

General Information

Section: 901, Credit hours: 3, Class meetings: MW 5:00-6:15pm in ENG 003

Instructor: Jay Ligatti (ligatti@usf.edu)

Office hours: MW 3:30-5pm, and other times by appointment, in ENB 333

Teaching Assistant: Cagri Cetin (cagricetin@mail.usf.edu)

Office hours: TTh 4:30-5:30pm, in ENB 325

Duties: Grade and answer questions about assignments

Required Textbook: *Elements of ML Programming (ML97 edition)*, by J. Ullman, 1998

Optional Textbook: *Types in Programming Languages*, by Benjamin Pierce, 2002

(available online: <http://www.netlibrary.com/urlapi.asp?action=summary&v=1&bookid=70966>)

Announcements: Please check the course website (<http://www.cse.usf.edu/~ligatti/pl-19>) regularly for announcements, assignments, and an up-to-date schedule. Grades will be posted on Canvas (<http://my.usf.edu/>). I may also send announcements via Canvas, so please ensure that your current email address is stored there.

Course description: In-depth, graduate-level study of the design and analysis of programming languages. Functional programming, deductive systems, operational semantics, type systems, and proofs of type safety.

Student outcomes: Students having successfully completed this course will understand techniques of specifying, designing, and analyzing programming languages.

Tentative Schedule

<u>Week</u>	<u>Dates</u>	<u>Topics</u>	<u>Reading (in ML book)</u>
1	01/07, 01/09	Introduction; ML basics; Polymorphism	1-3.1, 5.3
2	01/14, 01/16	ML functions	3.2-3.6.3, 4.1-4.2, 5.1
3	01/23	Higher-order functions; Currying	5.4-5.6
4	01/28, 01/30	ML type system; Deductive systems	6.1-6.3
5	02/04, 02/06	Deductive systems; Syntax; Review	Class notes
6	02/11, 02/13	Test I; Dynamic semantics	Class notes
7	02/18, 02/20	Dynamic semantics; λ -calculi	Class notes
8	02/25, 02/27	λ -calculi; Static semantics	Class notes
9	03/04, 03/06	Type systems; Type safety	Class notes
[Spring "break"]			
10	03/18, 03/20	Type safety; Review	Class notes
11	03/25, 03/27	Test II; Aggregate data types	Class notes
12	04/01, 04/03	Recursive types	Class notes
13	04/08, 04/10	Side effects; References; Loops	5.2, 7.2-7.3
14	04/15, 04/17	Control-flow effects; Evaluation contexts	Class notes
15	04/22, 04/24	Control-flow effects; Review	Class notes
Final	04/29 (Monday), 3-5pm		All tests are cumulative

Grading and Attendance

Tests: There will be three tests (02/11, 03/25, and 04/29). Tests are closed notes, books, laptops, phones, smart watches, neighbors, associates, contemporaries, etc. As a graduate student, you will be asked to solve additional problems, beyond what is asked of undergraduates.

Assignments: There will be 6 assignments, due by 5pm on the following Mondays: 01/21, 02/04, 02/25, 03/18, 4/08, and 04/22. Programming portions of assignments must be submitted through Canvas. Theory portions of assignments must be submitted in hardcopy for full credit (emailed theory portions will be graded as late submissions).

Final-grade breakdown:

40%	Assignments	(first one worth 5%, rest are worth 7% each)
60%	Tests	(first test worth 17%, second 17%, third 26%)
100%	Total	

Late assignments: Assignments may be submitted up to 2 days late, with a 15% penalty. For example, submitting a 90% correct solution late earns a 75%. If any part of an assignment is submitted late, then the whole assignment is considered to have been submitted late. Late theory portions of assignments may be emailed to the instructor.

Extra credit: You may complete an independent project for extra credit. You'll have to explain the project and turn in a description of your work. If interested, please email a proposal to ligatti@usf.edu.

Attendance: I don't take attendance in class, but absences put you at risk for missing assignments, schedule updates, and material not covered in the textbook. Students who will miss class for religious reasons must notify me of the date(s) in writing by the end of the first week of classes. Finally, please do not sell notes from, or record, class meetings without my permission.

