CSCI 203 Syllabus
Introduction to Computer Science

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Instructors

Susan Baish (susan.baish@bucknell.edu)
Alexander Fuchsberger (a.fuchsberger@bucknell.edu)
Jessen Havill (jessen.havill@bucknell.edu)

Course Description

Computation has become a fundamental mode of discovery in many different areas, from laboratory sciences to social sciences to literary analysis. In this course, we learn how to solve problems from these areas, and design computational solutions that are both elegant and efficient. We will express these solutions as computer programs written in a programming language called Python. We will also critically examine ways in which computing has affected human society and our shared responsibility to ensure that the power of computing is used appropriately. Absolutely no prior programming experience or computer science background is necessary.

Course Goals

Computing alters the way we engage with the world. It's more than code. Our goals are to:

1. Apply programming concepts to design and implement algorithms that solve computational problems.
2. Recognize the broader impact of computation in the world.

Specific course outcomes include the ability to:

1. identify ways in which computing has become a powerful mode of scientific inquiry.
2. design simple algorithms to solve computational problems.
3. implement algorithms as computer programs in the Python programming language.
4. utilize abstraction (data and functional) to solve more complex problems.

5. recognize the importance of efficiency in algorithm design and assess the asymptotic time complexity of simple algorithms.

Required Text

[Discovering Computer Science: Interdisciplinary Problems, Principles, and Python Programming, Second Edition](#) by Jessen Havill, Chapman & Hall/CRC Press, 2021.

Online Resources

You will use multiple websites this semester including:

1. `prairielearn.com`: Use PraireLearn to complete the reflection and homework assignments due before each class and lab assignments.
2. `http://www.discoveringcs.net`: Use this website for files and resources referred to in the textbook.
3. Individual Instructor Class Resources: Each instructor will provide a link to access materials specific to their lecture section.

CSCI 203 Structure

The CSCI 203 assignments and activities are scaffolded to provide you background information (reading and in-class assignments) and guided practice (labs) to develop your skills so you can tackle problems (homework assignments), the final project, and exam problems on your own. The following text describes these assignments and activities in more detail:

- **Readings** For each class, you will be assigned a reading from the required textbook. To facilitate careful reading, you are provided with reflection questions for each reading assignment. You are encouraged, of course, to jot down your own notes as you do the readings. The reflection questions must be submitted on `prairielearn.com` by 9:00 am on the due date.

- **In-Class Exercises** During class, you will work on exercises that apply concepts from the reading and prepare you to complete the homework assignments.

- **Homework Exercises** The textbook contains hundreds of exercises that are designed to reinforce the concepts and give you extra practice solving problems. For each reading assignment, a subset of the textbook problems will be assigned and due on `prairielearn.com` by 9:00 am on the next class day after the reading assignment was due.

- **Labs** During your weekly scheduled lab sessions, you will work collaboratively on interesting problems using a well-established practice called pair programming.

- **Final Project** During the second half of the semester, you will propose and implement a programming solution to a given problem. This project will allow you to showcase the skills that you have learned over the semester.

- **Exams:** Exercises such as the reading and homework assignments, lab exercises, and in-class activities provide you with opportunities to learn, practice, and experiment with skills important for the course in a low- or no-risk environment. After gaining expertise in an area, your comprehension will be assessed with 3 one-hour exams and a comprehensive final exam. The exams will be completed without a computer by handwriting solutions to problems. Mark your calendar with the following exam dates: (Exams will not be moved without an extenuating circumstance and proper documentation such as a request from an academic dean or Bucknell's Student Health.)

