# MTH-391: Fundamentals of Data Science
# Syllabus

Section A | Spring 2025 | Department of Mathematics | University of Portland

Last updated on January 19, 2025

## About the Class

### Instructor Information

- Instructor: Dr. Alex John Quijano
- Office: Buckley Center 279
- Email: quijano@up.edu

### Lectures and Discussions

This course meets on Mondays, Wednesdays, and Fridays. Wednesdays and Fridays will focus on discussing topics. Project phases will be scheduled for Mondays. The typical class routine will include pre-reading assignments before each class, followed by a short lecture or demonstration, worksheet activities, group presentations, and discussions.

The course schedule and location is:

- **Section A:** MWF 1:35 PM - 2:30 PM, Franz Hall 125

### Textbook

This course uses the following textbook - which is free to access - for reading and practice.

- Baumer BS, Kaplan DT, orton, Nicholas J (2017). *Modern data science, with R.* Chapman and Hall/CRC. https://mdsr-book.github.io/mdsr3e/.
- Wickham H, Çetinkaya-Rundel M, rolemund, Garrett (2023). *R for data, science.* O'Reilly Media, Inc. https://r4ds.hadley.nz/.
- VanderPlas, Jake (2016). *Python data science handbook: Essential tools, for working with data.* O'Reilly Media, Inc., https://jakevdp.github.io/PythonDataScienceHandbook/.

*Amendment 4: The textbook was emphasized.*

### Credit Hours and Prerequisites

- Credit hours: 3
- Prerequisites: MTH 161 (Elementary Statistics) or MTH 201 (Calculus I) with a grade of C or higher

*Amendment 5: The subsection "Credit Hours and Prerequisites" was added with the number of course credits and prerequisites.*

## Communication Tools

### Class Website

The syllabus, tentative topics schedule, and other information are posted on the course website.

You can access the course website at mth-391a-sp25-otco.

Note that this website can also be viewed in Teams.

### Microsoft Teams

We will be using Teams as the main real-time communication tool for general announcements, question-answering discussions, and direct messages. I added you to the Teams page already, so you just need to log in using your UP credentials. If not, then send a request when you log in. Let me know if you need any assistance.

I recommend that you install the Teams software on your own machine for easy and stable access, instead of accessing Teams on the browser.

The Teams for this course is MTH-391A-sp25.

Note that this course website and textbook can be accessed in Teams.

### Email

My UP email is quijano@up.edu.

If you prefer communicating through email, note that I have set up an email filter for this course, and you must put the "MTH 391" keyword in your subject line.

It is easy for me to get notice of your email if you put the keyword in the subject line. Concise and specific messages are helpful, so I know how I can best help you.

## Assignment Tools

### Moodle

We will be using the course Moodle page for submitting assignments and giving feedback.

The Moodle for this course is MTH-391A - sp25 - Fundamentals of Data Science. You are already listed in Moodle for this course using your UP account.

### Posit Cloud

We will be using the R and Python programming languages as tools for all assignments. These tools are free and open-source. We will use the Posit Cloud service, an online computing environment that supports computations in R and Python.

*Amendment 1: The sentence "We will be using a computational tool (R) for some assignments." was change to "We will be using the R and Python programming languages as tools for all assignments.*

*Amendment 2: The sentence "We will use the Posit Cloud service, an online computing environment." was modified to "We will use the Posit Cloud service, an online computing environment that supports computations in R and Python."*

Create a free account at Posit Cloud Sign-Up using your UP email. Note that you must use your UP email for me to add you into the course's workspace in Posit Cloud. You will receive an email inviting you into the workspace at the first week of the semester.

R and Python instructions and materials will be provided ad hoc.

Note that the Posit Cloud computing service is free for you but it is metered by computation hours for the instructor. Please only use the service for course related computations.

If you are interested in using your own machine, you can install R environments yourself. First, you need to install R. Next, install R Studio. Similarly, you can install Python environments using Python and Jupter Notebook.

