

Math 22 Discrete Mathematics

Summer 2016
De Anza College

Instructor: Doli Bambhania

Contact information: e-mail: bambhaniadoli@fhda.edu

phone: (408) 864-5382

Office: S43a

Office hours: By appointment

Prerequisite: Mathematics 41 (with a grade of C or better); or a satisfactory score on the College Level Math Placement Test within the last calendar year.

Course Description: Elements of discrete mathematics with applications to computer science. Topics include methods of proof, mathematical induction, logic, sets, relations, graphs, combinatorics, and Boolean algebra.

Student Learning Outcome: Analyze and apply patterns of discrete mathematical structures to demonstrate mathematical thinking.

Textbook: Epp, Susanna. Discrete Mathematics: An Introduction to Mathematical Reasoning, Brief Edition. Cengage Learning, 2011.

Calculator: You will need a basic calculator for this class. A standard graphing calculator will more than suffice.

Attendance: In any math class, attendance is extremely important! This is especially true during summer session when there is little time to catch up! You are expected to come to all of the class meetings on time and prepared. I will take attendance every day. If you do miss a class, it is YOUR responsibility to find out what you missed. If you stop attending, it is YOUR responsibility to drop yourself from the course. If you fail to do so, you will receive an 'F' in the course. **IMPORTANT:** All electronic devices such as cell phones must be silenced and put away during class!

Homework: The best way to succeed in any math class is doing all of the assigned homework correctly and in a timely manner, making sure you really understand what you are doing! This is especially important in this class because each problem tries to teach you to think, not just follow a procedure or learn a skill! Time spent on the homework will directly benefit you on quizzes and exams.

We will have two types of homework assignments:

1. **Practice problems from the textbook:** You should work on these every day of the summer session to stay "on top" of the material. These will not be collected, except for extra credit at the end of the quarter at the final exam. **IMPORTANT:** If you wish to do these for extra credit, you **MUST** do them in a bound notebook (wirebound, for example) for ease of submission at the end of the quarter. Each section and each problem must be clearly labeled. Each section must start on a new page. If I can't follow your organization, you won't get extra credit. Total available extra credit: 15 points
2. **Written sets for submission:** Three times during the term, I will send out a homework set to be written up and submitted at the start of class. These sets will include problem solving, critical thinking and applications exercises. Write your homework out in full detail, as modeled in the textbook and in class. There will be a strong emphasis on how the solutions are written up in this class. A subset of these exercises will be graded for correctness and all of it will be graded for completeness.

HW Guidelines:

- Write your full name in the top right hand corner of the first page.
- Write out each question in pen and the solution in pencil. For the rare question that's too lengthy, you may paraphrase.
- STAPLE your homework. No "dog ears" or paperclips!
- Label each problem clearly – use highlighter to mark the number.
- Do the problems in order, showing all work neatly, clearly and completely.

Late homework will not be accepted. If you cannot be in class on a day that the homework is due, send it in with a classmate or email it to me before your class starts. If there's an unusual situation out of your control, let me know.

I will answer any homework questions with enough demand at the beginning of every class. Please put the problems up on the board before class. If a problem you need help on is already on the board, put a check mark next to it.

Entrance/Exit Cards: We will have several unannounced in-class entrance and exit cards with problems similar to what has recently been done in class (that day or previous day) or on the homework to encourage you to come to class, stay for the duration, engage yourself enough to understand the material, and practice regularly. You will need to provide your own half sheet of paper for these. **Keep a number of pre-cut half sheets ready in your binder!**

Participation: I will randomly call on students during class with questions on a regular basis. You are expected to participate. You are also strongly encouraged to ask questions during class. This is to encourage you to do your best to learn the most that you can during class. The summer session moves very fast! There's no time to "catch up".

Quizzes: We will have several regular in-class quizzes (see the calendar). IMPORTANT: There will be NO MAKEUPS for any of the quizzes. However, your lowest quiz score will be dropped.

Exams: We will have 3 midterm exams. The midterm dates are on our calendar. You will also have a cumulative final exam, which will take place on **the last day of class** in our classroom. There will be NO MAKEUPS for any of the exams. If you miss a midterm exam, your final exam percentage will replace your score for that midterm. If your final exam score is higher than the score of your lowest midterm, the lower midterm score will be replaced. Please note that you **must** take the final exam in order to pass the class. If you cannot make it to the final exam, drop this class NOW, as final exam cannot be rescheduled*.

*In case of an unforeseen emergency or illness due to which you cannot take the final exam, you will be given an 'Incomplete' provided that you supply me with a sufficient proof.

