SYLLABUS, SPRING 2017

COP5556 PROGRAMMING LANGUAGE PRINCIPLES

CATALOG DESCRIPTION

History of programming languages, formal models for specifying languages, design goals, run-time structures, and implementation techniques, along with a survey of principal programming language paradigms. (3)

PRE-REQUISITES AND CO-REQUISITES

COP 3530 Data Structures and Algorithms (or equivalent undergraduate course).

COURSE OBJECTIVES

Students will gain both a conceptual understanding of specification and design issues in programming languages and their implementation, and hands-on experience implementing a compiler for a small programming language.

INSTRUCTOR

Dr. Beverly A. Sanders
Office location: CSE 358 (for now)
Telephone: (352) 505 1563
E-mail address: sanders@cise.ufl.edu (put COP5556 in the subject line)
Office Hours: W5 (11:45-12:35) or by appointment

TEACHING ASSISTANTS

Yunhao Wan

Hang Guan

COMMUNICATING WITH THE INSTRUCTION STAFF

- Question of general interest: discussion in Elearning (can be seen by entire class)
- Other question about assignments: comment on assignment (can be seen by instructor and TAs)

- Other issues (Message or email to instructor with COP556 in subject line)

Meeting Times

MWF 4 (10:40am-11:30am)
Videos of lectures will be available at elearning.ufl.edu

Class/Laboratory schedule

Three 50-minute class sessions per week

Meeting Location

NEB 201

Textbooks and Software Required

Textbooks

Title: Programming Language Pragmatics
Author: Michael L. Scott
Publication date and edition: **2016, Fourth Edition** (earlier editions are NOT adequate)
ISBN 9780124104099

Title: Syntax and Semantics of Programming Languages
Author: Ken Slonneger and Barry Kurtz
This book is out of print but the author has posted it online at
http://www.cs.uiowa.edu/~slonnegr/plf/Book
Chapters 1,3,5,8, and 11

Software

Java 8
ASM (an open source java bytecode manipulation framework)
Additional software TBA
(recommended: Eclipse IDE)

Course Outline (given topically rather than chronologically)

- Specification of programming languages
  - Syntax
  - Semantics
    - Operational Semantics
    - Denotational Semantics
    - Axiomatic Semantics
    - Attribute Grammars
- Issues in language design
  - Names, scope, and binding
  - Types
  - Control Flow
  - Control Abstractions
- Programming language paradigms

- Data abstraction and object-oriented programming (examples: Java, Smalltalk, C++)
- Non-imperative paradigms
  - Functional languages (examples: Scheme, ML, Haskell)
  - Logic programming (example: Prolog)
- Dynamic and scripting languages (examples: lua, csh, Python, Ruby, Perl, tcl, etc.)
- Concurrent programming (examples: Java, SR, OpenMP)

Attendance Policy, Class Expectations, and Make-Up Policy

Students are expected to either attend class or watch the videotaped lectures. Except as required by University policy, no extensions to deadlines will be granted and no makeup exams will be given. Excused absences must be consistent with university policies in the Graduate Catalog (http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance) and require appropriate documentation.

Evaluation of Grades

Exams 45%
Midterm 15%
Final exam 30%
Assignments 1-6 30%
The three lowest scores from Assignments 1-6 will be dropped.
Assignment 7 25%

Grading Policy

Grades will be curved.
More information on UF grading policy may be found at:
http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades

Exam Schedule

Midterm
TBA
Final Exam
TBA

Homework and Project Description

A tentative schedule of assignment can be found on the class E-learning site.

A homework assignment will be assigned approximately every two weeks. Each assignment will include an addition to an ongoing project to implement a compiler for a small programming language. The compiler must be written in Java. The target

language is java byte code and we will use the ASM byte code framework to help with code generation. Eclipse is the recommended IDE as there is a convenient plug-in for ASM.

Submitted homework will be graded by subjecting it to as collection of JUnit tests and scored as a percentage of passed tests. Understanding the specification and carefully and thoroughly testing your own code is expected.

No extensions to deadlines will be granted (except as required by University regulations) **and no late assignments will be accepted.** However, in order to allow you to deal with unforeseen events, job interviews, reduce stress, etc. the lowest three scores from assignments 1-6 will be dropped. However, be aware that each assignment builds on previous ones, so even if you do not submit an assignment in time to receive a score for it, it still must be done. It is your responsibility to ensure that your submissions conform to the instructions. Low grades due to careless mistakes that cause many test cases to fail will not be regraded.

Assignment 7 is a resubmission of assignment 6 after correcting errors.

Grading Scale

Grades will be curved

More information on UF grading policy may be found at:
http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu/evals. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel.

If you have any questions or concerns, PLEASE consult with the instructor or TAs in this class.

All work submitted in this course must be your own and produced exclusively for this course. Violations will be taken seriously and are noted on student disciplinary records. Additionally, the following specific requirements will be expected in this class: You may not sharing any part of your project with another student, or use any part of another students project in yours, even if that part of the project has already been graded.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:
http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

CAMPUS RESOURCES:

HEALTH AND WELLNESS

U Matter, We Care:
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

ACADEMIC RESOURCES

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall*,* 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*:* https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints*:* http://www.distance.ufl.edu/student-complaint-process.