*Amendment 3: The sentence "Similarly, you can install Python environments using Python and Jupter Notebook." was added.*

# Learning Goals

### Description

This course provides students with a comprehensive understanding of the essential principles and techniques in the field of data science. Through this course, students will learn to proficiently handle and visualize structured and unstructured data, quantitative and qualitative data, formulating questions, and extract valuable insights using modern statistical methods and algorithms.

### Notes

Students in this course will be evaluated through mini-assignments and a semester-long data science project. Students will gain hands-on experience in using simple and readable programming codes in R and Python for data processing and creating multivariate data visualizations. Students will also develop skills in creating reproducible reports, communicate findings effectively, and navigate through data ethics.

### Learning Outcomes

Upon completion of the course, you will be able to:

- Process structured and unstructured data, and produce informative data tables and visualizations, as well as able to understand and explain the basic structure of data, how it is collected, and evaluate its limitations.
- Apply statistical methods, techniques, approaches, and algorithms to extract necessary information and insights from data.
- Critique claims and evaluate decisions based on data, and write and run simple programming codes for data analysis and visualization.
- Apply data science concepts and methods to solve problems in real-world contexts and able to communicate results effectively.

### Learning Objectives

The following learning objectives are designed to build on one another, with some overlap. The goal is to help you achieve proficiency in these areas.

- Work with a diversity of data which includes spatial, temporal, text, and network data.

- Use appropriate exploratory data analysis methods to extract knowledge from data.
- Create multivariate data visualizations that are both static and interactive.
- Apply modern statistical methods and algorithms to analyze data.
- Effectively write stories about data for a non-technical (or technical) audience.
- Utilize a reproducible and collaborative workflow for data analysis.

## Topics Schedule

| Week | Day | Topic |
|------|-----|-------|
| 1 | M 1/13 | Orientation |
|   | W 1/15 | Data Science Life Cycle |
|   | F 1/17 | Cloud Computing |
| 2 | M 1/20 | *MLK Day (no classes, offices closed)* |
|   | W 1/22 | Reproducible Workflows |
|   | F 1/24 | Basics of Data Wrangling |
| 3 | M 1/27 | **Project Milestone: Project Proposal & Project Phase 1** |
|   | W 1/29 | Data Wrangling on One Table |
|   | F 1/31 | Data Wrangling on Multiple Tables |
| 4 | M 2/3 | Using R for Data Wrangling & **Project Phase 2** |
|   | W 2/5 | Data Reshaping |
|   | F 2/7 | Basics of Visualizations |
| 5 | M 2/10 | Using R for Visualizations & **Project Phase 3** |
|   | W 2/12 | Transforming Tables for Visualizations |
|   | F 2/14 | Advanced Visualizations |
| 6 | M 2/17 | **Project Milestone: 1st Progress Report & Project Phase 4** |
|   | W 2/19 | Iteration |
|   | F 2/21 | Wrangling High-Dimensional Data |
| 7 | M 2/24 | Using Python for Advanced Data Wrangling & **Project Phase 5** |
|   | W 2/26 | Scaling and Coloring |
|   | F 2/28 | Visualizing High-Dimensional Data |
| 8 | M 3/3 | *Spring Vacation* |
|   | W 3/5 | *Spring Vacation* |
|   | F 3/7 | *Spring Vacation* |
| 9 | M 3/10 | Using Python for Advanced Visualizations & **Project Phase 6** |
|   | W 3/12 | Wrangling Temporal Data |
|   | F 3/14 | Visualizing and Analyzing Temporal Data |
| 10 | M 3/17 | **Project Milestone: 2nd Progress Report & Project Phase 7** |
|   | W 3/19 | Wrangling Spatial Data |
|   | F 3/21 | Visualizing and Analyzing Temporal Data |
| 11 | M 3/24 | Dynamic Visualizations & **Project Phase 8** |
|   | W 3/26 | Wrangling Network Data |
|   | F 3/28 | Visualizing and Analyzing Network Data |
| 12 | M 3/31 | Regular Expressions & **Project Phase 9** |
|   | W 4/2 | Wrangling Text Data |
|   | F 4/4 | Visualizing and Analyzing Text Data |
| 13 | M 4/7 | **Project Milestone: Final Report & Project Phase 10** |
|   | W 4/9 | Introduction to Statistical Learning |

