

CSE 307 – Principles of Programming Languages

Course Information

Spring 2019

Stony Brook University

Instructor: Dr. Paul Fodor

<http://www.cs.stonybrook.edu/~cse307>

Course Description

- “Presents examples of important programming languages and paradigms such as LISP, ALGOL, ADA , ML, Prolog, and C++. Students write sample programs in some of the languages studied. The languages are used to illustrate programming language constructs such as binding, binding times, data types and implementation, operations (assignment data-type creation, pattern matching), data control, storage management, parameter passing, and operating environment. The suitability of these various languages for particular programming tasks is also covered.”
- *Prerequisites:* CSE 219 or CSE 260, and CSE 220 and the CSE major or permission of instructor.

Official Course Outcomes

- The following are the official course goals agreed upon by the faculty for this course:
 - Knowledge of, and ability to use, language features used in current programming languages.
 - An ability to program in different language paradigms and evaluate their relative benefits.
 - An understanding of the key concepts in the implementation of common features of programming languages.

Topics

- **Major Topics Covered in Course:**
 - Principles of Language Design
 - Specification of Language Syntax
 - Survey of Procedural and OO Languages
 - Intro. to Functional Programming
 - Intro. to Logic Programming
 - Programming Language Semantics
 - Values; Bindings; Types;
 - Programming Language Constructs
 - Expressions; Statements
 - Procedures and Environments
 - Parameter Passing

Staff/Instructor Information

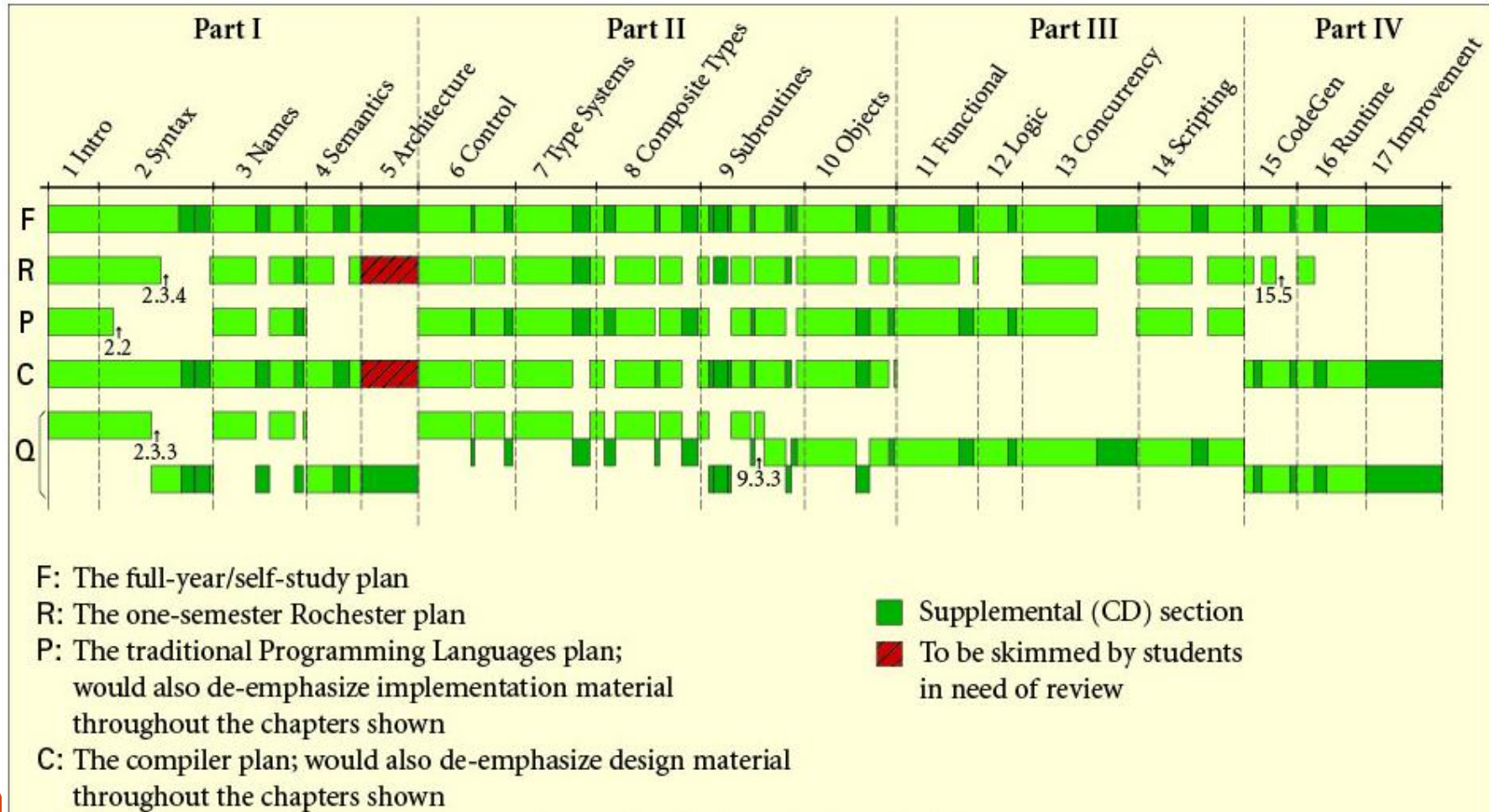
- Dr. Paul Fodor
214 New Computer Science Building
- Office hours: Mondays and Tuesdays, 3:30-5pm
- Email: paul (dot) fodor (at) stonybrook (dot) edu
 - Please include “CSE 307” in the email subject and your name in your email correspondence

