

Embedded Systems and C Programming

[Jump to Today](#)

Instructor: Max Dunne

Class Lecture: TuTh 3:20PM-4:55PM Zoom (check the zoom tab)

Office Hours: Fridays TBD

Piazza: <https://piazza.com/ucsc/spring2021/cse013e/> [\(https://piazza.com/ucsc/spring2021/cse013e/\)](https://piazza.com/ucsc/spring2021/cse013e/)

(Note that you are only anonymous to each other, not the staff.)

Lab Times

All on Zoom.

Monday	Tuesday	Wednesday	Friday
TBD	TBD	TBD	TBD

TA Office Hours

TBD

Please note that office hours are intended for discussion of grading issues and conceptual questions. They are for assistance with lab work when all other questions have been answered.

Uno32 Form:

[_ \(https://forms.gle/oFr7ynfQgRdgosuy7\)](https://forms.gle/oFr7ynfQgRdgosuy7) Should have received an email











Background



Computer Systems and C Programming is a class intended to bring you up to speed on programming small and large programs in C. Originally written in 1978, C remains the most popular programming language, and the most used one in terms of numbers of computer programs written in it. There are no prerequisites, but you are expected to be at least somewhat familiar with programming and computers. In this class, we are going to approach C from an embedded paradigm, and all of your programming assignments are going to be on a 32-bit embedded micro, the MicroChip PIC32 (which has a MIPS4K core). You will learn how to program in C, how to write modular code, and some of the tips and tricks




when dealing with an embedded micro. This is a programming class and you will be writing lots of code. Expect to spend at least 15-20 hours outside of class playing with the code to get things to work.




Acknowledgements





I would like to acknowledge Cyrus Bazeghi, for all his help with the course material, organization, and lecture material. Gabriel Elkaim, who renovated this class for the PIC32 and allowed me the opportunity to teach it. Steve Summit, who taught an Introductory and Intermediate Programming class at the Experimental College at the University of Washington in Seattle, WA, has generously allowed us to use his notes on K&R and other supplementary materials. [Microchip Corp](https://classes.soe.ucsc.edu/cmpe013/Spring17/www.microchip.com) (<https://classes.soe.ucsc.edu/cmpe013/Spring17/www.microchip.com>). has generously provided slides and software through their academic partner program, and some of the FILE system slides come from Henry Cheng at UC Davis.

- General Course Information [CSE013E_Info.pdf](https://canvas.ucsc.edu/courses/43227/files/3725982/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725982/download?download_frd=1)
- Course Syllabus [CSE013E_Syllabus.pdf](https://canvas.ucsc.edu/courses/43227/files/3725757/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725757/download?download_frd=1)
- Essential C handout [EssentialC.pdf](https://canvas.ucsc.edu/courses/43227/files/3725747/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725747/download?download_frd=1)
- Steve Summit C WriteUp [SummitC.pdf](https://canvas.ucsc.edu/courses/43227/files/3725764/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725764/download?download_frd=1)
- Notes for K&R Preface and Introduction [CMPE13_NotesKnR_Introduction.pdf](https://canvas.ucsc.edu/courses/43227/files/3725765/download?download_frd=1) 
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- Notes for K&R on Chapter 1 [CMPE13_NotesKnR_Ch1.pdf](https://canvas.ucsc.edu/courses/43227/files/3725762/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725762/download?download_frd=1)
- Notes for K&R on Chapter 2 [CMPE13_NotesKnR_Ch2.pdf](https://canvas.ucsc.edu/courses/43227/files/3725772/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725772/download?download_frd=1)
- Notes for K&R on Chapter 3 [CMPE13_NotesKnR_Ch3.pdf](https://canvas.ucsc.edu/courses/43227/files/3725760/download?download_frd=1) 
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- Notes for K&R on Chapter 4 [CMPE13_NotesKnR_Ch4.pdf](https://canvas.ucsc.edu/courses/43227/files/3725758/download?download_frd=1) 
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- Notes for K&R on Chapter 5 [CMPE13_NotesKnR_Ch5.pdf](https://canvas.ucsc.edu/courses/43227/files/3725763/download?download_frd=1) 
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- Notes for K&R on Chapter 6 [CMPE13_NotesKnR_Ch6.pdf](https://canvas.ucsc.edu/courses/43227/files/3725753/download?download_frd=1) 
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- Notes for K&R on Chapter 7 [CMPE13_NotesKnR_Ch7.pdf](https://canvas.ucsc.edu/courses/43227/files/3725769/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725769/download?download_frd=1)

