Course Description/Introduction

Increasingly each year, we rely on computing technology to accomplish daily tasks. This is even more true for scientists and engineers in STEM fields. However, simply knowing how to use existing software is not enough. This course will prepare future STEM professionals to make the best use of computers by writing their own software.

The course teaches fundamental programming constructs including data types, conditionals, loops, file I/O, functions, and objects in Python 3. In addition to core programming concepts, the course covers topics vital to computing as a STEM professional, such as data science, best practices for code development, and software ethics. If you wish to know more about what this course covers, see the course topics list.

Learning Outcomes

By the end of this course, students will be able to

1. Design algorithmic solutions to simple empirical problems by first breaking them down into smaller, more manageable components.
2. Implement an existing prompt, plan, or design into programmatically correct Python code that produces the expected text, file, or graph output.
3. Communicate in the language of programming with a computer and other programmers through code reading, writing, and critique.
4. Critically discuss and reflect on the role technology has in modern society and the positive and negative impacts their software may have on future users via written reflections attached to coding assignments.
5. Model how basic numeric and non-numeric data is represented in a computer, and predict when and how these physical representations diverge from their conceptual equivalents.
6. Navigate and utilize a computer file system through a GUI, the text console, and code.
7. Demonstrate effective debugging practices in an IDE to find, characterize, and correct code errors.

Course Textbook

Our main textbook for this course is “How to Think Like a Computer Scientist: Interactive Edition” by Allan Downy and Jeff Elkner. The text has been heavily edited to better suit our class. This book is available online for free through Runestone.

Required Technology

This course assumes and requires that you have access to an internet-enabled computer capable of writing and running code available to you each day in class. We will use a number of different pieces of software in the class. Please see our Guides Page for guides on how to install this software on your device.

If you are not able to consistently bring a computing device to class, please let your course instructor know. We may be able to provide assistance. Also note that several sections of this class are held in computer labs as an alternative to bringing your own device.

Grading and Assessment

This class uses a point-based grade system and a linear grading scale. There are a total of 1000 points available in this course. Grading calculations are simple, as every point equates to 0.1% of your total course grade. Throughout the course you will be assessed in the following ways:

Readings	Class Participation*	Studio Problems	Assessments	Exams[+]	Final Project
5%	10%	10%	25%	40%	10%

*Class participation credit depends on the day, but will include worksheets, in-class quizzes, and peer review of code.

[+]Students must have a recorded, non-zero grade for the final exam to pass the course.

Expectations

- You are expected to attend all classes and come prepared to actively participate in the activity and discussion for the day. Your attendance is important for several reasons: Coverage of material that is not in the textbook, and participation in active learning, where we all learn from each other.
- To do well in this course, it is highly recommended you keep up with the weekly assigned Runestone readings as well as engage in the in-class activities. We promise to prepare you and to provide you with the tools needed to succeed.

Grade Scale

- [90, 100] -- A
- [87, 90) -- B+
- [80, 87) -- B
- [77, 80) -- C+
- [70, 77) -- C
- [67, 70) -- D+
- [60, 67) -- D
- [0, 60) -- F

Submission/Grading information

- See the Late Policy below for extension policies related to absences or other personal difficulties
- After the grade of an assignment is posted in Gradescope and Canvas, students have ONE week to review and contest the assigned grade. If you are concerned over the grading of a particular assignment, submit a Regrade Request on Gradescope (Instructions here). If you cannot resolve the issue through Gradescope, contact your course instructor.
- Assignments may not be re-submitted after they have been graded.
- All Python projects will be graded with Python 3.12 (**https://www.python.org).** It is your responsibility to ensure your Python project submissions work in Python 3.12

Late policy

You are expected to submit your graded work on time under normal circumstances. Naturally, extenuating circumstances can happen. The deadline for graded work can be delayed without penalty in two ways:

- You have 5 “late passes” that can be spent to delay the deadline for an assignment by one day each, no questions asked. These can be spent how you wish, though you are limited to spending no more than three passes on one single assessment. You are encouraged to spend these passes in circumstances where an absence would not normally be acceptable (e.g. you are going on vacation, or just want a day off).
- For instances that would constitute an excused absence, you can instead request an extension for an assignment. Your extension request will be sent to your instructor for approval, who may reach out to you with further questions or clarifications. Acceptable reasons for an extension include illness, medical issues, bereavement, and pre-approved athletic events. “I didn’t plan well earlier and now I need more time” is not an acceptable reason for an extension, and will likely be denied by your instructor (though it would be fine to use a late pass in that case).

To either use a late pass or request an extension, use the Late Pass/Extension Form linked here.

If you do not have late passes or an approved extension, then work can still be submitted late, but with a deduction to your grade. For each day that an assignment is submitted late, up to three days, 20% of the grade you would have earned will be subtracted from the assignment’s grade.

