

## Course Syllabus

# Course Content

We will cover the following topics this semester:

Module 1: [Overview and Introduction to Swift \(https://umd.instructure.com/courses/1338917/modules/1670380\)](https://umd.instructure.com/courses/1338917/modules/1670380)

Module 2: [User Interfaces \(https://umd.instructure.com/courses/1338917/modules/1670381\)](https://umd.instructure.com/courses/1338917/modules/1670381)

Module 3: [Interacting with Resources \(https://umd.instructure.com/courses/1338917/modules/1670382\)](https://umd.instructure.com/courses/1338917/modules/1670382)

Module 4: [Concurrency \(https://umd.instructure.com/courses/1338917/modules/1670383\)](https://umd.instructure.com/courses/1338917/modules/1670383)

Module 4: Group Demos (no lectures/quizzes)

Module 5: Summary (no lectures/quizzes)

# Course Structure

This is a *flipped classroom* course. That means the lectures are all pre-recorded, and class time is used for Q&A, demonstrations, exercises, and time to work on projects.

It is also *self-paced*. In order to provide guideposts for students who are more deadline-driven, there is a suggested "nominal" pace for the course, which corresponds to the due dates for assessed work (see below). Class time will focus primarily on the nominal pace, but there should be ample time on most days for questions regarding material from any point during the course.

# Course Grading

This course employs *\*Standards-Based Grading\**, rather than traditional points-based grading. Rather than accumulating points that are then used to determine the cut-offs for various letter grades, there are specific *learning objectives* for students to demonstrate mastery of. A final grade in the course is determined by how many of these objectives were met, and at what level.

There are three types of learning objectives:

1. **Skills Tests:** These allow the student to show that they have a basic understanding of a particular objective within a module.
2. **Projects:** These are practical applications of the course concepts, and will form the bulk of the assessed work in the course.
3. **Group Project:** This is a longer-term multi-person project that will require students to design,

plan, and implement a complex application.

## Assessment Grading Scale

All learning objectives are assessed on the following scale:

- **E:** (3 points) Excellent; demonstrates mastery of the material
- **M:** (2 points) Meets Expectations; approaching mastery, with minor updates or learning required
- **R:** (1 point) Requires Resubmission; demonstrates progress towards mastery, but additional learning and major updates
- **N:** (0 points) Not Assessable; does not indicate that progress has yet been made

## Skills Tests

Each of the first two modules has a set of Skills Tests. These are timed (typically about 15 minutes) assessments which you will schedule with a TA or Dr. Marsh when you feel you are ready for it. When the test begins, you will be given a randomly selected problem, which you must then implement under supervision. This might be in person or via Zoom. Multiple attempts are permitted, though the problem may differ each time. This gives students the opportunity to measure their learning and make quantifiable progress.

There are a total of 6 skills tests.

## Projects

There are three individual projects in the course, including the final project. For each, there is a nominal deadline, at which point students' submissions will be scored, and feedback provided. Students may resubmit these as many times as they need to. By revisiting the project until it works, the student solidifies their understanding of the material.

When resubmitting a project, the student must also include a brief discussion of what enabled them to make progress. This can range from "I was unable to devote sufficient time to the project before the initial deadline" to "I fundamentally misunderstood how X behaved, and have since learned..." Because the resubmission attempts are unlimited, there will be no extensions granted. No excuse needs to be given, merely an acknowledgement that more time was needed.

Project descriptions will include the criteria for an E, M, R, or N.

## Group Project

There is also a team project, where each team of up to 4 students will propose an app and then

implement it. Proposals will include a set of minimal goals (required functionality) and stretch goals (extra functionality). The initial proposal will be evaluated and approved by Dr. Marsh, after which a TA will be assigned to each team, who will monitor the progress and assign final project scores.

Projects will be graded as follows:

- E: All minimal goals met, and at least one stretch goal met.
- M: All minimal goals met.
- R: App implements substantial functionality, but does not yet meet all minimal goals.
- N: App is lacking substantial functionality.

Teams and TAs will agree to a schedule of three milestones, where the TA will assess the state of the project, and all parties will discuss any necessary changes to the design or schedule. No milestones may be scheduled until the project proposal is approved.

## Unassessed Work

There are also a series of in-class exercises and quizzes. These are for students' benefit as a way to reinforce concepts from the lectures, and are likely (in some cases) to help with the projects.