Evaluation: Your final percentage will be computed as follows:

Homework Assignments	3 @ 20 points	60
Quizzes (lowest dropped)	Top 6 @ 20 points each	120
Entrance and exit cards	Top 5 @ 4 points each	20
Midterm Exams	3 @ 100 points each	300
Final Exam		150
TOTAL		650

Your final grade will be computed as follows:

Overall percentage	Your grade will be at least
97 % or greater	A+
91.5 – 97%	A
89.5 – 91.5 %	A-
87 – 89.5 %	B+
81.5 – 87 %	B
79.5 – 81.5 %	B-
77 – 79.5 %	C+
70 – 77 %	C
55 – 70 %	D
less than 55%	F

Academic Integrity: All students are expected to **exercise academic integrity** throughout the quarter. Any instances of cheating or plagiarism will result in disciplinary action, which may include recommendation for dismissal. You are encouraged to work together on homework but simply copying down answers from another student's homework is wrong! And, of course, that will be of no help to you on the quizzes and exams. Cheating on a quiz or an exam will result in getting a 0 on it, an 'F' in the course or dismissal from the class. Also, each incident of cheating will be reported to the Dean of the Physical Science, Mathematics and Engineering Division.

Disability Notice: If you feel that you may need an accommodation based on the impact of a disability, you should contact me privately to discuss your specific needs. Also, please contact Disability Support Services (864-8753) or Educational Diagnostic Center (864-8839) for information or questions about eligibility, services and accommodations for physical (DSS), psychological (DSS) or learning (EDC) disabilities.

Help and Miscellaneous Tips:

In any math class, and especially this one, your goal should be to get **ownership** of the material. Getting ownership means you understand the concepts, can demonstrate the skills, and explain the concepts and skills to someone who doesn't have them. Every problem will be different in this class. You will need to practice a lot to develop intuition and problem-solving skills that you will absolutely need on exams. Don't treat the concepts as "plug-and-chug"! That will serve you poorly. Instead, take the time to understand the structure behind the concepts through practice.

1. In this class, unlike most other classes, **definitions and theorems are of utmost importance. Memorize them!** The process of memorizing them will force a deeper understanding, which is necessary in this class. Organizing this information in a way that works for you is essential to doing well on quizzes and exams.
2. To succeed in any math class you must **do the homework diligently**. I am sure that there are many sources that can provide you with worked solutions to homework problems; however, such resources will be only be of so much use if you don't struggle to understand what you're doing. **Productive struggle** is extremely important in learning anything, especially mathematics. Working on the practice problems soon after class is also important because you progress efficiently when the material is still fresh in your mind.
3. **Form a study group!** Your classmates are probably your best resource in this class. Find at least 3 classmates. Work together on homework and study together. Keep each other informed and motivated to learn the most (and get the best grade!). This is especially important in the summer.
4. You will most likely have **group tutoring session** in S43 before class on Tuesdays and Thursdays - details to come. I am also available to help you throughout the term. Use the Drop-In tutoring services at S43 if you cannot make it to the group tutoring or for additional help.
5. Feel free to check in with me during the break or after class. E-mail is the best way to get in touch with me outside of class. You may also send me any questions over email and I'll make my best effort to answer them quickly. If you choose to do this, please remember to state your question clearly, and if it's a HW question, tell me briefly what you have tried and what your specific question is. Also, sign your name at the bottom of your email.
6. **Read the textbook!** Attending lectures is not enough to give you a complete idea of the material. I expect you to be familiar with the examples in the textbook in addition to in-class examples. They may show up on quizzes and exams even if they don't in lecture.
7. **Review your class notes** after class to make notes about any questions or comments about something in lecture. Feel free to ask me such questions before or at the beginning of the next class.
8. Make a point of taking care of any class-related issues that arise in a **timely manner**. The summer passes by faster than expected and it's hard to catch up, especially at the end of the session.
9. Finally, **ask questions** – lots of questions. I will try my best to make sure you're following me during class, but I can't read your mind. Asking questions during class is especially important to make sure that you don't get stuck on a point while the rest of the class moves on. Also, few other students in the class will have the same question as you, so you'll be helping others by asking your question.