| Week | Day | Topic |
|------|-----|-------|
|      | F 4/11 | Regression and Classification |
| **14** | M 4/14 | R and Python for Statistical Learning & **Project Phase 11** |
|      | W 4/16 | Model Selection and Regularization |
|      | F 4/18 | *Easter vacation* |
| **15** | M 4/21 | *Easter Vacation* |
|      | W 4/23 | Project Period |
|      | F 4/25 | Project Period |
| **16** | Th 5/1 | **Final Project Presentations(1:30 PM to 3:30 PM)** |

## Academic Support

### Help Hours

Dr. Alex John Quijano

- Walk-in Monday to Friday at 4:00 PM - 5:00 PM, Buckley Center 279
- One-to-One, Buckley Center 279 or in Teams *Click on the link to sign-up for a 15-minute session.*

My walk-in help hours start week 2. Note that you can bring a fellow student with you when you sign-up for a session. Just click the "Add Guests" link when you sign-up, and add in your fellow student's UP email. If you need more than 15 minutes, you can book at least two consecutive sessions.

### The Learning Commons

You can get academic assistance through Learning Commons tutoring services and workshops. The Co-Pilot peer tutoring program provides you with opportunities to work with other students to get help in writing, math, group projects, and other courses. Schedule an appointment to meet with a Co-Pilot (tutor) by visiting the Learning Commons website. You can also meet with a Co-Pilot during drop-in hours. Check the Learning Commons website or drop by the Learning Commons in BC 163 to learn more about their services. Find a tutor at the Learning Commons to get support on your academic journey.

### Math Resource Center

Appointment-based tutoring accepts appointments starting week 1 and sessions start week 2. Visit the Math Resource Center website to sign-up for an appointment. Drop-in tutoring is Monday to Thursday, 3:00 PM - 7:00 PM in BC 163 and starts week 2. Check the Math Resource Center website or drop by the center for more information.

### Help Hours Guidelines

It is strongly recommended that you attend the walk-in help hours or set up a one-to-one meeting with the me if you feel like you are falling behind during our in-person class activities, or if you just need to clarify concepts discussed in class. In order to be more productive during a one-to-one meeting (or the walk-in help hours), these are three recommendations before you come in:

- List all gaps in knowledge you have (missed concepts) or list all concepts that were unclear to you during class. We will address them one by one.

- Prepare questions you want answered and be ready to show relevant materials.
- Regarding assignments, prepare to show (a) what are the steps you have tried and (b) what are the errors you encountered and the strategies you have tried.

Note that these are recommendations so that you can get the most out of the help hours allocated for you. If you just want to come in and chat about something else, feel free to do so. If the dedicated time for one-to-one meeting does not work for you, send me a message to set up an appointment.

### Collaboration Policy

I expect you to participate in the class through lectures, class activities, discussions, homework, and other engagements. I also expect you to make use of opportunities to get help outside of class (help hours, Teams, email, tutoring) if you need help. Concise and specific messages are the most helpful so I know how I can best help you.

> You are encouraged to participate in discussions with your peers regarding assignments. However, each student must take responsibility and ownership of their work and submit their work individually, except for group projects.

## Assessment

### Assessment Disclosure Statement

Student work products for this course may be used by the University for educational quality assurance purposes. For reasons of confidentiality, such examples will not include student names.

### Standards-Based Grading

Learning data science demands focus, rigorous examination of the concepts you have encountered, and a process of ongoing refinement and improvement. You will be assessed on your proficiency of the concepts presented in the data science life cycle. You will have opportunities to demonstrate your proficiency, revise your work, and reflect on your growth in processing, visualizing, and analyzing complex data sets, communicating data stories, and making meaningful data-driven conclusions.