- The Cartoon Guide to Computer Science [Gonick_PartI.pdf](https://canvas.ucsc.edu/courses/43227/files/3725755/download?download_frd=1) 
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- The Cartoon Guide to Computer Science [Gonick_PartII.pdf](https://canvas.ucsc.edu/courses/43227/files/3725749/download?download_frd=1) 
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- The Cartoon Guide to Computer Science [Gonick_PartIII.pdf](https://canvas.ucsc.edu/courses/43227/files/3725761/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725761/download?download_frd=1)

- CKO Ch. 5: Event Driven Programming and State Machines [CKO_Chapter5.pdf](https://canvas.ucsc.edu/courses/43227/files/3725745/download?download_frd=1) 
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- Iterative software design [CSE013E_SoftwareDesign.pdf](https://canvas.ucsc.edu/courses/43227/files/3725768/download?download_frd=1) 
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- Bit Manipulation [CSE013E_BitManipulation.pdf](https://canvas.ucsc.edu/courses/43227/files/3725746/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725746/download?download_frd=1)










- UML Crash Course -- Part I [UMLCrashCourse_I.pdf](https://canvas.ucsc.edu/courses/43227/files/3725754/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725754/download?download_frd=1)
- UML Crash Course -- Part II [UMLCrashCourse_II.pdf](https://canvas.ucsc.edu/courses/43227/files/3725752/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725752/download?download_frd=1)
- UML Crash Course -- Part III [UMLCrashCourse_III.pdf](https://canvas.ucsc.edu/courses/43227/files/3725756/download?download_frd=1) 
(https://canvas.ucsc.edu/courses/43227/files/3725756/download?download_frd=1)
- UML Crash Course -- Parts I-III in PDF [A_Crash_Course_in_UML_State_Machines.pdf](https://canvas.ucsc.edu/courses/43227/files/3725771/download?download_frd=1) 
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Labs

In addition to the class lectures, you are expected to attend lab Zoom sections twice weekly.

We will be working with a 32-bit microcontroller, the MicroChip PIC32, using both a the built-in simulator, and a small development kit we will provide to you.

General documents regarding the labs are below. The lab manuals and lab-specific code follows.

- Re-grading of lab assignments will only be done if we have a clerical error (i.e.: we added points wrong) or we somehow missed your work. We will allow a single exception to resubmitting the correct commit ID per student once per quarter.
- We are currently using canvas for grading. We do not grade files on canvas but ones pulled from git. You will be submitting your commit ID on CANVAS.
- Using Git [CSE013E_GIT.pdf](#)  (https://canvas.ucsc.edu/courses/43227/files/3738612/download?download_frd=1)
- Software installation [CSE013E_ToolsInstallation.pdf](#)  (https://canvas.ucsc.edu/courses/43227/files/3725743/download?download_frd=1)
- Gcc on Windows [CSE013E_GCConWindows.pdf](#)  (https://canvas.ucsc.edu/courses/43227/files/3725766/download?download_frd=1)
- Style Guidelines [CSE013E_StyleGuidelines.pdf](#)  (https://canvas.ucsc.edu/courses/43227/files/3725748/download?download_frd=1)
- Serial Communications [CSE013E_SerialCommunications.pdf](#)  (https://canvas.ucsc.edu/courses/43227/files/3725744/download?download_frd=1)
- MPLAB X [CSE013E_MPLABX.pdf](#)  (https://canvas.ucsc.edu/courses/43227/files/3725767/download?download_frd=1)
- MPLAB X New Project Instructions [CSE013E_MPLABXNewProjectInstructions.pdf](#)  (https://canvas.ucsc.edu/courses/43227/files/3725759/download?download_frd=1)
- Compiler Errors [CSE013E_CompilerErrors.pdf](#)  (https://canvas.ucsc.edu/courses/43227/files/3725773/download?download_frd=1)
- Iterative software design [CSE013E_SoftwareDesign.pdf](#)  (https://canvas.ucsc.edu/courses/43227/files/3725768/download?download_frd=1)

