

MATH 4900: Senior Seminar in Mathematics

Spring 2020

Instructor: Tony Shaheen

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Office Hours: to be announced in class.

Course Website: Follow the link from <http://www.calstatela.edu/research/ashahee/>

Lectures: Monday and Wednesday, 6:00pm—7:40pm, MUS 111.

Textbook: There is no required textbook for this class.

Prerequisite: Math 2450, Math 4550, and Math 4650.

Course Description: There are two main components to the class.

1. Perfect numbers – I will teach you about this and there will be a final exam on it
2. Your chosen topic – You will write a paper on a topic of your choice and give a presentation on this topic to the class

Course Objectives: To learn about perfect numbers. To improve your ability to read, write, and present mathematics. To improve your ability to learn mathematics on your own.

Part 1 – Perfect Numbers: For the first half of the course, I will present on the topic of perfect numbers. The history of this problem goes back to the Greek times and there are several unsolved problems in this area. These are some of the oldest unsolved problems in mathematics. Our plan is to find out what has been discovered and what is left to figure out.

The final exam for this course will be based on the topics that we cover in part 1 of the course.

Part 2 – Your chosen topic: Each student will pick a topic to learn about on their own. Each student will give a talk on their chosen topic during the second half of the course. They will also write a paper on their topic.

Paper: Each student will choose a topic in mathematics that they haven't learned before, research the topic, and write a paper on the topic. You do not need to do any original research, just learn what others have figured out. The paper must be at least 10 pages long (single spaced), not including the title page and bibliography. The paper must include a bibliography of references that you used. Choose any topic in mathematics that you would like to learn more about. It can't be a topic that you have already learned in a class, but it can be an extension of some class that you took. By the second week of class I want everyone to tell me what topic

they are doing so I can approve it. See the website for examples of topics that you can choose. Or choose your own from the area of math that you like best. You may use whatever word processor you want to write your paper. Two examples are Word and LaTeX. Pictures may be hand-drawn if you don't know how to make them on a computer.

Do not copy word-for-word from a source such as the internet or a textbook. Write the paper in your own words. If you copy word-for-word you will be penalized, from a little bit of a penalty to a score of zero on the paper, depending on the extent of the copying.

A rough draft of the paper is due on Monday, March 16th. I will give you feedback at this point. This will be part of your grade. To receive the full 5% towards your grade you must (i) turn the rough draft in on time and (ii) have at least 5 pages written by this point, not including the title page or bibliography. Some parts of the rough draft can be sketchy, i.e. you can say that you will fill in such and such here, etc.

The final version of your paper is due during the final exam period.

Presentation: Each student will give a 40 min presentation to the class on the topic that they chose to write their paper on (40 min is roughly half a class period). Each student must use PowerPoint or a similar program to present their talk to the class.

Participation/Attendance: Please be respectful and come to each other's presentations.

Grading: Your grade will be calculated as follows:

30% - exam on perfect numbers (taken during the final exam period)

5% - rough draft of your individual paper (due March 16th)

30% - final version of your individual paper (due during the final exam period)

35% - presentation on your chosen topic

See the website for more information on the presentations and the final paper and how they will be graded.

Final Exam Period: The final exam period is tentatively scheduled for

Monday 5/11 from 5-7pm.

On March 9th the university will let us know if this is still the final exam time.

ADA statement: Reasonable accommodation will be provided to any student who is registered with the Office of Students with Disabilities and requests needed accommodation. Let me know during the first week of class if you will be needing accommodations.

Academic honesty statement: Students are expected to do their own work. Copying the work

of others, cheating on exams, and similar violations will be reported to the University Discipline Officer, who has the authority to take disciplinary actions against students who violate the standards of academic honesty.

Student responsibilities: Students are responsible for being aware of all announcements that are made in class, such as changes in exam dates, due dates of homework and papers, and cancellation of class due to instructor's absence. Students are responsible for announcements made on days that they are absent.

Students must check their CSULA email account regularly for information from the instructor and the Department. Failure to do so may result in missed deadlines or other consequences that might adversely affect students. Note that you can forward this email account to any other account of your choosing.