University at Buffalo Department of Computer Science and Engineering

Syllabus

CSE 410/510 ETH: Interactive Programming Environments

Ethan Blanton

Spring 2025

All students are expected to read and understand this syllabus. Failure to adhere to the policies in this syllabus may have consequences, including a negative impact on student grades, failure in the course, or administrative action against the student. *It is your responsibility to ask questions if anything in this document is unclear to you.*

This course is in-person and real-time. Students are expected to attend their assigned lecture unless they have a University-approved reason to miss.

Instructor

Ethan Blanton
eblanton@buffalo.edu

Office Hours (subject to change; consult the course web site):

| Davis 334 | Tuesday | 10:00–10:50 |
| | Friday | 16:00–16:50 |

Sections

Section	Course ID	Lecture Time	Location
CSE 410 LEC-ETH	23804	MWF 13:00–13:50	Norton 209
CSE 510 LEC-ETH	23919	MWF 13:00–13:50	Norton 209

1 Course Web Site

https://cse.buffalo.edu/~eblanton/course/cse410-2025-0s/

Locations, times, information regarding instructor office hours, assignment deadlines, and other information can be found on the course web site.

2 Lectures

Lectures will be delivered on campus in their assigned locations. Students are expected to attend their assigned lecture unless they have a University-approved reason to miss. Attendance will not be regularly taken, but may be taken at any time at the instructor's discretion (and may directly affect grade outcomes per the quiz policy and/or participation component in Section 9). Lecture recordings may be provided after the fact for review, or for asynchronous viewing in the event that a student must miss lecture for a University-approved absence, on a best-effort basis.

3 Course Description

CSE 410/510 ETH is a 3 credit course.
    From the UB catalog:

> Contents, format and required background vary from offering to offering. Intended for rapid introduction of timely material in computer science and engineering, which will not be repeated under this course number.

This iteration of CSE 410/510 ETH introduces the idea of interactive programming environments. These environments encourage a conversational, evolutionary style of programming. Students will learn something about several interactive programming languages and environments, including Lisp, Smalltalk, and Forth.

4 Prerequisites

All students registered for CSE 410/510 ETH are expected to have significant programming experience (equivalent to a UB undergraduate of upper class standing) and a willingness to learn new programming languages and environments. Students of both CSE 410 ETH and CSE 510 ETH should use the official CSE 410 ETH prerequisites as a guideline for understanding their expected background.

CSE 410 ETH: CSE 220 and CSE 250. Instructor approval. Students must complete a mandatory advisement session with their faculty advisor.

5 Course Materials

Several texts will be required for this course. All texts are available for free via the Internet, but students may choose to purchase printed versions if they choose. Additional readings will be required, but students should plan to read from:

- Venue. *Medley Reference Manual*. Venue, Apr. 1993. URL: https://interlisp.org/documentation/IRM.pdf

- Christoph Thiede and Patrick Rein. *Squeak by Example*. Square Bracket Associates, 2023. ISBN: 978-3-9523341-0-2. URL: https://github.com/hpi-swa-lab/SqueakByExample-english/

- Leo Brodie. *Starting Forth*. Prentice-Hall International, Inc., 1981. ISBN: 0-13-842930-8. URL: https://www.forth.com/starting-forth/

Additional resources may be found in the bibliography of this syllabus, or provided in discussions throughout the semester. Students are expected to read the material necessary to complete their coursework, and guidance will be provided on this.

Lecture slides will be provided electronically throughout the semester where they are used.

References to materials not required or assigned may be made, and students are encouraged to follow up on these references, but this will not be required for successful completion of the course.

6 Communication

All electronic communication from students to course staff regarding this course must occur in one of two ways:

- Messages on the course Piazza instance, or

- Email using your *official UB email account*.

For topics of a sensitive nature, please email the course instructor directly from your University-supplied email address. Emails from non-University addresses will be disregarded due to privacy concerns and FERPA regulation. For *all other contacts*, please do **NOT** email the course instructor directly; instead, make a private or public post to Piazza, as appropriate. Private posts of non-sensitive nature should be sent to *all course staff*. This will ensure the most timely possible response.

Students are expected to monitor the course Piazza instance and UBlearns classroom on a daily basis, checking it on every day that the University is open, as important course announcements will be posted to Piazza. Schedule changes, assignment handouts, homework, required readings, and other materials may be posted to Piazza, and it is the student's responsibility to keep track of these things. Failure to read Piazza messages will not be accepted as an excuse for missed projects, exams, or other course requirements.

Students will be added to the Piazza instance by the course instructor. If you are not, please contact the instructor by email to rectify this.

7 Course Requirements

The following items are required of every student, and failure to complete them may affect student grades as described in Section 9, *Grading Policy*, below.

