MA 405-002: Introduction to Linear Algebra and Matrices, NCSU, Spring 2018

Project

Overview

As an expert in your chosen field, your task is to explain to your colleagues how linear algebra can be useful. I have decided that you may work with up to two other people. You may still decide to work on your own. If you have chosen to work with others, this must be approved by the time the project proposal is due. After completing this project, the successful student will be able to:

- Identify at least one application of linear algebra within a chosen topic.

- Communicate technical ideas.

- Manage time effectively to incorporate a semester-long assignment.

Topics

I will include some potential areas at the end of this document if you need some ideas. Make sure you choose a topic about which you are passionate; you will be working on this all semester long. Your topics must fit the following:

- The topic must be small enough that it can be studied within the course of the semester.

- The topic must be an application of linear algebra, not just solving homework problems.

- The topic must be interesting to you and describable to me.

Proposal

Your proposal should include a brief summary of your chosen field and an explanation of how linear algebra is applied in that field. Include which concepts from linear algebra you intend to discuss. You may choose to look at the table of contents of our textbooks or talk to me to determine which concepts may be appropriate. The proposal should be no more than one page. It should include the names of all those working together. **Due: Friday, January 26, 2018.** You will receive one of three grades:

- "Acceptable," meaning your proposal is appropriate for the project.

- "Needs Work," in which case I will give you suggestions and you will be permitted to resubmit a proposal or show in your draft that you have implemented my suggestions.

- "Unacceptable," either because you did not submit a proposal or you failed to read directions.

Drafts

You are only required to submit one draft of your project (**Due Friday, February 23**). I will accept updated drafts at any time (within reason - please do not submit drafts weekly). Within your draft, you may wish to state concepts that we have not yet covered in class but you believe will be helpful. If your application relies heavily on concepts that we will cover toward the end of the semester, come to me and we can discuss how to manage your time with this project. My hope is that you are able to work on the project throughout the semester, rather than have to do it all at once.

Final Project

Your final project will be a maximum of four pages. If you'd prefer to use a different medium other than a paper for your project, please mention this in your project proposal or drafts. Your project can be as little as one page if you are able communicate your message within that page. More likely, you will need at least two pages. It is essential that you incorporate all feedback received throughout the semester in the final project. For this reason, please include a paragraph stating how you did so. **Due: Friday, April 20**

A grading rubric and instructions for the draft and final will be given at a later date. I will accept submissions in class on the due date (or before) or online by midnight of the due date below:

Component	Due Date	Points
Check-ins and Google Form	Friday, January 12 and ongoing	5
Project Proposal	Friday, January 26	15
Draft/Demonstrating Progress	Friday, February 23 and ongoing	30
Final Summary	Friday, April 20	40
	Total:	90

Potential Topics, in addition to your major or passion!

- Cryptography

- Linear Programming

- Markov Chains

- Web Page Ranking Algorithms

- Differential Equations

- Quantum Mechanics

- Computer Graphics

- Graph Theory