

CSCI 1010 Computer Science Orientation

Fall 2017

1 Contact information

Instructor:

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Office Hours: Wednesday 12:30pm - 2:30pm or by appointment

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Learning Assistants

Name: Samsara Counts

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Name: Brad Canaday

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Office Hours: Monday 6:00pm-7:30pm

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2 Course description

This course is an orientation to Computer Science. The objective is to introduce and expose the student to the many facets, and fields, of Computer Science. Topics covered include:

- Practice computer programming and debugging
- Practice programming real-time systems
- Practice leading and working in teams
- Practice using technical resources
- Demonstrate ability to describe subfields in Computer Science in small talk (i.e., at a shallow level)
- Demonstrate knowledge of current and future ethical issues in Computer Science

3 Tentative schedule

The lecture part of this class will mostly feature faculty talks about their research and interests.

Date	Speaker	Title/topic
Sept. 22	Roxana Leontie	Intro to robotics
Sept. 29	Robert Pless	Computer Vision
Oct. 6	Xiuzhen Cheng	Smart Home IoT security
Oct. 13	Gabriel Parmer	The Internet of Things and the Firehose of Big Data
Oct. 20	Rahul Simha	Big Dating: The Computer Science of Romance
Oct. 27	James Hahn	Computer Graphics and VR
Nov. 3	Abdou Youssef	Applications of Machine Learning and NLP
Nov. 10	CS1010 students	Project presentations

4 Prerequisites and Texts

There are no prerequisites for this class and there is no required textbook. Any necessary reading material will be placed on the web.

5 Assessment

There will be three components for your grade: ethic assignments (20%), course assignments (35%), the class project (45%). Your project grade will be assessed from completing the requisite tasks (50%) and your contributions (50%) to the project (based on team member evaluations and project plans and actualizations for team leaders, evaluations for regular team members). **All students are required to read the Academic Integrity policy described at:**

<https://studentconduct.gwu.edu/code-academic-integrity>

5.1 Assignments on ethics in Computer Science

Ethics has been becoming a leading concern in Computer Science, given implications in privacy, security, and safety. Consider the story of the Therac-25 machine, in which faulty programming caused numerous patients to be given significant overdoses of radiation therapy (do a web search for Therac-25 failure to read more about this horrendous story). Periodically you will be asked to comment on a story/video in popular media.

For each story/video, you are to answer the following questions:

1. What is the ethical issue(s) described or that you observed? Namely, what are the potential or actual impacts of computing on health, privacy, business, human rights, etc.?
2. How is the code of ethics (if at all) described at <http://www.acm.org/about/acm-code-of-ethics> violated?
3. Where has technology been ahead of public policy and professional code of computer science ethics with respect to this story/video?
4. How should engineers/organizations have handled/be handling the issue in the story/video in an ethical manner?

Late ethics assignments will not be accepted.

6 Project

There will be a term project that will involve working in a team and solving the problem of robot navigation in a maze. Each team will be given a Lego Mindstorm robotics kit and will be responsible for implementing their solution. The specific problem to be solved is a maze navigation problem you will be given a maze and a starting point and a final destination point on the maze. Your job is to come up with an algorithm to drive the robot from the starting point to the destination. After reaching the destination, the robot should make its way back to the starting point without making any wrong turns. For your final presentation, each team is required to (1) give a Powerpoint / Keynote presentation describing how you solved the problem, and (2) give a demo of your robot navigating from the start to the finish line.

Working in teams

Most coursework that you will do in your career as a student at GWU is solo: you are completely responsible for your own grade. This is not how the Real World[®] works! There you will always be working with or under other people.

The good thing about teams: A team can motivate you to work harder, faster, and better than you would on your own. A good team is a force multiplier.

The bad thing about teams: One bad teammate can hurt morale. Two can make a team completely dysfunctional.

The team leader develops a plan for each lab (**verified by the LAs no later than 10:40 am on the start of the lab**). Each plan breaks the tasks for the day into subtasks. Estimates for subtasks must be no longer than 15 minutes, and a plan for the entire lab must be given.

Choosing a team leader

Each team member will rotate through the team leader position. Each rotation will last one week. Immediately after all team leaders have rotated through the position, the team will choose the leader for the remainder of the course.

The team leader is responsible for project management and will have the following duties:

1. The team leader will devise a plan for each lab session or informal meeting. This plan must:
 - break that days assignment (or major goal, if there is no assignment to be done) into subtasks for the team to complete.
 - estimate the amount of time necessary to complete each subtask. No subtask should be estimated to require more than 15 minutes: subtasks estimated to require more than 15 minutes should be decomposed into multiple subtasks (each estimated at no more than 15 minutes).
 - be submitted on the team repository via git and verified by the LAs no later than 10:40 am (a late plan is equivalent to no plan)
2. Allocate tasks to team members and re-allocate tasks on an as-needed basis.
3. Record who completed which task and approximately how long it took to complete a task (actualization). This actualization is due at the end of the lab session.
4. Conduct performance evaluations (see below)

The team leader's grade is composed of:

- Plans verified at the beginning of lab (33%)
- Actualized plans, see above (33%)
- Team evaluations (34%)

Conducting performance evaluations The permanent team leader will be responsible for conducting evaluations of team members performance over his/her period of tenure. Performance is to be evaluated the following way:

- Performance is to be evaluated objectively using only a set of tasks that the team member completed or assisted significantly with. No adjectives are to be used.
- Both the team member and the team leader must sign the evaluation.
- Performance evaluations are due when the project is complete. **Without a performance evaluation, you will not be assigned a grade for the project.**

Ejecting team members One thing you will learn about team-based coursework is that there is almost always a slacker. In most courses, your power will be limited to anonymous snipes about your teammates. In the real world, poor performance has consequences, and in this course, you will have recourse. *At the fifth week of the course, the team can vote off at most one member of the team using the following procedure:*

1. One team member sends an email to the LAs cc'ing *every other current member of the team*.
2. Every team member but the one to be voted off must reply to the email saying that they agree with the decision.
3. The student ejected from the team must then complete the remainder of the project on their own.

7 Attendance

You are required to attend all classes and labs. Absence or lateness will cause you to miss handing in assignments due at the beginning of class and impact your grade. The lowest grade will be dropped from such assignments handed in at the beginning of class, so isolated lateness/absence can be recovered from.

8 Lab Section

You **must** be registered for one lab section of CS 1010. You are required to attend the lab! In some cases assignments will be handed out in the lab section and failure to attend the lab session implies a failing grade on the assignment.