Pre-Review

Welcome to Discrete Mathematics

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VE203 - Discrete Mathmatics

Why Discrete?

The content is actually "discrete"! In this short and "happy" spring semester, you're going to learn the following:

- Sets, Logics
- Relations
- Group Theory
- Number Theory
- Counting
- Graph Theory

"Discrete" Instructors

Compared to Vv186 course sequence which has a nice and unique instructor on the whole interval, Ve203 sounds to be more "discrete".

Time Peirod	Instructor(s)	*Comment.*
2011(?)~2015(?)	Horst Hohberger	Earliest math founder in JI
???	Horst & Manuel	Really heavy workload
2015(?)~2019	Zach McKenzie	200 Enrollments at most
2020 SU	Heidi Andersen	Leave becase the epidemic
2020 FA	Horst Hohberger	Just for emergency
2021 SP	Zach McKenzie	Leave JI later
2021 SU~	Runze Cai	

"Discrete" Slides
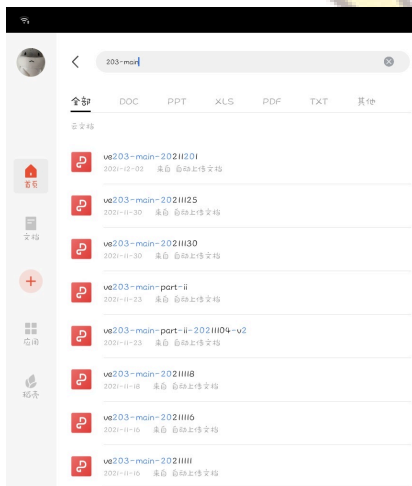
(a)   (b)

"Discrete" TAs

- 2019 SU: 仇天宇、朱辰宇、范哲良
- 2019 FA: 严欣愉、刘紫薇、朱辰宇
- 2020 SU: 严欣愉、仇天宇、郑慧昕
- 2020 FA: 张谷韬、彭程俊
- 2021 SP: 严欣愉、靳浩翔、俞泽晟
- 2021 SU: 靳浩翔、明星宇
- 2021 FA: 赵佳源、薛润泽
- 2022 SP: 黄昱程、肖子聪、小仓鼠
- 2022 SU: ?

Special thanks to 张谷韬, 严欣愉 and 赵佳源!

"Discrete" Students?

No!

The followings are for you!

Recommended Books & Websites

- Kenneth, H.Rosen. Translated by Xu Liutong etc. *Discrete Mathematics amd Its Applications*, Eightth Edition, Chinese Abridgement. China Machine Press, 2019 print.
- E. Knuth, Donald. Translated by Su Daolin. *The art of Computer Programming*, third edition. Beijing: National Defense Industry Press, 2007.6 print.
- www.mhhe.com/rosen
- https://vijos.org/
- https://leetcode.com/

Concept Checking Paper

The content of the CCPs (Concept Checking Papers) are shown below.

- CCP01: Logics & Sets & Induction
- CCP02: Equinumerosity & Relations
- CCP03: Partial Order & Cardinality
- CCP04: Divisibility & Euclidean Algorithm
- CCP05: Basic Group Definitions
- CCP06: Homomorphism & Cosets & Modular Arithmetic
- CCP07: Counting & Inclusion-Exclusion Principle
- CCP08: Linear Recurrence Equations & Asymptotic Notations & Master Method
- CCP09: Basic Graph Theory & Bipartite Graph
- CCP10: Trees & Kruskal's Algorithm & Dijkstra's Algorithm

RC Policy

My recitation class will contain the following elements.

- Review of Concepts
- Explanation for difficult contents in the slides
- In-class Exercises
- Extra Topic($\leq 15[\min]$)
  - *I hope it is interesting!*
  - *won't be too difficult!*
  - *Sometimes includes coding!*

Feel free to interupt me at any time!
I also plan to do OH-Feedback this term!

Extra Topic

Below are the extra topics that I'm planning to talk about:

- Boolean Algebra (Karnaugh Graph)
- Sort Algorithms (Quick Sort + Improved Bubble Sort)
- Prime Spiral (Bilibili Video)
- Divide-and-Conquer Algorithm (Fast Modular Exponentiation)
- Catalan Numbers & Generating Function
- Dynamic Programming (Backpack problem)
- Union and Find Set (Relatives or not)
- Ramsay's Problem (Hand Shaking)

End

Thanks!