

CSE 12 Syllabus - Fall 2019

Computer Systems and Assembly Language

Overview

This class exposes students to an overview of how computers work. We will discuss the building blocks of computer hardware, how data is stored in memory, and the MIPS instruction set.

Instructor

Rebecca J. Rashkin rrashkin+ce12@ucsc.edu (no guarantee for email response 😊)

Class website www.rebeccajr.com/computer-systems-and-assembly-langu
(rebeccajr.com -> education -> computer systems and assembly)

Office Hours E2-233; Tue/Thu 1:30 PM - 2:45 PM (by [appt](#))
Wed 1:30 PM - 2:45 PM (walk-in)

Salutations! I am thrilled to be teaching CSE 12 this quarter. Please address me as *Rebecca*, *Ms. Rashkin*, *Miss Rashkin*, *Miss Rebecca*, or *Master R*.

Teaching Assistants

Marco Carmona maacarmo+ce12@ucsc.edu

Mengjie Li mli55+ce12@ucsc.edu

Natasha Mittal nmittal1+ce12@ucsc.edu

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April Zitkovich april+ce12@ucsc.edu

TA office hours Thu 1 pm - 3 pm (BE 312C/D, Marco, Majid)
Fri 12 pm - 2 pm (BE 312C/D, Kevin, Natasha)

General

Dates: 26 Sep 2019 - 6 Dec 2019

Lecture: Classroom Unit 2, Tue/Thu 3:20 - 4:55 PM

Labs: Social Sciences 1 135

Open lab hours: Mon 8:15 pm - midnight
Tue 12:45 pm - 2 pm, 9:30 pm - midnight
Wed 8:15 pm - midnight
Thu 12:45 pm - 2 pm, 9:30 pm - midnight

Fri 12:35 pm - 6 pm
Sat and Sun noon - 6pm

* Baskin Eng 109 is open 24 hours and no classes scheduled:

After 9 pm Mon - Thu
Before 1 pm Thu
After 4:30 pm Fri
Open on the weekend

Scheduling of classes in Windows computer labs can be found at
<https://its.ucsc.edu/computer-labs/class-schedules/fall/be109.html>

Websites: canvas.ucsc.edu (must have a UCSC login ID, use CSE12L)
webcast.ucsc.edu (User: cse-12-1, password: 19fa_cse12)
piazza.com/ucsc/fall2019/cse12
www.zybooks.com

Textbooks

Required

We will be using a **custom online textbook** through zyBooks. You must use your UCSC email to register. Cost: \$39.95 You will be able to download a PDF copy of this custom textbook.

To access:

1. Sign in or create an account at learn.zybooks.com
2. Enter zyBook code: UCSCCSE12RashkinFall2019
3. Subscribe

This **FREE** supplemental textbook is also required:

Charles W. Kann, Introduction to MIPS Assembly Language Programming, Gettysburg College Open Educational Resources, 2015. <http://cupola.gettysburg.edu/oer/2/>
(available online for free)

Optional

Larry Gonick, The Cartoon Guide to Computer Science, Harper & Row Publishers, Inc., ISBN 0-06-460417-9, 1983.

https://www.amazon.com/gp/product/0064604179/ref=oh_aui_search_detailpage?ie=UTF8&psc

Yale N. Patt and Sanjay J. Patel, Introduction to Computing Systems: From Bits and Gates to C and Beyond (Reader), McGraw-Hill Education, First Edition, ISBN 978-1307117530, 2017. (borrow one from a former student)

David A. Patterson and John L. Hennessy, Computer Organization and Design MIPS Edition: The Hardware/Software Interface, Fifth Edition, ISBN 978-0124077263, 2013.

Prerequisites

Prior programming experience is highly recommended (e.g. CMPE 13, CMPE 5J/P) to succeed in this class. Specifically, it is imperative to understand **how to test and debug code**, functions, conditional statements, and loops. If you need a refresher on coding, check out:

[SoloLearn](#)

[CodingBat](#)

Key Dates

Registrar link	https://registrar.ucsc.edu/calendar/key-dates/index.html https://registrar.ucsc.edu/calendar/2019-20calendar.pdf
Final Exam Schedule	https://registrar.ucsc.edu/soc/final-examinations.html#c

Class

Holidays	Veteran's Day: Mon 11 Nov 2019 Thanksgiving: Thu - Fri 28 - 29 Nov 2019
Midterm	Thu 31 Oct 2019
Computer History Museum Field Trip	Sun 24 Nov 2019 1 - 3 pm
Presentations	Thu 5 Dec 2019 7 - 9 pm (Social Sciences 1 110)
Final	Mon 9 Dec 2019 4 - 7 pm (same room as lecture)

Administrative

Add by petition ends	Wed 27 Nov 2019
Drop	Wed 16 Oct 2019
Change grade option	Wed 27 Nov 2019
Withdraw deadline	Wed 6 Nov 2019

Contact

Please message me on **Canvas to contact me** directly. However, I cannot promise that I will respond to emails or online messages of any type. To resolve any administrative issues, you must see me during office hours.