This course uses a standards-based grading system, which emphasizes mastery of specific learning objectives. This approach is more precise and motivating than traditional grading methods and fosters a more equitable learning environment. Key features of standards-based grading include:

- A clear focus on mastering defined learning objectives
- The use of diverse assessment methods to evaluate understanding
- Regular, detailed feedback to guide your progress
- Support in setting meaningful goals and tracking your growth

This system prioritizes learning and personal development, enabling you to excel and reach your highest potential.

### General Marking Guide

Each assignment will be graded according to the general marking guide detailed below. You will be given feedback on your assignment and learning process to improve your performance. Note that each assignment has its own rubric guided by these general guidelines and the assignment's learning objectives.

Given the following marks, your work:

| Mark | Rubric Description |
| --- | --- |
| **Outstanding (O)** | Demonstrates a full understanding of the material, clearly and concisely explains concepts, applies them correctly and efficiently to solve problems, and may extend the concepts to new situations. |
| **Excellent (E)** | Demonstrates an approximate understanding of the material, may have made minor errors but is able to correct them and explain the reasoning, solves problems correctly, and may need more time or practice to improve efficiency. |
| **Acceptable (A)** | Demonstrates some understanding of the material but makes errors, can solve some problems, may need help with more difficult ones, and may need to work on improving problem-solving skills and reasoning. |
| **Needs Improvement (NI)** | Shows potential but needs more work, may have made several errors, is unable to solve problems, and needs to focus on understanding the material and developing problem-solving skills. |
| **Needs Major Improvement (NMI)** | Shows little understanding of the material, may have made many significant errors, is unable to solve problems, and needs to focus on building a foundational understanding of the material. |
| **Missing (M)** | Shows incomplete (either entirely or partially) or incomprehensible work. |

Note that these are categorical marks (not numerical scores).

**Final Course Grades**

| Assignment | Rank | Mark | A | B | C | D |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Phases and Milestones** | 1 | O | 90% | - | - | - |
| | | E | - | 80% | - | - |
| | | A | - | - | 70% | - |
| | | NI | - | - | - | 60% |
| **Mini-Assignments** | 2 | Completed | 100% | 90% | 80% | 70% |

The above table shows the percent of given assignments. These percentages are minimum requirements for each letter grade. The rank determines the importance of each assignment where 1 means the highest rank and 2 means lowest rank.

If you need more assistance on understanding your overall standing in this course, I encourage you to communicate with me directly.

## Assignments

### Submission Guidelines

Your work must be labeled correctly and clearly written. All mini-assignments and project phases must be uploaded to Moodle as a single pdf file or html file.

You need to submit all assignments online through Moodle.

## Mini-Assignments

There will be mini-assignments every Wednesday and Friday. The purpose of the mini-assignment is for in-class group work and activities.

You must submit your mini-assignment individually by end-of-class or end-of-day. Your name must exist in your assignment and the names of your collaborators.

Mini-assignments are marked mostly on completion, and partially on correctness. It will be marked either pass or fail, there will no detailed feedback on worksheets, and no opportunities for revisions and make-up.

## Project Phases and Milestones

Completing a data science project is essential for learning data science concepts because it provides practical application and experience. This course's main assessments is through a semester-long project and it will be divided into phases and milestones.

**Project Phases**   The purpose of the project phases is to break the semester-long project into smaller tasks, allowing for incremental progress toward its completion. Project phase reports must be communicated on the next scheduled phase. The reports should consist of a concise 3-minute presentation supported by three well-designed slides. These presentations should effectively summarize the following key elements:

- **Tasks:** Clearly articulate the tasks and purpose in relation to the overall project objectives. This includes outlining the problem being addressed, the motivation behind the work, and the specific outcomes that are being targeted.
- **Progress Achieved:** Provide a brief overview of the work completed so far, highlighting key results, and any challenges you overcame. This section should demonstrate the current state of the project.
- **Next Tasks:** Outline the next steps to be taken, focusing on the remaining tasks towards the next project milestone. Additionally, this section can include any anticipated hurdles and potential contingency plans.

