University at Albany

INF 308 : Programming for Informatics Spring 2019

Monday1 1:15–4:05 DR 0014

Instructor	Cristyn Magnus, Ph.D.
Office Hours	Th 2–4pm or by appointment
Office	HU16
Repository	`https://github.com/inf308/courseDetails`
Schedule	`https://tinyurl.com/ycrbdr7q`
Reading	Severance, Charles R. *Python for Everybody: Exploring Data Using Python 3*, 2016. `https://www.py4e.com/book`

1 Course Description

Computer programming in an Informatics environment. The fundamentals of programming, including introduction to algorithms, object-oriented design, and data structures. Additional topics include basic interface design, security, networking, use of databases, and mobile and other non-traditional computing platforms.

Prerequisites: INF 100 and CSI105 or INF108

2 Learning Objectives/Outcomes

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

- Analyze real-world problems then design and implement computational solutions for them
- Use, know when to use, and understand code that uses the following data structures: lists, dictionaries, tuples
- Create, modify, and understand computer programs that use the following object oriented concepts: classes, objects, inheritance
- Use version control and project management tools
- Create a virtual environment and install external packages
- Create artificial life
- Use a video game engine
- Design and create a program that solves a problem you are interested in

3 Online Resources

Piazza: Piazza is a wiki-based forum that allows students to ask and answer each others questions. In addition to being available as a web site, it is also available as an app for both Android and iOS. See *participation* below.
`piazza.com/albany/spring2019/inf308`

Github: Github provides free cloud storage for the *version control* system Git. Git is the industry standard and it is important to be comfortable using it. We will be using Github instead of Blackboard for submitting assignments. We will also be using Github instead of Blackboard for sharing course information (schedule, syllabus, reading, etc.).

Github also provides a free project management tool that is designed for *agile* project management, which is one of the most common project management styles in contemporary computing. You will be practicing good project management habits as you develop your programming skills. Importantly, you will be integrating project management, programming, and version control into your workflow.
`https://github.com`

Grade Sheet: Students have three options for checking their grades:

1. You will receive feedback on individual assignments through the github *issue* feature. You can copy your grades into your own spreadsheet and, using the weights given in the syllabus, calculate your own grade.

2. Come to office hours to check in. If you aren't confident that you are doing well, you can get extra help at the same time.

3. Access a shared google spreadsheet that displays your grades assigned to an alias. For anonymity, your alias will come from a randomly generated list of animals. If you disclose your alias, this will be the same as disclosing your grades to everyone who knows your alias. If that happens and you ask for a new alias, people who know your grades may be able to figure out who you are by reverse engineering from available data (everyone else's aliases will stay the same).

   Since there is some privacy risk involved, inclusion on this google sheet will be opt-in. Your information will only appear if you agree to it by filling out the form linked to at the end of this paragraph. Once you have opted in, if you want to opt back out, you will need to contact the instructor.
   `https://goo.gl/forms/lxylKUGhcBfY9Gll2`

4 Assessment

4.1 Graded Activities

Discussion and Online Participation: Active participation in online fora is a crucial part of professional computing life. To encourage this, we will have a class forum at `http://piazza.com`. Piazza.com allows wiki-like collaborative construction of questions and answers. Posting new questions/answers, editing someone else's question/answer to clarify it, and otherwise fruitfully engaging with the class' online community will earn participation credit.

In order to further encourage online engagement throughout the week, there will be the occasional online discussion activity. These will be announced through the piazza announcement system.

Remember that piazza is a wiki, meaning everyone can edit the posts, questions, and answers to improve them. The discussion thread is to discuss the main post/question/answer, not add content. Links and answers posted in the discussion thread aren't as useful if they don't make it into the main post. To receive full credit for your participation you must use the tool appropriately.

