CS 354: Programming Languages

Instructor

Instructor:	Jim Buffenbarger
Electronic mail:	`buff@cs.BoiseState.edu`
Office:	MEC-302C 426–3567

Meetings

Lectures:	TuTh 1:30–2:45	ENGR-314
Office hours:	TuTh 11:45–12:45	MEC-302C
	by appointment	MEC-302C

Our graduate assistants are Nilab and Nathan. You can find their schedules at:

```
http://coen.boisestate.edu/cs/computer-science-tutoring-center-cstc
```

Catalog Description

Principles of programming languages: design, syntax, semantics, information binding, strings, arithmetic, input/output, recursion and extensibility.

PRE/COREQ: CS 321.

In addition, familiarity with Unix, C, and Java is assumed.

Goals

At the end of the course, the student will be able to do the following:

- identify characteristics of procedural, object-oriented, functional, and scripting languages
- describe the phases of program translation
- explain different forms of binding, visibility, scoping, and lifetime management

- demonstrate the differences between various parameter passing methods

- explain the concepts of encapsulation, abstraction, inheritance, and polymorphism

- write programs in languages based on several different programming paradigms

- evaluate a language on the basis of the various features which it supports

Students also experience working on a team, developing a website, and giving an oral presentation.

Textbook

- *Programming Language Pragmatics*, Michael L. Scott, Third edition, Morgan Kaufmann, 2009, ISBN: 9780123745149.

Grading

At the end of the course, a letter grade is assigned to each student according to rank among classmates, which is determined from numerical scores assigned for performance of these activities:

Activity	Weight
Textbook Assignments	12%
Language Assignments	25%
Interpreter Assignments	15%
Language Website	18%
Exam	15%
Final	15%

Textbook Assignments (TA)

Several problem sets are assigned, from the exercises at the end of each chapter of the textbook. Students work on these individually, not as teams.

Language Assignments (LA)

Several small programs are assigned, to be developed in what are expected to be unfamiliar programming languages (e.g., C#). Open-source translators for these languages are available on the Linux computers in the Computer Science lab. Students work on these individually, not as teams.

Interpreter Assignments (IA)

A couple of programs are assigned, to extend a provided Java implementation of a simple programming-language interpreter. A Java development environment is available on the Linux computers in the Computer Science lab. Students work on these individually, not as teams.

Language Website (LW)

Each team of students develops a website dedicated to a particular, unfamiliar, programming language. Teams are formed, and languages are assigned, randomly. Several milestones are assigned. Open-source translators for these languages are available on the Linux computers in the Computer Science lab. Results are shared in an team-delivered oral presentation. Of course, students work in teams.

Exam and Final

An exam and a final are administered. These are in-class, open-note, and open-textbook (but no other books) tests. Of course, students work on these individually.

Documentation Standards

Good documentation and programming style is very important. Your programs must demonstrate these qualities for full credit. Good documentation and programming style includes:

- heading comments giving: author, date, class, and description
- function/procedure comments giving description of: purpose, parameters, and return value
- other comments where clarification of source code is needed
- proper and consistent indentation
- proper structure and modularity

When you submit a program, include: the source code, sample input data, and its corresponding results.

Due Dates

Homework is due at 11:59PM, Mountain Time, on the day it is due. Late work is not accepted. To submit your solution to an assignment, login to a lab computer, change to the directory containing the files you want to submit, and execute:

```
submit buff class assignment
```

For example:

```
submit buff cs101 hw1
```

The `submit` program has a nice `man` page.

Makeup examinations are not normally administered.

Scores are posted near my office, as they become available. You are encouraged to check your scores to ensure they are recorded properly. If you feel that a grading mistake has been made, contact me within two weeks of the date that work is returned. Old scores are not changed.

Academic Integrity

The University's goal is to foster an intellectual atmosphere that produces educated, literate people. Because cheating and plagiarism are at odds with that goal, those actions shall not be tolerated in any form. Academic dishonesty includes assisting a student to cheat, plagiarize, or commit any act of academic dishonesty. Plagiarism occurs when a person tries to represent another person's work as his or her own or borrows directly from another person's work without proper documentation.

If a student engages in academic dishonesty, the student may be dismissed from the class and may receive a failing grade. Other penalties may include suspension or expulsion from the University.

Much more information about academic integrity, including examples of academic dishonesty, is at:

http://cs.boisestate.edu/~buff/files/www-integrity.pdf

If you are unsure about a particular behavior, ask your instructor.

Labs

Each student receives an account on the cluster of computers in the Computer Science Lab (ENGR-213/214). The cluster comprises a server named `onyx.boisestate.edu` and a set of nodes with shared home directories. It is remotely accessible, via SSH. The cluster runs the Linux and Windows operating systems, via VMware.

Physical access requires building and room access. After hours building access, and all-hours room access, require an authenticated proximity-type student-identification card.

You are responsible for understanding and obeying lab rules:

http://coen.boisestate.edu/its/lab-rules

Schedule

Week	Date	Topic	Assigned	Due	Reading
1	Aug 26 Tue	Introduction			1
	Aug 28 Thu				
2	Sep 02 Tue				
	Sep 04 Thu	Programming Language Syntax			2.0-2.1
3	Sep 09 Tue		LA1,TA1		
	Sep 11 Thu	Names, Scopes, and Bindings			3
4	Sep 16 Tue		IA1		
	Sep 18 Thu				
5	Sep 23 Tue		LA2,TA2	LA1,TA1	
	Sep 25 Thu				
6	Sep 30 Tue		IA2	IA1	4.0-4.1
	Oct 02 Thu	Control Flow			6
7	Oct 07 Tue		LA3	LA2,TA2	
	Oct 09 Thu				
8	Oct 14 Tue				
	Oct 16 Thu	Data Types			7
9	Oct 21 Tue	Exam	LW1,LA4	LA3	
	Oct 23 Thu				
10	Oct 28 Tue			IA2	
	Oct 30 Thu				
11	Nov 04 Tue		LA5	LA4	
	Nov 06 Thu	Subroutines and Control Abstractions			8.0-8.3
12	Nov 11 Tue				
	Nov 13 Thu				
13	Nov 18 Tue		TA3,LW2	LA5,LW1	
	Nov 20 Thu				
14	Nov 25 Tue	Thanksgiving			
	Nov 27 Thu	Thanksgiving			
15	Dec 02 Tue				
	Dec 04 Thu	Presentations		TA3,LW2	
16	Dec 09 Tue	Presentations			
	Dec 11 Thu	Presentations			
17	Dec 16 Tue	Section 2 Final: 2:30-4:30			
	Dec 18 Thu	Section 1 Final: 9:30-11:30			