

CMPSC 100
Computational Expression
Spring 2020

“Computer so-called science” actually has a lot in common with magic...[i]t’s not a science. It’s also not really very much about computers. [C]omputer science, in some sense, isn’t real.

—Hal Abelson, MIT professor, “Structure and Interpretation of Computer Programs”

Course Information

Discussion	11:00 - 11:50	M,W	Alden Hall 109
Practical	11:00 - 11:50	F	Alden Hall 109
Lab Session	2:30 - 4:20	T	Alden Hall 101

A more specific course schedule is available [here](#).

Instructor Douglas Luman
Email dluman@allegheny.edu
Office Alden Hall 105
Phone +1 814 332 2881

Student Hours

Monday 9:00 - 11:00; 3:30 - 5:00 (Doane Hall A104/106)
Wednesday 9:00 - 11:00; 3:30 - 5:00 (Doane Hall A104/106)
Thursday 9:00 - 12:00
Friday 9:00 - 11:00; 1:30 - 3:00

To schedule an appointment, visit <http://cs.allegheny.edu/sites/dluman>. Should none of the above times work for your schedule, let me know: we can work out a better time either via email or our course’s Slack channel.

Required Texts

Lewis, J., & Loftus, W. (2018). *Java Software Solutions: Foundations of Program Design* (9th ed.). Boston, MA: Pearson.

I will supply either links to or reproductions of any material assigned in addition to the above text. These sources may include excerpts from books, conference publications, journals, other artists’ projects, or articles from popular press.

Canonical Course Description

An introduction to the principles of computer science with an emphasis on creative expression

through the medium of a programming language. Participating in hands-on activities that often require teamwork, students learn the computational structures needed to solve problems and produce artifacts such as interactive games and computer-mediated art and music. Students also learn how to organize and document a program’s source code so that it effectively communicates with the intended users and maintainers. Additionally, the introduction includes an overview of the discipline of computer science and computational thinking. During a weekly laboratory session students use state-of-the-art technology to complete projects, reporting on their results through both written reports and oral presentations.

Prerequisite Knowledge	Elementary algebra
Distribution Requirements	ME, SP

What We’re Really Up To

Some interpretations of the subject, perhaps, treat “computer science” as a kind of sacrosanct technical knowledge. And that is somewhat true: to some, it serves as a characterization of how skills learned as part of “computer science” are exercised—in service of implementing or achieving a technical goal. There are certainly technical constructs that programmers have to obey, and rules that, while somewhat pliable, are relatively inflexible. Undoubtedly, you’ll encounter frustration in this course with convention arising from technical agreements that may seem arbitrary.

But, as we’ll see in this course, “computer science” can exist outside of theorems, laws, or “rules” and, instead, serve as just another tool by which to express ideas—some of which happen to be technical in service or nature. No different than oil paints, paint brushes, a pack of playing cards, or elaborate vanishing booths, computer code can be used as a tool to express artistic or even impractical ideas via *computational thinking*, a set of thought processes which we are often unaware that we exercise on a daily basis.

Instead of only relating technical details (of which there are many), this course explores ways to ideate and realize concepts on the path to achieving basic fluency in a new language, enabling abstract ideas to become digital reality.

Learning objectives

By the end of this course, you will be able to:

- Develop and realize moderately complex ideas in a digital medium
- Understand the basic language-independent principles of “object-oriented programming” (OOP)
- Express basic fluency in the Java programming language
- Exercise an intermediate grasp of industry-standard tools used to build software (e.g. `git`, GitHub, et al.)
- Learn to adapt to the important, but often accidental, aspects of creating programs in Java
- Demonstrate the ability to communicate and collaborate as an integral part of the creative process

Grading

Class Participation	15% (150 pts.)
Laboratory Assignments	30% (300 pts.)
Practical Assignments	15% (150 pts.)
Quizzes	10% (100 pts.)
Course Project	10% (100 pts.)
Mid-term Exam	10% (100 pts.)
Final Exam or Project	10% (100 pts.)
Total	100% (1000 pts.)

Class Participation: One of the main learning vehicles for a discussion-based class is participation. The term “participation” should mean any of the following things in this course: active engagement in class activities, asking or answering questions, or involvement in the course’s Slack channel discussions. Attendance at each class session is worth three (3) points per class meeting.

Laboratory Assignments: These assignments will contain challenges which assume cumulative knowledge of course concepts. Various assignments will feature individual or group work, and are graded on completion and completeness. The amount of points for each assignment is progressive, and reflects the difficulty inherent in the tasks required.

Practical Assignments: These assignments are intended to allow students to practice and extend concepts without fear of failure. “Practicals” are short assignments graded on the basis of honest attempts made at completion. The amount of points for each assignment is progressive, and reflects the difficulty inherent in the tasks required.

Quizzes: Two (2) times this semester, I will give quizzes: short, timed, multiple choice assessments of concepts and terminology. Except for cases where arrangements have been made, quizzes are given in the class periods designated on the course schedule.

Mid-Term Exam: Nearly the mid-point of the semester, I will give an hour-long, cumulative exam which takes into account laboratory and practical assignments in addition to class discussion. Except for cases where arrangements have been made, this exam is given during the laboratory period designated on the course schedule.