You should use the piazza.com forum for all non-personal course-related communication. If you have questions about assignments, technical problems that need troubleshooting, or other questions that might be of interest to other students, they must be posted to piazza.com and not emailed to the instructor or TA. By participating in our online community, you will be able to help each other succeed.

Although piazza will let you make private posts, you should make all non-personal posts public, because the answer will be of interest to other students. You can set a public post to be anonymous to other students (the instructor will still see your name). If you set a non-personal post to private, the instructor may make it public to the class.

To receive credit, you must register for piazza with the name you are registered with as a student or a preferred name that you regularly use and have shared with the instructor.

Note: This course is unusual for a programming class in that it meets in a single 3 hour block instead of two or more times per week. There won't be opportunities to look at homework then ask for help in class later in the week. Each week we will just have the just one class and one chance to attend office hours. It is more important than usual for you to be active on piazza in order for everyone to succeed in the course.

In Class Activities: Students will be assigned to teams early in the semester and will be expected to participate with their team on *in-class* discussions and activities. Students are not expected to work with teams outside of class. Students will work with the same team the entire semester. Students who switch teams without permission will receive no credit for work done with teams besides their assigned team.

We are going to experiment with a different kind of team work. Before the advent of affordable laptops, working with classmates in computer labs contributed significantly to learning success. People didn't usually work in groups, but someone else from the class could usually be found in the lab at any given time, and you would sit with them so you could ask each other for help when you got stuck. People learned both from their individual programming projects and from getting and receiving help from their classmates. You learned just as much from helping someone else as you did from being helped—learning about new bugs, reading other people's code, etc. Laptops led to the dissolution of computer labs and replacing that group learning dynamic has been a problem for computing education ever since.

Every class period, the team will be responsible for submitting a document. The document might just be notes for the day. It might also include documentation from other in-class activities. If you need to add anything beyond notes, it will be announced in class. This will be graded. The notes will be taken in a shared google drive (there will be no hand-in process—the instructor will just look at the document in the team's folder).

Everyone on the team will also sign up for a different role. The details about the roles is available in your note template. These roles are designed to encourage the team to interact and work together, through shared note taking.

Most class periods will also include programming activities. You will be responsible for doing your own programming activities. But your roles will also make you responsible for your team. Check in with each other. Help each other when you get stuck. And so on.

Your in-class grade for the week will combine your team-notes with any other in-class activities.

Participation multiplier: To encourage people to take on different roles, you will receive an in-class participation multiplier that is based on maximizing your exposure to different roles. Ideally, the team should rotate through. Whatever you did last week, do the next one on the list. If you got to the bottom of the list, jump to the top. If you do this, your multiplier will be a 1. If someone refuses to do this, the multiplier acts as a penalty.

If you're interested in the math, a simple version of the formula is this: x is the number of

times you filled the role you filled the most. n is the number of times you filled the role you filled the least. $1/max(x-n,1)$. (Max is just to avoid divide by zero—if it would be zero, it becomes 1.) This won't penalize you for absences (those will impact your in-class activity score) but it will penalize you for gravitating to one role instead of trying new things. This ends up being an extremely punitive formula, so the actual formula (which looks scarier, but it will make not getting an even spread less harmful to your grade) will be $e^{1/max((x-n),1)^c}/e$ where c is a fudge factor that will be set to make the grade as fair as possible. The goal is to penalize people for hogging roles they like, not to penalize people for getting sick, missing one class, and getting out of sync with their team's rotation.

Homework: Homework will be due in some form every week. If a homework activity spans multiple weeks, you are required to do portions of each week. Pushing out a fully formed program at the last minute, no matter how good, will *not* earn you full marks. You need to work towards developing habits that will prepare you for professional life, where projects move along for weeks, months, years, and waiting for deadlines to produce work will set you up for failure.

You should plan to do at least some work each week before scheduled office hours. That way if you run into problems you will know in time to drop by office hours.

