

CS 100-001: Principles of Computing

Spring 2020

Contact Information

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Office Hours: See Piazza for office hours information

TAs: See the course Piazza site (Resources -> Staff) for contact information.

Piazza is the central site for our announcements, documents repository, and discussion board.

Blackboard is used for assignment submissions and to post grades. **Office Hours** are listed for all Instructors and TAs on Piazza (Resources -> Staff).

Students will need a computer on which they can access Internet sites and install programs, especially Python. There are computer labs on campus which provide this capability, but students may find it preferable to use their own computers.

Description

This course is intended to help students learn to think in the manner necessary to fully grasp the nature and power of the digital world around us. The early era of the Internet and the personal computer led to the need for "computer literacy." Now the changing nature of our global society requires that students learn new ways to think about problems and how to solve them, regardless of students' specific fields of endeavor. Through this course, students will explore major issues related to the "big ideas" of computational thinking (namely, Creativity, Abstraction, Data, Algorithms, Programming, Internet, and Societal Impact), as well as how these issues will impact their future lives.

Learning Outcomes

1. Students will be able to use technology to locate, access, evaluate, and use information, and appropriately cite resources from digital/electronic media.
 2. Students will understand the core IT concepts in a range of current and emerging technologies and learn to apply appropriate technologies to a range of tasks.
 3. Students will understand many of the key ethical, legal, and social issues related to information technology and how to interpret and comply with ethical principles, laws, regulations, and institutional policies.
 4. Students will understand the essential issues related to information security, how to take precautions and use techniques and tools to defend against computer crimes.
 5. Students will recognize the significance of the "big ideas" of computational thinking.
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Textbook

- **Required:** W. Daniel Hillis, *The Pattern on the Stone: The Simple Ideas that Make Computers Work*; (available free online from the GMU University Libraries https://wrlc-gm.primo.exlibrisgroup.com/permalink/01WRLC_GML/refoc6/alma9946908707104105)
 - **Note:** You have to login to GMU CAS to access the book when you are off-campus.
 - **Required:** Wentworth, Elkner, Allen, and Meyers, *How to Think Like a Computer Scientist: Learning with Python 3* ; (available free online at <http://openbookproject.net/thinkcs/python/english3e/>)
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Topics

- Representation of ideas with bits
 - Basic boolean logic
 - Devices to implement logic functions
 - Programming languages for data and action
 - Primitive operations and abstraction
 - Algorithms for work and play
 - Communication between machines
 - Computing security concepts
 - Basic data analysis
 - Impact of automation and communication on human societies
 - Human and machine intelligence
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Grading Policy

Homework assignments	40%
In-class assignments	10% (not announced in advance)
Mini exams	30% (3-4, 30 minutes in-class)
Final Exam	20% (comprehensive)

Final grades are calculated on a 10-point scale per letter grade, with the upper and lower 2% of each 10% earning a + or -.

A+ (>= 98.0%) A (>= 92.0%) A- (>= 90.0%) ; B+ (>= 88.0%) B (>= 82.0%) B- (>= 80.0%)
C+ (>= 78.0%) C (>= 72.0%) C- (>= 70.0%) ; D (>= 60.0%) ; F (< 60.0%)

- Homework is due electronically (via Blackboard) before the start of class on the day it is due. Unlimited resubmissions within the deadline are allowed, but only the most recent is graded.
- For grade disputes please contact the grader (the TA in most cases) first. You must initiate a dispute within a week of receiving your grade for the dispute to be considered.
- Late work is penalized -10% per day late, up to a maximum of 4 days. Thus, an assignment submitted 2 days late which would have scored an 87 would instead receive a 67. An assignment submitted during class on the day it is due is considered one day late. An assignment which is more than 4 days late will not be accepted.
- In-class assignments include participating in in-class discussions, completing polls/short quizzes, pop-quizzes, and in-class other activities.
- You may be required to show your Mason ID for exams. A missed exam will result in a zero.
- Please contact the instructor as soon as possible if there are extenuating circumstances which affect your ability to complete an assignment or exam.

Honor Code

All students are expected to abide by the [GMU Honor Code](#) and the [CS Department's Honor Code](#) policies. This policy is rigorously enforced. All class-related assignments are considered individual efforts unless explicitly expressed otherwise (in writing). Review the university and department honor code and present any questions regarding the policies to instructor. Cheating on any assignment will be prosecuted and result in a notification of the Honor Committee as outlined in the GMU Honor Code. Cheating by copying is often remarkably easy to detect by electronic means, so please do not put yourself at risk by cheating.

To provide an example of what cannot be done, the following are considered cheating and are not permitted:

- Directly using another student's solution to a problem, even if it is from a different semester.
- Asking a friend for a solution or paying someone for a solution.
- Searching for a solution in an outside source such as the Internet or a solution manual.
- Pasting your solutions to a public or semi-public site, including the message forum for this course (except in a private posts to the TAs).
- Collaborating or copying during exams.
- Assisting others in any of the above.

By contrast, the following is considered fair game during this course:

- Discussing the homework with other students in the class via informal, non-specific approaches to how a problem can be solved (do not share code, however).
- Getting help from classmates in solving a specific type of bug in a program (as long as it doesn't lead to discussing how the code should be structured).
- Searching on the Internet for alternate explanations of concepts discussed in class.

When learning to program, the ability to discuss with others is important to gain a footing and to better understand what is going on. At the same time, solving problems individually helps us better prepare for situation in which there are no other resources to rely on (like exams). If you are unsure whether something is fair game or cheating, ask an instructor. A good rule of thumb is that when you submit something, especially a piece of computer code, you should understand it well enough to be able to explain how it works.

Suggestions and Additional Policies

- **Make backups of all of your work.** We cannot grade what you do not submit, so guard against the possibility that something happens to your computer or your assignment by saving your work someplace else. Consider using a cloud backup such as Dropbox or Microsoft OneDrive. Accidentally deleting your work is not grounds for an extension.
- Make sure that your code at least does something. If your code cannot compile or run due to errors, it is likely to receive little to no credit.
- Make sure to keep at least one untouched version of each assignment you submit. If there are issues with the submission, you will only receive credit if we can verify that it has not been modified since you submitted it.
- It is recommended that you complete each reading assignment before the class where it is shown, to be able to better follow the material.

Disability Accommodations

Students with a learning disability or other condition (documented with [GMU Office of Disability Services](#)) that may impact academic performance should speak with me ASAP to discuss accommodations.
