CSCI 150 Assembly Language/Machine Architecture CRN 22061
General Course Information & Syllabus, Fall 2025

Welcome to CSCI 150!

Room: Building 61 Room 1418
Time: Tuesday / Thursday, 1:30 – 2:55pm (Lecture) and 3:05 – 3:55pm (Lab)

Instructor Information

My name is Jonathan Johannsen, and I am looking forward to exploring assembly language and machine architecture with you! I have been a computer programmer for 20 years and a Computer Science instructor for 7 years. Other than Computer Science I enjoy hiking, photography, and travel. I live in Monrovia with my wife and two daughters.

The four main ways to contact me during the semester are through Canvas Inbox, email, office hours, or my office phone.

The preferred way to access me when I am not on campus is through Canvas Inbox. To do this on a computer, log in to Canvas and select "Inbox" from the grey menu on the left side of the screen (If you are using the app, "Inbox" will be at the bottom of the screen). Next, at the top of the screen, select the icon for "Compose a new message". A window will pop up. In the "Course" dropdown, select "CSCI-150" and in the "To" entry type "Jonathan Johannsen". Please include a subject which briefly describes your question. I will typically respond to messages within 24 hours of receiving them, although it might take a little longer on weekends.

You may also email me at the following address, or visit or call my office during office hours:

Email: jjohannsen1@mtsac.edu
Office Location: 61-1612
Office Phone: (909) 274-4669

Course Information

As described in the course catalog, this course is for computer science, mathematics, engineering, and other science students. Topics covered include organization and operation of real computer systems at the assembly language level using the Intel 80x86 family of processors; mapping statements and constructs in a high-level language onto sequences of machine instructions; internal representations of simple data types and structures; numerical computation, noting various data representation errors and potential procedural errors; investigation of basic principles of operating systems; and programming language translation process.

Class meets in room 61-1418 on Tuesday and Thursday from 1:30 – 3:55pm. There will be a 10-minute break between the lecture and lab portions of class.

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Office Hours

I will be in my office located at 61-1612 on Monday and Wednesday from 12:15 – 1:45pm, and Tuesday and Thursday from 8:40 – 9:10am. Please stop by with any questions you may have on assignments or material covered during lectures. I am more than happy to help! No appointment is needed.

Textbook and Required Software

Assembly Language for x86 Processors Eighth Edition by Kip Irvine, ISBN 9780136681649

Access to a Windows computer with Microsoft Visual Studio 2022 community edition installed.

Prerequisite: CSCI 110
Advisory: CSCI 140 or CSCI 145

Attendance Policy

Attendance at the first lecture meeting is mandatory. Attendance at all other meetings is strongly recommended for learning the material and completing and submitting lab exercises. If you miss a lecture, please read the slides, and learn the course material and announcements covered in class. Lectures will not be repeated in office hours. If you must miss a class, please email me!

Lab Activities

During lab time, students will work on written or programming exercises related to the current lecture topics. At the end of lab time, students will submit all their lab work for the day to Canvas as a single submission.

You may work on lab assignments alone or in groups of up to 4. I highly encourage collaboration on labs, as this is a good opportunity to get to know your classmates and practice working in teams! If you complete a lab in a group, please make sure each member submits their own copy to Canvas.

Labs are due at the end of class and cannot be made up or submitted late. However, it is okay to submit partially finished or incorrect labs! If it is clear you have put effort toward solving the problem, you will receive full credit. We will go over all lab answers together as a class and answers will be posted on Canvas as study material for upcoming exams.

Your lowest 2 lab exercises will be dropped. In other words, you may miss 2 without your grade being affected!

Homework

Homework assignments will consist of written problems to be completed on paper. These problems will typically involve writing small segments of assembly language code by hand rather than complete programs. Homework assignments should be completed on your own.

Projects

There will be three projects this semester. Each project will involve creating a complete working program in assembly language and will be much more in-depth than homework assignments. Projects should be completed on your own.

Late Submission Policy

I highly encourage homework assignments and projects to be submitted by the specified date and time, so you do not fall behind. However, I understand how busy school and life can get, so if you need an extension, please reach out and we can discuss it. Late assignments without extensions are also accepted, but a 25% deduction per week will be applied. As mentioned earlier, lab assignments may not be submitted late.

Quizzes

There will be five quizzes this semester. Each quiz is scheduled (meaning no pop quizzes) and will consist of multiple choice, true/false, and short answer questions.

