

CSE216 Programming Abstractions

Spring 2024

Course Description:

Intermediate-level programming concepts and paradigms, including functional programming, object-orientation, basics of type systems, memory management, program and data abstractions, parameter passing, modularity, version control, and parallel programming. Includes weekly recitations, which provide students with experience in the practice of programming in a variety of high-level languages

Class hours: Lecture: TuTh 10:30am ~ 11:50am, Recitation: W 2:00pm ~ 2:55pm

Class room: TuTh: B203, W: B203

Prerequisites: Completed CSE214 with a C or higher grade, CSE major

Instructor:

YoungMin Kwon (youngmin.kwon at sunykorea dot ac dot kr), Office B420

Office hours: Tu,W: 3:30pm ~ 4:30pm

TA:

Geonwoo Kim (email: geonwoo.kim.1 at stonybrook dot edu)

TA hours: TBA

Textbook and References:

- Programming Language Pragmatics, 4th Edition, Morgan Kaufmann, 2016, ISBN: 978-0-12-410419-9; Authors: Michael L. Scott
- Structure and Interpretation of Computer Programs, 2nd Edition, The MIT Press, 1996, ISBN: 978-0262510875; Authors: Harold Abelson, Gerald Jay Sussman, and Julie Sussman
- OCaml learning material from <https://ocaml.org/learn/>

Course Website:

<http://www3.cs.stonybrook.edu/~youngkwon/cse216/>

Grading:

- 1st midterm exam: 20%
- 2nd midterm exam: 20%
- Final exam: 25%
- Programming assignments: 30%
- Recitation exercises: 5%
- Attendance: missing more than 20% of the class will fail the course

Major Topics Covered in the Course:

- Programming Language Paradigms
- Functional problem-solving using a high-level functional language
- Object-oriented design and programming
- Cross-cutting programming language concepts
- Version control

Course Learning Outcomes:

- An understanding of programming language paradigms and tradeoffs.
- An understanding of functional techniques to identify, formulate and solve problems.
- An ability to apply techniques of object-oriented programming in the context of software development.

Academic integrity:

Students should pursue their academic goals in an honest way that does not put you at an unfair advantage over other students. You are responsible for all work you submitted and representing other's work as yours is always wrong. Faculty is required to report any suspected instance of academic dishonesty to the school. Regarding your homework, you are encouraged to discuss it with others, but you should write your own code. For more information please refer to http://www.stonybrook.edu/commcms/academic_integrity/index.html

Students with disabilities:

If you have a physical, psychological, medical or learning disability that may impact your course work, please let the instructor know. Reasonable accommodation will be provided if necessary and appropriate. All information and documentation are confidential.

Critical incident management:

The University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn.

Tentative Course Schedule

Week	Topics
Week 1	Programming language paradigms
Week 2	Procedural abstractions
Week 3	Data abstractions
Week 4	Algebraic Data Type, Modules
	Midterm Exam 1
Week 5	Tail recursion, Continuations
Week 6	Modular abstractions
Week 7	Objects, Streams, Lazy evaluation
Week 8	Lambda calculus
	Midterm Exam 2
Week 9	Type system
Week 10	C Introduction
Week 11	C Dynamic memory allocation
Week 12	Event driven programming
Week 13	Event driven programming