7.1 Lecture

Students must attend every lecture. Lecture attendance will not necessarily be taken regularly, but lecture participation will be calculated as a portion of each student's grade.

Students must watch any pre-recorded videos containing course content that may be released from time to time.

It will be assumed that students are familiar with all material presented in class, and any material presented in lecture or course videos may appear on any test, quiz, homework assignment, or other evaluation. *Attendance and attention to lecture and course videos are critical to success in this course.*

7.2 Assignments

One programming task will be assigned for each of the Lisp, Smalltalk, and Forth environments. These programming assignments are individual activities, and students are expected to use them as their introduction to the language and environment.

7.3 Presentations

Each student will make several in-class presentations through the course of the semester. These presentations will be counted toward either lecture participation or various project components, depending on their topic.

7.4 Semester Project

Students will complete a semester project in a small group. The project must be implemented using one of the interactive programming environments discussed in class, or in another interactive programming environment agreed upon between the student group and the instructor.

Students will present a project proposal to the instructor before Spring Break, and the final project must be turned in by the final full week of classes. Specific due dates may be found in Section 8, *Course Schedule*, below. In between, students will make progress reports to the instructor and present their project progress in class at least once.

Each student group will be expected to present their project at CSE Demo Day at the end of the semester.

7.5 Tests and Quizzes

There will be no midterm or final exam.

Quizzes may be introduced at any time by the instructor, covering any material previously covered in lectures, readings, or written homework assignments. These quizzes may or may not be announced in advance. (In particular, "pop quizzes" may be utilized to evaluate student attendance, engagement, and present understanding of course material.)

7.6 Submission Policy

Programming assignments will be assigned with a deadline. All assignments are to be submitted by this deadline. In the event of any ambiguity in the deadline, times are assumed to be in the *current local time zone of the University*. Penalties for missing this deadline are as follows.

- Projects submitted before the deadline will incur no penalty.

- Projects submitted after the deadline, but within 24 hours of the deadline (Saturday, Sunday, and University holidays do not count toward these 24 hours) will incur a penalty of 20% of the possible score.

- Projects submitted more than 24 hours after the deadline as described above will not be accepted and will receive no credit.

Neither the instructor nor the student assistants are obligated to provide assistance for programming assignments after the assigned deadline.

7.7 Make-up Policy

No deadline extensions or make-up work will be permitted except for approved University absences. Please see the University attendance policy for more information.

8 Course Schedule

The order of course topics, and important dates (including exam dates and times), is provided here for convenience. Inclement weather, local emergencies, unsafe building and/or campus environments, or other circumstances may cause the University to change this schedule. Course progress and pedagogical concerns may cause rescheduling of lectures, activities, and presentations, or changes to required readings. You will be notified via Piazza or UB email of changes within the control of course staff. Course staff will attempt to keep you appraised of changes outside of staff control, but you are responsible for monitoring University communications to this effect.

Note in particular that the schedule of topics as covered in lecture may change significantly due to student interaction and interest, and that this may have small effects on due dates. Every effort will be made to adhere to the schedule laid out here, but small changes may be warranted as the semester progresses.

You are responsible for monitoring any changes to this schedule, according to communications from course staff or the University. Failure to be aware of schedule changes is not sufficient reason for extended deadlines, make-up exams, or other accommodations.

Date	Description
2024-01-22	First Day of Class
2024-02-12	Lisp programming assignment due
2024-02-26	Smalltalk programming assignment due
2024-03-07	Group membership finalized
2024-03-12	Forth programming assignment due
2024-03-14	Project proposals due
2024-03-17–2024-03-21	*Spring Break*
2024-03-31	Project progress report 1 due
2024-04-14	Project progress report 2 due
2024-04-14–2024-04-25	In-lecture project presentations
2024-04-25	Project reports due
2024-04-28	Demo Day posters due
2024-05-02	Projects due
2024-05-06	Last Day of Class
2024-05-07	CSE Demo Day

The following schedule of topics is an estimation, and is subject to change.

Week	Topic	Reading
2025-01-22	Introduction	
2025-01-27	Lisp and Interlisp	Interlisp: The Language and its Usage
2025-02-03	Lisp	
2025-02-10	Smalltalk and Squeak	Smalltalk by Example
2025-02-17	Smalltalk	

2025-02-24	Forth and fuzzball MUCK	Starting Forth
2025-03-03	Forth	
2025-03-10	Reflection and project proposals	
2025-03-17	*Spring Break*	
2025-03-24		
2025-03-31		
2025-04-07		
2025-04-14	Project presentations	
2025-04-21	Project presentations	
2025-04-28		
2025-05-05	Wrap-up	

9 Grading Policy

No "I" (Incomplete) grades will be given for this course except for **documented extreme circumstances** or situations required by University policy. *Failure to complete work on time does not constitute an extreme circumstance.*

Grades will not be changed at the end of the semester for any reason other than a documented error in grading. No grade negotiation will be permitted. In particular, no grades will be changed to preserve scholarships, fellowships, University positions, immigration status, internship or job offers, or any other outside factor. Grades reflect student performance and mastery of course material.