Exams

We will have two midterm exams and a final. Each exam will contain a written portion and a programming portion. The written portion will involve true/false, multiple choice, and short answer questions, as well as handwriting x86 assembly language code on paper. The programming portion will involve writing a complete x86 assembly language program and submitting the code via Canvas.

The two midterms will take the entire class period of their scheduled dates. For the final exam, the written portion will take place on Tuesday of finals week and the programming portion will take place on Thursday.

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If you need to reschedule an exam, please speak to me at least one week in advance. Exams missed without rescheduling will receive a grade of zero unless there is an extreme emergency. In such an event, you may take a makeup exam within a week of the missed exam.

Grading Policy

Lab Exercises:	5%
Participation:	5%
Quizzes:	5%
Homework and Projects:	15%
Exam #1:	20%
Exam #2:	20%
Final:	30%

Exams and homework assignments will typically be graded within one week of their due date. All grades will be posted on Canvas. If you have questions or concerns about a grade received on an assignment or exam, please talk to me within one week of receiving it.

Tentative Schedule

The following schedule of lecture and lab topics is tentative and subject to change.

Week	Date	Topic	Lab	Chapter
1	Aug 26	Introduction, Basic Concepts, Data Representation	Binary Conversions	1
	Aug 28	Data Representation	Binary Subtraction and Two's Complement	1
2	Sep 2	Data Representation	Working with Hexadecimal	1
	Sep 4	x86 Processor Architecture **Homework #1 Assigned**	Identifying Computer Components	2
3	Sep 9	Assembly Language Fundamentals **Quiz #1**	Handwriting Assembly Language Code.	3
	Sep 11	Assembly Language Fundamentals **Homework #1 Due**	Running our First Assembly Program.	3
4	Sep 16	Data Transfers, Addressing, and Arithmetic **Homework #2 Assigned**	Signed and Unsigned Operations. Checking for Overflow and Carry.	4
	Sep 18	Data Transfers, Addressing, and Arithmetic **Quiz #2**	Working with Arrays Using Pointer Arithmetic.	4

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5	Sep 23	Data Transfers, Addressing, and Arithmetic **Homework #2 Due**	Processing Arrays with the Loop Instruction	4
	Sep 25	Procedures	Writing and Calling our own Procedures	5
6	Sep 30	**Exam #1**		
	Oct 2	Procedures **Project #1 Assigned**	Using the Irvine32 Library	5
7	Oct 7	Conditional Processing	A Program to Calculate Letter Grades	6
	Oct 9	Conditional Processing **Quiz #3**	A Simple While Loop Menu	6
8	Oct 14	Integer Arithmetic **Project #1 Due**	Applying Shifts to Extract Data	7
	Oct 16	Integer Arithmetic **Homework #3 Assigned**	Comparing Multiplication and Division Techniques	7
9	Oct 21	Advanced Procedures **Quiz #4**	Passing Arguments on the Stack	8
	Oct 23	Advanced Procedures **Homework #3 Due**	Implementing Recursion	8
10	Oct 28	Strings and Arrays	Repeating String and Array Operations	9
	Oct 30	Strings and Arrays **Project #2 Assigned**	Searching and Sorting Arrays	9
11	Nov 4	**Exam #2**		
	Nov 6	Structures and Macros	Building and Using a Simple Structure	10
12	Nov 11	No Class: Veteran’s Day		
	Nov 13	Structures and Macros **Homework #4 Assigned**	Using Macros	10
13	Nov 18	Floating-Point Processing **Project #2 Due** **Quiz #5**	Practice with IEEE 754 Format	12
	Nov 20	Floating-Point Processing **Project #3 Assigned**	Floating Point Registers	12
14	Nov 25	Floating-Point Processing **Homework #4 Due**	Writing Code that Performs Floating-Point Calculations	12
	Nov 27	No Class: Thanksgiving		
15	Dec 2	Memory Management	Dynamic Memory Allocation	11
	Dec 4	Memory Management	Understanding Memory	11

16	Dec 9	**Final Exam (Lecture): 1:30 – 4pm**		
	Dec 11	**Project #3 Due**	**Final Exam (Lab): 1:30 – 4pm**	

Important Dates

September 5: Last day to drop with a refund.
September 7: Last day to add.
September 7: Last day to withdraw without a W.
October 31: Last day to withdraw with a W.
Exams:

- Exam #1: September 30.
- Exam #2: November 4.
- Lecture Final Exam: December 9 at 1:30pm.
- Lab Final Exam: December 11 at 1:30pm.

