

MATH4999L1 Capstone Project in Mathematics (Pure Math Track)

Lead Instructor: Prof. Yang Wang

Pre-Requisites: By now you should have taken and passed most of the necessary pre-requisite materials needed to do well in this class. But some review of linear algebra, calculus, analysis etc will certainly not hurt.

Homework: Some exercises will be given after a lecture. They will have a due date, usually one week after they are assigned. There are also discussion type of problems or open ended questions that are not required to be turned in, but can be the basis for your term project. Homework will count for 30% of your total final grade.

Exams: There will be no exams.

Attendance: Attendance is required because the course is structured like a workshop, and there is no textbook. Thus it is important that you attend the lectures.

Grading Policy: Your final grade will be based on *three things*: Attendance, Homework, and Final Project (report + presentation). More precisely, here is how each category will be calculated.

Attendance: Attendance counts 25% of your grade. There are a total of 26 lectures in this class. We will not have a class on November 29. So there will be a total of 25 lectures. Allowing each of you to miss two classes due to illness and extraordinary circumstances, we will consider attending 23 lectures as full attendance. The maximum attendance score one can get is 25 points. Assume you have attended N lectures. If $N \geq 23$ then you get $P_A = 25$ points. Otherwise, you get

$$P_A = 25 \times \frac{N}{23} \text{ points.}$$

Homework: Homework also counts 30% of the total grade. This is similarly computed. Suppose your cumulative score is X out of a total of S . Then your homework grade P_H is

$$P_H = 30 \times \frac{X}{S}.$$

Given that the language of choice for typesetting is LaTeX, you will be required to submit your homework in LaTeX after October 4. In other words, any HW submission due after *October 4* **must be submitted in LaTeX**.

Your cumulative score X can also exceed the total S . Thus in theory you can get more than 30 points in the end. This is a mechanism to reward those of you who put in extra effort: Having a very unique and clever solution, making the submission extra nice, etc. Any HW submission in LaTeX before October 4 will be given 20% extra credit. *HW submitted using MS Office or other applications will not qualify for bonus.*

You are allowed to discuss HW with your fellow students. However, copying HW from one another is strictly forbidden. If copying is suspected because of the similarity of an unusual argument, especially if the argument is wrong, those suspected of copying HW will be called into Prof. Wang's office and questioned. If copying is confirmed, an *automatic reduction of 10 points in the final HW grade* will be made to all involved parties for each incidence.

Term Project: The Term Project consists of a project presentation and a written final project report, and it counts 45% of the total grade.

- The term project will be team based, which is to encourage team working and communication, both are important career skills. A team should have 3 members. In exceptional cases it can have 2 members. The team decides on a topic and collaborate.
- The presentation part will be done by the whole team together, so each team has one presentation. The length of the presentation will be announced later, and it is usually around 20 minutes. The term project presentation will be judged by a panel of professors. It will *account for 20 of the 45 Term Project points*. The clarity and depth of the presentation will count the bulk of the grade for the presentation.
- The written project report must be written separately by each individual. Copying and any form of plagiarism from the web or team members is strictly forbidden. *Copying/plagiarizing will result in a 0 point for all parties involved, regardless who copied from who*. The report should be at least 5 pages long, but should not be overly long. It will *account for 25 of the 45 Term Project points*. It will be judged on the depth of your research, the clarity of your writing, and creativity.
- The maximum score for the term project is $P_P = 45$ points. But for exceptional work extra points might be awarded.
- Not doing a project, or submitting an unacceptable project, will result in an F grade regardless how well you do in Attendance and Homework.

Final Grade Assignment: You will get an A if your final grade is $\geq 90/100$. The other grades are assigned accordingly. There could be a curve pending on the overall performance of the class. However, we will not curve it up, i.e. if all of you receive over 90 points or more, you will all get an A.

Office Hours: This class will be jointly taught by different professors. Each professor will make himself available to you for that week and beyond. In addition, your TAs should also be available to help you.

Miscellaneous: Showing respect to the professors and your fellow students is a basic courtesy all of you should understand and practice in all your classes. There is no exception in this class. During the class, please turn your cell phone to the silent mode. Also, you are not allowed to turn on your laptop or tablet unless it is for note-taking, surf your phone for more than 10 seconds, talking out aloud, etc. Anyone who violates this code of conduct will receive a warning. A second violation will result in dismissal from the class, as well as a 10 points deduction on the attendance grade.

Contact Us: Email is the best way to reach all the professors and the TAs. Please find the following email addresses:

- Prof. Yang WANG: `yangwang@ust.hk`
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