General Information

- Meeting Information:
 - Lectures section 1: MoWe 5:30-6:50pm.
 - Lectures section 2: MoWe 7-8:20pm.
 - In New Computer Science 120.
- Course Web page:
<http://www.cs.stonybrook.edu/~cse307>
- Blackboard will be used for assignments, grades and course material

Textbook

- Programming Language Pragmatics by Michael Scott. Fourth Edition, Morgan Kaufmann Publishers, 2015.



Grading Schema

- Homework assignments = 20%
- Quizzes = 5%
- Midterm exam 1 = 25%
- Midterm exam 2 = 25%
- Final exam = 25%
- Do not miss the exams. Make-up exams will be given only in extenuating circumstances (e.g., doctor's note stating that you were ill and unfit to take the exam). Students who miss an exam for a valid reason may need to take a make-up exam; specific arrangements will be made on a case-by-case basis.

Exam dates

- Midterm exam 1: Wednesday, March 6, 2019, during class time, in classroom.
- Midterm exam 2: Wednesday, April 17, 2019, during class time, in classroom.
- Final exams:
 - Section 1: Wednesday May 15, 2019, 8:30-10:30 PM, (2 hours final exam), in classroom.
 - Section 2: Tuesday May 21, 2019, 5:30-7:30 PM, (2 hours final exam), in classroom.
 - See Final Exams University Schedule here: <http://www.stonybrook.edu/commcms/registrar/registration/exams.html>

Grading Schema

- **The Pass/No Credit (P/NC) option is not available for this course.**
 - This policy applies to *all* CSE/ISE undergraduate courses used to satisfy the graduation requirements for the major.

Grading Schema

- **Grade Cutoffs**

- A [93-100], A- [90-93), B+ [87-90), B [83-87), B- [80-83), C+ [77-80), C [73-77), C- [70-73), D+ [65-70), D [60-65), F [0-60)
- **SPECIAL RULE:** If all your grades, including homework assignments, quizzes, recitation and your three exam grades are above the respective class averages, you're guaranteed to receive a grade of C or higher for this class.
- There will be extra credit problems as a part of quizzes and homework assignments which values to an increase of less than 4% in the final grade.
- There will be in-class quizzes / brief assessments used to practice the class material and measure growth in knowledge, abilities, and skills. They will be solved in class and they are valued 2 points each.

