CIS 280 Selected Languages: Intro to Python / CIS 280A Python for Machine Learning
Spring 2020 Syllabus

Professor: Dr. Laura Grabowski
Office: Dunn 303
Office Hours: MWF 9:45 AM – 10:45 AM, TR 11:00 AM - 12:00 PM, R 1:00 PM – 2:00 PM, and by appointment. Please feel free to stop in any time, even if it's outside these official office hours.
Voice: (315) 267-2216
E-mail: grabowlm@potsdam.edu
CS Department Slack Workspace: https://join.slack.com/t/potsdamcsdepartment/signup
Join with your Potsdam email address. If you're already on Slack with another email, you can link multiple emails with no problem. A Slack message is **THE BEST** way to get a question answered by me evenings/weekends!

Overview of the Course
This material covered in the first section of this course (CIS 280) is essentially a Computer Science I course, like CIS 201, except in Python. However, since you are already familiar with one programming language, our approach will be a bit different. Programmers are expected to teach themselves new programming languages as a normal part of their jobs/work. This course is something of a bridge between the detailed presentation of material that you had in CIS 201 and the fully independent learning that you need to develop as a CS professional. The intent of the course is to provide structure, support, and feedback to facilitate your learning the second programming language.

The second section (CIS 280A) will build upon the Python skills that you develop in the first section, in order to explore some of the powerful Python libraries and tools for machine learning. Here, we will focus on the practical side of using those tools rather than the theoretical aspects of machine learning.

Student Learning Outcomes
The Computer Science department has adopted ten learning objectives for students completing an undergraduate major or minor in the department. These learning objectives map to the undergraduate computer science curricula outlined by the Association for Computing Machinery (ACM) and the Computing Accreditation Commission (CAC) of the Accreditation Board for Engineering and Technology (ABET). Each course in the curriculum is designed to address particular objectives so that the overall curriculum fulfills our goal of producing capable computer scientists. The objectives (and broad outcomes) serve as a rubric for evaluating the learning that happens in this class. You may wish to review this section of the syllabus when filling out the course evaluation and especially when studying for midterm and final exams.

Students in the Computer Science program at SUNY Potsdam are expected to graduate with a:

1. Knowledge of discrete and continuous mathematics --- including elementary probability and statistics – and the ability to apply logic and mathematical proof techniques to computing problems. *Not emphasized in CIS 280/280A.*
2. Knowledge of basic theory of computability and complexity of computation. *Not emphasized in CIS 280/280A.*
3. **Knowledge of and the ability to apply programming fundamentals in at least two programming languages.**
   Students will explain (in oral and written format) the technical aspects of their programs.
   Students will analyze a problem and develop a solution that uses an appropriate abstract data type.
4. **Knowledge of fundamental data structures and algorithms --- including analysis of their correctness and complexity --- related to various fields of computer science, and the ability to apply this knowledge to problems through the use of appropriate programming languages.**
   Students will design and implement collection classes that use list components and provide a wide range of functionality.
5. Knowledge of computer architecture and organization, computer operating systems, and computer networks, and the ability to apply this knowledge to problems through the use of appropriate programming languages*. Not emphasized in CIS 280/280A.*
6. Competence and effectiveness in technical oral, written, and visual communication, particularly as they apply to the dissemination of technical information on subjects dealing with computing technology and applications. *Not emphasized in CIS 280/280A.*

7. Knowledge of and skill in applying good practices in software engineering. *Not emphasized in CIS 280/280A.*
8. The ability to function effectively in teams to accomplish a common goal. *Not emphasized in CIS 280/280A.*
9. An understanding of professional, ethical, legal, security, and social responsibilities and issues, including an awareness of impact of computing on individuals, organizations, and society. *Not emphasized in CIS 280/280A.*
10. A commitment to continuing professional development. *Not emphasized in CIS 280/280A*.