## Letter Grades

This course will not be curved. Instead, the following serves as a *contract* that enables each student to determine what letter grade they hope to achieve, and what precisely is required to earn this grade.

- **A**
  - All projects, including the team project and final, must score an E
  - All 6 Skills Tests at M or better
    - At least 5 at E
- **B**
  - All projects, including the team project and final, must score at least an M
    - At least 2 at E
  - 5 Skills Tests at M or better
    - At least 3 at E
- **C**
  - All projects, including the team project and final, must score at least an M
  - 3 Skills Tests at M or better
    - These cannot all be from the same module
- **D**
  - All scored projects have been attempted, with a majority at M

Plusses and minuses are awarded for work that falls between the criteria for two grades, as illustrated by the following. A student is one objective away from an A. For example, they have 6 skills tests assessed at an M or better, but only 4 of these are an E. That student will earn an **A-**.




Another student is more than one objective away from an A, but over halfway from the B criteria to the A criteria in *all* objectives. That is, 3 of the projects have an E, 6 skills tests have at least an M, and at least 4 of those have an E. That student will earn a **B+**.

## Academic Integrity











You are expected to adhere to the University's academic integrity policy. All work that is not explicitly stated to be a team effort must be done by you alone. *You have 24 hours after the deadline of any graded work (including tests) to self-report lapses in academic integrity*, which we can then hopefully resolve without a reference to the Office of Student Conduct.

Posting of any project/exercise implementation (even after the course is over) in a publicly available online location (e.g., github) is prohibited under the Code of Academic Integrity (facilitation of academic dishonesty). Any student responsible for this will be reported to the Office of Student Conduct and risks the sanction of an "XF" in the course. The CS Department gitlab server (<https://gitlab.cs.umd.edu> (<https://gitlab.cs.umd.edu>)) is an acceptable place for your code, as long as access is appropriately restricted.


## Course Summary:

Date	Details	Due
Thu Jan 26, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230658">Quiz: Simple types and control flow</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230658">https://umd.instructure.com/courses/1338917/assignments/6230658</a> )	due by 2pm
Fri Jan 27, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230674">Git Setup and General Configuration</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230674">https://umd.instructure.com/courses/1338917/assignments/6230674</a> )	due by 5pm
Tue Jan 31, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230664">Quiz: Functions and Closures</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230664">https://umd.instructure.com/courses/1338917/assignments/6230664</a> )	due by 2pm

Date	Details	Due
Thu Feb 2, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230657">Quiz: Data Structures</a> <a href="https://umd.instructure.com/courses/1338917/assignments/6230657">https://umd.instructure.com/courses/1338917/assignments/6230657</a>	due by 2pm
	 <a href="https://umd.instructure.com/courses/1338917/assignments/6252795">M1 Skills: Functions and Control Flow</a> <a href="https://umd.instructure.com/courses/1338917/assignments/6252795">https://umd.instructure.com/courses/1338917/assignments/6252795</a>	due by 11:59pm
Tue Feb 7, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230659">Quiz: Type relations and errors</a> <a href="https://umd.instructure.com/courses/1338917/assignments/6230659">https://umd.instructure.com/courses/1338917/assignments/6230659</a>	due by 2pm
Thu Feb 9, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230655">Quiz: Object references</a> <a href="https://umd.instructure.com/courses/1338917/assignments/6230655">https://umd.instructure.com/courses/1338917/assignments/6230655</a>	due by 2pm
	 <a href="https://umd.instructure.com/courses/1338917/assignments/6252861">M1 Skills: Data Structures</a> <a href="https://umd.instructure.com/courses/1338917/assignments/6252861">https://umd.instructure.com/courses/1338917/assignments/6252861</a>	due by 11:59pm
Fri Feb 10, 2023	 <a href="https://umd.instructure.com/appointment_groups/11755">Skills Testing</a> <a href="https://umd.instructure.com/appointment_groups/11755">https://umd.instructure.com/appointment_groups/11755</a>	2pm to 4pm
Mon Feb 13, 2023	 <a href="https://umd.instructure.com/appointment_groups/11763">Skills Testing</a> <a href="https://umd.instructure.com/appointment_groups/11763">https://umd.instructure.com/appointment_groups/11763</a>	9am to 11am
	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230660">Quiz: Generics and where clauses</a> <a href="https://umd.instructure.com/courses/1338917/assignments/6230660">https://umd.instructure.com/courses/1338917/assignments/6230660</a>	due by 2pm
Tue Feb 14, 2023	 <a href="https://umd.instructure.com/appointment_groups/11762">Skills Testing</a> <a href="https://umd.instructure.com/appointment_groups/11762">https://umd.instructure.com/appointment_groups/11762</a>	12:30pm to Feb 16 at 2pm
Thu Feb 16, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6252888">M1 Skills: References and Generics</a> <a href="https://umd.instructure.com/courses/1338917/assignments/6252888">https://umd.instructure.com/courses/1338917/assignments/6252888</a>	due by 11:59pm

