Group Project   TMATH 402

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

1. applied techniques covered in class to a new topic that interests you, 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 abstract 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 you can work individually or in groups of up to three.

Timeline:

1. 1/28 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. 2/9 In class writing activity: Come to class knowing who is in your group and what topic you will work on.
3. 2/18 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. Keep a copy for yourselves as it will be collected in the portfolio
4. 2/25 Return peer reviews: Make sure to keep all the reviews you receive as these must be included in the portfolio.
5. 3/3 Turn in second draft to instructor.
6. 3/10 Poster Session:
7. 3/17 Final paper due:
8. 3/17 Portfolio is due:

Group Project Topic Ideas:

- Check-digits (e.g. driver's license #, money orders, credit card #)
- Puzzels (e.g. 15 puzzle, Rubric cube)
- Secrete codes using modular arithmetic (e.g. RSA)
- Symmetry in chemistry (e.g. crystals)
- Card tricks
- Bell ringing

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

1. An abstract that gives a clear, concise description of the paper in less than 100 words.

2. At least two pages to serve as an introduction to the 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. The problems must be your own examples and not simply following those provided by 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. A work cited page in either APA or IEEE style that is absence of questionable/inappropriate sources.

Poster Specifications: The poster should be a standard sized 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, well chosen, and clearly written. 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 (1/28) from *each* group member.
2. The activity log created on 2/9 and updated regularly.
3. A copy of the review that you provided (over another group's paper).
4. The a copy of the peer reviewed and instructor reviewed draft that your received.
5. One page, typed response to the feedback that you paper received.
6. Group self evaluations to be turned in through Canvas by 3/17.

Details about the self evaluations will be posted on Canvas but below is a brief summary:

Specify the members of your group and next to each indicate what you perceived as their level of involvement and contributions. Note, I am requesting two numbers for each group member: 1) their level of involvement and 2) their contributions.

It is possible for a group member to be very involved (e.g. attend all meetings and work with the group) but not contribute any answers. Similarly it is possible that a group member may not be involved and contribute many answers.

Details about the range of numbers to assign: Let n be the number of people in each group. The total number of points you can assign is 8*n. Each member's points must be an integer greater than 0.