For Tuesday / Thursday office hours, you must make an appointment to ensure a meeting with me. If someone does not show, or if you have a quick question, I might be able to see you in between appointments, but there is no guarantee.

To schedule a meeting, please select an appointment time here:

<https://calendar.google.com/calendar/selfsched?sstoken=UUVCd3ZmMj15N1pZfGRlZmF1bHR8ZDK0MTkzNzkxZDE3M2VkZGM0N2FmYTE5YmY1NDY4ODA>

Replace the event title “cruzid (first name last name)” with YOUR CruzID and name.

Replace the description text with a summary of the purpose of the meeting. If you need to meet remotely, please indicate this in the description and log into Google Hangouts during the time of our meeting. **Failure to follow these instructions** will result in a **forfeit** of your meeting time.

If you need to cancel your meeting, **delete it off of your Google calendar** and it will open up the slot for someone else. When you miss a meeting, you prevent another student from using that slot - so if you know you are going to miss, just cancel it!

Attendance

Lab

There will be weekly quizzes in lab section. You must be present in your **assigned lab** in order to receive credit. These quizzes will contribute to your class participation grade. **You must be present for the entire lab section** to get credit for the quiz (unless you are finished with all released labs at that point).

You may attend any lab section. However, if the computer lab is full, you may be asked to leave if you are not enrolled in that section.

Completing a quiz for any student other than yourself counts as academic dishonesty.

Lecture

You are responsible for all content presented in lecture. This includes any changes to class logistics. A webcast is provided for your convenience, however **functionality of the webcast is not guaranteed.**

Evaluation

40% Labs (must average greater than 55% to pass)
10% Participation
25% Midterm exam (exams must average greater than 55% to pass)
25% Final exam

Grade Speculation

To speculate your final grade, you may use [this spreadsheet](#). Make a copy and enter your scores.

Labs

The 40% for labs will be distributed as follows (subject to change)

1% Lab 0
4% Lab 1
7% Lab 2
8% Lab 3

10% Lab 4

10% Lab 5

Any deviation from the naming convention stated in the lab assignment will cause a **25% grade deduction** for that lab. There are **no exceptions** to this rule.

Participation

There will be weekly quizzes in lab. You must be present in your **assigned lab section** in order to receive credit. These quizzes may be administered on either lab day. You are permitted to work with your classmates on these.

In addition, there will be homework assignments posted to Piazza and required reading assignments that contain interactive examples. You are permitted to work in groups on these problems.

Your two lowest participation grades will be dropped to account for sickness and other unforeseen circumstances.

Extra Credit

Each extra credit option is worth up to 1% added to your final grade. There is no limit to the number of extra credit assignments you can do. However, if you are re-taking this class and previously completed the essay on malleable intelligence, you may not turn in this assignment again.

Extra Credit Option 1: Don't Use Your Grace Period

See below.

Extra Credit Option 2: [Computer Archeology](#)

Write an essay and give a 1-2 minute presentation on some artifact from computer history.

Extra Credit Option 3: 500 Word Essay, [Reflection on Malleable Intelligence](#)

Read the chapter "Intelligence as a Malleable Construct" from the Handbook of Intelligence and write a 500+ word essay. This assignment will have 3 parts: summary, reflection, and recommendations. You may not reuse this assignment from a previous quarter.

Extra Credit Option 4: Obtain Your [Amateur Radio Operating License](#)

Join the [Amateur Radio Club](#) and obtain or upgrade your amateur radio operating license. Show proof of attending 4 meetings or club events (club meetings, nets, antenna building parties).

Extra Credit Option 5: [Skill Progression](#)

Learn a new skill, or progress in a skill you already have. Show documentation of your skill progression and journal about it four times throughout the quarter. Examples: juggling, drawing, singing, dancing, playing a musical instrument, movement progression. Give a 1 - 3 minute presentation on your skill progression during class presentation

Passing Requirements

A typical grading scale will be used in assigning grades. Plus and minus grades will not be issued.