Quizzes

Quizzes will be given out at least once a week on CANVAS. These will be based almost entirely on the reading material that should have been completed before the quiz is released.

Lecture Videos










Recent lecture videos will be stored on CANVAS. Due to arbitrary size Restrictions on CANVAS, older lecture videos will be moved to the google drive folder below.










<https://drive.google.com/drive/folders/17pOxbTr9uQmJ1kVrZTzkz8OwyM4ySN-m?usp=sharing>
 (https://drive.google.com/drive/folders/17pOxbTr9uQmJ1kVrZTzkz8OwyM4ySN-m?usp=sharing)










Course Summary:










Date	Details	Due
Tue Mar 30, 2021	 Embedded Systems and C Programming Lecture https://canvas.ucsc.edu/calendar?event_id=205893&include_contexts=course_43227	3:20pm to 5:05pm
Thu Apr 1, 2021	 Embedded Systems and C Programming Lecture https://canvas.ucsc.edu/calendar?event_id=205894&include_contexts=course_43227	3:20pm to 5:05pm
Tue Apr 6, 2021	 Embedded Systems and C Programming Lecture https://canvas.ucsc.edu/calendar?event_id=205895&include_contexts=course_43227	3:20pm to 5:05pm
Wed Apr 7, 2021	 Lab 1 https://canvas.ucsc.edu/courses/43227/assignments/234010	due by 11:59pm
Thu Apr 8, 2021	 Embedded Systems and C Programming Lecture https://canvas.ucsc.edu/calendar?event_id=205896&include_contexts=course_43227	3:20pm to 5:05pm
Tue Apr 13, 2021	 Embedded Systems and C Programming Lecture https://canvas.ucsc.edu/calendar?event_id=205897&include_contexts=course_43227	3:20pm to 5:05pm
Thu Apr 15, 2021	 Embedded Systems and C Programming Lecture https://canvas.ucsc.edu/calendar?event_id=205898&include_contexts=course_43227	3:20pm to 5:05pm
Tue Apr 20, 2021	 Embedded Systems and C Programming Lecture https://canvas.ucsc.edu/calendar?event_id=205899&include_contexts=course_43227	3:20pm to 5:05pm

Date	Details	Due
Thu Apr 22, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205900&include_contexts=course_43227)	3:20pm to 5:05pm
Tue Apr 27, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205901&include_contexts=course_43227)	3:20pm to 5:05pm
Thu Apr 29, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205902&include_contexts=course_43227)	3:20pm to 5:05pm
Tue May 4, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205903&include_contexts=course_43227)	3:20pm to 5:05pm
Thu May 6, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205904&include_contexts=course_43227)	3:20pm to 5:05pm
Tue May 11, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205905&include_contexts=course_43227)	3:20pm to 5:05pm
Thu May 13, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205906&include_contexts=course_43227)	3:20pm to 5:05pm
Tue May 18, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205907&include_contexts=course_43227)	3:20pm to 5:05pm
Thu May 20, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205908&include_contexts=course_43227)	3:20pm to 5:05pm