- 1 day late: -20% grade
- 2 days late: -40% grade
- 3 days late: -60% grade
- 4 or more days late: assignment is no longer accepted

Course Support

- The 128 Team, instructors and mentors, is available to help you via weekly office hours. You can see the team's availability on the Office Hours Page starting a few days after the beginning of term.
- Ed Discussion will be our course communication tool. You should already be registered for it by joining this class. Links to the forum can be found on the left or top link bars on Canvas, or right here. A few suggestions:
    - Be polite. This applies to assignment clarifications (e.g. writing “This requirement makes no sense” is not helpful phrasing. Instead, try something like: “I’m not clear what requirement X means. Should I do [a] or [b]?”)
    - An Ed post is not a text message; use complete sentences and correct spelling, punctuation, and grammar.
    - Carefully think about the best way to phrase your question so it is understandable by others.
    - Check to see if your question has already been asked/answered before posting!
    - Anonymous posts are anonymous to the students in the class, not to the instructors/mentors.
    - In regards to Ed posts about Python projects:
        - Never, ever, post your entire code on Ed (unless instructed to do so). Instead post a small portion of your code that you are suspicious about. Not including the bit of code is like ordering pizza by saying, "Hi, I'd like some food, please."

(Uh, what food? What size pizza? What toppings? And do you want extra napkins?).
    - Be specific. An email (or private post on Ed) merely stating "something is wrong with my code, can you please take a look" is not likely to elicit an effective response. What do you think is wrong? Give your Mentor / Instructor a hint.
    - Never, ever, copy code that is posted on Ed and paste such code into your own project (unless instructed to do so).
- This term all 128 students will be given access to the HiTA tool in development at Mines. This is an AI-powered LLM designed to help students quickly search course material, practice course content, and get help with assignments. Access to HiTA will begin a few weeks after the start of term.
- All students are also encouraged to seek academic support from the Center for Academic Services & Advising (CASA). CASA provides advising, tutoring, academic enrichment workshops, etc. Please take advantage of this valuable resource!
- The Writing Center, located in Stratton Hall 301, is here to help all members of the Mines community with writing projects at any stage of the writing process. To make an appointment, please visit their online scheduling system at: http://mines.mywconline.com

Academic Integrity

All students are advised to be familiar with the university policy on Academic Integrity. In addition, CS@Mines faculty have adopted a Collaboration Policy for all CS courses, including this one.

For CSCI 128 in particular, our primary concern is to grant you ample, fair opportunities to practice and demonstrate individual mastery of the course learning outcomes. Programming is a creative process (like art). Every "canvas" (i.e program) should be different. Academic misconduct frequently is a disruption of this process. Some rules to follow in this class:

1. You may discuss (verbally, not textually) assessments with other students. If you discuss an assessment with anyone (including a 128 Team member), you must list their names in your submitted assessment header AND provide a brief summary of the discussion.
2. Your discussion is subject to the *empty hands policy*, which means you leave the discussion without any record [electronic, mechanical or otherwise] of the discussion.
3. You are not allowed to give code you have developed to another student NOR copy code created by someone else.
4. You are not allowed to show another student your working code except during course peer review opportunities.
5. You are NOT allowed to post or view 128 assessments on an open Q&A forum (e.g., Chegg). All 128 assessments are copyrighted, so posting an assessment (or a piece of an assessment) is violating copyright law. Also, viewing solutions to the posted copyrighted problems is participating in academic misconduct. All Q&A forums are monitored and any 128 posts will be investigated.
6. Any material from any outside source, such as books, projects, and in particular, from the Web, should be properly referenced in your submitted assessment.
7. If you are aware of students violating this policy, you are encouraged to inform your course instructor.

8. Violating this policy will be treated as academic misconduct for all students involved (both the helper and the copier). See the Student Handbook link above for details on academic dishonesty.

The above rules apply to course assessments. Other work, specifically readings, worksheets, and studio problems, can be done collaboratively with other students at no risk of misconduct. In fact, we would prefer that you do these assignments with other students, as that will likely enhance your learning.

Common mistakes that students make (which leads to an academic misconduct charge) include:

- Allowing a friend to see your working code to "help them". The friend might say "I won't copy", but often copying ends up happening.
- Posting a Python assignment on an open forum (e.g., Chegg).
- Viewing a solution to a Python assignment on an open forum (e.g., Chegg).

Use of Generative AI

Generative AI is a new technology that is still developing and no one (not even your professors) yet know exactly the final form it will take or the impact it will have on future work. The university has also recently drafted guidelines for generative AI use here at Mines. While these tools are likely to become important in the future, we do not believe they are refined or reliable enough to be used as core programming support yet. LLMs are allowed in this class, but only under specific circumstances.