To receive full marks, you will need to show evidence of progress by each week's deadline. You don't have to hand in something special for the intermediate deadline; instead, you will demonstrate this progress through your git commits. On weeks where you have to show progress, not a final product, you will be graded based on a) the quality of your commit messages, b) the amount of progress made towards completing the activity, and c) making commits at appropriate points (i.e. making regular commits that each cover one thing instead of infrequent commits that cover many different things).

Final Project, Proposal and Presentation/Paper: *There is no final exam.* Instead of a final exam, you will do a final project. Your final project is an opportunity to showcase what you've learned in the course in the context of a programming project that interests you.

This will make up a significant portion of your grade and you should treat it with the same gravity that you would treat a final exam. You should spend time throughout the beginning of the semester thinking about your final project. You may submit a final project proposal at any time and can begin working on the project as soon as it is approved. You should plan on working on it in pieces over the course of the last part of the semester.

In addition to writing a program, you will need to either present at the iCEHC Showcase on

Tuesday May, May 7, 2–5pmor write a paper on your project. Presenting at the showcase is preferred, as it is before your final deadline and feedback you receive might help you improve your project before the deadline. The paper option is intended for students whose schedules do not permit them to attend the showcase. Students choosing the paper should make a point of attending office hours for feedback.

4.2 Grading

Weights

In Class Activities * Participation	25%
Homework	30%
Discussion & Online Participation	8%
Final Project Proposal	5%
Final Presentation or Paper	7%
Final Project	25%

Feedback: Most activities will be graded on a four-point scale: think ✓, ✓+, ✓-, and 0 if you didn't do it. These are mapped onto numbers 0–3 to be entered into a spreadsheet. The idea behind this is that grading usually isn't as precise as we like to think it is: we can very easily tell the difference between something that is done well (3) and something that is badly done (1). Anything that doesn't fall neatly into one of those categories would be a 2. Beyond that, fine distinctions are based more on aesthetics, position of the assignment in the pile of grading, and whether or not the coffee has run out. More complicated assignments that have multiple dimensions of grading (all of them using this scale) will end up with finer gradations between grades. Most small-scale activities will not.[1]

- 0: not attempted
- 1: attempted, but clearly incorrect
- 2: attempted, but only partially correct
- 3: attempted, and clearly correct

5 Policies

Attendance: Your in-class performance is key to your success in this course. You are expected to attend every class and to arrive on time. If you have to leave early or arrive late for unavoidable reasons, you are expected to be discrete to avoid disturbing other students.

Attendance, itself, is not graded. Instead, graded in-class activities constitute an important part of the course grade. It is not possible to maintain a passing grade without consistent

[1] Rapaport, William J. 2009. "A Triage Theory of Grading: The Good, the Bad, and the Middling". https://www.cse.buffalo.edu//~rapaport/Papers/grading.pdf

attendance. If you miss class, you will earn an automatic zero for the missed activities. Because of the nature of the assignments, no make-up opportunities will be available.

If a team falsifies information to cover for an absent team member to give them credit for an activity they did not participate in, this constitutes cheating. Cheating on an team activity by any team member will result in the entire team receiving a 0 for the day's in-class activities. If it happens again, the punishment may be more severe.

Computing Resources: Although the projects can be done on your own computers, problems with your system (hardware, software, network access, etc.) will not be accepted as excuses for late or missing work. Information Commons computers are provided in the UAlbany libraries for students with computer or network issues. Students are required to read the University at Albany Policy for the Responsible Use of Information Technology (`https://wiki.albany.edu/display/public/askit/Responsible+Use+of+Information+Technology+Policy`).

Email Policy: Instructors and TAs get a large volume of email and will set aside time at least once a week to deal with it. The subject line should include the course number and a brief note of what you are emailing me about (e.g. "INF 308: appointment"). When time is set aside time to address student emails, a subject line filter will be used. Emails that do not contain "INF 308" in the subject line may end up in junkmail. If you attempt to contact the instructor or TA via email and did not include "INF 308" in your email subject line, any failure of communication that results is your responsibility.