General Class Information

- **Class Time/Place:** MW 11:00 AM – 11:50 AM, Dunn 204
- **Required Text:** Deitel, P. & Deitel, H. (2019). *Python for Programmers*. Pearson.
  - ISBN-13: 978-0-13-522433-5. ISBN-10: 0-13-522433-0.
  - We will be working through this entire book starting the first week of class, so you need to buy it ASAP.
- **Software:** We will use the Anaconda Python distribution for all work in this course. Anaconda is a (free) Python distribution that can be easily installed on Windows, OSX, and Linux. You may install Anaconda on your own machine if you wish. We have also installed Anaconda in the CS computer lab (Dunn 302). Please note that some of the book material requires that you install additional libraries. The book section "Before You Begin" walks you through installations and updates of the software. Unlike most of my courses, I allow you to bring your machine to class for this course.
- **Session dates and Other Important Dates**
  - CIS 280 *Introduction to Python*: January 27 – March 25.
  - CIS 280A *Python for Machine Learning:* March 30 – May 23.
  - Other important dates
    - **Spring Recess:** No classes Mon-Fri Mar 9-13 (classes resume Mon Mar 16, 8:00 AM).
    - **April Recess:** No classes Mon-Tue Apr 13-Apr 14 (classes resume Wed Apr 15, 8:00 AM)
    - See the university website for additional calendar information, http://www.potsdam.edu/academics/calendar.

Course Requirements and Procedures

- **Grading procedure:** The grade for the course is based entirely on the assigned deliverables for each week. Deliverables will consist of items such as exercise code, Jupyter notebooks, and programming assignments. The scoring for deliverables will be weighted such that the score reflects the relative difficulty/scope of the assignment (*i.e.,* all points are the same). The overall grade in the course will therefore be simply the percentage of the total points that you earn.

  Final grades are determined according to the scale shown below, subject to a curve at the discretion of the professor.

  4.0: 95 – 100%
  3.7: 90 – 94%
  3.3: 85 – 89%
  3.0: 80 – 84%
  2.7: 77 – 79%
  2.3: 73 – 76%
  2.0: 70 – 72%
  1.7: 67 – 69%
  1.3: 63 – 66%
  1.0: 60 – 62%
  0.0: <60%

  NOTE: The actual scale used may be adjusted according to the performance of the class a whole, again at the professor's discretion. In borderline cases, attendance, class participation, and completion of assigned work will be used to make a decision on the course grade.
- **Extra Credit: No special arrangements will be made for extra credit for improving grades.**

Attendance: Attending all class meetings and completing required work is crucial to your success in this course.

- **Late deliverables:** Late assignments will be accepted up to one calendar week past the due date, with a flat 25% penalty, in accordance with the standard Computer Science Department policy. Assignment submission policies are detailed in "Assignment Submission Policy and Guidelines," below.
- **Impact of extracurricular activities on class work:** You make the choices about how you will spend your time, including investing your time in non-academic activities. As a student, you need to give priority to your academic work, and prevent extracurricular commitments from negatively impacting your work for classes. You are, of course, free to participate in activities that are meaningful to you; however, do not expect me to give special consideration because of time management issues that arise from those activities. You should not be missing class because of extracurricular activities, nor should you allow yourself to fall behind on assignments. **NOTE: I will not give extensions that relate to participation in extracurricular activities, even if the activity is related to Computer Science.**
- **Grading questions:** If you have a question about a grade, you must (1) wait 24 hours after receiving the grade before contacting me, and (2) communicate with me within one week of the day the graded work is returned to you. You lose the right to re-grading after that time.
- **Incompletes:** Incomplete grades (Inc) are granted rarely. Incompletes are not to be used as a shelter from potentially low grades. An incomplete grade may be reported for you only when the following conditions are satisfied (SUNY Potsdam Undergraduate Catalog):
  1. The student has requested an incomplete.
  2. Course requirements have not been completed for reasons beyond the student's control. (e.g. illness or family emergency).
  3. The student has completed the majority of the work for the class, and the student can accomplish the remaining requirements without further registration.
- **Academic integrity:** You are expected follow the "SUNY Potsdam Academic Honor Code" (SUNY Potsdam Undergraduate Catalog) by doing your own work on all required work for the course unless specifically directed otherwise by the professor. **Copying is strictly forbidden**. Students caught cheating will receive a grade of 0 for that evaluation. More than one offense will result in dismissal from the course and possible disciplinary sanctions by the university. Academic Misconduct definitions, procedures, due process, and student rights are described in the SUNY Potsdam Undergraduate Catalog, as cited above. Please see additional information in "Assignment Submission Policy and Guidelines," below.
- **Accommodative Services:** If you have special needs that must be accommodated to fulfill the course requirements, you must notify the professor and Sharon E. House, Director of Accommodative Services, 111 Sisson Hall, 267-3267. The university has resources available to assist qualified students with their academic studies. Please note that the professor is not able or qualified to determine what accommodations are necessary and appropriate. That task must be accomplished by the Accommodative Services staff. It is up to the student to initiate the process with Accommodative Services.
- **Food and Drink in Class and Lab:** Beverages are allowed in the lecture classroom as long you clean up after yourself and do not disturb others. Please do not bring food to lecture. UNDER -**NO**-CIRCUMSTANCES ARE FOOD AND BEVERAGES (EVEN GUM OR WATER BOTTLES) ALLOWED IN THE COMPUTER LAB (DUNN 302)!
- **Accommodation of Religious Observances:** I will make reasonable accommodation for a student's religious beliefs. Please notify me within the first week of classes about any scheduled class date that conflicts with a religious observance.
- **Course Withdrawal:** The last day to drop a semester course without receiving a grade is Friday, November 1.
- **Moodle Page:** All the information and content for the course will be distributed through the course Moodle page. I expect that you will check the page daily for updates and announcements. Announcements posted in the News Forum in Moodle will automatically be sent to your Potsdam email, so you must also check your email daily. If you have schedule questions, look in Moodle first, before you send me an email.