Each slide should focus on one of these three components, with clear and concise content. Visual aids, such as charts, graphs, or images, should be used to enhance understanding and engage the audience. Presenters should aim for a professional delivery that stays within the 3-minute time limit, ensuring clarity and impact without overloading the audience with excessive details.

**Project Milestones**   The milestones are aligned with key stages of the data science life cycle to ensure the systematic and effective progression of projects. Each milestone represents a distinct project phase and serves as a checkpoint to verify alignment with objectives and address potential challenges.

Each milestone includes a written report and reflects the expectations of a typical project phase. The following are details on what these milestones should be:

- **Project Proposal:** Frame your data science project, establish objectives, and outline the approach to solving it. Requirements:
    - Clearly define the problem or research question.
    - Specify the dataset(s) to be used and their relevance.
    - Outline the methods or techniques to be employed (e.g., exploratory data analysis, modeling, visualization).

- **1st Progress Report:** Summarize early work on data acquisition, cleaning, and exploratory data analysis. Requirements:
  - Description of datasets obtained, including sources and key features.
  - Initial data cleaning steps (e.g., handling missing values, removing duplicates).
  - Preliminary insights from data exploration (e.g., summary statistics, visualizations).
  - Updates on challenges encountered (e.g., data quality issues) and resolutions.
- **2nd Progress Report:** Focus on finalizing data visualizations, exploratory analyses, and refining data preparation, with modeling as a secondary consideration. Requirements:
  - Comprehensive set of data visualizations that clearly convey trends, patterns, and key insights.
  - Advanced exploratory analyses, including correlations, feature engineering, or hypothesis testing.
  - Validation of the dataset's readiness for modeling (e.g., addressing imbalances, normalization, feature selection).
  - Initial modeling attempts, with a focus on establishing a baseline or proof-of-concept models rather than optimization.
  - Discussion of insights derived from visualizations and how they influence modeling decisions.
- **Final Report:** Deliver a comprehensive document summarizing the entire data science project, from problem definition to final insights. Requirements:
  - Overview of objectives and methods.
  - Detailed findings, including final model performance and validation results.
  - Key insights drawn from analyses, supported by visualizations.
  - Discussion of the project's impact, limitations, and potential future work.
- **Project Presentation:** Summarize and showcase the project's objectives, process, findings, and conclusions in a concise, engaging format. Requirements:
  - A 15-minute presentation with 10 well-designed slides.
  - Visuals summarizing data insights, modeling approach, and final outcomes.
  - Focused delivery with clear, jargon-free communication for a mixed audience.
  - Participation in reviewing other student's projects based on structured criteria (e.g., clarity, analysis quality, presentation).

The final project presentations are on:

- **Section A:** May 1, Th 1:30 PM - 3:30 PM, Franz Hall 125

## Project Assessments

Project reports are marked using the general grading guide and will be returned with detailed feedback.

There will be no revisions for project phases and milestones because each phase is designed to include drafting and revising as part of the process. This semester-long project is intentionally structured to be iterative.

**Assessing Project Reports** The project reports allows you demonstrate your understanding of the material in written form. This part will be evaluated on the details of your methodology and analysis.

Reports will be graded on 3 components:

| Report | Description |
|---|---|
| **Methodology** | The method should be sound and well-founded. It should be based on a solid understanding of the underlying principles. The method should be applied correctly and consistently. |
| **Reasoning** | The solution method should be explained in a clear and logical way. The steps of the method should be justified and explained. The reasonableness of the solution should be justified. |
| **Writing** | The solution process should be written in a clear and concise way. The steps of the method should be easy to follow. The graphs/diagrams/equations should be clear and helpful. The mathematical notation should be used clearly and correctly. |

**Assessing Project Presentations** The project presentations allows you to demonstrate your understanding of the materials as well as your ability to communicate your work.