The credit breakdown for the course will be as follows:

Course Requirement	Percent
Lisp programming assignment	5%
Smalltalk programming assignment	5%
Forth programming assignment	5%
In-class participation	30%
Project proposal	10%
Project progress reports	10%
Project presentation	10%
Project report	10%
Project artifact	15%

At the instructor's discretion, up to 15% of the course grade may be removed from the percentage allotted to in-class participation and the project presentation (in any proportion) and allocated to quizzes, including pop quizzes, without prior notice. *Attendance in lecture is mandatory.*

Final grades will be assigned from the above percentages as follows, although individual component scores may be adjusted or a curve of the instructor's choice may be applied if the instructor deems it warranted. Lower percentages are inclusive, upper percentages (excepting 100%) are not; that is, a 90.0% would be an A-, not a B+.

	B+ 87-90%	C+ 77-80%	D+ 67-70%
A 95-+ %	B 83-87%	C 73-77 %	D 63-67%	F 0-63%
A- 90-95%	B- 80-83%	C- 70-73 %	

10 Behavioral Expectations

Students are expected to behave in a way that is respectful to their fellow students and the course staff, and uphold the CSE values.

In addition, the University at Buffalo has a list of behavioral expectations.

In summary, avoid disrupting the classroom via late arrivals or early departures; distracting behaviors such as talking, watching videos, playing games, or viewing non-course content; eating and drinking; *etc.*

11 Academic Integrity

Students will abide by the CSE Academic Integrity Policy, the University Academic Integrity Policy, and the Undergraduate or Graduate amendments thereof, as appropriate.

The Academic Integrity policy for this course can be found on my web site, under Policies. You should read it for additional information and clarifications not found here.

All resources used in completing assignments for this class *must be given appropriate attribution.* Students should use the provided resources and readings for this course in the completion of their work, but are encouraged to seek out other resources as needed. Students may not submit others' work as their own under any circumstances.

Generative artificial intelligence (AI) or large language models (LLM) are not permitted resources for this course. This includes sites and technologies such as ChatGPT, Bard, the conversational interfaces on search engines like Bing or Google, and GitHub Copilot, as well as *all other* AI assistants. Usage of these AI technologies to produce material to be turned in for this course, to assist with producing or understanding material in this course, to debug programs for this course, or any other purpose related to this course, is a violation of the course academic integrity policy.

If there is any question about whether a resource is acceptable for use in completing a course assignment, students are encouraged to ask the instructor or a SA *before* making use of it. Asking about a resource is **not** a violation of academic integrity, even if the resource is not allowed for the course.

Violation of these policies will result in a failing grade for the course and referral upward for additional sanctions according to University policy.

11.1 Sharing Course Materials After Completion

Sharing of course materials *after* completing this course is also a violation of the academic integrity policy for this course, as discussed in the University AI policies under "Improper Distribution of Course Materials." Materials used in this course, including project handouts *and your own project implementations* remain a part of this course after you complete it. Sharing those materials after completing this course may still constitute an academic integrity violation. Academic integrity proceedings may be started **even after you have passed this course**.

In particular, be aware that if you post your course project materials in a public place after completing the course, **you may be subject to academic integrity proceedings**. This can result in a **retroactive failure** in this course.

11.2 Amnesty for Violations of Academic Integrity

A student who has committed a violation of this academic integrity policy may receive limited amnesty for the violation by *notifying the instructor, in writing,* of the violation **before I have begun to assess the violating assignment**. This notification must include the student's name, person number,

UBITname, and state the assignment in question and the nature of the violation. Upon submitting such a statement, the student will receive no credit for the violating assignment, but *no further sanctions will be taken, and the violation will not be reported*. Once I have begun assessing the assignment in question, no such statements will be permitted. Since it may not be obvious to students when assessment begins, such statements should be submitted as soon as possible after the violation occurs. While assessment may begin at any time, in general I will not look at student submissions until a project deadline has passed.

See my online Academic Integrity Policy for an example scenario and more information.

12 Program Outcomes and Competencies

This course is included as an elective in both the BS Computer Engineering program, accredited by the Engineering Accreditation Commission (EAC) of ABET, and the BS Computer Science program, accredited by the Computing Accreditation Commission (CAC) of ABET.

The course introduces students to the following CAC student outcomes, for which graduating students must demonstrate:

(CAC-1) Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.

(CAC-2) Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

(CAC-3) Communicate effectively in a variety of professional contexts.

(CAC-5) Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

(CAC-6) Apply computer science theory and software development fundamentals to produce computing-based solutions.