Computer Use

- You can do your assignments on your own machine or on the workstations in DUNN 302. Since we are using Anaconda, we shouldn't have cross-platform issues with code interpretation. If an issue arises, I will contact you and we will figure out what is happening.
- You must use your SUNYCard to enter the Unix classroom (Dunn 302). Your computer account in the Unix classroom is your private property and should be treated as such. Please protect yourself by keeping your password private and making sure that you completely log out every time you use your account. ***NOTE: It is <u>your</u> responsibility to prevent others from plagiarizing your work.***

Assignment Submission Policy and Guidelines

- Deliverables will be assigned every week. Deliverables will be submitted through Moodle and assignment deadlines will be **strictly** enforced. It is the student's responsibility to ensure that the electronic submission is time stamped by the deadline. I strongly discourage last-minute submissions.
- Late assignments will be accepted for 1 calendar week after the due date (7 calendar days, where 1 day = 24 hours). An assignment is considered late when Moodle marks an assignment as late, whether it is by 1 minute or 7 days. All late assignments will be penalized a flat 25%. Extensions that are not subject to penalty may be granted in rare cases when there are extenuating circumstances (such as serious illness or disability, a death in the family, an accident, *etc*.) and when these circumstances are supported by written documentation and brought to my attention before the on-time submission deadline. I do not grant extensions just because you need more time to complete an assignment. **Note: I will not give extensions because of involvement in outside activities such as attendance at hackathons, ACM activities, and the like** (see above, "Impact of extracurricular activities on class work")**.** In general, I avoid giving individual extensions on assignments, since it seems unfair to the class as a whole. However, I will consider granting an extension on a case-by-case basis, if you come speak to me in person and make your case to my satisfaction.

Class and Lab Behavior

- I expect you to arrive to class on time and remain throughout the entire class period.
- I expect you to arrive on time for class and lab, ask questions, participate in class discussions, and remain on task throughout the class meeting. Talking out of turn, engaging in non-class-related discussions with others (including the professor), using electronic devices during lecture, and other disruptive behavior will not be tolerated. If you are disrupting class, I may ask you to leave. Repeated offenses may result in your referral to the Office of Student Conduct and Community Standards, and possible dismissal from the class.
- All members of the Potsdam Computer Science community are governed by the ACM Code of Ethics and Professional Conduct, https://www.acm.org/about-acm/acm-code-of-ethics-and-professional-conduct, which we have distilled into our SUNY Potsdam Department of Computer Science Code of Professional Conduct (see below). The department faculty are committed to modeling and promoting ethical and professional behavior for all our students.

SUNY Potsdam Department of Computer Science Code of Professional Conduct

1. **Preamble**
   All members of the ACM, including the Computer Science faculty of SUNY Potsdam, are committed to ethical professional conduct as specified in the ACM Code of Ethics and Professional Conduct. Students, taking courses from the faculty, are bound by our commitment.

   All members of the Department are obliged to remind one another to behave professionally. Violations should be reported promptly; however, capricious or malicious reporting of violations is, itself, a violation. When reporting, bring all relevant aspects of the incident to the faculty's attention.

2. **Moral Imperatives**
   As a Computer Science student I will...