Academic Integrity

My goal is to help you build a solid foundation in the concepts required to become a successful computer programmer! I cannot do this without being able to assess your progress, and I cannot properly assess progress unless I know students have submitted their own work. Therefore, unless otherwise stated, all assignments must be completed alone. Copying from outside sources such as other students, the internet, or AI chatbots on homework assignments, projects, quizzes, or exams is considered cheating and will result in a 0 grade for the activity. Mt. San Antonio College's policy on Academic Integrity can be found in the catalog and will be enforced.

Accommodations and Accessibility

Your success in this course is important to me! If you have any disability, either temporary or permanent, I encourage you to visit the Accessibility Resource Centers for Students (ACCESS) to discover how you might improve your learning experience. The ACCESS Center offers quality programs and services empowering students with disabilities to access and engage in educational activities at the College. The ACCESS Center can be reached at access@mtsac.edu or (909) 274-4290. If you need disability-related accommodations and do not wish to register with ACCESS, please visit the ADA/504 Compliance Officer located in Human Resources, Administration Building, (909) 274-4225 to address your accommodations needs.

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Tutoring Services

The STEM Center offers free peer mentoring in Computer Science and many other subjects. Tutoring is provided on a first-come first-served basis. The STEM center is in building 61 room 3320 and can be contacted through their website at www.mtsac.edu/stem and by phone at 909-274-5686.

Student Learning Outcomes and Course Measurable Objects

The following are the Student Learning Outcomes (SLOs) and Course Measurable Objectives (CMOs) for CSCI 150. A Student Learning Outcome is a measurable outcome statement about what a student should be able to understand and do as a result of their time in this class. Course Measurable Objectives focus on course content and can be considered smaller pieces that build up to the SLOs.

Course Measurable Objectives (CMOs):

1. Explain different number systems and manipulate bits and bytes.
2. Identify the components of a computer and the organization of those components.
3. Use assembly language instructions to write programs.
4. Map statements and constructs in a high-level language into a sequence of machine instructions.
5. Construct internal representations of simple data types.
6. Identify the basic principles of the operating systems.
7. Utilize procedures in assembly programs.
8. Analyze disk operations and compare different file systems.
9. Write programs in assembly language.

Student Learning Outcomes (SLOs):

1. Students will be able to manipulate data at the bit and byte levels.
2. Students will be able to identify the components of a computer and the organization of those components.
3. Students will be able to describe disk storage systems and file systems.
4. Students will be able to use assembly language instructions to write small programs.

Equity, Diversity, and Inclusion Statement

My goal for this class it to create an equitable and inclusive space in which every student feels welcome, heard, and respected. Such a space provides us with the opportunity to learn from each

other. After all, the greatest learning and innovation occurs when we collaborate with people with diverse perspectives, lived experiences, and expertise.

Campus Resources and Support Services

The following is a list of resources available to Mt. Sac students:

- ACCESS Center: Provides counseling, instruction, and accommodations for students with disabilities and medical conditions.
    - Location: Building 9B- Student Services Center.
    - Phone: (909) 274-4290
    - Email: access@mtsac.edu
- ASAC: The ASAC (Academic Support and Achievement Center) offers free tutoring in Computer Science and many other subjects. Tutoring is provided on a first-come first-served basis.
    - Location: Building 6-101
    - Phone: (909) 274-4300
    - Email: asac@mtsac.edu
- Health Center: Provides physical and mental health services to students in a confidential environment with sensitivity to individual needs.
    - Location: Building 9E- Student Success Building.
    - Phone: (909) 274-4400
    - Email: studenthealth@mtsac.edu
- Housing Resources: Provides information on various housing resources available to Mt Sac students.
    - Location: Building 9C- Student Life Center
    - Phone: (909) 274-5099
    - mountiefresh@mtsac.edu
- Mountie Fresh Food Pantry: Serves Mt. Sac students impacted by food insecurity by providing access to food and basic necessities.
    - Phone: (909) 274-5099
    - Email: mountiefresh@mtsac.edu
- Pride Center: A resource center and lounge space for the LGBTQ+ community and its allies.
    - Location: Building 26A, Room 1630
    - Phone: (909) 274-6549
    - Email: pridecenter@mtsac.edu

- Transfer Center: Helps students prepare to transfer through workshops, activities, events, and advising.
    - Location: Building 9B, 2nd floor
    - Phone: (909) 274-6388
    - Email: transfercenter@mtsac.edu
- Veterans Resource Center: Assists student Veterans and their eligible dependents and makes appropriate referrals regarding education benefits.
    - Location: Building 9E- Student Success Building.
    - Phone: (909) 274-4520
    - Email: veterans@mtsac.edu