Date	Details	Due
Tue May 25, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205909&include_contexts=course_43227)	3:20pm to 5:05pm
Thu May 27, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205910&include_contexts=course_43227)	3:20pm to 5:05pm
Tue Jun 1, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205911&include_contexts=course_43227)	3:20pm to 5:05pm
Thu Jun 3, 2021	 Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=205912&include_contexts=course_43227)	3:20pm to 5:05pm
	 Christian's TA Office Hours (https://canvas.ucsc.edu/calendar?event_id=189658&include_contexts=course_43227)	
	 Christian's TA Office Hours (https://canvas.ucsc.edu/calendar?event_id=189659&include_contexts=course_43227)	
	 Christian's TA Office Hours (https://canvas.ucsc.edu/calendar?event_id=189660&include_contexts=course_43227)	
	 Christian's TA Office Hours (https://canvas.ucsc.edu/calendar?event_id=189661&include_contexts=course_43227)	
	 Christian's TA Office Hours (https://canvas.ucsc.edu/calendar?event_id=189662&include_contexts=course_43227)	
	 Christian's TA Office Hours (https://canvas.ucsc.edu/calendar?event_id=189663&include_contexts=course_43227)	









Date	Details	Due
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189619&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189620&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189621&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189622&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189623&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189624&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189625&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189626&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189627&include_contexts=course_43227)	










Date	Details	Due
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189628&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189629&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189630&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189631&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189632&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189633&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189634&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189635&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189636&include_contexts=course_43227)	









Date	Details	Due
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189637&include_contexts=course_43227)	
	 CSE013E Embedded Systems and C Programming Lecture (https://canvas.ucsc.edu/calendar?event_id=189638&include_contexts=course_43227)	
	 CSE013E Lab section - Friday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189664&include_contexts=course_43227)	
	 CSE013E Lab section - Friday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189665&include_contexts=course_43227)	
	 CSE013E Lab section - Friday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189666&include_contexts=course_43227)	
	 CSE013E Lab section - Friday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189667&include_contexts=course_43227)	
	 CSE013E Lab section - Friday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189668&include_contexts=course_43227)	
	 CSE013E Lab section - Friday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189669&include_contexts=course_43227)	
	 CSE013E Lab section - Friday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189670&include_contexts=course_43227)	

Date	Details	Due
	 CSE013E Lab section - Friday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar? event_id=189671&include_contexts=course_43227)	
	 CSE013E Lab section - Friday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar? event_id=189672&include_contexts=course_43227)	
	 CSE013E Lab section - Friday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar? event_id=189673&include_contexts=course_43227)	
	 CSE013E Lab section - Monday (12:00pm - 2:00pm) (https://canvas.ucsc.edu/calendar? event_id=189639&include_contexts=course_43227)	
	 CSE013E Lab section - Monday (12:00pm - 2:00pm) (https://canvas.ucsc.edu/calendar? event_id=189640&include_contexts=course_43227)	
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	 CSE013E Lab section - Monday (12:00pm - 2:00pm) (https://canvas.ucsc.edu/calendar? event_id=189642&include_contexts=course_43227)	
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	 CSE013E Lab section - Monday (12:00pm - 2:00pm) (https://canvas.ucsc.edu/calendar? event_id=189644&include_contexts=course_43227)	

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	 CSE013E Lab section - Monday (12:00pm - 2:00pm) (https://canvas.ucsc.edu/calendar?event_id=189645&include_contexts=course_43227)	
	 CSE013E Lab section - Monday (12:00pm - 2:00pm) (https://canvas.ucsc.edu/calendar?event_id=189646&include_contexts=course_43227)	
	 CSE013E Lab section - Monday (12:00pm - 2:00pm) (https://canvas.ucsc.edu/calendar?event_id=189647&include_contexts=course_43227)	
	 CSE013E Lab section - Tuesday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189610&include_contexts=course_43227)	
	 CSE013E Lab section - Tuesday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189611&include_contexts=course_43227)	
	 CSE013E Lab section - Tuesday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189612&include_contexts=course_43227)	
	 CSE013E Lab section - Tuesday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189613&include_contexts=course_43227)	
	 CSE013E Lab section - Tuesday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189614&include_contexts=course_43227)	
	 CSE013E Lab section - Tuesday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189615&include_contexts=course_43227)	

