

APPLICATIONS FOR ANALYZING DATA (FALL 2025)

Instructor	Joseph Kinzer	Course number	DSCI 2253
Contact Info	Joseph.Kinzer@rctc.edu 507-261-3485	Prerequisites	COMP 1150
Office	M2401C	Class location	71: Online
Office Hours	Mon & Wed 5pm to 6pm by appointment only	Class time	71: Asynchronous

Welcome to DSCI 2253: Applications for Analyzing Data! I'm your instructor, Joseph Kinzer. If you have short questions not answered here, email is generally the best way to get ahold of me. For more detailed questions about the class, I'd encourage you to talk to me during office hours (either in person or over the phone) or to set up an appointment.

Course Description: This course provides students with an initial exposure to Data Science, specifically working with datasets using python. Students will learn how to load and read datasets, clean data, perform exploratory data analysis, and visualize data. (3 credits). All of our work will be done in Jupyter notebooks using Python (unless we are answering questions from the text). VS Code is a helpful desktop application that can assist in managing your environments and packages. Here are links to install Python and VS Code and get started if you wish to use this program:

[Download Python | Python.org](#)

[Download Visual Studio Code - Mac, Linux, Windows](#)

COURSE CONTENT AND LEARNING OUTCOMES

Outline of Major Content Areas:

1. Programming for Data Science

- Syntax
- Variables
- Data Types

2. Data Cleaning and Wrangling

3. Data Ethics and Bias

4. Exploratory Data Analysis

5. Data Modeling

6. Statistical Analysis of Model Selection and Fit

7. Data Visualization

8. Communication of Results

3. Detect and analyze bias in data and the effect on marginalized groups.

4. Develop data structures to perform calculations grounded in industry applications.

5. Identify and test models for prediction using statistical packages.

6. Develop graphical displays associated with a given application.

7. Create evidence-based, audience-appropriate communication to disseminate information about the results of a data analysis project to support business decisions or scientific research.

8. Utilize software and programming languages such as, but not limited to, Excel, Python, and R for statistical analysis.

Learning Outcomes (General): The student will be able to:

- Develop a foundation of syntax, variables, and data types critical to data modeling.
- Import data from various sources (databases, text files, spreadsheets, data warehouses).

RCTC Core Outcomes. This course contributes to meeting the following RCTC Core Learning Outcome(s):

- Critical Thinking.** Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.

REQUIRED COURSE MATERIALS

- The text book for this course is *Pandas for Everyone, Python Data Analysis, 2nd edition*
- This course will require that you have reliable, regular internet access.

GRADING AND COURSE POLICIES

Grading Scale:: ≥ 90.0 (A), 80.0-89.9 (B), 70.0 -79.9 (C), 60.0-69.9 (D), <60 (F).

Your final grade is a weighted average of the following:

- Weekly Assignments (50%).** Each week's assignment will consist of either a Jupyter notebook or problem assignments from the text book. They are graded out of 10 points, and the emphasis for the Jupyter notebook assignments is on making *legitimate attempts* to answer each question rather than on strict correctness.
- Final Project (50%).** Your final project will allow you to choose a data set, and demonstrate what you've learned in the class.

Attendance. Students in face-to-face classes should attend class regularly, while online students are expected to participate in class discussions and activities. If you miss more than two weeks consecutively, or 1/3 of the total class sessions, you may receive a failing grade of FW. This may endanger your ability to receive financial aid. With this in mind, you are responsible for withdrawing from the class if you decide not to continue. I am willing to make exceptions if circumstances require, but you must let me know about these promptly.

ACADEMIC HONESTY POLICY

This is adapted from CS50's recommended policy for introductory CS classes.

My philosophy on academic honesty is best stated as “be reasonable.” The course recognizes that interactions with classmates and others can facilitate mastery of the course’s material. However, there remains a line between enlisting the help of another and submitting the work of another. The course’s policy characterizes both sides of that line.

The essence of all work that you submit to this course must be your own. Unless otherwise specified, collaboration on assessments (e.g., assignments, labs, problem sets, projects, quizzes, or tests) is not permitted except to the extent that you may ask classmates and others for help so long as that help does not reduce to another doing your work for you. Generally speaking, when asking for help, you may show your work to others, but you may not view theirs, so long as you and they respect this policy’s other constraints.