For the Fall term CS128 is participating in a pilot study of the HiTA tool being developed here at Mines. HiTA is a generative AI that uses ChatGPT, but has been developed specifically with educational use in mind. It is able to support your learning process and will not give direct answers to homework questions (much like a human TA). It also has specific knowledge of the course content and materials; much more than a 3rd party tool. Access to HiTA will start early in the term, and will be granted to all registered CSCI 128 students.

HiTA is the only generative AI tool we are allowing you to use in this course. You may use it with assistance in any or all homework in this class, but if you use it to assist with your assessments you must cite as a resource, like you would any other form of support.

If you use any other AI or generative tools (including but not limited to Microsoft 365 Copilot, Microsoft Bing Chat, GitHub Copilot, Open AI's ChatGPT, Facebook's LLaMA, Google's Bard, and X's Grok) to generate, draft, create, or compose any portion of your work, this will be considered a form of academic misconduct.

NOTE: All issues of misconduct are reported to the Dean of Students. Academic misconduct may result in course failure for all students involved (both helpers and copiers). Cheating on an assignment to get a few points for free is NOT worth the risk!

To acknowledge that you fully understand and accept this policy, please answer question 9 of the syllabus quiz with the word **Understood** (case sensitive).

Learning Environment

Fundamentally, we expect and require respect in this course for yourself, your classmates, and the 128 Team. This includes:

- Respect for yourself includes taking care of yourself physically and mentally and advocating for an environment that facilitates learning for you.
- Respect for your classmates includes recognizing and appreciating the diversity of backgrounds and experiences of your classmates and making it your interest to foster a learning environment for everyone; all are welcome.
- Respect for the 128 Team (as well as your classmates) includes not participating in disruptive or distracting behavior: talking, playing games, or web surfing during lecture, for instance, make it difficult for others to focus on the reason we are all here.
- Respect must be mutual to be effective; we (the 128 Team) will be held to the same standards of respect.

Disability Support Services

Disability Support Services (DSS) works collaboratively with students, faculty, and staff to minimize barriers and support an accessible campus community. When barriers to access occur, Disability Support Services works one-on-one with students to determine accommodations and facilitate access to programs and services. If you've been approved for accommodations through Disability Support Services, please contact your professor to confirm receipt of your accommodation letter and to discuss the implementation of accommodations in this course. Please visit mines.edu/disability-support-services for more information or to request accommodations.

Digital Accessibility

The Colorado School of Mines is committed to supporting an accessible digital environment for all members of our community, including students with disabilities. If you have an accessibility concern with Canvas or any digital materials or software used in this course, please contact your professor or request support from Information & Technology Solutions. Please visit https://www.mines.edu/accessibility/ for more information.

Student Outreach & Support (SOS) Resources:

If you feel overwhelmed, anxious, depressed, distressed, mentally or physically unhealthy, or concerned about your wellbeing overall, there are resources both on- and off-campus available to you. If you need assistance, please ask for help from a trusted faculty or staff member, fellow student, or submit a referral for yours. As a community of care, we can help one another get through difficult times. If you are concerned for another student, offer assistance and/or ask for help on their behalf. Students seeking resources for themselves or others should visit mines.edu/sos.

Student Outreach and Support can help connect you with a variety of resources; some of those might include:

1. Counseling Center – https://www.mines.edu/counseling-center/ or students may call to make an appointment. There are also online resources for students on the website. Located in the Wellness Center 2nd floor. Located at 1770 Elm St.
2. Health Center - https://www.mines.edu/student-health/ or students may call to make an appointment. Located in Wellness Center 1st floor.
3. Colorado Crisis Services - For crisis support 24 hrs/7 days, either by phone, text, or in person, Colorado Crisis Services is a great confidential resource, available to anyone.

http://coloradocrisisservices.org, 1-844-493-8255, or text “TALK” to 38255. Walk-in location addresses are posted on the website.

In an emergency, you should call 911, and they will dispatch a Mines or Golden PD officer to assist.

Diversity and Inclusion:

At Colorado School of Mines, we understand that a diverse and inclusive learning environment inspires creativity and innovation, which are essential to the engineering process. We also know that in order to address current and emerging national and global challenges, it is important to learn with and from people who have different backgrounds, thoughts, and experiences.

Our students represent every state in the nation and more than 90 countries around the world, and we continue to make progress in the areas of diversity and inclusion by providing Diversity and Inclusion programs and services to support these efforts.

Center for Academic Services and Advising (CASA):

CASA provides a variety of services to support students during their time at Mines. Please see www.mines.edu/casa for a complete list of current support services.

Maintenance Clause

This syllabus is intended to give students guidance on our course this semester and will be followed as closely as possible. The lead course professor reserves the right to modify, supplement and make changes as course needs arise. This syllabus is not a legal document; common sense rules always apply, e.g., no late assignments will be accepted after the solutions are discussed in class.