Students are expected to use the `http://piazza.com` forum for all non-personal course-related communication. If you have questions about assignments, technical problems that need troubleshooting, or other questions that might be of interest to other students, they must be posted to piazza.com and not emailed to the instructor or TA.

You may email the instructor and/or TAs in the following circumstances:

- If you cannot come to office hours and need to set up an appointment to meet at another time—in this case you *must* include your availability for the upcoming week.
- If you have need to contact the instructor or TA about a private matter. Examples include:
  - Making arrangements for disability accommodations.
  - To discuss private, personal matters that are impacting your coursework such as physical or mental illness, death in the family, etc.
  - If the instructor asks you to email them something relating to a previous conversation.

– To let the instructor know that your preferred name/gender is not the name you are registered with so you can use your preferred name in course activities without losing credit because your preferred name does not match the name in the roster.

If you are emailing your instructor or TA to schedule an appointment because you cannot attend regularly scheduled office hours, you must include your availability for the upcoming week. Your instructor teaches multiple classes and maintains an active research schedule; your TAs have a full load of classes and activities of their own. Without your full availability for the upcoming week, it will be very difficult to find an overlapping free period.

Make-up Policy: There are generally no make-up opportunities for missed assignments except in extenuating circumstances (please see `http://www.albany.edu/health_center/medicalexcuse.shtml`.). Instead of asking to make up missed work, please use the course 'safety valves' described below.

Since there will be occasions in your life when missing a class meeting is simply unavoidable, this course has two no-fault safety valves.

1. You may make up ONE regular in-class activity. To do this, look over your team's notes for the missed day and figure out what you missed. Do it on your own (or come to office hours for help). Create a google doc in your team's directory and give it the name associated with the assignment, followed by your name, and the word MAKEUP (e.g. 0128IntroDoeJaneMAKEUP) and document what you did there. If the activity wasn't one you can sensibly do on your own, contact the instructor for an alternate activity. You may not make up more than one day without special permission of the instructor (see item 2). If you try to do so without discussing it with the instructor, only the first makeup activity will be graded.

   Be careful not to waste your makeup on frivolous things early in the semester, since you may need it if you catch a cold or need to leave town for a day later in the semester. If you do not use your safety valve for missed classes, you will be able to use your safety valve to improve your grade, by dropping your single lowest score.

2. If you become seriously ill during the semester, or become derailed by unforeseeable life problems, and have to miss so many assignments that it will ruin your grade, meet with your instructor in order to make arrangements. Don't wait until it's too late to see us when you get in trouble.

Students with Disabilities: Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning, and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify

the Director of the Disability Resource Center (`http://www.albany.edu/disability/`). That office will provide the course instructor with verification of your disability, and will recommend appropriate accommodations.

In general, it is the student's responsibility to contact the professors at least one week before the relevant assignment to make arrangements. If you have a disability that affects you sporadically, it is a good idea to preemptively register with the disability office so that if you have a flare up, you will have already set up your safety net.

Incompletes and Requests for Re-evaluation: Students must complete all requirements in order to pass the course. A grade of incomplete will be given only when circumstances beyond the student's control cause a substantial amount of course work to be unfinished by the end of the semester. Whenever possible, the student is expected to make extra efforts to prevent this situation from occurring. The instructor will be the sole judge of whether an incomplete is warranted. Final grades are computed based on the above formulas and are NOT negotiable. Per department policy, "students may not submit additional work or be re-examined for the purpose of improving their grades once the course has been completed and final grades assigned."

A student granted an incomplete will make an agreement specifying what material must be made up, and a date for its completion. The incomplete will be converted to a normal grade on the agreed upon completion date based upon whatever material is submitted by that time.