Final Exam: A three-hour-long cumulative exam covering all topics from the semester’s class discussions, laboratory, and practical assignments. As a condition of enrolling in this course, students agree that this exam is offered during the university-sanctioned exam date and time specified by the college’s finals schedule. In the place of a final exam, students may complete a project whose functionality and scope are approved by the instructor. This project is due by the end time of the exam period.

Course Project: This project offers students the opportunity to develop a realized version of an reasonably complex, discipline-appropriate project. Completion of this project will require use of the knowledge accumulated throughout the semester. Details for this project will be given out at the approximate mid-point of the semester. This task will require planning, careful evaluation, and

implementation of a wide variety of concepts, and will allow students to choose and implement a project of their chosen discipline/application and approaches/methods. This project will be subject to approval by the instructor through a process including a formal proposal, interim updates, and technical reports.

Note on Attendance

Class attendance is mandatory. That written, you may encounter circumstances which require absence during a given class period. Generally, I require notification one (1) week in advance of an absence. Should you be absent due to an emergency, notify me as soon as is practical. Students who accumulate more than five (5) unexcused sessions will have their course grade reduced one (1) letter grade. Frequent or prolonged absences due to illness should be documented by the student's doctor, the Health Center, the Dean of Students office, or the Student Disability Services.

Class Preparation

I expect students to arrive to class prepared. Here, "prepared" means having completed reading assignments, compiled questions, and being ready to engage in thought-provoking discussion predicated on current concepts and material. In order to assist students' preparedness efforts, I will provide a schedule with reading assignments and will accompany all discussions with slides or summaries of class activity.

Classroom Ethics

The discipline of computer science, like many others, encourages its members to act according to discipline-specific ethics. I encourage you to take time to review the Association for Computing Machinery (ACM) **Code of Ethics**. The Department of Computer Science maintains a brief poster version of this code on the first floor of Alden Hall.

The Allegheny College Statement of Community

Allegheny College also expects students and faculty to act according to its Statement of Community:

Allegheny students and employees are committed to creating an inclusive, respectful and safe residential learning community that will actively confront and challenge racism, sexism, heterosexism, religious bigotry, and other forms of harassment and discrimination. We encourage individual growth by promoting a free exchange of ideas in a setting that values diversity, trust and equality. So that the right of all to participate in a shared learning experience is upheld, Allegheny affirms its commitment to the principles of freedom of speech and inquiry, while at the same time fostering responsibility and accountability in the exercise of these freedoms. This statement does not replace existing personnel policies and codes of conduct.

Keep both of these standards in mind as you exercise your academic inquiry in this course. These serve as our fundamental "first principles" in pursuit of our shared academic goals.

Seeking Assistance

Assistance with course concepts

Students who struggle to understand knowledge and skills defined in this course are encouraged to seek assistance from the course instructor and teaching assistants. To meet with me, consult my available office hours (above) and make an appointment.

tl;dr: historically, students who are successful in my courses visit and discuss course concepts with the instructor and Technical Leaders early and often.

The Technical Leaders' office hours schedule is located here:
<https://www.cs.allegheny.edu/teaching/technicalleaders/>

Assistance outside of the course

If you find yourself in difficult circumstances which affect your ability to participate in or complete course work, let me know immediately. Full stop.

Do not wait until the end of the semester. Part of my role as a course instructor is to make sure that students receive the assistant they need. Do not hesitate to let me know if there is anything I can do with respect to your ability to handle your work.

In some situations, it may be helpful to consider the following resources:

The Maytum Learning Commons +1 814-332-2898
<http://sites.allegheny.edu/learningcommons/tutoring/>

Allegheny College Counseling Center	Schultz Hall	+1 814-332-4368
The Winslow Health Center	Schultz Hall	+1 814-332-4355
Student Life	Campus Center	+1 814-332-2800

Special Needs and Disability

Students with disabilities who need accommodations in this course are encouraged to contact Disability Services at +1 814-334-2898. Disability Services is part of the Learning Commons, located in Pelletier Library. Should you need accommodations, contact this office as soon as possible to ensure that approved accommodations are communicated and implemented as quickly as possible. This serves both you and I in providing the best environment for learning and support.

Honor Code

All students and faculty at Allegheny College are bound by the Honor Code. Everyone expects that your behavior reflects this commitment. Given the eminently shareable and reproducible nature of code, the Department of Computer Science adds the following statement to the general college policy:

Department of Computer Science Honor Code Policy

It is recognized that an important part of the learning process in any course, and particularly in computer science, derives from thoughtful discussions with teachers, student assistants, and fellow students. Such dialogue is encouraged. However, it is necessary to distinguish carefully between the student who discusses the principles underlying a problem with others, and the student who produces assignments that are identical to, or merely variations on, someone else's work. It will therefore be understood that all assignments submitted to faculty of the Department of Computer Science are to be the original work of the student submitting the assignment, and should be signed in accordance with the provisions of the Honor Code. Appropriate action will be taken when assignments give evidence that they were derived from the work of others.

As the nature of "plagiarism" and constituents of "fair use" change often, the department encourages you to periodically review the specific tenets of the general college Honor Code provided in the latest course catalog and in the *Compass*.

The above statement, of course, also applies to online forums such as Stack Overflow, et al.