CS 351 – Programming Languages

Fall 2021

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Office: Via Zoom (Link on Cougar Couse)

Classroom: Zoom (Link on Cougar Course)

Office Hours: TuTh 2:20-3:50 PM

And by appointment

Course description

Important features and concerns of implementation design on programming languages in common use today will be studied and analyzed. Includes data and control structures, run-time storage management, context-free grammars, language translation systems, programming paradigms, and distributed and parallel programming constructs.

Course learning outcomes

With ever-growing number of programming languages in today's digital world, you, as an aspiring computer scientist, need to have the ability of learning new language quickly and reason about which language to use for the task at hand.

This course has large amount of discussion and hands-on-practice based components. It has a strong emphasis on engaging everyone to actively participating in discussion, team collaboration, and hands-on coding throughout the semester. Through active participation in this course, you will:

- Quickly learn new programming languages
- Understand and use different types of programming languages – the paradigms
- Understand the basics of how programming languages are designed, and how your program is executed behind the curtain – the principles
- With a combined understand of the paradigms and principles of the programming language world, you will be able to appreciate the strengths and limitations of different languages and effectively use them for different tasks.

This syllabus is subjected to change.

Textbook

In response to "Cougars Affordable Learning Materials" call, there is no required textbook for this class. However, to make this happen while achieving your learning outcomes, we, as a group, need to work together and contribute to this class. The efforts include sourcing free reading materials online, forming and sharing class notes, etc. And of course, you actually read through the materials. The active learning process of forming our own "readings" will also help you understand the concepts better and learn "how to learn".

If reading a book helps your learning and you want to have one, I recommend "Programming Languages: Principles and Paradigms" by Allen B. Tucker and Robert E. Noonan. This one is a slight easier read.

"Concepts of programming languages" by Robert W. Sebesta is traditionally used in this course, available as e-text. This one covers more comprehensive topics and will bring you deeper into the PL world.

Course structure and schedule

We will meet on TuTh every week via Zoom. The course schedule, announcements, homework dues are maintained on our Cougar Courses course page. Please check the Cougar Courses very often. *The challenging level of this course will be adjusted based on how well you could develop your skills. The more you put in, the more you could gain from this experience.*

Collaboration

This course encourages collaboration. We will spend some time at very beginning for you to find "coding partners". Discussion will help generate ideas. An extra person is very helpful when you get "stuck" with a program bug and could not find it. Finding other people's programming bug will help you see more examples and a different way of thinking. Also, being able to explain solution to others is an important skill in all disciplines, including computer science.

High-level discussions of the problem and potential approaches to the solution are encouraged. Also, you are encouraged to ask your peers low-level questions about features of the programming language, the operating system, or some other applications. Spend some effort to think about the problems by yourself before reaching out. Even though the solutions might not come the first time, it is a very good practice for you to further foster the way of thinking programmatically.

After discussion, when you are writing down your code, please do it by yourself. Unless specifically instructed as a group project, all homework or projects are solo work, meaning referencing other people's work or share your work is not allowed. Coping code does not help you training the ability to generate future solutions on your own. *Understanding other people's code is very different from being able to write your own!*

Besides in-class discussion times, "Student Chat Room" Zoom links are created. You are highly encouraged to participate and work on your HW together virtually or simple chat and make friends. The instructor will not attend these sessions.

In class contribution

To provide an active learning experience for you, this course is highly discussion and peer problem solving based. This means everyone is expected to come to class and actively make contribution to the class discussion. Some lab practices and all the "presentation voting" (you vote for thumb up/down for other teams' presentations' performance) will count towards in-class contribution. They take 5% final grade.

Online discussion

If you have a question from the reading or practice, most likely some other classmates are also confused! F*or any small-scale questions that can be explained via online discussion forum, you are urged to post it there. Everyone who has a thought about it are encouraged to answer/discuss.* (Larger questions or individual questions that does not apply to others are welcomed for office hours, emails, or in class.) You will get a good answer quickly this way since your peers would also be checking the forum. I will check it often and answer if no one already did so. In this way, others who are reading the posts will also benefit.

Again, like our collaboration policy, general ideas or programming language details are encouraged to be discussed. However, please do not post large chunks of your code asking for debugging or writing large chunks of code for other people.

To foster the online discussion, we will count how many posts you made at the end of the semester. Short sentences like "Thank you", "That is a good idea", though necessary for discussion, does not count for the post counting. 5 posts that shows your effort can raise 1 homework grade to 100%, 3 homework maximum.

Get-ready material and quiz

On Cougar Course, you will see get ready material listed. Those are online posts or videos that you need to watch to get ready for next weeks' content. You also need to finish the small quiz after learning the material. The get-ready quiz can be done multiple times and only the highest grade will count, 5% final grade in total.

Homework and projects

Doing homework will greatly help you preparing the next day's class and master previous knowledge. There will be programming projects also. They could be solo or peer projects with different programming languages on topics that foster your deeper understanding of programming language paradigms or principles. You will also be asked to created mind-maps 3 times to help you reviewing material on time. Getting enough practice is the center of this class. The different type of assignments counts as 50% of the final grade. For a 3-credit course, you would spend 6 hours after the class for practices. Assignments are typically due on Wednesday 11:59pm. Some HWs (ones that does not use quiz module) has cut-off time set at 12:00 (noon) the next day. You have 12h grace period to submit a slightly late HW but submission during grace period will have 2 point deducted from your original grade. **After that point, late submission is not accepted.**

T*o encourage you always be on top of your homework so that you could get enough practices to succeed, some questions in homework, or slight variations, will show up in exams or become pieces for your projects.*

We will use Cougar Course quiz modules for some of the homework, this way you can see the correct answers and partial grades right after submission due time when your memory is still fresh. They will be set up as unlimited submission chance and only the last attempt will be graded so it works just like a word document homework. **No grace period for those HWs and late submission is not accepted**. If you missed homework, use the online posts points to waive that homework.

