CS 4003 | Programming Languages

Section 001 | Spring 2016 |Time: 11.15 AM to 12.10 PM | Venue: REC CENTER 3210

Instructor: Vignesh Subbian, subbiavh@mail.uc.edu, Office Hours: Monday, 9:00 – 10:00 AM (Rhodes 918)

Course Overview

Course Catalog Information: 3 Credits. Concepts and features in design, compilation, and implementation of modern programming languages. Introduction to functional and logic-programming

Course Goals: The goals of this course are for each student (1) to understand the differences among the procedural, functional, and logic programming paradigms. The understanding is to be developed from two distinct perspectives: how a problem's solution may be formulated within each of these programming paradigms, and how the run-time environments of these languages work and differ from each other and (2) gain some experience in writing simple programs in a functional language and in a logic language.

Course Reference Textbooks: There is no official course text book. Reading notes and other materials will be provided to students through Blackboard.

Learning Outcomes:

1. Students will be familiar with some basic information about historical evolution of programming languages.
2. Students will understand consequences of a number of language design choices that a programming language designer faces. Results and implementation aspects of these design choices will be understood by the students.
3. Students will be able to describe/use some advanced features of an object-oriented programming language.
4. Students will understand the basic ideas of functional programming languages and will be able to write simple programs in a functional language.
5. Students will understand the basic ideas of logic programming languages and will be able to write simple programs in a logic programming language.

Outline of Course Topics:

1. Brief history of programming languages
2. Basic concepts of programming languages and their run-time environments.
3. Procedural languages and some of their advanced features:
4. Functional programming paradigm
5. Logic programming paradigm

Programming Languages and Tools:

Broadly, we will learn and use three programming languages[#]: ML (functional programming), Clingo (logic programming) and Java (Object-oriented language). [#]Subject to change based on learning needs of the class. The order in which topics are covered is also subject to change.

Statement of Inclusion:

The *diversity*** of the participants in this course is a valuable source of ideas, problem solving/programming strategies, and software engineering creativity. If you feel that your contribution is not being valued for any reason, please speak with me privately. If you wish to communicate anonymously, you may do so in writing or speak with Teresa Hamad. We are all members of the UC academic community where it is our shared responsibility to cultivate a climate where all students/individuals are valued and where both they and their ideas are treated with respect.

***includes every participant's identity, personal and academic/professional background (includes technical/programming experience, co-op/research experience), interests, and expertise.*

Statement of Personal Challenges and Preferences:

- If you have personal challenges such as health issues that might affect your ability to perform in this class, please let me know as soon as possible so that we can work together to make appropriate accommodations.
- Also, I will gladly honor any request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.

Grading:

Assignments	50%
Project	10%
Quizzes	20% (typically on a biweekly basis)
Final Exam	20% (during final exam week)

- **Tentative Dates for Quizzes:** January 29th, February 12th, March 4th, March 16th or 18th, April 8th
- **Grading Scale:** The final letter grade will be based on UC's default grading scale and assigned as follows. The minimum overall total may be lowered, but will not be raised. Assignments and quizzes will be weighted based on the workload/length.
  A: 94 to 100 | A-: 90 to 93
  B+: 87 to 89 | B: 84 to 86 | B-: 80 to 83
  C+: 77 to 79 | C: 74 to 76 | C-: 70 to 73
  D+: 67 to 69 | D: 60 to 66
  F: 0 to 59
- **Team Work:** For assignments and the project, students are allowed (and encouraged) to work on teams of TWO, unless otherwise specified on the assignment write-up. Both team members should acknowledge each other and include names of the contributing members in their submissions. Students are strongly encouraged to monitor and participate in the online discussion forum on Blackboard. In particular, questions raised in class will typically be given a 48-hour reflection period (i.e., until the following class) to allow for critical thinking as well as participation in the discussion board.
- **Self-designed Project:** A default project will be assigned to the class. Student are welcome (and encouraged) to propose their own projects.

- **Extra Credit:** Outstanding participation in online discussion forums (on Blackboard) will be recognized and awarded a small extra credit (as determined by the instructor). Self-designed projects with strong implementation/results may be awarded extra credit (as determined by the instructor). Other extra credit opportunities (if any) will be announced in class.
- **Submission Policies:** Any assigned work is due at 11.59 pm on the day specified on the assignment write-up (usually Saturdays). Late submissions will receive 80% credit after the due date. Late submissions beyond one week after the due date are NOT acceptable.
- **Make-up Policy:** Make-up assignments/exams may be given in case of illness or personal emergencies. In case of illness, a written and signed note from the physician is required.
- **Academic Integrity:** Every student/student team should submit their own code/work. Plagiarism is strictly prohibited. Failure to adhere to these guidelines will be dealt with as recommended in the UC Student Code of Conduct and the submission (under consideration) will receive 1% credit.
- **Grievance Policy**: All course-related grievances should be communicated in writing. See *Statement of Inclusion* for related information.

Emergency event and severe weather policy:

The emergency event and severe weather policy for this course is as follows:

- If UC is open, the class will meet.
    - If I cannot make it to class, I will let you know through e-mail.
    - If you cannot make it to class due to the weather or an emergency, you should try to let me know through e-mail.
- If UC is closed for all or part of the class time, the class is canceled.