   2.1. Respect all members of the Department.

2.1.1. Be professional in face-to-face and electronic interactions.

2.1.2. Be fair so everyone is free to work and learn.

2.1.3. Be active in preventing discrimination in physical and electronic spaces frequented by Department members.

2.2. Accept and provide appropriate feedback.

2.2.1. Avoid starting or spreading rumors.

2.2.2. Respect confidentiality.

2.3. Be honest, trustworthy, and respect intellectual property.

2.3.1. Only take credit for my own work.

2.3.2. Respect the privacy of others.

2.3.3. Access computing resources only when authorized and report any access risks discovered.

2.4. Contribute to society and human well-being.

2.4.1. Improve public understanding of computing and its consequences.

2.4.2. Consider both the direct and indirect impacts of my actions.

Student Support

Note: The Provost has requested that the following information be included in course syllabi. The following information is presented without modification.

Every student in this class is a valued individual. If you are struggling with issues outside of the classroom, please know that there are professionals both on and off campus who can assist you. If you need immediate assistance, please contact our campus Counseling Center (with free counseling) at (315) 267-2330 or visit their website. Links to other resources are provided below:

- Rachel Bayliss, Title IX Support Staff & Title IX Core Team, Draime Extension S184, (315) 267-2350 or VanHousen Extension, Rm. 392, (315) 267-2516

- Bias Incident Reporting
  - http://www.potsdam.edu/about/diversity/biasincident

- Center for Diversity
  - 223 Sisson Hall
  - (315) 267-2184
  - http://www.potsdam.edu/studentlife/diversity

- University Police
  - Van Housen Extension
  - (315) 267-2222 (number for non-emergencies; for an emergency please dial 911)

- Student Conduct and Community Standards
  - 208 Barrington Student Union
  - http://www.potsdam.edu/studentlife/studentconduct/codeofconduct

- Reachout (24-hour crisis hotline)
  - (315) 265-2422

- Renewal House (for victims of domestic violence)

- SUNY Potsdam Campus Office: Van Housen Extension 390 (open Wednesdays, 9-5:00)
- (315) 379-9845 (24-hour crisis hotline)
- Renewalhouse_campus@Verizon.net

And please: if you see something, say something. If you see that someone that you care about is struggling, please encourage them to seek help. If they are unwilling to do so, Care Enough to Call has guidelines on whom to contact. Everyone has the responsibility of creating a college climate of compassion.

Tentative Course Schedule

Week starting	Week	Chapters and Topics	Deliverable (tentative) **
CIS 280: Introduction to Python			
Jan 27	1	▪ "Before You Begin" ▪ Chapter 1: Intro to Computers and Python ▪ Chapter 2: Introduction to Python Programming	Program 1
Feb 3	2	▪ Chapter 3: Control Statements ▪ Chapter 4: Functions	Program 2
Feb 10	3	▪ Chapter 5: Sequences: Lists and Tuples	Program 3
Feb 17	4	▪ Chapter 6: Dictionaries and Sets ▪ Chapter 7: Array-Oriented Programming with NumPy	Program 4
Feb 24	5	▪ Chapter 8: Strings: A Deeper Look	Program 5
Mar 2	6	▪ Chapter 9: Files and Exceptions	Program 6
Mar 9		***Spring Recess: No classes Mon-Fri Mar 9-13 (classes resume Mon Mar 16, 8:00 AM)***	
Mar 16	7	▪ Chapter 10: Object-oriented Programming	Program 7
Mar 23	8	*Work on Program 6*	
CIS 280A: Python for Machine Learning			
Mar 30	9	▪ Chapter 11: Natural Language Processing	Program 1A
Apr 6	10	▪ Chapter 12: Data Mining Twitter	Program 2A
Apr 13	11	▪ Chapter 14: Machine Learning: Classification, Regression, and Clustering	Program3A
Apr 20	12	▪ Chapter 15: Deep Learning	TBD
Apr 27	13	*April Recess: No classes Mon-Tue Apr 13-Apr 14 (classes resume Wed Apr 15, 8:00 AM)* ▪ Chapter 15, continued	Program 4A
May 4	14	▪ Chapter 16: Big Data	TBD
May 11	15	▪ Chapter 16, continued ▪ Chapter 13: IBM Watson (if time)	Program 5A
May 18		**Final Exam Week** No class meeting. Final deliverable due on Monday May 18, 2:30 PM (end of Final Exam period). *No late deliverables will be accepted due to time considerations.*	

** List of deliverables may change. Details will be posted in Moodle and announced in class.

See https://www.potsdam.edu/academics/calendar for important dates for Spring 2020.