Grading

- The final grade you receive in this class will reflect, as far as possible, the extent to which you have mastered the concepts and their applications.
- How much someone needs a grade, or how close they are to the next higher grade, will have no effect on grade.
- As the instructor, I want everyone to do well in this course, and will make every reasonable effort to help you understand the material taught.
- However, the grades provided at the end of the semester are final, except for rare situations involving grading errors.
- They will not be altered for any reason, so please do not ask me to do so.

Assignments

- There will be regular programming assignments which must be submitted electronically on **Blackboard** (<http://blackboard.stonybrook.edu>) by the announced due date and time.
 - no late submission is permitted
- All assignments should be submitted electronically
 - Blackboard
- All code must compile. Code that does not compile will not be graded.
 - Assignments will be graded based on program performance and documentation.
 - Submissions that are not submitted as requested in the assignment will not receive any credit (e.g., a Test.java file cannot be test.java, test.txt, johnSmith.java or anything else but Test.java; same for method arity)

Regrading of Homework/Exams

- Please meet with a TA or the instructor and arrange for regrading.
- **You have one week from the day grades are posted or mailed or announced**
 - Late requests will not be entertained

Class Schedule

Week	Lecture Topics
1	Introduction to Programming Languages
2	Python
3	SML
4	Programming language syntax
5	Programming language syntax
6	Names, Scopes, and Bindings
7	Names, Scopes, and Bindings
8	Semantic Analysis
9	Semantic Analysis
10	Control Flow, Data Types
11	Control Flow, Data Types
12	Subroutines and Control Abstraction
13	Data Abstraction and Object Orientation, Functional Languages
14	Logic Languages
15	Logic Languages, Concurrency

Lecture Notes

- I encourage you to print the slides, so you can focus on just listening in class
- There are a lot of example code in the lecture notes and I will add more every week, but I will prioritize on the most important aspects and leave the extras for reference
 - I know they say that writing notes would help us learn better, but personally I cannot write and still completely hear everything that someone says
 - I process someone's statement, start writing while half listening, get through half of what I was supposed to write, and then blank out, thereby forgetting what I was supposed to write and what I had heard while I was writing (it might just be sleep deprivation, but it could probably be partially attributed to the density of the lessons)

Student Accessibility Support Center

- If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential
- Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Student Accessibility Support Center. For procedures and information go to the following website:
<http://www.stonybrook.edu/ehs/fire/disabilities>
- **All documentation of disability is confidential**

Academic Integrity

- The following rules are posted in every course syllabus:
"Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Any suspected instance of academic dishonesty will be reported to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/"

Academic Integrity

- You can discuss general assignment concepts with other students: explaining how to use systems or tools and helping others with high-level design issues
- You **MAY NOT share** assignments, source code or other answers by copying, retyping, looking at, or supplying a file
 - Assignments are subject to manual and automated similarity checking (We do check! and our tools for doing this are much better than cheaters think)
- If you cheat, you will be brought up on academic dishonesty charges - we follow the university policy:
 - <http://www.stonybrook.edu/uaa/academicjudiciary>

Examples of Academic Dishonesty

- Unpermitted collaboration (on a paper, homework, lab reports, etc.). Unless an instructor has explicitly approved working together, students should assume, for their own protection, that it is not permitted.
- Helping someone else to plagiarize from one's own homework (for example, by giving them a copy of yours, or doing it for them)
 - This includes having a public repository on Github that other students can copy from.
- Representing someone else's source code as one's own. If another person's code is being used, it must be properly cited.
- Buying or selling source code.
- Using source code or pieces of a paper from the internet without properly citing the source.

Academic Integrity

- The instructor makes a recommendation at the Academic Judiciary office
 - Cheating is cheating! No matter the amount of cheating or if one is the source or destination of cheating.
 - Do not cheat! You are cheating yourself.
 - Our job is to teach you the material and make sure that you learn it.
 - Our recommendation is always F for the cheaters!