Withdrawal from the course: The drop date for the Spring 2019semester is Tue, Feb 15 for undergraduate students. That is the last date you can drop the course without receiving a 'W.' The last day you can drop the course and receive a 'W' is Mon, April 8. It is your responsibility to take action by this date if you wish to drop the course. In particular, grades of "incomplete" will not be awarded to students because they missed the drop deadline.

Announcements: Course announcements will be posted on Piazza (`http://piazza.com`. You are expected to be aware of course announcements. You can set the app to give you push notifications when new questions, answers, or announcements are posted. You may also use settings to configure it to send you email (or not), either in real-time or as a digest.

Weather Cancellations: Students are responsible for awareness of campus closure. You can get this information from various sources. See http://www.albany.edu/emergency/ for more information.

Unless an announcement is posted saying otherwise, weather cancellations will not affect the planned schedule. In particular, assignment due dates will not change. Since we will miss an entire week's worth of class, if losing an entire week of class will cause the class as a whole to far behind (e.g. if we are moving more slowly through the material than expected), an alternate all-online activity will be posted to try to keep us on track. (If we are making quick progress, I might decide we don't need a makeup activity to stay on track.) Since cancellations will come as a surprise to all of us, don't expect the alternate activity to be posted immediately. It will take time to create and post an activity. It might be wise to work on something else in the meantime so you'll have time later for the alternate activity later.

Phones, Laptops, and Other Distractions: Students are required to read the University at Albany Policy for the Responsible Use of Information Technology available at the ITS web site: https://wiki.albany.edu/display/public/askit/Responsible+Use+of+Information+Technology+Policy

Computers, phones, and laptops may be used during class for note taking as long as the use is not disruptive or distracting. If you have attentional issues that prevent you from focusing on class if you are not also fidgeting with something else, you should make a point of sitting towards the back or edge of the room so you don't hurt the focus of students whose attention requires minimal distraction. While the instructor may be lenient in students taking the occasional emergency text, you may be asked to put your tech away or sit in the back if your tech use becomes a significant distraction to other students or is hindering your ability to focus on the class.

Conduct: Students are expected to abide by UAlbany community standards: http://www.albany.edu/communitystandards/. In particular, students are expected to be civil in class and in the piazza forum associated with this class. Trolling, hate speech, harassment, etc. will bear the same penalties as academic dishonesty (see below).

6 Academic Integrity

Students are expected to be familiar with and abide by UAlbany's Standards of Academic Integrity published in the Undergraduate Bulletin. (http://www.albany.edu/undergraduate_bulletin/regulations.html)

Some of the work that you do in this class will be done with teams and some will be individual. Academic honesty principles apply in both cases: teamwork must be the work of the team and no one else; Individual work must be the work of the individual and no one else. In particular, in-class activities that you do alone with your team as a study group must be your own work. Your team is there if you need conceptual help or feedback, but input beyond that constitutes cheating.

You may form study groups, discuss assignments and techniques in general terms, etc., but the assignments themselves must be your own work. In particular, two or more people may not create any portion of an assignment together and submit it for credit. Please ask if you have any questions about academic integrity.

A (non-exhaustive) list of unacceptable activities is:

- Allowing other students to see or copy your assignments.
- Examining or copying another student's assignments.
- Allowing other students to see or copy your work during an exam.
- Examining or copying another student's work during an exam.
- Getting answers or help from people, or other sources (e.g. research papers, web sites) without acknowledging them.
- Directly using ideas from other sources without engaging with those ideas and producing something of your own. Rewording someone else's ideas is still plagiarism unless you are restating their ideas as a first step to engaging with those ideas.
- Lying to the professor about issues of academic integrity.

Any incident of academic dishonesty in this course, no matter how "minor" will result in:

- No credit for the affected assignment.
- A written report will be sent to the appropriate University authorities (e.g. the Dean of Undergraduate Studies).
- One of
  - A final mark reduction by at least one-half letter grade
  - A Failing mark (E) in the course
  - referral of the matter to the University Judicial System for disposition.