[90, 100+) A
[80, 90) B
[70, 80) C
[60, 70) D
(0, 60) F

You must earn at least a 55% average on the exams to pass the class:

$(\text{midterm exam \%} + \text{final exam \%}) / 2 > 55\%$

Likewise, your average lab scores must be no less than 55% (weighted average) to pass the class. Use the [grade speculation spreadsheet](#) to calculate your weighted lab grade.

There is no minimum grade requirement for participation.

In order to pass, you may not consume more than 72 [grace period](#) hours total. The grace period is described in a future section.

The highest letter grade you can earn if you do not meet minimum passing requirements is a D.

You can receive a 0 if the lab assignment was not submitted, files are missing, files are in the wrong format, you put in little to no effort, or are caught cheating. Only completing the README for a lab assignment counts as little to no effort.

[Regrades](#)

You will have **one week** after grades are posted on Canvas to contest any homework, quiz, or lab grade.

Regrading of lab assignments will only be done if we have made a clerical error (i.e., we added points wrong) or we somehow missed your work. Note that **this does not include you forgetting to submit** or if you made a mistake in the submission process. In addition, we will not regrade because you think you deserve more points.

When requesting a regrade, your entire assignment will be regraded. This means that if you initially received more points than you should have, it's possible that **your score could be reduced** in the regrade.

Only regrades requests that are respectfully worded will be considered. Clerical errors are part of life. There is never any reason to be rude or snarky.

Regrade requests are submitted via Google forms, to be posted on Piazza.

[Note](#)

You will receive the **same grade** for CMPE 12 and CMPE 12L. Assume that CMPE 12 and 12L are one 7-unit course. **You must enroll in both the lab and**

lecture to get credit for this course. If you are enrolled in the lab without the lecture, or vice versa, you will receive an F in the course you are enrolled in.

Assignment Submission

Labs

Lab assignments are submitted by uploading files to your Git repository. You must register for a [UCSC GitLab](#) account in order to have a repository created for you. It is your responsibility to learn how to use Git. There are several Git tutorials [posted below](#) that go over the basics.

Homework

Homework assignments are submitted via Google Forms. Links to the homework assignments are posted on Canvas.

Grace Period

Students will have 72 hours **total (over all of the labs)** of “grace period” that can be used on lab assignments (only - not homework or reading assignments) to allow for **unexpected life events** that interfere with turning in assignments by the deadline. The grace period hours are consumed in 1 hour increments that is kept track on Canvas.

We do NOT need to know why you are using your grace period. If there is some extenuating circumstance that is not covered by the grace period, we need to be informed of this ASAP (not at the end of the quarter).

If there are no commits for a lab before the end of the grace period, you will have consumed **ALL** of your grace period hours.

Sometimes a student will use up their grace period due to procrastination, and then need the grace period later in the quarter for a legitimate reason. No additional late hours are allocated. **If you consume more than 72 late hours, the highest letter grade you can receive is a D.**

If you push any changes to your repository that modified the files for a lab during the grace period, you will consume late hours.

If you don't use any late hours at all, we will add 1% to your final grade.

Example

Assume there are two students with the following late hour usage:

Student 1

LAB	LATE HOURS USED
0	0
1	0
2	24
3	6
4	27
5	13

Student 2

LAB	LATE HOURS USED
0	0
1	33
2	50
3	5
4	56
5	19

The highest grade that Student 2 can earn is a D.

Piazza

Piazza is the official class online forum for delivering announcements and connecting with other students. It is your responsibility to check the forum regularly for updates on assignments and logistics.

Guidelines

1. If you have a question, help yourself first. Look at the notes, book, other Piazza posts using the search feature.
2. If you can't figure out the answer on your own, post a question with a **useful subject** and **describe your problem**. If you are referring to a specific number on a practice exam, include the question in your post.
3. Piazza is a professional forum so be polite and respectful. Your post is never anonymous to instructors. Inappropriate or rude posts will be removed.
4. Please don't use Piazza as a soapbox for complaints. If you have a concern, please set up an appointment with me.

Software

The following software is used for the lab assignments.

[Git](#)

[GitLab@UCSC documentation](#)

[git videos](#)

[git immersion tutorial](#)

[learn git branching tutorial](#)

[Multimedia Logic](#)

[mml mac installation](#)

[mml tutorial](#)

[MARS](#)

[video tutorials](#)

Incompletes

Students requesting an incomplete must be in good standing (have a passing grade up until that point). An incomplete will only be granted as a result of a medical or family emergency. You must request an incomplete before the last day of instruction.

Note

If you ask for an incomplete after not turning in labs or homework assignments, you are not in good standing.