  - Friday, February 9, 2024 during your regularly-scheduled class

  - Friday, March 1, 2024 during your regularly-scheduled class

  - Friday, April 5, 2024 during your regularly-scheduled class

  - Tuesday, May 7, 2024 at 11:45 am

Grade Determination

The following relative weights will be used to determine your final grade:

Course Component	Relative Weight (%)
Professionalism	2
Reflection Questions and Homework Exercises	15
Labs	15
Final Project	8
Three One-Hour Exams (14% each)	42
Cumulative Final Exam	18

The scale used for grading is:

Percentage (%)	Letter Grade
>93,3	A
> 90.0 to 93.3	A-
> 86.7 to 90	B+
> 83.3 to 86.7	B
> 80.0 to 83.3	B-
> 76.7 to 80	C+
> 73.3 to 76.7	C
> 70.0 to 73.3	C-
> 60.0 to 70.0	D
60.0 or less	F

Professionalism

The professionalism component of your grade encompasses expectations that will follow you in your future jobs: you arrive on time and prepared for class and lab, you are engaged during class and lab times (you aren't surfing the web), you work collaboratively with your classmates towards your common goal (for us, learning), and you communicate about any challenges that arise (e.g., extended absences). Previously arranged and unavoidable absences (sickness, family emergencies, varsity athletic participation) will not be held against you. To the extent possible, absences should be communicated to your instructor in advance. You are responsible for the content of reading assignments, lectures and handouts, as well as announcements and schedule changes made in class whether or not you are present. If you must miss a class, be sure to check with your instructor or another student to get what you missed.

We understand that life happens. To accommodate this, your 2 lowest Homework Assignment grades will be dropped. If you have a situation that interferes with your ability to complete an assignment that is not remediated by the drops, you can contact: (1) your instructor directly, (2) your academic dean, (3) Dean of Students, (4) Bucknell Student Health, and/or (5) Office of Accessibility Accommodations (depending on your situation) for additional support and resources. See below under Support Resources for more information.

How Students Succeed in CSCI 203

Computer Science is a new way of thinking for many students. The best students ask for help early and often. If you have questions, please email your instructor, attend Office Hours or a TA Help Session, or join a TLC Study Group. Here is a list of actions that will help you succeed in CSCI 203.

- **Work on CSCI 203 regularly.** It is very important that you keep up with the coursework on a daily basis; consistency is the key. Each topic builds on previously-covered topics so you will be lost if you skip assignments or classes. Like other classes at Bucknell, you are expected to devote at least 2 - 3 hours outside of class for each hour of class time. The reading and homework assignments are meant to reinforce good habits. If you spend an hour or two every day, this course is quite manageable, and you will learn more effectively. Do not try to do the work for this class in one or two long sessions each week. Start thinking about assignments when assigned and consistently work on them. For the final project, aim to be done a day early so you have time to polish your program and write your best report.

- **Practice active reading.** Read the textbook in front of a computer and type in all of the code to see what it does. Be curious. If you're wondering "What would happen if …", try it! The beauty of programming is that it is easy to test ideas and get instant feedback. Answer the reading questions as you read. It is perfectly normal to have to read a section two or three times before you understand it. Many students find it very useful to read a section again after we have talked about the topic in class.

- **Come prepared for each class and actively participate in class.** Your **active participation** in **every** class and **preparation** for **every** class is absolutely essential to your success. The reading serves as a starting point for each class so we can explore more interesting problems and not just rehash the reading. Completing the reading and practicing programming with the provided examples will prepare you so you can contribute to and get more out of each class. Your attendance and active participation is expected at each class meeting. Your grade will almost certainly suffer indirectly if you choose not to attend.

- **Try the homework assignments on their own.** Just as musicians need to practice their instruments and athletes need to practice their skills, you need to *individually* practice programming to become proficient. Homework exercises are meant to provide both practice and diagnostic information about how well you are understanding the concepts. If you do not understand how to do an exercise, contact your instructor or attend a TA help session. If you need more practice with a given topic, try some of the unassigned exercises.

- **Ask for help quickly.** Problems tend to only get worse as time goes by during a semester. We want to help you! The earlier the better! If you are having trouble

understanding something, ask questions right away before or after class, in class (Others may have the same question and will appreciate knowing the answer.), during office hours, or during TA help sessions. There is plenty of help available, but it is up to you to seek it out. Everything in this class is cumulative; the further you get behind, the harder it becomes to catch up.

- **Test yourself often.** On exams, you will be expected to write code on paper for problems that are similar to homework exercises. So it is important to practice this on your own. Choose some previous exercises, or some new ones from the book, and work out the answers on paper without looking at the solution. When you are done, you can check your answers by trying your solution on the computer. Testing yourself often has also been shown scientifically to improve learning!