Date	Details	Due
Fri Feb 17, 2023	 <a href="https://umd.instructure.com/appointment_groups/11761">Skills Testing</a> ( <a href="https://umd.instructure.com/appointment_groups/11761">https://umd.instructure.com/appointment_groups/11761</a> )	11am to 4pm
Tue Feb 21, 2023	 <a href="https://umd.instructure.com/appointment_groups/11778">Skills Testing</a> ( <a href="https://umd.instructure.com/appointment_groups/11778">https://umd.instructure.com/appointment_groups/11778</a> )	11am to Feb 23 at 2pm
Tue Feb 21, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230668">Quiz: SwiftUI Views</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230668">https://umd.instructure.com/courses/1338917/assignments/6230668</a> )	due by 2pm
Wed Feb 22, 2023	 <a href="https://umd.instructure.com/appointment_groups/11806">Skill Test Sign Up</a> ( <a href="https://umd.instructure.com/appointment_groups/11806">https://umd.instructure.com/appointment_groups/11806</a> )	3:30pm to Feb 24 at 4pm
Wed Feb 22, 2023	 <a href="https://umd.instructure.com/appointment_groups/11803">Skills Test</a> ( <a href="https://umd.instructure.com/appointment_groups/11803">https://umd.instructure.com/appointment_groups/11803</a> )	12pm to 2pm
Wed Feb 22, 2023	 <a href="https://umd.instructure.com/appointment_groups/11802">Skills Test</a> ( <a href="https://umd.instructure.com/appointment_groups/11802">https://umd.instructure.com/appointment_groups/11802</a> )	12pm to 1pm
Wed Feb 22, 2023	 <a href="https://umd.instructure.com/appointment_groups/11804">Skills Test</a> ( <a href="https://umd.instructure.com/appointment_groups/11804">https://umd.instructure.com/appointment_groups/11804</a> )	1pm to 2pm
Thu Feb 23, 2023	 <a href="https://umd.instructure.com/appointment_groups/11815">Skills Testing</a> ( <a href="https://umd.instructure.com/appointment_groups/11815">https://umd.instructure.com/appointment_groups/11815</a> )	9am to 6pm
Thu Feb 23, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230667">Quiz: Basic SwiftUI controls</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230667">https://umd.instructure.com/courses/1338917/assignments/6230667</a> )	due by 2pm
Fri Feb 24, 2023	 <a href="https://umd.instructure.com/appointment_groups/11779">Skills Testing</a> ( <a href="https://umd.instructure.com/appointment_groups/11779">https://umd.instructure.com/appointment_groups/11779</a> )	10am to 6pm