Exams

Some questions will come from in-class practices, homework, and online discussion variations. So again, a good engagement and continuous effort is strongly encouraged. There will be a midterm and a final, each count 15% of your grade. The final will take place during the final week.

Small write-ups and presentation

To help you see how much you learn and grow in this course and have a clear goal in mind, we will do three small write-ups in the beginning, midterm, and at the end. Beginning write-up will be about your goals and ending write-up will be about what you've improved, both academically and personally. Total take 5% of final grade.

Presentations will happen throughout the semester. Presentation topics will be provided, and you could sign up as a peer. It takes 5% of final grade. Detailed grading rubric is on Cougar Course.

Grading

For an overview:

In class contribution -- 5%	Get ready quiz – 5%
Homework & projects – 50%	Exams –15%+15%
Write-ups – 5%	Presentation – 5%

Total	Grade
90 <= Total <= 100	A
86 <= Total < 90	B+
82 <= Total < 86	B
79 <= Total < 82	B-
75 <= Total < 79	C+
70 <= Total < 75	C
60 < Total < 70	D
<60	F

Important note: if you see any problems with your assigned grade, please do not hesitate to contact the instructor. However, you are required to do so within one week of the day that the grade is posted. Students should not come to instructors and ask for a higher grade on an assignment because doing so would allow them to hit a certain letter grade. In addition, the discussion for grading should be specific to an assignment rather than whether the student deserve to pass the class.

I do not alter the scale for individual exam or project scores, but I may alter the scale for the final grades. Left graph is the reference scale. I would alter the scale only if the distribution of final grades indicates that such a shift in the scale is appropriate.

Contacting me

- Small questions that could benefit others: post on Cougar Course discussion forum or discuss with coding partner.
- Large questions that cannot be answered: office hours (Zoom link on CC or email for appointment) for easier communication, during class lab sessions, and before/after classes.
- If you think your question is small enough to be clearly answered by email, and it is about individual/does not help others: please do not hesitate to email me/drop by office hours.
- During office hours or quiet times of lab sessions, feel free to chat with me *about class content, grad school, or generally about computer science, or just a chat about your thoughts on the course. I am more than happy to meet you!*

Credit Hour Policy

Following CSUSM credit hour policy, for this course, you are expected to spend 6 hours per week outside of the classroom learning.

ADA statement

Students with disabilities who require reasonable accommodations must be approved for services by providing appropriate and recent documentation to the Office of Disabled Student Services (DSS). This office is located in Craven Hall 4300, and can be contacted by phone at (760) 750-4905, or TTY (760) 750-4909, and by email sent to dss@csusm.edu. Students authorized by DSS to receive reasonable accommodations should meet with me during my office hours in order to ensure confidentiality.

Academic Honesty Statement

Students will be expected to adhere to standards of academic honesty and integrity, as outlined in the Student Academic Honesty Policy. All assignments must be original work, clear and error-free. All ideas/material that are borrowed from other sources must have appropriate references to the original sources. Any quoted material should give credit to the source and be punctuated accordingly.

Academic Honesty and Integrity: Students are responsible for honest completion and representation of their work. Your course catalog details the ethical standards and penalties for infractions. There will be zero tolerance for infractions. If you believe there has been an infraction by someone in the class, please bring it to the instructor's attention. The instructor reserves the right to discipline any student for academic dishonesty, in accordance with the general rules and regulations of the university. Disciplinary action may include the lowering of grades and/or the assignment of a failing grade for an exam, assignment, or the class as a whole.

It is recommended that students be referred to the full Academic Honesty Policy at https://www.csusm.edu/policies/active/documents/Academic_Honesty_Policy.html

Resources for learning during the special time

CSUSM as One (https://www.csusm.edu/csusmasone/) provides a list of resources to help you navigate the Fall 2020 semester.

IITS for students (https://www.csusm.edu/iits/iitsforyou/students.html) provides technical information and help to promote online learning.

Cougar Care Networks ((760) 750-7627 or via ccn@csusm.edu.) is the first point of contact if you face personal, academic, financial or other challenges.

Recommendations for students in Virtual Learning Environments (link below) gives a list of recommendations that will help you navigate this challenging time

(https://www.canva.com/design/DAECjPp-ayg/9fDNO2abIJM3A70PEIph_A/view?utm_content=DAECjPp-ayg&utm_campaign=designshare&utm_medium=link&utm_source=sharebutton#1)

Class behavior expectations

Students in this class are expected to follow these basic principles: Demonstrate respect for oneself and for others. Treat other with dignity and behave in a way which promotes a physically and psychologically safe, secure, and supportive climate. Allow all community members to engage as full and active participants where the free flow of ideas is encouraged and affirmed.

Student responsibility for Add/Drop deadlines

Students are responsible for understanding all processes and timelines associated with adding or withdrawing from a course. Published detailed information can be found with the Class Schedule on the CSUSM website.

Student responsibility for assignment deadlines and failed technology

Assume that technology will fail at some point. Do not assume that everything will go smoothly when it comes to computers. Plan ahead. Do not leave completion/submission of assignments/projects for the last possible moment.