

# Math 2305 – 18011 (Fall 2023)

## Discrete Mathematics and Its Applications

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**Course Instructor:** Dr. Blerina Xhabli

**Email:** bxhabli@central.uh.edu

**Course/Section Number:** Math.2305/18011

**Lecture Time/Place:** MWF 11:00am – 12:00pm / SEC 102

**Office Hours:** MWF 12:30pm – 01:30pm and/or by appointment

**Course Homepage:** <https://www.canvas.uh.edu> and MATH2305 FA23 TEAM

**Course Calendar:** <https://www.math.uh.edu/~blerina/Math2305FA23.html>

**Course Prerequisites:** Math.2413 or equivalent

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### TEXTBOOK

*Discrete Mathematics and Its Applications*, **Eighth Edition**, by Kenneth H. Rosen.

### COURSE DESCRIPTION

This course covers elementary discrete mathematics for computer science: it is designed to prepare math, computer science, and engineering majors for a background in abstraction, notation, and critical thinking for the mathematics most directly related to computer science. It emphasizes mathematical definitions, logical inference, and proof techniques. Topics include propositional logic, first-order logic, proof methods; sets, functions, relations; mathematical induction, recursion; elementary number theory, graph theory; basic complexity theory, recurrences.

### COURSE CONTENT on CANVAS

The course materials and resources will be delivered through modules in CANVAS. The assignments will be submitted online through CANVAS. Also, you will be able to see your grades on CANVAS. We will have a microsoft team for this class, which will be used for online meetings on unprecedented events or other important things.

### RESOURCES FOR ONLINE LEARNING

University of Houston is committed to student success, and provides information to optimize the online learning experience through our Power-On webpage. Please visit this webpage for a comprehensive set of resources, tools and tips including: obtaining access to the internet, AccessUH; requesting a laptop through the Laptop Loaner Program; using your smartphone as a webcam; and downloading Microsoft Office 365 at no cost. For assistance, contact UHOnline@uh.edu.

## TECHNOLOGY REQUIREMENTS

Computer and internet access is required for this course. In summary, students will need:

- a Functioning (updated) Computer
- Reliable Internet Connection
- PDF viewer/Ability to watch mp4 files.
- Ability to log in to CANVAS through AccessUH for online assignments.
- Ability to access Microsoft TEAMS platform.

Note that all UH students have access to AccessUH/CANVAS/MS teams with their cougarID.

## COURSE DELIVERING FORMAT AND STRUCTURE

This course is being offered in the **face to face** format. Every lecture session will be held **every Mon/Wed/Fri 11:00am - 12:00pm** according to the class schedule at **SEC 102**. Being a face to face delivered course, all students agree that they are available during the meeting times.

Even though the course format/structure is face to face, due to unprecedented events, the team for this lecture is created and is available on MS TEAMS. In case of a need to move to the online setting, all students will be utilizing the class team. Every student is automatically put on the MS Team of this course.

**This course is not self-paced**; students are expected to follow the homework assignments due dates as specified on the course calendar. After every lecture session, we recommend the students to practice the newly learned topics by working on the provided homework assignment and/or corresponding exercises of the textbook section we have covered.

1. Students are expected to behave professionally during lecture sessions. Any students who do not follow the university's code of conduct might be removed from the session.
2. Students will be able to find every resources of this course on CANVAS.
3. For online sessions (when necessary), you are advised to turn off your webcam and microphone before joining the sessions. By joining an online session, students give consent to be recorded on the live session video. This rule will apply if we need to switch to online teaching.

**Attendance is mandatory.** While we cannot force you to be in class during the scheduled time of this course, it is important to emphasize that your success depends tremendously on the consistent efforts you do show to come to every lecture and learn the topics in class. Unless it is an emergency or something important, you should do the utmost to attend every lecture. If you can't attend the lecture session in person due to personal important emergencies, make sure you study the topics you missed before you come to the next lecture. Feel free to ask for help either your instructor, or the teaching assistant of the class.

## SYLLABUS CHANGES

Please note that the instructor may need to make modifications to the course syllabus. Notice of such changes will be announced as quickly as possible through CANVAS announcements and email.