How to learn: Show up. Do the things. Be consistent.

Students often ask how to be successful in this class. Here are my suggestions.

Show up

A large part of making progress is just showing up - even if you don't feel like it. And to increase the probability that you might learn something from lecture, come to class **prepared**. Bring paper, a writing utensil, and a notebook. It's helpful to have several **colored pens** or **highlighters**. Be present in class; eliminate distractions by stashing your electronics.

We often need to be exposed to a new concept several times before we start to comprehend it. So, go to every one of your scheduled lab sections. Stay for the entire time. Find a weekly office hour or MSI session that fits your schedule. Actually attend!

Do the things

Just "do the things." #1 tip: **Find a study group**. How do you find a study group? Go to office hours and MSI.

Review your notes after every class starting from the beginning of the quarter. Redo all of the examples, and complete any examples we didn't get to. Repetition is key to understanding. Spending time to strengthen your knowledge foundation will serve you in completing the lab assignments.

Start labs early. You will inevitably run into bugs that you have to fix. This often takes way longer than you might think to resolve. Starting labs early enables you to catch these issues early on so you are not panicked at 11 pm on the due date.

Make up your own examples. Rewrite the homework with different numbers. Solve this new version of the homework.

Be consistent

The key to progression in any context is consistency. We can't expect to learn a new subject or skill if we don't work it into our weekly schedule. So, just show up and do the things. Consistently.

Advice From Your Peers

Here are some suggestions from students who took the course in the past:

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To stay on top, you have to attend class, take notes, and continuously study the material. Cramming does not work in the long-term.

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I found it was best to study in a group. We went through each of the practice midterms and took our time with each problem. We wrote out each step of the math for the conversion problems and made our own examples to practice on if we were stuck on a particular problem. When we had trouble with any of the boolean or logic gate questions, we found that writing out the truth tables was a good place to start.

We also watched a lot of youtube videos that gave very clear instructions on how to do all types of conversions: bases, floating point etc...

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- *Do the Labs & start them immediately!!! (...Understand the concepts behind them)*
- *The weekly UCSC Canvas quiz is a good test of your knowledge. Go back and review the ones you missed and why.*
- *Webcast is awesome, and I know I miss some classes here and there (night owl), but I really try to put an effort to go to class. It's where I feel that I can focus the most without distraction.*
- *If you're not sure of something go to MSI or office hours.*
- *Study consistently, refer to the resources (videos) provided in Piazza for help, and practice the midterms.*

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practice midterms!!! nothing like learning from what came in the past. I did a dry run through with one of them to see where I was at and what type of questions I needed to improve on. Then I went through the second one and used the worksheets to make sure I did all of them correctly

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Sometimes you might have a busy quarter, and will unfortunately fall behind on some lectures and notes. In this situation, what I found has worked best is to religiously study from the practice midterm. It might seem like a good idea to go through all the online lectures, but with limited time its most effective to learn whats required on the study guide, and use the online lectures to help you solve the practice questions. You can maybe ask a classmate to help you with the questions that you are struggling on with the most, but many of these topics and similar questions can be found online too.

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You will get out what you put into the class. Also make sure to start the Lab assignments ASAP so you can get a feel for the difficulty and time management needed for the class. Some Labs look very very easy but you will realize that writing any program in assembly is a struggle. That being said, the Labs are very doable and the people who say they're hard are the ones who wait wayyyy to long to start. Also the amount of resources outside of the class is insane.

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... As far as Labs go, if you start them early you should be good. Also, if you need help on Lab TAs are more super helpful.

Modified Supplemental Instruction

At Learning Support Services, Tutors, Learning Assistants, and staff work with campus partners to support students and advance educational equity by designing inclusive learning environments in:

- 1) Modified Supplemental Instruction,
- 2) Small Group Tutoring, and
- 3) Writing Support.

Modified Supplemental Instruction (MSI) support is offered for this course. In MSI, you can expect the MSI leader to facilitate cooperative group activities designed to have students work together on the course content. MSI is offered at **least three times each week** for the entire quarter. The MSI leaders are undergraduate students who took the class, did well, and are trained to facilitate group sessions to focus on you, the students, and what you need to succeed in the course. LSS provides continuous training for MSI leaders to create inclusive spaces for students and facilitate group work effectively.

MSI is for everyone and open to all students in class to get extra practice on the things you already know or the things you want to know better. Attendance is voluntary; however, students who attend MSI sessions weekly tend to earn higher final grades than students who do not participate in MSI.