Presentations will be graded on 3 components:

| Presentation | Description |
|---|---|
| **Knowledge** | This includes the student's ability to recall and apply statistical concepts and procedures. The student should be able to answer questions about the material in a clear and concise way, and they should be able to solve problems using a variety of methods. |
| **Communication** | This includes the student's ability to explain their thinking clearly, concisely, and timely. The student should be able to use statistical language fluently, and they should be able to communicate their ideas in a way that is understandable. |
| **Problem-solving** | This includes the student's ability to identify and solve statistical problems. The student should be able to think critically about problems, and they should be able to develop and implement strategies for solving them. |

**Project Guidelines**

You must present and submit your phase presentations on the next scheduled phase. Project milestones must be written in RMarkdown and saved as html file.

The final report must include all relevant R codes that generated all figures and analysis. R codes can be also be included in the Appendix section of your report if you choose. The R Code must be properly documented or with comments.

You are encouraged to utilize all resources available to you, including course materials, online references, and collaborative discussions with your group members. However, you must adhere to the following guidelines:

- **Follow the Academic Integrity Policy:** Ensure all work is your own or properly credited where collaboration or external resources are involved.
- **Comply with the Course AI Policy:** Any use of AI tools must align with the course-specific AI guidelines provided. Misuse of AI will be considered a violation of academic integrity.

- **Adhere to Referencing and Citation Guidelines:** Properly cite all external sources used in your work to give appropriate credit and avoid plagiarism.
- **Uphold the Academic Honor Code:** I trust you to maintain the highest standards of honesty and integrity in your work.
- **Take Ownership of Your Work:** Each group member must contribute meaningfully and be prepared to explain and defend the project outcomes.

By following these principles, you will not only meet the project requirements but also demonstrate your commitment to ethical and responsible academic practices.

## Expectations

### Deadline Extension Policy

If you need more time to submit an assignment, you may request an extension by following these steps:

- Communicate with me at least 12 hours before the deadline.
- Specify the exact day you plan to submit your work or the number of extra days you need.
- Please ensure that you adhere to the established timeline for submitting assignments, as it is important to maintain fairness and avoid over-reliance on extensions.

Submitting a few hours late is usually not a major issue, as long as I receive your work before I begin marking and providing feedback. An extension is not required in such cases. Extensions for in-class assignments –such as worksheets, mini-assignments, or activities– will only be granted if I decide to extend the deadline for the entire class.

*Amendment 6: The sentence "If you need more time to submit a homework assignment, you may request an extension by following these steps:" was changed to "If you need more time to submit an assignment, you may request an extension by following these steps:".*

*Amendment 7: The sentence "Extensions for worksheets will only be granted if I decide to extend the deadline for the entire class." was changed to "Extensions for in-class assignments –such as worksheets, mini-assignments, or activities– will only be granted if I decide to extend the deadline for the entire class."*

### Late Assignments

You are expected to turn in all completed assignments on time. Circumstances that may disallow you to turn in your work on time - such as a medical reason - are understandable. Please let me know if you have missed the deadline way beyond its original posted date without prior communication regarding extensions. Because every assignment is an important aspect of your learning in this class, we will discuss when you will turn in the assignment as well as decide upon an acceptable consequence for your turning it in late. I am committed to successfully helping you learn from this course.

*Amendment 8: The "Late Assignments" subsection was moved.*

*Amendment 9: The sentence "Please let me know if you are unable to submit your work and have missed the deadline way beyond its original posted date." was modified to "Please let me know if you have missed the deadline way beyond its original posted date without prior communication regarding extensions."*

**Withdrawal Procedures**

It is the student's responsibility to drop the course if he or she is no longer planning on attending the course or filling the other course requirements. In order to drop, the student must use and Add/Drop form available at the Registration Office. If a student does not properly withdraw from a course, he or she may receive an **F** for the course. A properly withdrawn student will receive a **W**. The last day to withdraw is **Monday, April 14th**.