Math 22 Discrete Mathematics - Tentative Calendar - Summer 2016

	Monday	Tuesday	Wednesday	Thursday
Week 1	27-Jun Greensheet, Introductions, 2.1, 2.2	28-Jun 2.2, 2.3, 3.1	29-Jun 3.1, 3.2, 3.3	30-Jun Quiz 1, 3.3, 3.4
Week 2	4-Jul Holiday	5-Jul Quiz 2, 4.1, 4.2	6-Jul 4.2, 4.3, Review	7-Jul Midterm Exam 1 (1.1, 4.1), 4.4
Week 3	11-Jul 4.5, 4.6, 5.1	12-Jul Quiz 3, 5.2, 5.3	13-Jul 5.5, 5.6, 6.1	14-Jul Quiz 4, 6.2, 6.3
Week 4	18-Jul 6.4, 7.1, Review	19-Jul Midterm Exam 2 (4.2-6.3), 7.2	20-Jul 7.3, 7.4	21-Jul Quiz 5, 8.1, 8.2
Week 5	25-Jul 8.3, 8.4	26-Jul Quiz 6, 9.1, 9.2, 9.3	27-Jul 9.4, 9.5, Review	28-Jul Midterm Exam 3 (7.1-9.3), 9.6
Week 6	1-Aug 10.1, 10.2	2-Aug Quiz 7, 10.3, 10.4	3-Aug Review	4-Aug Final Exam

Other Important Dates

Please check MyPortal for important Admissions and Records deadlines for things like add, drop, withdraw, grade option, etc.

Math 22 Practice Problems (Exercise Sets from Epp - Brief Edition)
Summer 2016

Do these for extra credit; Follow the directions from the syllabus carefully!

Section	Problems
1.1 (review)	1 - 13
1.2 (review)	1 - 12
2.1	2, 5, 8, 13, 17, 24, 26, 31, 42
2.2	2, 4, 10, 14, 17, 20, 27, 31, 38, 41, 43, 46
2.3	2, 5, 9, 23, 28, 32, 35, 38bc, 41
3.1	4, 6, 10, 18, 19, 23, 24, 26, 29, 33
3.2	2, 3, 5, 10, 14, 17, 19, 34, 38, 40, 44, 47
3.3	3, 11, 12, 16, 17, 21d, 30, 37, 44
3.4	6, 13, 14, 15, 19c, 22, 24, 27, 34
4.1	6, 8, 10, 13, 16, 21, 28, 34, 37, 50, 53, 55
4.2	5, 14, 20, 22, 25, 30
4.3	5, 13, 20, 23, 27, 28, 30, 36, 42c, 45
4.4	8, 10, 15, 19, 22, 28, 38, 40, 43
4.5	4, 7, 10, 13, 15, 20, 22, 29, 34d
4.6	8, 10, 13, 15, 24, 26, 28
5.1	2, 4, 9, 11, 17, 29, 31,33, 36, 43, 47, 49, 52, 53, 55, 59, 61, 63, 65
5.2	4, 7, 9, 12, 16, 17
5.3	2, 3, 9, 15, 17, 20, 29
5.5	2, 4, 8, 12, 14, 19, 22, 26
5.6	4, 7, 8, 13, 20, 23, 25, 33, 38
6.1	3, 6, 9, 12, 14, 17, 23, 27, 30, 33
6.2	7, 14, 19, 21, 23b, 26, 31, 35
6.3	2, 8, 13, 16, 20, 21, 32, 35
6.4	2, 3, 5, 9, 11aii, 11aiii, 11b
7.1	2, 4, 10, 11, 27, 35, 36, 39, 42
7.2	2, 5, 7, 9, 11, 16, 17, 20, 23, 30, 33, 37
7.3	2, 7, 11, 17, 19, 22, 24, 25
7.4	3, 8, 11, 15, 17, 18, 22, 27
8.1	3, 5, 7, 8, 11, 17, 20
8.2	2, 10, 13, 17, 19, 26, 30, 38, 42
8.3	2b, 9, 13, 14, 17, 19, 20, 24, 34
8.4	2, 4, 5, 10, 15, 35, 36
9.1	4, 6, 8, 10, 13, 14, 16, 19, 21, 22, 24, 26
9.2	5, 11, 14, 15, 18, 21, 22, 24, 26, 27, 30, 33
9.3	6, 11, 20, 23, 25, 32, 35
9.4	2, 4, 8, 13, 16, 29, 23, 25, 28, 30, 31
9.5	7, 10, 12, 14, 17, 20, 22, 24, 25, 26a-d, 30
9.6	5, 14, 16, 17, 34, 37, 44, 54
10.1	4, 9, 16, 19, 22, 27, 37, 39, 40, 44
10.2	2, 5, 6, 8, 13, 15, 22, 30, 32, 33, 47
10.3	3, 7, 15, 17, 19, 23, 26, 29
10.4	2, 3b, 5, 7, 11, 14, 17, 19, 20