Date	Details	Due
Mon Feb 27, 2023	 <b>Skills Testing</b> <a href="https://umd.instructure.com/appointment_groups/11791">https://umd.instructure.com/appointment_groups/11791</a>	11am to 4pm
	 <b>Initial Proposal</b> <a href="https://umd.instructure.com/courses/1338917/assignments/6230676">https://umd.instructure.com/courses/1338917/assignments/6230676</a>	due by 11:59pm
Mon Feb 27, 2023	 <b>Skills Testing</b> <a href="https://umd.instructure.com/appointment_groups/11818">https://umd.instructure.com/appointment_groups/11818</a>	9am to 6pm
	 <b>Skills Test Sign Up</b> <a href="https://umd.instructure.com/appointment_groups/11822">https://umd.instructure.com/appointment_groups/11822</a>	3:30pm to Mar 3 at 4pm
	 <b>Skills Testing</b> <a href="https://umd.instructure.com/appointment_groups/11821">https://umd.instructure.com/appointment_groups/11821</a>	9am to 12pm
Tue Feb 28, 2023	 <b>Skills Testing</b> <a href="https://umd.instructure.com/appointment_groups/11819">https://umd.instructure.com/appointment_groups/11819</a>	12:30pm to Mar 3 at 5pm
	 <b>Quiz: Gestures, Undo, Fonts, and Colors</b> <a href="https://umd.instructure.com/courses/1338917/assignments/6230653">https://umd.instructure.com/courses/1338917/assignments/6230653</a>	due by 2pm
Wed Mar 1, 2023	 <b>M2 Skills: Basic SwiftUI Controls</b> <a href="https://umd.instructure.com/courses/1338917/assignments/6252908">https://umd.instructure.com/courses/1338917/assignments/6252908</a>	due by 11:59pm
	 <b>Skills Testing</b> <a href="https://umd.instructure.com/appointment_groups/11824">https://umd.instructure.com/appointment_groups/11824</a>	9am to 11am
Thu Mar 2, 2023	 <b>Skills Testing</b> <a href="https://umd.instructure.com/appointment_groups/11835">https://umd.instructure.com/appointment_groups/11835</a>	9am to 12:30pm

Date	Details	Due
	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230669">Quiz: Graphics</a> <a href="https://umd.instructure.com/courses/1338917/assignments/6230669">https://umd.instructure.com/courses/1338917/assignments/6230669</a>	due by 2pm
	 <a href="https://umd.instructure.com/appointment_groups/11834">Skills Testing</a> <a href="https://umd.instructure.com/appointment_groups/11834">https://umd.instructure.com/appointment_groups/11834</a>	4:30pm to 6pm
	 <a href="https://umd.instructure.com/courses/1338917/assignments/6252910">M2 Skills: Gestures and Styling</a> <a href="https://umd.instructure.com/courses/1338917/assignments/6252910">https://umd.instructure.com/courses/1338917/assignments/6252910</a>	due by 11:59pm
Fri Mar 3, 2023	 <a href="https://umd.instructure.com/appointment_groups/11823">Skills Test - 2</a> <a href="https://umd.instructure.com/appointment_groups/11823">https://umd.instructure.com/appointment_groups/11823</a>	11am to 4pm
Mon Mar 6, 2023	 <a href="https://umd.instructure.com/appointment_groups/11846">Skills Testing Sign Up</a> <a href="https://umd.instructure.com/appointment_groups/11846">https://umd.instructure.com/appointment_groups/11846</a>	3:30pm to Mar 9 at 4pm
	 <a href="https://umd.instructure.com/appointment_groups/11838">Skills Testing</a> <a href="https://umd.instructure.com/appointment_groups/11838">https://umd.instructure.com/appointment_groups/11838</a>	4pm to Mar 8 at 6pm
Tue Mar 7, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230662">Quiz: SwiftUI miscellanea</a> <a href="https://umd.instructure.com/courses/1338917/assignments/6230662">https://umd.instructure.com/courses/1338917/assignments/6230662</a>	due by 2pm
	 <a href="https://umd.instructure.com/courses/1338917/assignments/6252911">M2 Skills: Graphics</a> <a href="https://umd.instructure.com/courses/1338917/assignments/6252911">https://umd.instructure.com/courses/1338917/assignments/6252911</a>	due by 11:59pm
Wed Mar 8, 2023	 <a href="https://umd.instructure.com/appointment_groups/11850">Skills Test</a> <a href="https://umd.instructure.com/appointment_groups/11850">https://umd.instructure.com/appointment_groups/11850</a>	12pm to 2pm
	 <a href="https://umd.instructure.com/appointment_groups/11851">Skills Testing</a> <a href="https://umd.instructure.com/appointment_groups/11851">https://umd.instructure.com/appointment_groups/11851</a>	12pm to 2pm
Thu Mar 9, 2023	 <a href="https://umd.instructure.com">Skills Testing</a> <a href="https://umd.instructure.com">https://umd.instructure.com</a>	9am to 6pm