**Appointment Cancelation Policies**

You can cancel your appointments, but it is strongly recommended that you cancel 24 hours before your scheduled time so that other students can schedule when a spot opens. You can reschedule for a different day and time if you need to.

Please try to show-up to any of your appointments. If you have extenuating circumstances, please let me know as soon as possible to discuss next steps.

**Attendance and Participation**

Attendance is not tracked. However, participation is highly recommended. You are expected to actively participate in this class. Participation includes coming to class on time, being prepared, being willing to ask questions and share ideas, setting up study groups outside of class, attending tutoring sessions, posting helpful resources online, and contributing to the Teams discussion channels. Group and individual presentations of ideas is a suggested component of participation.

**Absences**

Generally, students are expected to attend all class sessions according to the instructor's direction. Students who feel unwell should NOT attend class in person. These students should inform their instructor as soon as possible.

Should the instructor need to miss class, the course may be temporarily conducted remotely. Should the instructor be unable to teach for an extended period of time, the respective department or unit will find a substitute to continue the course.

**Incompletes**

An incomplete "I" will only be considered when the quality of a student's work is satisfactory (C- or better), but for some essential reason the course has not been completed by the student. An "I" is reserved for emergency situations only. To request an incomplete, the student must submit a typed, signed and dated letter stating the reason(s) why an incomplete is appropriate. The letter should also contain the conditions for the completion of work. Acceptance of the request shall be at the discretion of the instructor, Department Chair, and/or Dean of the College of Arts & Sciences.

**Accessibility Statement**

The University of Portland strives to make its courses and services fully accessible to all students. Students are encouraged to discuss with their instructors what might be most helpful in enabling them to meet the learning goals of the course. Students who experience a disability are also encouraged to use the services of the Office for Accessible Education Services (AES), located in the Shepard Academic Resource Center

(503-943-8985). **If you have an AES Accommodation Plan**, you should meet with your instructor to discuss how to implement your plan in this class. Requests for alternate location for exams and/or extended exam time should, where possible, be made two weeks in advance of an exam, and must be made at least one week in advance of an exam. Also, if applicable, you should meet with your instructor to discuss emergency medical information or how best to ensure your safe evacuation from the building in case of fire or other emergency. All information that students provide regarding disability or accommodation is confidential. All students are responsible for completing the required coursework and are held to the same evaluation standards specified in the course syllabus.

## Code of Academic Integrity

The University of Portland is a diverse academic community of learners and scholars who are dedicated to freely sharing ideas and engaging in respectful discussion of those ideas to discover truth. Such pursuits require each person, whether student or faculty, to present truthfully our own ideas and give credit to others for the ideas that they generate. Thus, cheating on exams, copying another student's assignment, including homework, or using the work of others without proper citation are some examples of violating academic integrity.

Especially for written and oral assignments, students have an ethical responsibility to properly cite the authors of any books, articles, or other sources that they use. Students should expect to submit assignments to Turnitin, a database that ensures assignments are original work of the student submitting. Each discipline has guidelines for how to give appropriate credit, and instructors will communicate the specific guidelines for their discipline. The Clark Library also maintains a webpage that provides citation guidelines at https://libguides.up.edu/cite.

The misuse of AI to shortcut course learning outcomes will be treated as a violation of academic integrity comparable to plagiarism or cheating. Faculty are responsible for including a written "Course AI Policy" in their syllabi that clearly states what they consider appropriate and inappropriate uses of AI in the context of their courses. Students are responsible for using AI in ways that do not detract from the established learning outcomes of the course. All members of the scholarly community are responsible for demonstrating sound judgment in discerning when and how to utilize AI in their work, upholding standards of citation, originality, and integrity.

Please see the University Bulletin for further information: up.smartcatalogiq.com/en/2023-2024/bulletin/.

