

CS 222.1: Introduction to Data Science with Python  
Fall 2021 Syllabus

Instructor: Dr. Yanxia Jia. (jiay@arcadia.edu)

Times:
- Lecture section:
  - CS222.1  MWF: 12:15 ~ 1:20pm
- Lab section:
  - CS222L.1  R: 12:20 ~ 2:00pm

Office number: Boyer Hall 333

Office hours:
- MWF 1:20 ~ 2:20pm
- Tue: 1 ~ 2pm except for the following days: 9/14, 9/21, 10/12, 11/9, 12/14
- By appointment.

Course Description:
This course provides an introduction of data science and analytics techniques using Python. Students will learn the essential concepts of python programming. They will use python tools, such as numpy, pandas, and matplotlib, to perform data cleaning, manipulation and visualization. They will also apply basic statistics and machine learning techniques to conduct data analysis. Students from non-computer Science majors are welcome.

Learning Outcomes:
Upon completion of this course, students should be able to:

1. articulate different stages of the data science process
2. clean, manipulate and visualize data using python tools
3. apply descriptive statistics method to explore data
4. apply machine learning modeling techniques to solve a data science problem
5. develop research writing and presentation skills

Textbooks and Learning Resources:
For textbooks 1 and 2, follow the instructions in Runestone_Textbooks_F21.pdf (under File/ on canvas) to subscribe.

1. (Free) “How to Think Like a Computer Scientist: Interactive Edition”.  
   https://runestone.academy/runestone/books/published/thinkcs/py/index.html
2. (Free) “How to Think Like a Data Scientist”.
   https://runestone.academy/runestone/books/published/htlads/index.html


5. Canvas
   Important course materials, such as syllabus, power point slides, assignments and announcements will be posted on Canvas. I expect students to check course information on Canvas regularly.

6. The web

Tutoring Resources:

- LRN tutors:
  - https://www.arcadia.edu/academics/academic-support/learning-resource-network
  - Please follow this link for Instructions for requesting a tutor, updates, schedules, and other academic support resources are posted there. https://arcadia.instructure.com/enroll/476LYR.

Calendar (Tentative)

| Week 1 ~ 4 | Python Basics | Chapter 1 |
| Week 4 ~ 6 | Intro to Data Science | Chapter 2 |
| Week 7 ~ 8 | Numpy | Chapter 3 |
| Week 9 ~ 10 | Pandas | Chapter 4 |
| Week 11 | Matplotlib | Chapter 5 |
| Week 11 ~ 15 | Intro to Machine Learning | Chapter 6 |

Final presentation day: 1 ~ 4pm, Dec. 15 (Wednesday)

Class Attendance:

You are expected to attend classes regularly. Should you have to miss a class meeting, please contact me to notify me of your absence prior to the class, and it is your responsibility to find out what has been taught that day and make up the work. In case of emergency, please contact me by E-mail as soon as you can.

Technology Policies

You will be using lab computers for online reading of course-related information or solving in-class practice problems. Any other use of these computers (e.g., surfing non-
course-related sites and playing games) and the use of cell phones is strictly prohibited. Place your phone on mute before you come to class. Violating this policy will negatively impact your participation grade.

**Assignments and Final Project**

There will be lab assignments, programming assignments, and a final project (with presentation). Assignments and projects take time. Please start early and ask for help if needed. Do not wait until the day before the deadline to ask for help!

- Submitted code must be free of compile errors; otherwise, it will receive a very low grade.
- For group assignments, every member must submit their work. Be sure to add a comment listing all group members in the beginning comment section of your program.

**Late Policies**

Late assignments will receive a deduction of 10% per day (24 hours) up to two days (48 hours). Submissions later than 48 hours after the due date will receive a grade of 0.

**Quizzes**

There will be multiple quizzes. The score for the lowest quiz will be dropped, to take into account sicknesses or bad days. There will be no other early or late or make-up quizzes. A missed quiz results in a score of zero for that quiz.

**Evaluation:**

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<thead>
<tr>
<th>Attendance/participation</th>
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<tbody>
<tr>
<td>Quizzes</td>
<td>20%</td>
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<td>Labs</td>
<td>25%</td>
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<td>Assignments</td>
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<td>Final project</td>
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**Academic Honesty**

You are expected to adhere to the code of academic honesty of Arcadia University. All work must be your own. You may discuss the main ideas of a given assignment with other students, but you must write actual solutions by yourself. For group assignments, group members can share information within the group.
The following behaviors are absolutely not allowed:
- copying another student’s/group’s code, even if you modify it.
- sharing your code with another student (for individual assignments) or group (for group assignments).

If you want to use other people’s code, such as example programs found on the Web as part of your solutions, be sure to contact me for approval. Add reference when use code or resources that are not yours.

