

# Advanced Data Science and Visualization

COSC 460 - Spring 2022

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## 1 Introduction

This class is being taught at St. Mary's College of Maryland, located on the traditional and ancestral territory of the Chaptico, Piscataway, Yaocomaco, and Pamunkey Native Americans.

We will be expanding on the knowledge you have gained in your earlier computer science classes and reaching for a deeper understanding of some of the techniques you already know so you can understand the power of the tools that you are using. Please do so knowing that Computer Science is not a discipline removed from society. Computer algorithms in use today reflect and exacerbate many inequities and problems in society, though they can also contribute in some part to solutions to these problems.

## 2 Overview

This course serves as an advanced exploration into the programming and data visualization techniques required for data science. Topics include: advanced inference and predictive modelling, data mining, data visualization, and ethics in data science. Prerequisite: COSC 360 or permission of the instructor.

## 3 Evaluation

The breakdown of the grading is as follows:

- Homework 70%
- Readings Responses 10%
- Project 15%
- Participation 5%

## 4 Attendance and Tardiness

Attendance is highly recommended. I expect students to be in class at the beginning of the class period, if you have circumstances that prevent you from being in class on time, please let me know as soon as possible. While there is no required attendance you are expected to participate while in class and your grade will be lower if you do not participate in class discussions or group work.

## 5 Late Policy

Unless otherwise stated all Homeworks and Projects will be due on Fridays at 5PM.

Reading Responses will be due before class as we will be discussing them in class. Late readings will be accepted for 10% of their original point value until the end of the semester.

Homework will be awarded 5% fewer points per day late for up to six days after the due date. Homework will not be accepted after six days.

There will be limited opportunity to turn in the final project as it is due at the end of the semester, the late penalty will be 10% a day and students should communicate with the professor to learn how late submissions will be accepted (the cut off will be the same for everyone but the final date may change depending on other deadlines)

### 5.1 Anonymized Grading

It is important for you to put your name on each assignment you turn in to practice professionalism and I will remove points if it is not present, however I also believe that anonymized grading is important and I use it for all assignments to the fullest extent possible. Anonymized grading requires that I not know the author of the work I grade. I achieve this by opening all of the assignments at once and minimizing the comments at the top of the code or scrolling so that I cannot see your name at the top of the document as I grade. I use anonymized grading to minimize the effect that either my own biases or any preconceived notions of students' ability influence may have on my judgment of their work.

Note: It is not usually possible for me to use anonymized grading with late work.

## 6 Respect for Others

It is expected that all students be attentive, polite, and not a source of distraction to me or any other student. Your behavior at all times must be respectful – of your classmates, yourself, and me. Language that is disrespectful based on race, ethnicity, sexual orientation, age, gender or gender expression, religion, ability, social class, or size will not be tolerated.

To help us accomplish this:

- If you would like us to use a name and/or set of pronouns that differ from those that appear in your official SMCM records, please let me know.
- If you feel like your performance in the class is being impacted by your experiences outside of class, please talk to me. I would like to be a resource for you. Note: I am a Mandatory Reporter and as such am mandated to report anything that would fall under Title IX (sexual harassment or sexual assault).
- As a participant in class discussions, you should honor and respect the diversity of your classmates.

### 6.1 Ask Questions

You are encouraged to ask appropriate relevant questions and introduce your own views that contribute to everyone's learning. Every person in the classroom has a different level of experience with the material we are reviewing. With this in mind, please be respectful of where your fellow classmates are in their learning and with your words inside and outside the classroom.

## 6.2 Religions Holidays

If you are celebrating a religious holiday that conflicts with the course, please let me know as soon as possible so we can make alternative arrangements for you or so I can shift the course schedule. I have tried to ensure that no due dates fall on major religious holidays but it is very possible that I have missed some, so please let me know. Additionally, if there is anything in the course that might violate your religious traditions and beliefs, please meet with me so I can create slightly different requirements for you.

## 6.3 Accommodations

My class intends to be a disability-friendly space. Please let me know if there are things that I can do to achieve a more accommodating setting. Students with documented arrangements in this course should speak to me as soon as possible so we can discuss what you need to succeed in this course.

## 6.4 Distractions

I understand that it is difficult to pay attention for long periods of time and I aim to break up the lecture material with activities and frequent breaks. Please avoid distracting behaviors such as private conversations, irrelevant reading, coming to class late, leaving early, checking email, using social media, texting, or listening to headphones, are disruptive to meaningful learning. These disruptions are inconsiderate to others and undermine your own learning experience.

Be sure to silence all electronic devices when you are in class. If they go off in class they are a distraction to everyone in the class. Habitual offenders will be excused from class with a 0 for participation for the day.

## 7 Masks

I am very grateful to the many thousands of people who worked very hard to develop the vaccine and the tens of thousands of people who organized the distribution of it. The research suggests however that vaccinated people can spread COVID and catch the disease, therefore regardless of school policy changes throughout the semester when you are in the classroom you will be required to wear a mask at all times. You may step outside if you would like to lift your mask to take a drink of water, get a bite to eat, or scratch your nose.

## 8 Academic Honesty

You should only be turning in your own work and when you add to or enhance your work with the work of others you must give credit to those other sources, including your past self and other students.

You should not be sharing the code you write for any assignment with other students (unless they have been assigned as your partner or group member).

If you do use code that someone else wrote then you must write a comment in your code with a reference to where you got the code you are using.

For example, if the source was a website your comment should include:

- the URL,
- the website name,
- the date you got the code,
- an explanation of how many lines of code you used, and
- what modifications you made to the code.

Any violation of academic integrity will result in an automatic zero for that assignment and will be reported to Academic Services. Severe violations of academic integrity or a second offence will result in a more severe penalty up to, and including, an automatic F in the course.

## 9 Writing Center

The Writing and Speaking Center offers free peer tutoring in writing and speaking. The peer tutors are students themselves, but they have completed extensive hands-on training to learn how to assist their peers at any step of the process (planning, drafting, or revising) for any writing or speaking assignment, and they have also now been trained how to deliver this help via Zoom sessions. Although the peer tutors cannot diagnose issues or make revisions for you, they can work collaboratively with you to discuss ideas, consider options, and find solutions so that you can continue solo. This collaborative approach is one of the best ways to help students develop their abilities because all writers and speakers need audiences—just ask the peer tutors, who often schedule tutorials with each other.

To schedule an appointment, please visit the Center's website ([www.smcm.edu/writingcenter](http://www.smcm.edu/writingcenter)) and click the "Make an Appointment" button. The Center's website also has videos of sample tutorials, helpful handouts on different writing elements, an FAQ section with more information, and details for how to become a tutor. If you need assistance scheduling or have additional questions, please contact the Assistant Director of the Center, Mandy Taylor, at [apeatwole@smcm.edu](mailto:apeatwole@smcm.edu).

## 10 Closing

The most important thing in any of my classes is that you are safe and healthy, after that your learning is important and I hope that you are able to expand your horizons in this course. If you have any undue difficulty with your work as it pertains to this class, please contact me as soon as possible. Always remember that the professors win when you don't need us any longer.