Catastrophic events

- Major illness, death in family
- Formulate a plan (with your CEAS academic advisor) to get back on track
- Advice
 - Once you start running late, it's really hard to catch up

Piazza

- The Piazza discussion board should be used for all communication with the teaching staff for questions about the course assignments and material
 - Piazza is a forum for additional learning and assistance
 - You are expected to use the Piazza forum for all non-personal, course-related communication
 - Like questions about what a homework problem is asking, technical problems that need troubleshooting, or other questions that might be of interest to other students must be posted to Piazza and not emailed to the instructor or a TA

Piazza

- The following are NOT appropriate uses of Piazza:
 - cyber-bullying
 - posting memes
 - complaining about a grade
 - airing concerns/comments/criticisms about the course
 - posting more than a few lines of source code from an attempt at a homework problem
 - posting the solution to a homework problem or a link to a website containing the solution
 - in general, anything unrelated to the course material and student learning
- Anonymous posting is turned off, so we can see who you are.

Email Etiquette

- When emailing your instructor about the course, use the following guidelines to ensure a timely response:
 - use your official @stonybrook.edu email account (we cannot respond to an other email due to FERPA regulations)
 - use a descriptive subject line that includes "CSE307" and a brief note on the topic
 - begin with a proper greeting, such as "Hi Prof. Fodor"
 - briefly explain your question or concern or request including the course (we are teaching several courses)
 - end with a proper closing that includes your full name, Net ID and SBU ID number