The course introduces students to the following EAC student outcomes, for which graduating students must demonstrate:

(EAC-1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

(EAC-3) an ability to communicate effectively with a wide range of audiences.

(EAC-5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

(EAC-7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Student outcomes will be evaluated as follows.

CAC					EAC				Assessment Types
1	2	3	5	6	1	3	5	7	
		✓			✓				In-class participation
✓	✓			✓	✓			✓	Programming assignments
✓		✓	✓		✓	✓	✓		Project proposal
✓	✓	✓	✓		✓	✓	✓		Project reports
✓	✓	✓	✓	✓	✓	✓	✓	✓	Project artifact generation

13 Accessibility Resources

From the UB Reasonable Accommodation Policy:

> The University at Buffalo is committed to providing equal access to individuals with disabilities, including physical access to programs and reasonable accommodations for members of the university community.

If you have any disability which requires reasonable accommodations to enable you to participate in this course, please contact the Office of Accessibility Resources in 60 Capen Hall, 716-645-2608, and also the instructor of this course during the first week of class. The Office of Accessibility Resources will provide you with information and review appropriate arrangements for reasonable accommodations, which can be found on the web at: http://www.buffalo.edu/studentlife/who-we-are/departments/accessibility.html.

14 Critical Campus Resources

Sexual Violence   UB is committed to providing a safe learning environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence and stalking. If you have experienced gender-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), UB has resources to help. This includes academic accommodations, health and counseling services, housing accommodations, helping with legal protective orders, and assistance with reporting the incident to police or other UB officials if you so choose. Please contact UB's Title IX Coordinator at 716-645-2266 for more information. For confidential assistance, you may also contact a Crisis Services Campus Advocate at 716-796-4399.

Counseling Services   Students may experience a range of issues that can cause barriers to learning or reduce their ability to participate in daily activities. These might include strained relationships, anxiety, high levels of stress, alcohol/drug problems, feeling down, health concerns or unwanted sexual experiences. Counseling, Health Services, and Health Promotion are here to help with these or other concerns. Students can learn more about these programs and services by contacting:

- Counseling Services:
    - 120 Richmond Quad (North Campus), 716-645-2720
    - First Floor Michael Hall (South Campus), 716-829-5800
- Student Health Services:
    - 4350 Maple Road (at Sweet Home), 716-829-3316
- Health Promotion:
    - 114 Student Union (North Campus), 716-645-2837

Acknowledgments

Some language in this syllabus is drawn from University policies (as noted), the UB Course Syllabi Requirements document, department guidelines, and other University resources. Some language and structure in this syllabus is drawn from Steve Ko's CSE 486/586 syllabus from Spring 2017 and from Matthew Hertz's CSE 115/503 syllabus from Spring 2019. Additional improvements were made by Karthik Dantu in 2019.

Reading List

Black, Andrew P. et al. *Squeak by Example*. University of Berne, 2009. ISBN: 978-3-9523341-0-2. URL: https://open.umn.edu/opentextbooks/textbooks/313.

Brodie, Leo. *Starting Forth*. Prentice-Hall International, Inc., 1981. ISBN: 0-13-842930-8. URL: https://www.forth.com/starting-forth/.

Brodie, Leo. *Thinking Forth*. 2004. ISBN: 0-9764587-0-5. URL: https://www.forth.com/forth-books/#h-thinking-forth-by-leo-brodie.

Byte. The Small Systems Journal 6.8 (Aug. 1981): *Smalltalk*. URL: https://archive.org/details/byte-magazine-1981-08.

Kaisler, Stephen H. *Interlisp: The Language and its Usage*. John Wiley & Sons, 1986. ISBN: 0-471-81644-2. URL: https://interlisp.org/documentation/1986-interlisp-language-book-1.pdf.

Kaisler, Stephen H. *Medley Interlisp: The Interactive Programming Environment*. Dec. 2021. URL: https://interlisp.org/documentation/20211225-interlisp-book-2.pdf.

Seibel, Peter. *Practical Common Lisp*. Apress, 2005. ISBN: 978-1-59059-239-7. URL: https://gigamonkeys.com/book/.

Shapiro, Stuart C. *Common Lisp: An Interactive Approach*. Computer Science Press, 1992. ISBN: 0-7167-8218-9. URL: https://cse.buffalo.edu/~shapiro/Commonlisp/commonLisp.pdf.

Thiede, Christoph and Patrick Rein. *Squeak by Example*. Square Bracket Associates, 2023. ISBN: 978-3-9523341-0-2. URL: https://github.com/hpi-swa-lab/SqueakByExample-english/.

Venue. *Medley Reference Manual*. Venue, Apr. 1993. URL: https://interlisp.org/documentation/IRM.pdf.