Group Project   TMATH 308

The reason why: By the end of this project you will have

1. applied techniques covered in class to a new topic without the direct aide of a teacher,
2. practiced presenting technical information, and
3. developed technical writing skills.

Beginning in week five students will form groups and start periodically working on their own research topics outside of class. The group project will center around a direct application of linear algebra and requires the completion of a paper, portfolio, and poster. You may select a topic from the list below or choose your own topic. Pairs are preferred but if you would like to work alone you may also do so.

Timeline:

1. 10/24 In class writing activity: Come to class with two or three topics you are considering for your project. You need not have decided on a topic, but you should have a short list of interests.
2. 10/31 In class writing activity: Come to class knowing who is in your group and what topic you will work on.
3. 11/7 In class check in: Bring activity log to class.
4. 11/14 Draft exchanged between groups: *Each* member must review the paper given to their group and fill out the grading rubric. Additional comments and suggestions from each group member should be written on the one copy that they were given.
5. 11/21 Return peer reviews: Make sure to keep all the reviews you receive as these must be included in the portfolio.
6. 11/26 Presentaions:
7. 12/5 Final paper due:
8. 12/10 Portfolio is due:

Group Project Topics:

Topic	Places to start
Error-detecting codes	§1.4
Cross Product	Exploration after §1.3
Codabar System	after §1.4
Economic applications	§3.7
Balancing Chemical Equations	§2.4
Network Analysis	§2.4
Electrical networks	§2.4
Finite Linear Games	§2.4
Probability (Markov Chains)	§3.7
Kalman filter (phase-locked loop)	
Archimede's Law of Levers	
Discrete Dynamical Systems	
Adjacency Matrices of Graphs	
Good Will Hunting Problem	Harvard paper
Archimede's Cattle Problem	
Voting transformed to simplicies	

Paper Specifications: The writing component is minimally a five page single space paper in size 12 font. The paper is expected to be written clearly and be free of grammatical mistakes in either the APA or IEEE format. The paper must include:

1. An abstract that gives a clear, concise description of the paper in less than 100 words. (I will count the words!)
2. At least two pages that serve as an introduction to topic being discussed. Included in this introduction should be precise definitions and examples to help clarify any new concepts. The audience for this paper will be your peers, so make sure you write at an appropriate level.
3. A few problems/examples completed and clearly written up. Make sure that you work a number of your own examples and don't just follow examples provided in your sources. The solutions need not be shown in their entirely, but must include a few key steps as well as an explanation of what the computation means.
4. At least one additional (and interesting) application or example of this topic that was not found within the textbook. Be sure to cite your outside source using APA or IEEE style in your paper.
5. A work cited page in either APA or IEEE style that is absence of questionable/inappropriate sources.

Presentation Specifications: Each group will have 12 minutes to set up, present, and field questions on their topic. Every group member must speak. Presentations must have:

1. an introduction to your group's topic,
2. one well chosen example/application, and
3. a prepared visual aide that enhances the presentation.

Portfolio Specifications: The following must be collected, in order, and turned in on the due date:

1. The first in-class writing activity (10/24) from *each* group member.
2. The activity log created on 10/31 and updated regularly.
3. A copy of the feedback that your group gave during the peer review.
4. One page, typed response to the feedback that your group received.