## COURSE EVALUATION ASSESSMENTS and GRADING RUBRIC

A student in this class is expected to complete weekly homework assignments, attendance poppers/quizzes, and three exams along with a final. The final course grades are assigned according to the students performance on each category above, using the following guidelines/percentages:

- Exam I: 18%
- Exam II: 18%
- Exam III: 18%
- Final Exam: 20%
- Homeworks: 16%
- Participation Quizzes: 10%

## HOMEWORK ASSIGNMENTS

A list of homework problems will be given every week. They will be posted on the Assignments Module in CANVAS. Homeworks will be submitted online due on Wednesdays. **Late homework is not permitted, unless there is a valid excuse (see the Excused Absence Policy above).** Expect to spend approximately three hours working on homework outside of class for every hour spent in class. If you have any issues with the way the homework problems are graded, please contact me. Your turned-in homework grade will be based on the following guidelines:

- Homework will not be accepted by email. There is no exception to this rule.
- Write legibly and neatly. If possible, choose to type your solutions in word or latex. Provide space for the grader to make comments.
- Homework should be written on standard-sized paper (8.5" × 11"). The papers can be either college-ruled, or plain white.
- Solutions to homework problems should be written in sequential order.
- You may discuss the problems with other classmates as you figure out how to do the problem or establish its truth, but the write-up should be done by you alone and in your own words.
- Homework should be scanned in one single pdf file with the pages and homework problems in the right order, and be submitted online by the deadline.
- Homework is due every Wednesday, at 11:59pm.
- Your lowest two homework grades throughout the term will be dropped at the end.

## CLASS PARTICIPATION/ENGAGEMENT QUIZZES

Class participation is very important for being successful in this course. It is strongly recommended to attend every lecture session and pay attention and be engaged in the lectures. **Once a week, you will be given an unannounced quiz**, which will have a couple questions related to what we have done so far. Questions on exams will be similar to the examples from lectures presented in class, assigned homework problems and quiz questions. Make sure you do understand everything we do properly.

Coming prepared to class is very important to be able to keep up with the pace of the lecture. To enhance your understanding, it is strongly recommended to read the upcoming assigned sections from the textbook **before** being covered in class. Reading the new topic before it is covered in class is just as critical as doing the written homework.

## EXAM DATES

There will be three exams and one final. All the exams will be delivered and proctored in class during the scheduled class time. Books and notes will not be allowed on all exams.

Exam 1 (§1.1–§2.3)	Friday, September 22	11:00am – 11:50am
Exam 2 (§3.1–§5.3)	Friday, October 20	11:00am – 11:50am
Exam 3 (§6.1–§8.3*)	Friday, November 17	11:00am – 11:50am
Final Exam (cumulative)	Friday, December 8	11:00am – 2:00pm

## FINAL EXAM

Final is comprehensive and mandatory for ALL students. Check UH Fall '23 website for final exam schedule. Make your travel plans so that you are available during the testing period.

If you miss a test without a valid excuse as described below, you receive a zero for it. When you take the final, the grade on the final will replace that zero. If you miss more than one test, only one of them will be replaced. If the final exam grade is better than any of the previous test grades, then the final exam grade will automatically replace the lowest test grade even if you do not miss any test. The primary reason for this policy is to offset the impact of zero scores due to emergencies (medical, personal, or otherwise) on a student's final course grade.

## LATE ASSIGNMENT AND MAKE-UP POLICY

This course is a cumulative course. You as a student need to keep up with the lectures, homework assignments and exams. Students are expected to check the calendar several times a week and plan ahead so that they don't miss assignments. We drop two homework assignments primarily to offset the impact of zero/low scores due to emergencies on a student's final course grade. Hence, students should not expect to have an option to make up missed assignments unless in the case of an excused absence (See: Excused Absence Policy above).

If requesting make up work (assignment or exam) due to an excused absence: the student needs to contact the instructor in writing before the next class meeting (or as soon as possible afterwards with an explanation regarding why the notice could not be sent before the next class meeting). Read the Undergraduate Excused Absence Policy to see a list of documentations to support your

request; follow the guidelines provided on this document to make your request. Your instructor will inform you of the decision in writing (via email).

## OFFICE HOURS

My office hours will be held on campus in room PGH 212 every MWF 12:30pm – 1:30pm and by appointment. To request an online appointment, the students must email (see below for proper emailing etiquette) from their cougarnet email account with their full name, course name and section number and student ID, a brief description of what the nature of the meeting is for and a subject line with “private meeting request MATH 2305”. Please give at least 2 or 3 dates / time ranges you are available and I will reply with an online TEAMS link for our meeting. You must RSVP the meeting to reserve the time slot.