- **Be patient but persistent**. Some of the concepts in this class take a while to sink in. Try not to get frustrated if it doesn't make sense right away. Keep doing examples and ask a lot of questions. Don't give up! With sufficient effort, it will eventually click.

- **Use pair programming for collaborative assignments.** With pair programming, you and your partner listen to each other and hash out a plan for how you are going to complete the assignment. You and your partner should work together on all aspects of the assignment, from beginning to end. Do not practice "divide and conquer." One partner (the "driver") types and the other (the "navigator") watches for errors and focuses on the overall design. The "driver" and "navigator" roles should switch often so that both partners are contributing equally. See this (rather dorky) video for a tutorial: https://www.youtube.com/watch?v=rG_U12uqRhE

- **Use your resources.** Office hours and help sessions are open to all students and available throughout the semester for help with concepts and individual assignments. The materials provided by the individual instructors and the textbook provide coverage of topics and practice exercises. The Teaching & Learning Center runs peer-facilitated **Study Groups** for CSCI 203 that meet for 90 minutes each week to answer questions, clarify content, and work together to solve problems and build a community of learners. (Registration opens Tuesday, January 23, 2024 at noon. Register at my.bucknell.edu/StudyGroups)

- **Reflect on your *own* progress.** Sometimes, *seeing* a strong partner code something gives the illusion that *you* can code it too. But that's often not true. Make sure you are *accurately* reflecting on what you can and cannot do in the course.

Attendance

- **What happens if I cannot attend my scheduled lab due to illness or another valid reason?** Since a large component of the lab is pair programming with an assigned partner, you need to attend your regularly-scheduled lab or a makeup lab

session to earn credit for each lab. If you need to miss a lab for a valid reason (ex: *illness* is a good reason, *sleeping in* is not), email Professor Baish who will arrange a makeup lab session for you.

- **What happens if I cannot attend my scheduled class period due to illness or another reason?** If you have symptoms of a transmissible disease or are expected to isolate because of exposure to a transmissible disease, **do NOT come to class**. If you need to miss class, review any class notes or exercises posted by your instructor. After reviewing the materials for the missed class, email your instructor to ask any questions that you may have and to check for any missed announcements or work. After missing four classes without an email to or notification for your instructor, you may be asked to meet with your instructor to discuss how you are keeping current with course work. Each class in CSCI 203 builds on material learned in the previous class so your success depends on you keeping up-to-date on course materials.

Academic Responsibility

As a member of Bucknell's academic community, you are expected to abide by Bucknell University's Honor Code. Any submissions for reflection and homework assignments and exams should be your own work. Submissions for lab or project assignments should be the work of you and your lab or project partner. You must clearly cite any sources that you use by adding a comment to your submission with the source. See the following webpages for more information on:

- [The Bucknell University Honor Code](#)
- [Academic Board of Review Procedure](#)

You are expected to abide by the Bucknell University Honor Code and the [Code of Ethics and Professional Conduct](#) of the Association for Computing Machinery (ACM), the professional organization for computer scientists.

What kind of collaboration is allowed?

In this class, you may discuss problems with other students in the class, but written (and typed) work must be your own. In other words, you may talk about problems with your peers, but when it comes time to write your solutions, you are on your own. You may have general conversations about problem strategies, but you must leave these conversations without having written anything down or electronically or visually shared code with somebody else. (For a lab assignment, you may share code with your lab partner.) Be aware that submitted code from all CSCI 203 sections may be run through a similarity checker to check for inappropriate collaboration. Also know that simply changing variable names does not evade the similarity checker from finding plagiarism. If you have questions, email or speak to your instructor.

Can I use the internet?

👍 You **are** allowed to use online resources to help you *understand* a topic in this course.

❗ Any online sources (including AI-supported chatbots such as ChatGPT) that you use **must be cited as a comment in your code. This includes sources that just helped you understand a topic.**

🚫 You are **not** allowed to search for *specific* code or solutions to specific problems you're assigned. (This includes the use of AI-supported chatbots such as ChatGPT.) Copying code or solutions will not prepare you to be able to complete problems on exams on your own.