Regret clause. If you commit some act that is not reasonable but bring it my attention (Joseph.Kinzer@rctc.edu) within 72 hours, I may impose local sanctions that may include an unsatisfactory or failing grade for work submitted, but I will not refer the matter for further disciplinary action except in cases of repeated acts.

Below are rules of thumb that (inexhaustively) characterize acts that I consider reasonable and not reasonable. If in doubt as to whether some act is reasonable, do not commit it until you solicit and receive approval in writing from the course’s heads. Acts considered not reasonable by the course are handled harshly. If the course refers some matter for disciplinary action and the outcome is punitive, the course reserves the right to impose local sanctions on top of that outcome that may include an unsatisfactory or failing grade for work submitted or for the course itself. The course ordinarily recommends exclusion (i.e., required withdrawal) from the course itself.

Reasonable

- Communicating with classmates about assessments in English (or some other spoken language), and properly citing those discussions.
- Discussing the course’s material with others to understand it better.
- Helping a classmate identify a bug in their code, as by viewing, compiling, or running their code after you have submitted that portion of the code yourself.
- Incorporating a few lines of code that you find online or elsewhere into your own code, provided that those lines are not themselves solutions to assigned work and that you cite the lines’ origins.
- Sending or showing code that you’ve written to someone, possibly a classmate, so that they might help you identify and fix a bug.
- Submitting the same or similar work to this course that you have submitted previously to this course (for example, if you are retaking the class).
- Turning to the web or elsewhere for instruction beyond the course’s own, for references, and for solutions to technical difficulties, but not for outright solutions to assigned work.
- Whiteboarding solutions with others using diagrams or pseudocode but not actual code.
- Working with (and even paying) a tutor to help you with the course, provided the tutor does not do your work for you.

Not reasonable

- Accessing a solution to some assessment prior to (re-)submitting your own.
- Accessing or attempting to access, without permission, an account not your own.
- Asking a classmate to see their solution to some assessment before (re-)submitting your own.
- Failing to cite (as with comments) the origins of code or techniques that you discover outside of the course’s own lessons and integrate into your own work, even while respecting this policy’s other constraints.
- Giving or showing to a classmate a solution to an assessment when it is they, and not you, who is struggling to solve it.
- Paying or offering to pay an individual for work that you may submit as (part of) your own.
- Providing or making available solutions to assessments to anyone, whether a past, present, or prospective future student.
- Searching for or soliciting outright solutions to assessments online or elsewhere.
- Splitting an assessment’s workload with another individual and combining your work.
- Submitting (after possibly modifying) the work of another individual beyond the few lines allowed herein.
- Submitting the same or similar work to this course that you have submitted or will submit to another.
- Using AI-based software that suggests or completes lines of code (unless this is explicitly allowed).
- Viewing another’s solution to an assessment and basing your own solution on it.

RCTC COMMON POLICIES

This course will be taught in accordance with the following policies, which apply to ALL RCTC courses. If you have any questions about these, please let me know!

Academic Integrity Statement. The primary academic mission of Rochester Community and Technical College (RCTC) is to provide quality learning opportunities for students. Acts of academic dishonesty undermine the educational process and the learning experience for the student and our college community. It is the responsibility of the student to complete their academic requirements with integrity and not engage in acts of cheating, plagiarism, or collusion. The College expects that students are submitting work and materials that reflects their individual learning and efforts within their course, program, and college academic requirements. It is expected that RCTC students

will understand and adhere to the concept of academic integrity and to the standards of conduct outlined within this policy. Students who are found to have engaged in an act of academic dishonesty may face academic sanctions through the Academic Integrity Procedure and non-academic misconduct sanctions through the Code of Student Conduct.

Americans with Disabilities Act. Rochester Community and Technical College is committed to ensuring its programs, services and activities are accessible to individuals with disabilities, through its compliance with state and federal laws, and System Policy. Appropriate accommodations are provided to those qualified students with disabilities. If you believe you qualify for an academic accommodation, please contact the Director of Disability Support Services, Travis Kromminga at 507-280-2968 or through the Minnesota relay TTY 1-800-627-3529. The office can also be reached via email at travis.kromminga@rctc.edu.