Date	Details	Due
	<a href="#">/appointment_groups/11855)</a>	
	 <b>Skills Testing</b> <a href="https://umd.instructure.com/appointment_groups/11836">https://umd.instructure.com/appointment_groups/11836)</a>	12:30pm to Mar 10 at 3pm
Fri Mar 10, 2023	 <b>Skills Tests</b> <a href="https://umd.instructure.com/appointment_groups/11849">https://umd.instructure.com/appointment_groups/11849)</a>	11am to 4pm
Mon Mar 13, 2023	 <b>Skills Testing</b> <a href="https://umd.instructure.com/appointment_groups/11867">https://umd.instructure.com/appointment_groups/11867)</a>	9am to Mar 15 at 11am
Tue Mar 14, 2023	 <b>Quiz: Simple Persistence</b> <a href="https://umd.instructure.com/courses/1338917/assignments/6230654">https://umd.instructure.com/courses/1338917/assignments/6230654)</a>	due by 2pm
Thu Mar 16, 2023	 <b>Skills Test</b> <a href="https://umd.instructure.com/appointment_groups/11866">https://umd.instructure.com/appointment_groups/11866)</a>	12:30pm to Mar 17 at 5pm
	 <b>Quiz: Files</b> <a href="https://umd.instructure.com/courses/1338917/assignments/6230661">https://umd.instructure.com/courses/1338917/assignments/6230661)</a>	due by 2pm
Fri Mar 17, 2023	 <b>Milestone 1</b> <a href="https://umd.instructure.com/courses/1338917/assignments/6230677">https://umd.instructure.com/courses/1338917/assignments/6230677)</a>	due by 11:59pm
	 <b>Quiz: Location and Navigation</b> <a href="https://umd.instructure.com/courses/1338917/assignments/6230670">https://umd.instructure.com/courses/1338917/assignments/6230670)</a>	due by 2pm
Tue Mar 28, 2023	 <b>Project: Triples</b> <a href="https://umd.instructure.com/courses/1338917/assignments/6230686">https://umd.instructure.com/courses/1338917/assignments/6230686)</a>	due by 11:59pm
	 <b>M3 Skills: Simple Persistence</b> <a href="https://umd.instructure.com/courses/1338917/assignments/6252913">https://umd.instructure.com/courses/1338917/assignments/6252913)</a>	due by 11:59pm

Date	Details	Due
Thu Mar 30, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230666">Quiz: CoreData and CloudKit</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230666">https://umd.instructure.com/courses/1338917/assignments/6230666</a> )	due by 2pm
Fri Mar 31, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230678">Milestone 2</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230678">https://umd.instructure.com/courses/1338917/assignments/6230678</a> )	due by 11:59pm
Tue Apr 4, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230665">Quiz: Firebase</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230665">https://umd.instructure.com/courses/1338917/assignments/6230665</a> )	due by 2pm
Thu Apr 6, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6252914">M3 Skills: Advanced Persistence</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6252914">https://umd.instructure.com/courses/1338917/assignments/6252914</a> )	due by 11:59pm
Tue Apr 11, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230663">Quiz: Concurrency and Queues</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230663">https://umd.instructure.com/courses/1338917/assignments/6230663</a> )	due by 2pm
Thu Apr 13, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230671">Quiz: Groups, Barriers, and Semaphores</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230671">https://umd.instructure.com/courses/1338917/assignments/6230671</a> )	due by 2pm
Fri Apr 14, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6252915">M4 Skills: Queues</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6252915">https://umd.instructure.com/courses/1338917/assignments/6252915</a> )	due by 11:59pm
Fri Apr 14, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230679">Milestone 3</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230679">https://umd.instructure.com/courses/1338917/assignments/6230679</a> )	due by 11:59pm
Tue Apr 18, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230656">Quiz: Sessions, deadlock, and Operation Queues</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230656">https://umd.instructure.com/courses/1338917/assignments/6230656</a> )	due by 2pm
Thu Apr 20, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6252961">M4 Skills: Dependencies</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6252961">https://umd.instructure.com/courses/1338917/assignments/6252961</a> )	due by 11:59pm

Date	Details	Due
Mon May 1, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230675">Group Project</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230675">https://umd.instructure.com/courses/1338917/assignments/6230675</a> )	due by 11:59pm
Tue May 9, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230672">Project: BikeRide</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230672">https://umd.instructure.com/courses/1338917/assignments/6230672</a> )	due by 11:59pm
Mon May 15, 2023	 <a href="https://umd.instructure.com/courses/1338917/assignments/6230680">Project: OpenTok</a> ( <a href="https://umd.instructure.com/courses/1338917/assignments/6230680">https://umd.instructure.com/courses/1338917/assignments/6230680</a> )	due by 11:59pm