Grading system: The scale for final letter grades is as follows, using standard notation for ranges: A ($\infty, 93]$ A- (93,90] B+ (90,87] B (87,83] B- (83,80] C+ (80,77] C (77,73] C- (73,70] D+ (70,67] D (67,63] D- (63,60] F (60, $-\infty$). An A+ may be awarded for exceptionally outstanding work.

Academic honesty: Everything you turn in for this class must be your own work. On all work that you submit, I'll ask you to write and sign a pledge promising that you have not cheated. If you are caught cheating, you will receive an FF grade for the class. Do not post your solutions online, even after the semester ends.

The following page contains additional information required to appear on USF syllabi. Every part of this syllabus is subject to adjustment as the semester progresses. Please contact me if you are dissatisfied with the course policies, discussions, assignments, grading, etc.; I will be happy to accommodate reasonable requests for modifications.

Academic Integrity Academic integrity is the foundation of the University of South Florida System's commitment to the academic honesty and personal integrity of its university community. Academic integrity is grounded in certain fundamental values, which include honesty, respect, and fairness. Broadly defined, academic honesty is the completion of all academic endeavors and claims of scholarly knowledge as representative of one's own efforts. The final decision on an academic integrity violation and related academic sanction at any USF System institution shall affect and be applied to the academic status of the student throughout the USF System, unless otherwise determined by the independently accredited institution. The process for faculty reporting of academic misconduct, as well as the student's options for appeal, are outlined in detail in [USF System Regulation 3.027](#).

Disruption to Academic Progress Disruptive students in the academic setting hinder the educational process. Disruption of the academic process is defined as the act, words, or general conduct of a student in a classroom or other academic environment which in the reasonable estimation of the instructor: (a) directs attention away from the academic matters at hand, such as noisy distractions, persistent, disrespectful or abusive interruption of lecture, exam, academic discussion, or general University operations, or (b) presents a danger to the health, safety, or well-being of self or other persons.

Academic Grievance Procedure The purpose of these procedures is to provide all undergraduate and graduate students taking courses within the University of South Florida System an opportunity for objective review of facts and events pertinent to the cause of the academic grievance. An "academic grievance" is a claim that a specific academic decision or action that affects that student's academic record or status has violated published policies and procedures, or has been applied to the grievant in a manner different from that used for other students.

Disability Access Students with disabilities are responsible for registering with Students with Disabilities Services (SDS) (SVC 1133) in order to receive academic accommodations. SDS encourages students to notify instructors of accommodation needs at least 5 business days prior to needing the accommodation. A letter from SDS must accompany this request.

Sexual Misconduct / Sexual Harassment USF is committed to providing an environment free from sex discrimination, including sexual harassment and sexual violence ([USF System Policy 0-004](#)). The USF Center for Victim is a confidential resource where you can talk about incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. This confidential resource can help you without having to report your situation to either the [Office of Student Rights and Responsibilities](#) (OSSR) or the [Office of Diversity, Inclusion, and Equal Opportunity](#) (DIEO), unless you request that they make a report. Please be aware that in compliance with Title IX and under the USF System Policy, educators must report incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. If you disclose any of these situations in class, in papers, or to me personally, I am required to report it to OSSR or DIEO for investigation. Contact the [USF Center for Victim Advocacy and Violence Prevention](#): (813) 974-5757.

Religious Observances All students have a right to expect that the University will reasonably accommodate their religious observances, practices and beliefs ([USF System Policy 10-045](#)). The USF System, through its faculty, will make every attempt to schedule required classes and examinations in view of customarily observed religious holidays of those religious groups or communities comprising the USF System's constituency. Students are expected to attend classes and take examinations as determined by the USF System. No student shall be compelled to attend class or sit for an examination at a day or time prohibited by his or her religious belief. However, students should review the course requirements and meeting days and times to avoid foreseeable conflicts, as excessive absences in a given term may prevent a student from completing the academic requirements of a specific course. Students are expected to notify their instructors at the beginning of each academic term if they intend to be absent for a class or announced examination, in accordance with this Policy.

Statement of Academic Continuity In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include, but are not limited to: Learning Management System, online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor the Learning Management System for each class for course-specific communication, and the main USF, College, and Department websites, emails, and MoBull messages for important general information ([USF System Policy 6-010](#)). For additional guidance on emergency protective actions and hazards that affect the University, please visit www.usf.edu/em