**NOTE:** Your teaching assistant (TA) will also have tutoring times.

## STUDYING GUIDE and TUTORING OPTIONS

Note that that this course is a 3-credit course. Every week, we recommend planning to spend at least 9 hours of outside of lecture time to study / practice for this course (the general principle is at least 3 hours per credit every week). In order to be successful in this course, students should study regularly, plan ahead to work on the assignments, get help when needed. A consistent effort is essential to getting a good grade. You can get help by:

- Attending your instructor’s / TA’s office hours
- Visiting CASA tutoring center
- Visiting LAUNCH tutoring center

Here are some important tips for success in this course:

- Attend class and ask questions – very encouraged to ask questions on your Discussion Module in CANVAS.
- Study after each lecture by reviewing the notes you took and working through the extra examples in your textbook.
- Come prepared; understand the material presented on the previous lecture.
- Work on your homework assignment daily. Practice more with similar examples from the textbook if needed. Do not wait until the due dates so that you can get help.
- Studying for your exams:
  - Learn the material every week; take care of your assignments every week.
  - As you study, make a note of those topics you do not quite understand and visit your instructor during office hours or tutoring centers for clarification of these concepts.
  - During the week prior to a test; work on the review sheet, review your notes / homeworks / quizzes correlated to the exam.

## **REASONABLE ACADEMIC ADJUSTMENTS/AUXILIARY AIDS**

The University of Houston complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for disabled students. In accordance with Section 504 and ADA guidelines, UH strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please contact the Justin Dart Jr. Student Accessibility Center (formerly the Justin Dart, Jr. Center for Students with DISABILITIES).

## **EXCUSED ABSENCE POLICY**

Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston Undergraduate Excused Absence Policy for reasons including: : medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Under these policies, students with excused absences will be provided with an opportunity to make up any quiz, exam or other work that contributes to the course grade or a satisfactory alternative. Please read the full policy for details regarding reasons for excused absences, the approval process, and extended absences. Additional policies address absences related to military service, religious holy days, pregnancy and related conditions, and disability.

## **RECORDING OF CLASS**

Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the Center for Students with DISABILITIES. If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with anyone without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

## **COMMUNICATION VIA UH EMAIL**

Email communications related to this course will be sent to your Exchange Email Account which each University of Houston student receives. The Exchange mail server can be accessed via Outlook, which provides a single location for organizing and managing day-to-day information, from email and calendars to contacts and task lists. Exchange email accounts can be accessed by logging into Office 365 with your Cougarnet credentials or through Access UH. They can also be configured on IOS and Android mobile devices. Additional assistance can be found at the Get Help page.

Your instructor will be sending class emails using PeopleSoft; you are responsible for checking your

UH email. Per UH Policy, notices properly addressed and so sent via PeopleSoft shall be presumed to have been received by the student. Thus, you are responsible for the content in emails sent to your UH account, regardless if your external (non-UH) email provider filters or blocks them. When emailing your instructor, it is recommended that you use a professional email address and include the course name on the subject line so that your instructor can address your questions accordingly. Please read this link for more on communication via email: [EMAIL ETIQUETTE](#)

**IMPORTANT:** Note that your instructor will communicate with you via email. Your instructor will not reply to chat messages via MS TEAMS outside of class times or office hours. Calls from MS TEAMS will not be responded to unless they are made by appointment. If you leave a voice mail at your instructor's office phone, he/she might not receive it. The best way of communication with your instructor outside of class times is via email for personal matters and via the Discussion Channel in your TEAMS account for general questions and content questions (like help with an example from your notes or a quiz question.) It is strongly recommended to always include "MATH 3336 Section 20690" as well as a searchable description of the issue in the subject line for ALL course-related email correspondence. If you do not receive a timely response to an important email within 24 hours, it is your responsibility to send a follow-up email. If you again do not hear from me after a follow-up email, it is most likely that your email is not coming through and you should come to office hours or speak with me before or after class. It is your responsibility to ensure that I am aware of issues you may have with the course; failure to effectively initiate timely communication is not a valid basis for a grade grievance and cannot be used as such.

## **ACADEMIC HONOR PRINCIPLE**

High ethical standards are critical to the integrity of any institution, and bear directly on the ultimate value of conferred degrees. All UH community members are expected to contribute to an atmosphere of the highest possible ethical standards. Maintaining such an atmosphere requires that any instances of academic dishonesty be recognized and addressed. The UH Academic Honesty Policy is designed to handle those instances with fairness to all parties involved: the students, the instructors, and the University itself. All students and faculty of the University of Houston are responsible for being familiar with this policy.

All students are expected to adhere to the UH Academic Honesty Policy as described in the UH Undergraduate Catalog. "Academic dishonesty" means employing a method or technique or engaging in conduct in an academic endeavor that contravenes the standards of ethical integrity expected at the University of Houston or by a course instructor to fulfill any and all academic requirements. Academic dishonesty includes, but is not limited to, the following: Plagiarism; Cheating and Unauthorized Group Work; Fabrication, Falsification, and Misrepresentation; Stealing and Abuse of Academic Materials; Complicity in Academic Dishonesty; Academic Misconduct.

