Combinatorial Mathematics

Mong-Jen Kao (高孟駿)

Monday 18:30 – 20:20

About this Course

You can find all course content and information there.

Course Website:

https://sites.google.com/nycu.edu.tw/110-2-combo-math/

About this Course

- ■ Provides an introduction of combinatorial math for undergraduate students. Topics to cover include:

  - Classic topics related to "Counting"

  - Selected topics in graph algorithms

  - Extremal set theory

  - Other selected topics

Grading Policy

- ■ **Homework (40%)**

  - There will be approximately 8 – 10 homework, with interesting problems for you to "think" for proofs and answers.

- ■ **Midterm & Final exams (30% + 30%)**

  - Take place in [W7 - 3/28] and [W16 - 5/30].

  - The problems will mainly come from the lectures and the HW problems.

Course Endorsement Policy

■ I will sign the course endorsement document if there's a reason why you need to take this course.

    - However, there are things you need to know when taking this course. Be sure to check it out. (See later slides)

I am Recruiting TAs for this course

- ■ Number of volunteers needed :

  4 ~ 5 groups (of 1~2 ppl)

- ■ Time and Location:

  Mab @ EC114, ideally twice a month per group

- ■ Salary : 2k per group / month
  Extra reward : 5 pts of total grade (at the end of the semester)

- ■ Job description:

  - Grade the HWs and help select the best 10% of them.

Contact me if you're interested in forming groups and helping out.

Things you need to know, when taking this course - (I)

- I plan to give a mild course for combinatorial math, and a *mild course only*.

  - It's a *fundamental course* in math that focuses on **proof reading, deriving, and writing** trainings.

  - I collect the content I believe to be important and interesting, and you pick them up.

  - It's all about reading the slides and notes, and doing the homework.

Things you need to know, when taking this course – (II)

- This is the first time I lecture this course.

  - I am teaching while preparing, and
    the course preparation ~~may~~ not be as complete as it normally would be.
    surely will

  - Some selected topics are also new to me.
    (They are important, and I am learning them via teaching.)

- The course preparation will be better in the 2nd or the 3rd year.

  - It's not a bad idea to take this course later.

A mild caution

Things you need to know, when taking this course – (III)

- I am generally not a good storyteller, and hence not a good lecturer.

    - "Self-Learning" is highly encouraged.

    - I collect the content, and you pick them up, via reading the slides & notes. Build up your own understandings on the concepts I collect in this course.

    - Use the lecture recording only as a reference to the slides & notes.

Class attendance is not necessary,
but you need to read the content yourself.

Course Material

- ■ The course material is selected from the following two reference books.
  - "Applied Combinatorics", 6th Ed., Alan Tucker.
  - "Extremal Combinatorics", 2nd Ed., Stasys Junka, 2011.

How to Do Well in this Course?

- Read the slides & notes, and make sure you understand the concepts.

- Do the homework problems.

  Spend some time and work on the proofs.