## Course AI Policy

The use of generative AI — such as Copilot, Gemini, or ChatGPT — is encouraged and allowed in all of its capacity. However, students must use these tools ethically and responsibly. To use generative AI responsibly in this class, students should grasp underlying concepts, acknowledge AI's assistance, protect data privacy, verify information, and uphold academic honor code. AI should be seen as a learning aid, not a replacement for critical thinking.

## Referencing and Citation Guidelines

In your written work for this course, you must cite all sources of information that you use, whether they are direct quotes, paraphrases, or summaries. The style of citation that you use should be consistent throughout your paper. The citation styles for this course are APA or CSE.

- APA style is used in the social sciences and psychology. It is characterized by parenthetical citations that include the author's last name and the year of publication. For example, "According to Smith (2023), the average height of a man in the United States is 5'10"."
- CSE style is used in the natural sciences and engineering. It is characterized by numbered citations that are listed at the end of the paper. For example, "[1] Smith, J. (2023). The average height of a man in the United States. Journal of Human Biology, 55(2), 123-132."

If you are unsure which citation style to use, please consult with me. You can also find more information about APA and CSE style in the Clark Library citation guidelines: libguides.up.edu/cite

Plagiarism is the act of using someone else's work without giving them credit. It is a serious academic offense that can result in a failing grade or even expulsion from school. By following these guidelines, you can help to avoid plagiarism and ensure that your work is properly cited.

## Mental Health Statement

Anyone may sometimes experience problems with their mental health that interfere with academic experiences and negatively impact daily life. If you or someone you know experiences mental health challenges at UP, please contact the University of Portland Counseling Center in the upper level of Orrico Hall (down the hill from Franz Hall and near Mehling Hall) at 503-943-7134 or hcc@up.edu. Their services are free and confidential. In addition, confidential phone counseling is available at the Pilot Helpline by calling 503-943-7134 and pressing 3. The University of Portland Campus Safety Department (503-943-4444) also has personnel trained to respond sensitively to mental health emergencies at all hours. Remember that getting help is a smart and courageous thing to do – for yourself, for those you care about, and for those who care about you. For more information on health and wellness resources at UP go to https://linktr.ee/wellnessUP.

## Non-Violence Statement

The University of Portland is committed to fostering a safe and respectful community free from all forms of violence. Violence of any kind, and in particular acts of power-based personal violence, are inconsistent with our mission. Together, all UP community members must take a stand against violence. Learn more about what interpersonal violence looks like, campus and community resources, UP's prevention strategy, and what we as individuals can do to assist on the Green Dot website, www.up.edu/greendot. Further information and reporting options may be found on the Title IX website, www.up.edu/titleix.

## Ethics of Information

The University of Portland is a community dedicated to the investigation and discovery of processes for thinking ethically and encouraging the development of ethical reasoning in the formation of the whole person. Using information ethically, as an element in open and honest scholarly endeavors, involves moral reasoning to determine the right way to access, create, distribute, and employ information, including: considerations of intellectual property rights, fair use, information bias, censorship, and privacy. More information can be found in the Clark Library's guide to the Ethical Use of Information at Ethical Use of Information at libguides.up.edu/ethicaluse.

## Diversity and Inclusion Statement

In the study of natural and mathematical sciences, often perceived as objective disciplines aimed at understanding the world, it is crucial to recognize the historical biases embedded within these fields,

stemming from a limited set of privileged populations. Acknowledging the potential existence of overt and covert biases within the course, I emphasize that science is a human endeavor necessitating the incorporation of diverse experiences in the pursuit of knowledge and skill. Valuing every student irrespective of background, origin, race, religion, ethnicity, sexual orientation, disability status, etc., I am committed to fostering an inclusive climate throughout the course. Encouraging open communication about concerns or challenges, I assure confidentiality, except for instances of academic integrity violations or sexual harassment, which are legally mandated to be reported. Within our classroom, diversity and individual differences are celebrated as strengths, and the use of mathematics as an analytical tool to challenge power, privilege, and oppression is supported. It is our collective responsibility to create a welcoming space where ideas can be challenged while maintaining respect for individuals.