

New York University Tandon School of Engineering

Computer Science

Course Outline CS-GY 6373 Programming Languages

Fall 2017

Professor Thomas Reddington

6373 Thursday 10:30 -12:50 PM; Rogers Hall, Rm 615

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2 Metro Tech Center, Rm 10.089

Office hours: by appointment

GA's: TBD

Programming Languages

Description :

This course covers the structures, notations and semantics of programming languages. Topics: Issues of scope, type structure and parameter passing. Control structures, including support for exception handling and concurrency.

Abstract data types and object-oriented languages. Programming in the large. Implementation issues. Functional, logic programming languages. Examples from a variety of languages.

This is not a class on any one programming language but a class on a series of concepts that underlie one of more programming languages.

Learning Objectives

Understand different concepts and constructions across multiple programming languages

Be able to critique how one language provides support for a language concept versus another language.

Learn imperative, functional, logic and Object-Oriented programming languages

Perquisites

CS-GY 5403

Be familiar with Linux and c.

Textbook

Robert W. Sebesta, Concepts of Programming Languages (10th ed.)

Kent Lee, Foundations of Programming Languages (Supplied)

A Linux Virtual Machine (VM) will be provided that has languages preinstalled. Class exercises will be done on this VM. It will be preloaded with flex, python, python3, swi-prolog, lisp, c & C++, and Haskell, julia.

Lessons

Homework is the key to success in this course. There will be assignments that are done in the VM and results captured. There may also be writing assignments. You are responsible for reading Chapters 1 and 2 on your own.

A rough schedule of topics/chapters: (These may change as the semester progresses). I also intend on discussing the lambda calculus and Petri Nets at some point in the lectures.

Lectures	Date	Chapter	Topics
1	9/7	Ch 3	Introduction; VLAB; BNF/Flex/Parse Trees
2	9/14	Ch 4	Lexical and Syntax Analysis, Petri Nets
3	9/21		Lambda Calculus
4	9/28	Ch 15	Functional Programming Languages
5	10/5	Ch 16	Logic Programming Languages
6	10/12	Ch 5	Names, Bindings and Scope
7	10/19	Midterm	Midterm
8	10/26	Ch 6	Data Types
9	11/2	Ch 7	Expressions and Assignments
10	11/9	Ch 8	Statement-Level Control Statements
11	11/16	Ch 9, 10	Subprograms, Implementing Subprograms
12	11/23	Thanksgiving	Thanksgiving
13	11/30	Ch 11, 12	Abstract Data Types and Encapsulation Concepts, Object Oriented Programming
14	12/7	Ch 13, 14	Concurrency, Exception Handling
15	12/14		Last Day of Class, Review
	12/21	Final exam	Final exam

Grading

40% Homework
30% Midterm exam
30% Final exam

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Policies:

The exact topics listed in this syllabus are subject to change. As the class progresses we will gauge where your interests lie and may adjust topics and schedule appropriately.

All homework and laboratory assignments are due on the date indicated on the course website. **Late assignments will not be accepted** so don't ask for an extension if you are late. Failure to submit an assignment will result in a grade of zero for that assignment. You will have ample time from the time an assignment is given until it is due. We will not consider a network outage, unavailability of your computer or a computer in the lab (whether a specific computer or any computer in general), or other computer problem that occurred the night before the due date to be a justification for submitting an assignment late. You may assume that there will be one lab and/or homework for each lecture.

Individual Work and Collaboration

In preparing your submissions for homework and laboratory projects you are authorized to use the textbook, your notes, web sites, on-line documentation and any other reference materials to which you have access. You may also discuss the assignment in general with other members of the class or with anyone else whom you believe can be of assistance (including possibly the instructor).

The work that you submit for grading **must**, however, be exclusively your own work. If you do obtain assistance from another individual, you must include an explicit note to that effect in your submission for the assignment. Further all references used must be cited. This means that if you are using various web sites for assistance in laboratory assignments and/or homework you must cite the exact URLs. In addition, any other printed material used must be explicitly cited.

See: <https://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/academic->

integrity-for-students-at-nyu.html

Cheating & Plagiarism

Cheating or plagiarism on a lab or homework will result in a zero and the Computer Science department will track you going forward for subsequent infractions.. Cheating on an exam is a much more serious infraction and may result in a lower grade for the course or an F.

Moses Center Statement of Disability

If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities at [212-998-4980](tel:212-998-4980) or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.