Code of Conduct

Learning computer science (CS) takes practice and we're trying to create an environment in which all students succeed.

- We don't grade using a pre-defined curve, so you should treat your **classmates as your collaborators**. If everyone succeeds, we would be delighted to give everyone an A.

- Technical fields have a long history of fostering non-welcoming environments. **We take our classroom culture very seriously.** Read our **code of conduct** in this syllabus.

You have two primary responsibilities:

1. **Promote** an inclusive, collaborative learning environment.
2. **Take action** when others do not.

As stated above, we adhere to and expect you to adhere to the **ACM's Code of Ethics.** More broadly, a course like CSCI 203 involves reflection, collaboration, and communication. Computer Science has a checkered history with respect to inclusion – in corporate environments, in our classrooms, and in the products we create. We strive to promote characteristics of transparency and inclusivity that reflect what we hope our field becomes (and not necessarily what it has been or is now).

We reject behavior that strays into harassment, no matter how mild. Harassment refers to offensive verbal or written comments in reference to gender, sexual orientation, disability, physical appearance, race, or religion; sexual images in public spaces; deliberate intimidation, stalking, following, harassing photography or recording, sustained disruption of class meetings, inappropriate physical contact, and unwelcome sexual attention.

If you feel someone is violating these principles (for example, with a joke that could be interpreted as sexist, racist, or exclusionary), **it is your responsibility to speak up!** If the behavior persists, send a private email to your instructor to explain the situation. While we will preserve anonymity when possible, also be aware that we are required by law to report incidents of sexual misconduct or relationship violence.

(Portions of this code of conduct are adapted from Prof. Lorena A. Barba)

Support and Resources

Access Statement

We are committed to creating a learning space where **everyone** can participate as fully as possible. We recognize that there are **many reasons** students may need to adjust their pace, style, or method of learning, including but not limited to disability, temporary or ongoing personal life circumstances, unexpected emergencies, or other learning differences. We are here to support you in your education.

All students are welcome to contact us to discuss any access needs and how we can better support your learning (e.g., accessing materials, assessments, and participation). **You do not need a specific reason or diagnosis to talk to us about your access needs.** These discussions can happen at any time during the course; everyone's needs change over time. However, the earlier we know, the sooner we can work toward a solution.

Students with disabilities may also formally register with the Office of Accessibility Resources, the office responsible for disabled student support services, which is the official process for receiving reasonable accommodations in the classroom. Details can be found below under Accommodations.

(statement language based on Lydia X. L. Brown, https://autistichoya.net/resources/syllabus-language/)

Accommodations

If you have a physical, mental, or learning disability, either hidden or visible, which may require classroom, test-taking, or other modifications for accommodation, please talk to the Office of Accessibility Resources (OAR):

- Phone: 570-577-1188
- Email: oar@bucknell.edu
- Location: Suite 107 in Carnegie

The OAR is here to help and will work with you to determine appropriate accommodations. If accommodations are needed, the OAR will communicate those to your instructor through a

Letter of Accommodation. Your instructor will not be given information about the nature of your disability, only the accommodations you need. Your instructors will treat any information as private and confidential. Please visit this link for more information about the OAR. **We want to help you and support you!**

Mental Health

In this classroom and on Bucknell's campus, we support mental health efforts. Any student who is struggling and believes this may impact your performance in the course is encouraged to contact your Associate Academic Dean (Deans Collier or Robbins for the College of Arts and Sciences, Dean Norton for the College of Engineering, and Dean Kepner for the College of Management) or the Dean of Students at 570-577-1601 for support. Furthermore, please approach your instructor if you are comfortable in doing so. This will enable us to provide resources and support. If immediate mental health assistance is needed, call the Counseling & Student Development Center at 570-577-1604 (24/7).

Basic Needs Security

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Dean of Students at 570-577-1601 for support.

If you are comfortable doing so, please notify your instructor as well. This will enable us to provide any resources that we have or are aware of. Again, **we want to help you succeed here!** Success means taking care of your basic needs *first*.