcements, so you should check it regularly.

Assignments

- There will be four assignments, typically due in 7 to 10 days.
- Assignments are to be done independently. General high-level discussion of assignments with others in the class is allowed, but the actual work should be your own. Assignments that show excessive similarities will be taken as evidence of cheating and dealt with accordingly.
- Assignments should be turned in **by the beginning of class** on the due day. Late assignments turned in by the beginning of the next class will be graded with 30% reduction. Assignments turned in later than that will not be accepted.

- Make the assignments readable and understandable. They are to be handed in on regular paper, legibly written or typed. If you have more than one sheet, **staple the sheets together**. If the grader has trouble reading or understanding what you have done, points will be deducted even if it can finally be determined that you have the correct answer.
- Your solutions have to be **precise and detailed**: you have to work out **all** details that are necessary to solve the problem using the approaches discussed in class. You also have to write your solutions in a way that convinces the grader that you understand all these details. Be careful, precise, and thorough.

Programming Projects

- There will be two programming projects, which have to be submitted electronically on *stdsun* by midnight on the due date. The projects **must compile and run** on *stdsun*. Some people prefer to implement the projects on a different machine, and then port them to *stdsun*. This usually creates ugly problems in the last minute, and I would advise against it. Still, if you decide to use a different machine, it is **entirely** your responsibility to make the code compile and run correctly on *stdsun* before the deadline.
- The projects are to be done independently. General discussion of the projects with others in the class is allowed, but you have to do all the design, programming, and testing independently. Submissions that show excessive similarities will be taken as evidence of cheating and dealt with accordingly.
- The projects are due by 11:59 pm on the due day. **Absolutely no exceptions** will be made to this deadline: if you submit at 12:00 am, your submission will be considered to be late. The time stamp on the electronic submission will be used as the submission time. A reduction of **10% per day** will be applied to late submissions. Submissions more than three days late will **not** be accepted.

Exams

- There will be a midterm exam and a final exam:
 1. Midterm: ?, 9:30 am – 10:18 am, DL 357
 2. Final: ?, DL 357

Both will be comprehensive, in-class, closed book. You will be allowed to use a cheat sheet — one standard-sized piece of paper, with notes on both sides.

- The exam questions will typically require creative application of the general approaches discussed in class. Memorizing things will not be enough; you need to have conceptual understanding of the techniques we have covered, and how these techniques could be applied to small problems. Exam questions will be very similar to the questions from the homeworks; thus, you should make sure that you have very solid understanding of all details in the homework solutions.
- Missing the midterm or the final without prior written (e-mail) approval from me will result in a score of zero for that exam. To get my approval to reschedule an exam, e-mail me **at least one week** before the exam is scheduled. I will not give such approval unless the reasons are justifiable.

Grading

Homework assignments	20%
Programming projects	25%
Midterm	20%
Final	35%

Grading Policy

The entire course will be graded on a curve. I expect the average grade to be around B. For this reason, I will deduct points rather liberally and I will encourage the grader to do the same. Keep this in mind if you get a score that you consider to be relatively low. Of course, when grading on a curve the absolute score is not important. For homeworks, exams, and projects, I will give you statistics that will help you understand your standing in the class.

It is a course policy that *whoever graded something will be responsible for handling grading disputes*. I will grade the midterm exam and the final exam. The grader will grade the homeworks and the projects. Grades become final one week after an assignment or an exam is handed back. This should leave plenty of time to resolve grading disputes.

Honesty

I will treat you as professionals, and you should conduct yourselves as such. You are free to discuss the assignments and the project with others. However, the solutions you submit should be developed by yourself. **Cheating is a very serious offense and will not be tolerated.** Supplying others with materials is also against this rule. Additional details on academic integrity are available at oaa.osu.edu/coam/ten-suggestions.html.

Students with Disabilities

Any student who feels he or she may need an accommodation based on the impact of a disability should contact me privately to discuss his or her specific needs. Please contact the Office of Disability Services at (614) 292-3307, or visit 150 Pomerene Hall, to coordinate reasonable accommodations for students with documented disabilities.

Religious Obligations

I will do my best to accommodate any religious obligations you may have. Please contact me privately, at least a week in advance, to work out any relevant details.