If two people/groups share the same code or a significant amount of implementation details, both parties will be considered as conducting plagiarism. Please keep in mind that inadvertent plagiarism is plagiarism. If you are not sure, check with your instructor. Finally, I reserve the right to ask you to explain your code to me.

**Important Dates**

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<th>Event</th>
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<tr>
<td>Course changes-drop/add</td>
<td>Aug. 30 ~ Sep. 13</td>
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<td>Course withdrawal with adviser’s approval (W)</td>
<td>Sep. 14 ~ Nov. 9</td>
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<td>Undergraduate course withdrawal permitted with</td>
<td>Nov. 10 ~ Dec. 21</td>
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<td>extenuating circumstances (WP/WF if approved))</td>
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<td>Priority-registration for Spring 2022</td>
<td>Nov. 8 ~ 19</td>
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<td>Reading day – no classes or final exams</td>
<td>Dec. 14</td>
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No class:
- Labor Day                                       Sep. 6
- Fall break (no classes or exams)               Oct. 25 ~ 26,
- Thanksgiving vacation                          Nov. 24 ~ 28

**COVID-related:**

- Covid Update and Information: [https://www.arcadia.edu/university/covid-19](https://www.arcadia.edu/university/covid-19)

- **Wearing masks during class:** Masking requirements can fluctuate during the semester based on changes in the pandemic. Please follow current University mask requirements and when required to wear a mask, use it to cover your nose and mouth.

When masks are required in the classroom and a student is not wearing one, or is wearing one without covering their nose and mouth, the instructor or a fellow student can remind them to wear one or to wear one properly. If a student does not have a mask, the instructor can provide guidance for where to find one and the student can return to class after acquiring it. If a student will not wear a mask or will not wear one properly, even when provided with access to a mask, the instructor should follow normal procedures for student conduct issues.
Facilitating contact tracing: If an individual in the class tests positive for COVID, the University will contact people who were in close proximity to that person for an extended period of time. In our class, we will utilize the following measures to facilitate this process:

- **Seating**: Maintaining consistent seating can facilitate contact tracing. Please sit in the same seat for the entire semester and note who is seated around you.

- **Cohorts for small group work**: During the semester we will frequently work in small groups for discussions or projects. Maintaining the same individuals in these groups throughout the semester will facilitate contact tracing. Please work with the same group of students consistently during the semester.

In-person and remote class attendance: Most students will attend classes in person with exceptions for online courses and approval for fully remote learning. Some students may require access to short periods of remote learning for a number of reasons such as illness, quarantine, or isolation. In these types of situations, the instructor will be notified that a student cannot attend class in person, although the reason will not be disclosed. The student should contact their instructor to arrange for remote access to class and/or access to class recordings. As in any semester, students may have other reasons to request short-term remote access to class or access to class recordings, such as an emergency situation or other unanticipated challenge that affects their ability to attend class. Students should contact their instructor to make this type of request and it is up to the discretion of the faculty member to determine the best course of action.

When not to come to class in person: To support the health and safety of Arcadia community members, please do not attend class for any of the following reasons and contact Student Health Services for assistance:

- A positive test for COVID
- Assignment to quarantine or isolation
- You feel unwell
- Notification or personal awareness that you may have been exposed to a person with COVID

**Anti-Racism Statement**

The Department of Computer Science and Mathematics at Arcadia University rejects racism and intolerance in all forms.

We believe that the best science and inquiry are only possible with equity. Our department is committed to systemic, long-term actions to support our Black students and other community members of color who have been underrepresented and marginalized in the sciences. We pledge to be actively anti-racist in our classrooms and community and strive to use the tools of mathematics and computer science to effect change.

We take Arcadia’s mission of inclusivity and actions towards social justice seriously. To all of our students: You belong here, and we are proud to be your professors, colleagues, and mentors.

**Title IX Statement (a New Federal Requirement)**

Arcadia University is committed to providing a learning, living, and working environment that is free from discrimination. The University has an [Interim Policy Prohibiting Sexual Harassment](#)
and Sexual Misconduct detailing our commitment to preventing and addressing such behavior. I understand the impact that sexual harassment and sexual misconduct can have and am committed to doing my part to foster an environment that is safe and equitable.

Please know that all faculty on campus are mandatory reporters. This means that if you disclose an experience of sexual harassment or sexual misconduct to me outside of a classroom discussion, a writing assignment, or a University-approved research project, I must share what you reported to me with Arcadia’s Title IX Coordinator. This does not mean that you will have to pursue an investigation or go through a grievance process. Even if you do not choose these options, the Title IX Office can provide supportive measures and other resources to you.

If you or someone you know has experienced sexual harassment or sexual misconduct, please know that you are not alone. If you would like to speak to someone confidentially, confidential resources are provided on the Office of Equity and Civil Rights website.