Date	Details	Due
	 CSE013E Lab section - Tuesday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189616&include_contexts=course_43227)	
	 CSE013E Lab section - Tuesday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189617&include_contexts=course_43227)	
	 CSE013E Lab section - Tuesday (4:00pm - 6:00pm) (https://canvas.ucsc.edu/calendar?event_id=189618&include_contexts=course_43227)	
	 CSE013E: Office Hours for Max Dunne (https://canvas.ucsc.edu/calendar?event_id=189648&include_contexts=course_43227)	
	 CSE013E: Office Hours for Max Dunne (https://canvas.ucsc.edu/calendar?event_id=189649&include_contexts=course_43227)	
	 CSE013E: Office Hours for Max Dunne (https://canvas.ucsc.edu/calendar?event_id=189650&include_contexts=course_43227)	
	 CSE013E: Office Hours for Max Dunne (https://canvas.ucsc.edu/calendar?event_id=189651&include_contexts=course_43227)	
	 CSE013E: Office Hours for Max Dunne (https://canvas.ucsc.edu/calendar?event_id=189652&include_contexts=course_43227)	
	 CSE013E: Office Hours for Max Dunne (https://canvas.ucsc.edu/calendar?event_id=189653&include_contexts=course_43227)	

Date	Details	Due
	 CSE013E: Office Hours for Max Dunne (https://canvas.ucsc.edu/calendar?event_id=189654&include_contexts=course_43227)	
	 CSE013E: Office Hours for Max Dunne (https://canvas.ucsc.edu/calendar?event_id=189655&include_contexts=course_43227)	
	 CSE013E: Office Hours for Max Dunne (https://canvas.ucsc.edu/calendar?event_id=189656&include_contexts=course_43227)	
	 CSE013E: Office Hours for Max Dunne (https://canvas.ucsc.edu/calendar?event_id=189657&include_contexts=course_43227)	
	 CSE013E: Office Hours with Margaret (https://canvas.ucsc.edu/calendar?event_id=189674&include_contexts=course_43227)	
	 CSE013E: Office Hours with Margaret (https://canvas.ucsc.edu/calendar?event_id=189675&include_contexts=course_43227)	
	 CSE013E: Office Hours with Margaret (https://canvas.ucsc.edu/calendar?event_id=189676&include_contexts=course_43227)	
	 CSE013E: Office Hours with Margaret (https://canvas.ucsc.edu/calendar?event_id=189677&include_contexts=course_43227)	
	 CSE013E: Office Hours with Margaret (https://canvas.ucsc.edu/calendar?event_id=189678&include_contexts=course_43227)	

Date	Details	Due
	 CSE013E: Office Hours with Margaret (https://canvas.ucsc.edu/calendar?event_id=189679&include_contexts=course_43227)	
	 CSE013E: Office Hours with Margaret (https://canvas.ucsc.edu/calendar?event_id=189680&include_contexts=course_43227)	
	 CSE013E: Office Hours with Margaret (https://canvas.ucsc.edu/calendar?event_id=189681&include_contexts=course_43227)	
	 Embedded Systems and C Programming (https://canvas.ucsc.edu/calendar?event_id=189683&include_contexts=course_43227)	
	 Embedded Systems and C Programming (https://canvas.ucsc.edu/calendar?event_id=189684&include_contexts=course_43227)	
	 Git DoOver Usage (https://canvas.ucsc.edu/courses/43227/assignments/234009)	
	 Margaret's Office Hours (Friday@11am) (https://canvas.ucsc.edu/calendar?event_id=189682&include_contexts=course_43227)	
	 Personal Responsibility (https://canvas.ucsc.edu/courses/43227/assignments/234021)	