SYLLABUS, SPRING 2015

COP5555 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
Telephone: (352) 505 1563
E-mail address: sanders@cise.ufl.edu (put COP5555 in the subject line)
Web site: www.cise.ufl.edu/~sanders
Office Hours: R4 (10:40-11:30am) or by appointment

TEACHING ASSISTANT

Nakul Jindal

MEETING TIMES

MWF 7 (10:40am-11:30am)

CLASS/LABORATORY SCHEDULE

Three 50-minute class sessions per week
MEETING LOCATION
CSE E118

TEXTBOOKS AND SOFTWARE REQUIRED

TEXTBOOKS
Title: Programming Language Pragmatics
Author: Michael L. Scott
Publication date and edition: 2009, third edition (including CD supplement)
ISBN 13: 978-0-12-374514-9

Title: Syntax and Semantics of Programming Languages
Author: Ken Slonneger and Barry Kurtz
Publication date: 1995
This book is available at http://www.cs.uiowa.edu/~slonnegr/plf/Book
Chapters 1, 3, 5, 8, and 11

SOFTWARE
Java 8
SML/NJ
available from http://www.smlnj.org
ASM (an open source java bytecode manipulation framework)
available from http://asm.objectweb.org

RECOMMENDED READING
Additional on-line reading material TBA

COURSE OUTLINE (GIVEN TOPICALLY RATHER THAN CHRONOLOGICALLY)

• Specification of programming languages
  o Syntax
  o Semantics
    ▪ Operational Semantics
    ▪ Denotational Semantics
    ▪ Axiomatic Semantics
    ▪ Attribute Grammars
• Issues in language design
  o Names, scope, and binding
  o Types
  o Control Flow
  o Control Abstractions
• Programming language paradigms
  o Data abstraction and object-oriented programming (examples: Java, Smalltalk, C++)
  o Non-imperative paradigms
    ▪ Functional languages (examples: Scheme, ML, Haskell)
    ▪ Logic programming (example: Prolog)
  o Dynamic and scripting languages (examples: lua, csh, Python, Ruby, Perl, tcl, etc.)
  o Concurrent programming (examples: Java, SR, OpenMP)
**Grading – Methods of Evaluation**

Exams 40%
   - Midterm 10%
   - Final exam 30%

Assignments 60%
   - There will be 7 assignments. Assignment 7 counts double. The lowest two scores, excluding project 7, will be dropped.

**Exam Schedule**

Midterm
   - On campus students: Wed. March 11
   - EDGE students: Must be returned by 5pm Friday, March 13

Final Exam
   - On campus students: Wed. April 29, 3-5pm
   - EDGE students: Must be returned by 5pm, Friday, May 1.
   - The final exam will be comprehensive, covering material from lectures, reading, project and homework from the entire semester.

**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 and many will also include pencil and paper exercises and/or a self-contained programming assignments not related to the project.

**No extensions to deadlines will be granted.** Late assignments will be accepted up to two days late with a penalty of 20% of the maximum grade for each 12 hours it is late. The time of submission will be determined by the submission timestamp and deadlines will be strictly enforced. **No late submissions will be accepted for Assignment 7.**

EDGE students: Unless otherwise specified, deadlines for EDGE students are 1 week after the deadline for in-class students. Make sure to pay attention to the exam dates, especially the final, and do not let this extension prevent you from having sufficient time to prepare for the exams.

**Grading Scale**

Grades will be curved
MAKE-UP EXAM POLICY

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

No makeup exams will be given. Exams will be excused (i.e. the final grade will be computed without that score) for documented illness and emergencies only. The final exam will be given to all on-campus students on the date scheduled by the registrar.

HONESTY POLICY

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.

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 (http://www.dso.ufl.edu/sccr/process/student-conduct-honorcode/) 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 in this class.

ACCOMMODATION FOR STUDENTS WITH DISABILITIES

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, 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.

UF COUNSELING SERVICES

Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
- Counseling and Wellness Center:
- SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling.
- Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

SOFTWARE USE

All faculty, staff and student 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.

EVALUATIONS

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. 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/.