

# 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 from a teacher, and
2. 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. 10/27 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. 11/3 In class writing activity: Come to class knowing who is in your group and what topic you will work on.
3. 11/17 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.
4. 11/25 Poster session:
5. 11/29 Return peer reviews: Make sure to keep all the reviews you receive as these must be included in the portfolio.
6. 12/6 Final paper due:
7. 12/8 Portfolio is due:

Group Project Topics:

Topic	page	Problems
Error-detecting codes	47	§1.4 #46,48,52
Cross Product	45	2,3,8b
Codabar System	55	verify the last paragraph by generati
Computer Lies	66	1,2
Pivoting Smartly	86	1,2
Economic applications	101 of Nako's pg 40 & 51	Allocation of Resources
Balancing Chemical Equations	103	§2.4 # 7,8,11
Network Analysis	104	§2.4 # 16
Electrical networks	106	§2.4 # 19,21
Finite Linear Games	109	§2.4 any two from # 23 -28 Magic Sq
Kalman filter (phase-locked loop)		
Archimede's Law of Levers	44	Nokos page 52
Discrete Dynamical Systems	131 &140	Noko's §2.9
Adjacency Matrices of Graphs	§3.5	Nako's
Good Will Hunting Problem	235	§3.7
Archimede's Cattle Problem	54	Nako's

**Paper Specifications:** The writing component is minimally a four page single space paper in size 12 font. The paper is expected to be written clearly and be free of grammatical mistakes. Two papers with the proper formatting are posted on the class website and can also serve as examples of technical writing. You may use either the APA style (as the examples posted on the class website do) or IEEE for your work cited. 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 to 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. If you choose a topic on the list provided above, a few problems have already been selected. If you are working on a topic not on the list provided 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 entirety, 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.

**Poster Specifications:** The poster should be a standard [?x?](#) poster that can be leaned up against the wall. The poster must include a basic introduction to your topic and at least one example. Groups are encouraged to make their posters flashy and attention grabbing but make sure the content is correct and well chosen. Students will spend a class period examining each other's posters and asking each other questions about their topics.

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

1. The first in-class writing activity (10/27) from *each* group member.
2. The activity log created on 11/3 and updated regularly.
3. The peer reviewed draft with all collected writing rubrics.