MATH 213

MATH 213: Basic Discrete Mathematics - Syllabus

Instructor: Meng Zhang

Lectures:
Mon 09:00-09:50 LTW102
Wed 09:00-09:50 LTW102
Fri 16:00-16:50 LTW102 (**odd weeks**)

Discussion:
Fri 16:00-16:50 LTW102 (**even weeks**)

Course Description:
The course covers fundamental concepts from discrete mathematics that are used in every engineering discipline. We begin with sets, functions and relations, treat propositional and first-order predicate logic, handle induction and recursion, then proceed towards basic number theory and counting, graphs and trees, and provide a first introduction of the use of these concepts in sequential and recursive algorithms. By the end of the course students will have obtained a general understanding of discrete mathematics, appreciate its usage in all computing-related problems, and be able to conduct mathematical reasoning and proofs.

Prerequisite: MATH 220 or MATH 221. Students may not receive credit for both this course and CS 173.

Instructor:
Meng Zhang (`mengzhang@intl.zju.edu.cn`), Office Hour: Mon 7:15-8:15 pm

Teaching Assistants:
Shurong Wang (`shurong.22@intl.zju.edu.cn`), Office Hour: Tue 7-8 pm, Group 1
Ruiling Xu (`ruiling.22@intl.zju.edu.cn`), Office Hour: Fri 8-9 pm, Group 2
Xirui Yao (`xirui.22@intl.zju.edu.cn`), Office Hour: Mon 7-8 pm, Group 3
Xuchen Ding (`xuchen.20@intl.zju.edu.cn`), Office Hour: Tue 10-11 am & Wed 2:45-3:45 pm, Group 4
Jie Wang (`jie.20@intl.zju.edu.cn`), Office Hour: Thur 6-7 pm, Group 5

Assessment: Attendance: 5%, Homework: 35%, Midterms: 30% (15% each), Final: 30%.

Text: *Discrete Mathematics and Its Applications*, 8th Edition. By Kenneth H. Rosen. Publisher: McGraw-Hill Education. ISBN: 978-1-260-09199-1, MHID: 1-260-09199-6.

Reference Books: *Introduction to algorithms*. By Cormen, T.H., Leiserson, C.E., Rivest, R.L. and Stein, C., 2022. MIT press.

Grading Policy:
There will be approximately weekly homework assignments in this course, which will be released on the course website on Fridays. You are encouraged to collaborate and cooperate with your peers on these assignments; however, you should only hand in your own original efforts. Evidence of plagiarism will be dealt with seriously. Late homework, will not be accepted; however, your lowest 2 homework grades will be dropped.

Topics:

- Logic and Mathematical Proofs
- Sets and Functions
- Complexity of Algorithms
- Number Theory, Combinatorics, Cryptography
- Graphs, Trees
- Mathematical Induction and Recursion
- Counting

Tentative Schedule and Readings:

Week	Topics	Chapters in Textbook
1-2	Logic	1
2	Mathematical Proofs	1.7-1.8
3	Sets and Functions	2
4	Complexity of Algorithms	3
5-7	Number Theory and Cryptography	4.1, 4.3-4.6
7	First Midterm Exam	
8-9	Mathematical Induction and Recursion	5
10	Counting	6.1-6.6, 8.1-8.6
11	Relations	9
11	Second Midterm Exam	
12, 13	Graph Theory and Trees	10.1-10.8, 11.1-11.5
14	Wrap-up & Review	