CS 304: Programming Languages

Instructor: Dr. Boris Kerkez
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Office Hours: Mon 11-12, 3-4, Tue 10:30–12:00, 1:30-3, Wed 11-12, Thu 12:30-2:00, and by appointment

Course Objectives: The course deals with issues involved in the design and implementation of programming languages. Topics include syntax and semantics, type models, control models and structures, parameter passing, storage management, as well as formalisms to describe the syntax and semantics of programming languages. The course will also introduce students to different programming language paradigms. Upon completion of the course, you will be able to

- critically evaluate existing and future programming languages
- understand design goals and purposes of various programming paradigms
- understand the form and the meaning of a programming language and its specification
- design / implement ideas in procedural, object-oriented and functional languages

Prerequisites: Data Structures (CS 230), Discrete Mathematics (MATH 224).

Required Text: *Concepts of Programming Languages*. R. Sebesta, 9th edition. Addison-Wesley 2006-7. ISBN-10: 0321493621, ISBN-13: 978-0321493620

Optional Text: *Programming Languages: Concepts and Constructs*. R. Sethi, Addison Wesley.
An Introduction to Programming Languages. http://www.acooke.org/andrew/writing/lang.html

Reading Assignments: Reading assignments will come from the textbook. Weekly readings for this course are specified on the last page in the course schedule. Note that the material indicated on the schedule should be read *before* the class in which it will be covered. This will allow you to follow the lectures much easier and to ask questions to clarify the reading material.

Grading: The grade for the course will be determined by the scores of the three exams (two midterms and the final), assignments, pop quizzes and participation, and homework.

2 Exams, 20% each	40%
Final Exam	25%
Assignments	30%
Quizzes/Class participation	5%

Grades will be assigned using the following scale:

92% and above	A		71% - 74%	C
88% - 91%	A-		68% - 70%	C-
85% - 87%	B+		65% - 67%	D+
81% - 84%	B		61% - 64%	D
78% - 80%	B-		58% - 60%	D-
75% - 77%	C+		57% and below	F

I reserve the right to adjust (lower) the scale to utilize gaps in the distribution, but this will be done minimally if at all. The class attendance policy may also affect your course grade.

Exams: There will be two one-hour midterm exams during the semester. During the exams you may be required to write and understand short programs, answer short essay and multiple choice questions, and think critically about programming language practices. Your attendance on exams is required. No make-up exams will be given except in documented cases of emergency. All exams are closed book.

The final exam is comprehensive and is scheduled by the registrar's office. Our final exam will take place on Monday, December 10th, 1:30 – 3:30.

Programming Assignments: There will be a total of six to eight assignments throughout the semester. The best way to learn programming languages is by exercising the concepts learned in class through practice. Programming assignments are due at the beginning of class on the due date. You will receive a separate handout outlining the assignment turn in procedures. Late assignments will be accepted for 24 hours after the class period and will be assessed a 50% penalty.

Work that you submit must be your own. No cooperation among the students is allowed unless it is explicitly approved by the instructor. You may seek help from tutors and the instructor in case you need assistance with your assignments. Copying someone else's code and disguising it as your own is a very serious offense and will not be tolerated. Depending on the severity of the offense, as well as on other factors as determined by the instructor, the instructor reserves the right to assign a grade of F for the assignment, and possibly a grade of F for the whole course. The University policy on scholastic dishonesty is outlined both in the undergraduate catalog and in the Student Handbook.

Attendance Policy: Attendance in this course *is required*. Students are expected to attend each lecture and to be in class on time. In case of an absence, a student must provide a *documented* excuse of his or her absence. Simply notifying the instructor about an absence is not a documented excuse. Two or more unexcused absences will result in a reduction of the student's overall course grade by a half letter grade. Four or more unexcused absences will result in a reduction of the student's overall course grade by an additional full letter grade. Six or more unexcused absences will automatically result in a grade of "F" for the course. Tardies will also result in serious consequences. A tardy is defined as being late for a class, after a class session has already begun. You are permitted one tardy without any consequences. Each tardy after the first tardy will result in one unexcused absence and a reduction of the student's overall course grade as described above.

Academic Dishonesty: All students are bound by the academic integrity policy in the most recent AU student handbook. Academic dishonesty includes, but is not limited to plagiarism (the intentional or unintentional presentation of someone else's words or ideas as one's own without proper documentation), fabrication (the intentional falsification or invention of research, citations or other information) and cheating. The process for dealing with violations and the appeals process are detailed in the student handbook. In addition, severe and blatant violation of the academic integrity policy may result in a grade of F for the course at the discretion of the instructor.

Classroom Support: Students with documented disabilities who require academic adjustments for this class are requested to contact me to discuss reasonable accommodations. While not required, it is in the best interest of the student to have this conversation early in the semester. In order to receive academic adjustments paperwork from Disability Services must be provided to document this need. Disability Services is located in 105 Amstutz, extension 5953.

Important Dates: The last day to drop the course is November 9th

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Tentative Weekly Course Schedule, Fall 2012

Week	Dates	Reading	Topic
1	Aug 20, Aug 22, Aug 24	Chapter 1	Course introduction. Preliminaries
2	Aug 27, Aug 29, Aug 31	Chapter 2, Chapter 3	Evolution of programming languages. Syntax
	Sep 3	*No class*	*Labor Day*
3	Sep 5, Sep 7	Chapter 3	Syntax and semantics, attribute grammars
4	Sep 10, Sep 12, Sep 14	Chapter 3, 4	Syntax and semantics. Lexical and syntax analysis
5	Sep 17, Sep 19, Sep 21	Chapter 4	Lexical and syntax analysis, parsing
6	Sep 24, Sep 26, Sep 28	Chapter 5	Names, bindings, type checking
7	Oct 1, Oct 3, Oct 5	Chapter 5	*Exam 1.* Scope. Environments.
8	Oct 8, Oct 10, Oct 12	Chapter 6	Data types. Primitive, string, user-defined, arrays
9	Oct 15, Oct 17, Oct 19	Chapter 6, 15	Records, unions, pointer types. Functional programming
	Oct 22		*Fall Break*
10	Oct 24, Oct 26	Chapter 15	Functional programming
11	Oct 29, Oct 31, Nov 2	Chapter 15	Functional programming. Scheme language
12	Nov 5, Nov 7, Nov 9	Chapter 15, Chapter 7	Expressions and assignment statements
13	Nov 12, Nov 14, Nov 16	Chapter 7	*Exam 2.* Expressions and assignment statements
14	Nov 19	Chapter 8	Statement-level control structures. Subprograms
	Nov 21 - Nov 25		*Thanksgiving Break*
15	Nov 26, Nov 28, Nov 30	Chapter 9	Subprograms
16	Dec 3, Dec 5	Chapter 11	Abstract Data Types and Encapsulation Constructs