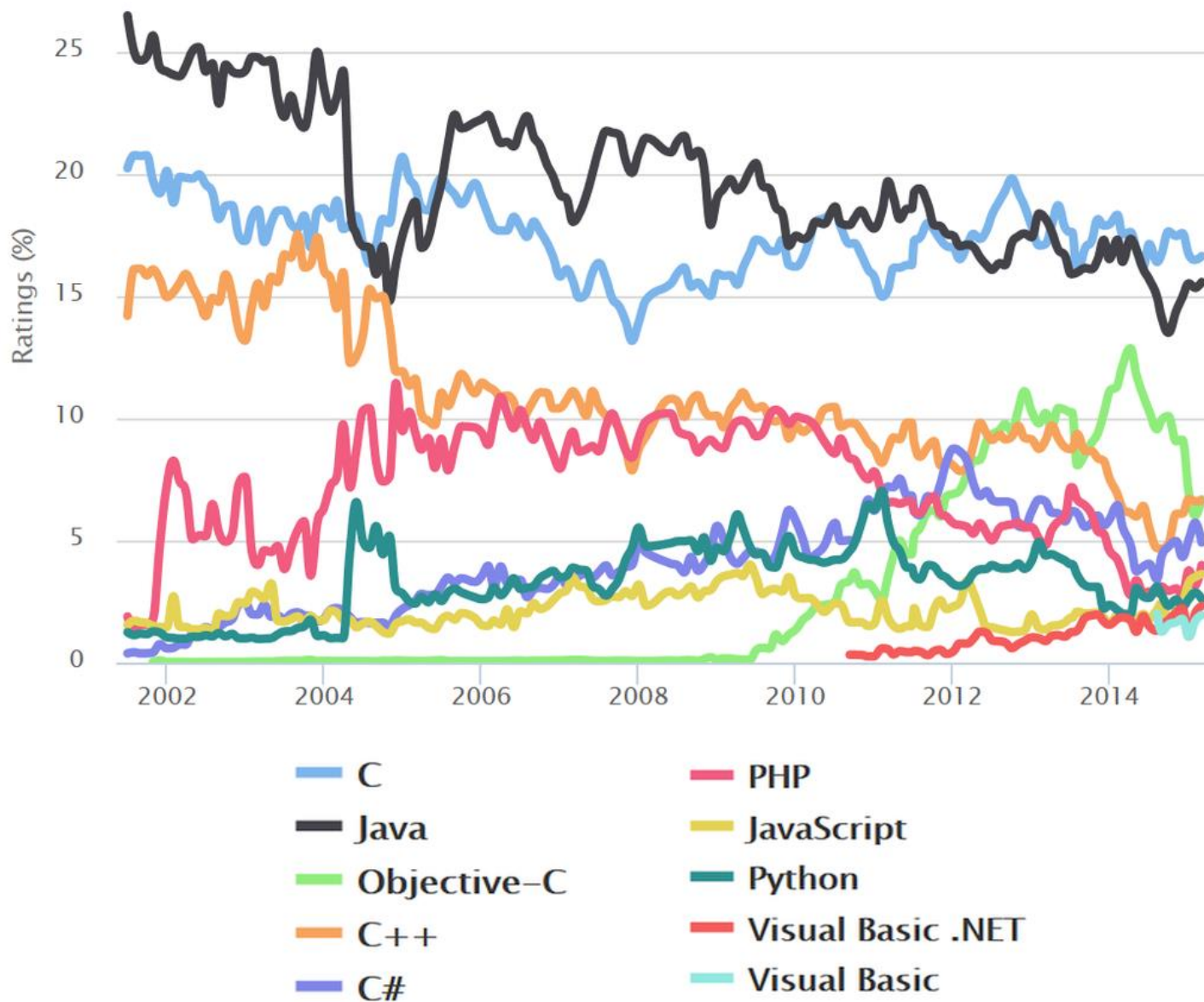
Please

- Please be on time
- Please show respect for your classmates
- Please turn off (or use vibrate for) your cellphones
- ...
- On-topic questions are welcome

Programming languages used in most popular websites*

Websites	Popularity (unique visitors) ^[1]	Front-end (Client-side)	Back-end (Server-side)	Database	Notes
Google.com ^[2]	1,100,000,000	JavaScript	C, C++, Go, ^[3] Java, Python , Dart ^[4]	BigTable, ^[5] MariaDB ^[6]	The most used search engine in the world
YouTube.com	1,000,000,000	JavaScript	C/C++, Python, Java, ^[7] Go ^[8] PHP ^[9]	MySQL, BigTable, MariaDB ^{[6][10]}	The most visited video sharing site
Facebook.com	900,000,000	JavaScript	Hack, PHP, C++, Java, Python, Erlang, D, ^[11] Xhp ^[12]	MySQL, ^[13] HBase Cassandra, ^[14]	The most visited social networking site
Yahoo	750,000,000	JavaScript	JavaScript, ^[15] PHP	MySQL, PostgreSQL ^[16]	Yahoo is presently ^[when?] transitioning to n
Amazon.com	500,000,000	JavaScript	Java, C++, Perl ^[17]	Oracle Database ^[18]	Popular internet shopping site
Wikipedia.org	475,000,000	JavaScript	PHP , Hack	MySQL, MariaDB ^[19]	"MediaWiki" is programmed in PHP, runs c encyclopedia
Twitter.com	290,000,000	JavaScript	C++, Java, Scala, Ruby on Rails ^[20]	MySQL ^[21]	140 characters social network
Bing	285,000,000	JavaScript	ASP.NET	Microsoft SQL Server	
eBay.com	285,000,000	JavaScript	Java, ^[22] JavaScript ^[23]	Oracle Database	Online auction house
MSN.com	280,000,000	JavaScript	ASP.NET	Microsoft SQL Server	An email client, for simple use. Mostly kno
Microsoft	270,000,000				
Linkedin.com	260,000,000	JavaScript	Java, JavaScript, ^[24] Scala	Voldemort ^[25]	World's largest professional network
Pinterest	250,000,000	JavaScript	Django ^[26] (a Python framework)	MySQL, Redis ^[27]	
Ask.com	245,000,000				
Wordpress.com	240,000,000	JavaScript	PHP	MySQL	

https://en.wikipedia.org/wiki/Programming_languages_used_in_most_popular_websites



https://en.wikipedia.org/wiki/Measuring_programming_language_popularity

Welcome
and Enjoy!