Want MSI to be successful for you? Bring your books, lecture notes, questions, and be open to working collaboratively with your peers. You can access the [MSI schedule online](#) or check out Learning Support Services' website for more information on [MSI](#) and [other programs](#) LSS offers to support student success.

Disability Accommodations

UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please:

1. Rename the soft copy of your DRC Accommodation Authorization Letter with your CruzID (NOT YOUR STUDENT NUMBER, all lowercase, e.g. rrashkin.pdf)
2. Email me and Majid (mamoghad+ce12@ucsc.edu), your TA, the letter (please don't provide a hard copy)
3. Stop by my office during walk-in hours so we can discuss ways to ensure your full participation in the course.

Testing accommodations can only be guaranteed for students who submit their Accommodation Authorization Letter within the first two weeks of class.

I encourage all students who may benefit to contact DRC services:

Disabled Resource Center
146 Hahn Student Services
(831) 459-2089 (voice)
(831) 459-4806 (TDD/TTY)
drc@ucsc.edu

Title IX

The university cherishes the free and open exchange of ideas and enlargement of knowledge. Maintaining this freedom and openness requires objectivity, mutual trust, and confidence; it requires the absence of coercion, intimidation, or exploitation. The principal responsibility for maintaining these conditions must rest upon those members of the university community who exercise most authority and leadership: faculty, managers, and supervisors.

The university has therefore instituted a number of measures designed to protect its community from sex discrimination, sexual harassment, sexual violence, and other related prohibited conduct. Information about the Title IX Office, the online reporting link, applicable campus resources, reporting responsibilities, the UC Policy on Sexual Violence and Sexual Harassment and the UC Santa Cruz Procedures for Reporting and Responding to Reports of Sexual Violence and Sexual Harassment can be found at:

<http://titleix.ucsc.edu>

The Title IX/Sexual Harassment Office is located at 105 Kerr Hall. In addition to the online reporting option, you can contact the Title IX Office by calling 831-459-2462.

Academic Integrity

We have a **zero tolerance** policy for academic dishonesty. Academic dishonesty is submitting work that does not represent your own understanding of the material. It also means sharing code with your classmates unless explicitly told that it is permitted.

If a student is caught cheating, they will receive an F for the quarter. In addition, an academic misconduct form will be filed to document the incident. The consequence can range from a warning to expulsion from the university. For more information about the process visit <https://ue.ucsc.edu/academic-misconduct.html>.

This class offers many opportunities to work with your classmates (i.e. homework and quizzes); however, labs are **individual assignments** and must be completed **independently**.

You are encouraged to form study groups to review concepts presented in class and strategies for solving problems at a high level. However, under no circumstances are you permitted to share your code with your classmates.

On each assignment, in your README.txt, you **must document** any external resources that you used (other than course materials) and **anyone** that you discussed the assignment with.

If you are flagged for cheating, you will receive a zero on the assignment. If you do not explicitly document your collaborators, you will also be written up for academic misconduct, and will receive an F in the course.

How can you avoid getting flagged for academic misconduct?

When discussing the lab, work at a white / chalk board, but **do not take notes or pictures** of the board. After going your separate ways, wait 15 minutes before writing anything down. This wait time ensures that any information that you write down is a reflection of your **own understanding** of the material.

Do not exchange any written information about the lab, either on paper or electronically. **This includes pseudocode.**

Do not work on the labs side-by-side your friend outside of section. The proximity will lead you both to produce solutions that are not reflective of your own understanding of the material.

Examples of acceptable collaboration

- Discussing lab requirements with classmates
- Drawing block diagrams or strategizing about problem solving approaches
- Assisting your classmate in debugging

Examples of cheating

- Studying someone else's solution of a lab before writing your own code
- Looking at someone else's solution to uncover a bug in your code
- Sharing your code with another student
- Emailing your code to a classmate
- Cloning your repository on a classmate's computer
- Uploading your code to a public website, e.g. Chegg, Course Hero
- Paying for an online tutoring service such as Chegg
- Working on the lab sitting next to your classmate, discussing the process
- Having someone "coach" you while working on the assignment
- Using more than a couple lines from an online resource

Do not post your assignment solutions publicly, even after the quarter is over. Do not share your solutions with students who take this course after you. **If you aid students in cheating after the quarter is complete, you could retroactively fail this course.**

Reading List

Sections from the Introduction to MIPS book along with the optional texts are listed below.

<https://docs.google.com/spreadsheets/d/1YKgcJE320AVnmGDFpvx-2CWjLt2U-x1uIc4uq8Hwvm8/edit?usp=sharing>

Note

This syllabus is subject to change.