Military Friendly Statement. Rochester Community and Technical College (RCTC) is a military friendly campus, pledging to do all we can to help military veterans transition into college to complete their educational goals. RCTC is proud to be a Beyond the Yellow Ribbon campus, serving and honoring our veterans, military service members and their families. Through the Veterans Resource Center, RCTC offers student veterans an on-campus point of contact with other veterans, and program information to assist them in making a successful transition into college. For assistance, students are encouraged to contact the Veterans Assistant Coordinator, Mark Larsen, at 507-779-9375 or email at mark.larsen@state.mn.us, or Othelmo da Silva, RCTC's VA certifying official at 507-285-7566 or email at VeteranServices@rctc.edu.

Title IX Statement. Title IX of the Education Amendments of 1972 states: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance." Today, Title IX ensures that sex-based discrimination, including that related to pregnancy/parenting, sexual orientation, and gender identity, is responded to promptly and effectively with a fair, transparent, and reliable process.

Anyone who believes there has been an act of discrimination, harassment, or violence on the basis of sex against any person or group in a college-sponsored program or activity may file a complaint through the reporting form to the Title IX Coordinator, Dr. Teresa Brown. The coordinator may also be reached via email at titleix@rctc.edu or phone at 507-285-7217.

GETTING IN TOUCH WITH ME (AND WHAT TO INCLUDE IN AN EMAIL)

The best way to get ahold of me is by email, which I will aim to respond to within ONE working day (for simple questions) or TWO working days (for more complex ones). I am available on weekends as well as evenings and am available for phone call discussions with prior scheduling. If you don't hear from me by 2 days, please try calling or texting me and I'll respond as soon as possible. In order to help me provide you with quick, effective feedback, be sure to completely outline your question as well as provide any relevant info needed for a response. As I rule, I will not respond to requests that you be exempted from class policies without very good reason (e.g., for late-work extensions outside the conditions outlined above), or to emails that lack basic identifying information (your full name, class, etc.). For long or complex questions, I highly encourage you to schedule an appointment so that we can talk (either in person or by phone).

RESOURCES FOR STUDENT SUCCESS

Some helpful resources at RCTC (all of which are included with your course tuition) include the following:

- **Student Support Services/TRIO (SS 159)** provides academic support for first-generation and low-income college students, as well as those with documented disabilities.
- **Drop-in Tutoring (AT 306)** is available free of charge to *all* RCTC students. Please take advantage of it!
- **Online Tutoring** is available at www.tutor.com, accessible via D2L (so, don't go directly to the website—instead, log on to the main RCTC D2L page, and look for the link). This online tutoring option also includes a form where you can submit a paper for review (there is something like a 12-hour turn around).

COURSE CALENDAR

Week	Week Starting		Notes
1	08/25/2025	Syllabus, Setup & Introduction to the course	No Assignment Due
2	9/1/2025	Chapter 1: Pandas DataFrame Basics	Assignment 1 due 9/7
3	9/8/2025	Chapter 2: Pandas Data Structures Basics	Assignment 2 due 9/14
4	9/15/2025	Chapter 3: Plotting Basics	Assignment 3 due 9/21
5	9/22/2025	Chapter 4: Tidy Data	Assignment 4 due 9/28
6	9/29/2025	Chapter 5: Apply Functions	Assignment 5 due 10/5
7	10/6/2025	Chapter 6: Data Assembly	Assignment 6 due 10/12
8	10/13/2025	Dataset for Final Project	Dataset Submission due 10/19
9	10/20/2025	Chapter 7: Data Normalization	Assignment 7 due 10/26
10	10/27/2025	Chapter 8: GroupBy Operations	Assignment 8 due 11/2

11	11/3/2025	Chapter 9: Missing Data	Assignment 9 due 11/9
12	11/10/2025	Chapter 10: Data Types	Assignment 10 due 11/16
13	11/17/2025	Chapter 11: Strings and Text Data	Assignment 11 due 11/23
14	11/24/2025	Chapter 12: Dates and Times	Assignment 12 due 11/30
15	12/1/2025	Chapter 13: Linear Regression	Assignment 13 due 12/7
16	12/8/2025	Chapter 14: Model Diagnostics	No Assignment Due
17	12/15/2025	Final Project Due Dec 16th	Class ends Dec 19th