Refer to UH Academic Honesty website and the UH Student Catalog for the definition of these terms and university's policy on Academic Dishonesty. Anyone caught cheating will receive sanctions as explained on these documents and will be reported to the department for further disciplinary action. The sanctions for confirmed violations of this policy shall be commensurate with the nature of the offense and with the record of the student regarding any previous infractions. Sanctions may include, but are not limited to: a lowered grade, failure on the examination or assignment in question, failure in the course, probation, suspension, or expulsion from the University of Houston,



or a combination of these. Students may not receive a W for courses in which they have been found in violation of the Academic Honesty Policy. If a W is received prior to a finding of policy violation, the student will become liable for the Academic Honesty penalty, including F grades.

**Posting answers for homework questions online** (at group chats or other online tools) **is considered an academic honesty violation.** Students are expected to know the difference between “getting/giving HELP on a problem” and “getting/giving answers to a problem”. If a student is caught sharing answers (in person or online), he/she might be reported to the departmental hearing officer for an academic honesty violation. If a student becomes aware of cheating or any other violations; that student is responsible for informing the instructor.

## **COPYRIGHT POLICY**

The materials provided by the instructor in this course are for the use of the students enrolled in the course only. Copyrighted course materials may not be further disseminated without instructor permission. This includes sharing content to commercial course material suppliers such as Course Hero or Chegg. Students are also prohibited from sharing materials derived from the instructor’s content (e.g., a student’s lecture notes).

## **INCOMPLETES and DROPPING/WITHDRAWING**

An incomplete (I) may be awarded to you by your teacher if the reason is a compelling NON-ACADEMIC reason, you have completed virtually all the course assignments AND you have a passing grade on this work.

Incompletes are NOT available to students who have done little of the coursework nor for students who have failing grades on what they have done. See your teacher to discuss eligibility and to fill out and sign the Incomplete contract. This is also required and must be signed in advance of an I being posted. Imminent failure is not an acceptable reason to be awarded an incomplete.

If a student wants to drop the class, it is his/her responsibility to do so by logging on [access.uh.edu](https://access.uh.edu) and completing the drop process before the drop deadline, Wednesday 11/16. Instructors cannot drop students for any reason.

## **TITLE IX/SEXUAL MISCONDUCT**

Per the UHS Sexual Misconduct Policy, your instructor is a “responsible employee” for reporting purposes under Title IX regulations and state law and must report incidents of sexual misconduct (sexual harassment, non-consensual sexual contact, sexual assault, sexual exploitation, sexual intimidation, intimate partner violence, or stalking) about which they become aware to the Title IX office. Please know there are places on campus where you can make a report in confidence. You can find more information about resources on the Title IX website at <https://uh.edu/equal-opportunity/title-ix-sexual-misconduct/resources/>

## **SECURITY ESCORTS AND COUGAR RIDE**

UHPD continually works with the University community to make the campus a safe place to learn, work, and live. Our Security escort service is designed for the community members who have safety



concerns and would like to have a Security Officer walk with them, for their safety, as they make their way across campus. Based on availability either a UHPD Security Officer or Police Officer will escort students, faculty, and staff to locations beginning and ending on campus. If you feel that you need a Security Officer to walk with you for your safety please call 713-743-3333. Arrangements may be made for special needs. Parking and Transportation Services also offers a late-night, on-demand shuttle service called Cougar Ride that provides rides to and from all on-campus shuttle stops, as well as the MD Anderson Library, Cougar Village/Moody Towers and the UH Technology Bridge. Rides can be requested through the UH Go app. Days and hours of operation can be found at <https://uh.edu/af-university-services/parking/cougar-ride/>

## **MENTAL HEALTH AND WELLNESS RESOURCES**

The University of Houston has a number of resources to support students' mental health and overall wellness, including CoogsCARE and the UH Go App. UH Counseling and Psychological Services (CAPS) offers 24/7 mental health support for all students, addressing various concerns like stress, college adjustment and sadness. CAPS provides individual and couples counseling, group therapy, workshops and connections to other support services on and off-campus. For assistance visit [uh.edu/caps](http://uh.edu/caps), call 713-743-5454, or visit a Let's Talk location in-person or virtually. Let's Talk are daily, informal confidential consultations with CAPS therapists where no appointment or paperwork is needed.

The Student Health Center offers a Psychiatry Clinic for enrolled UH students. Call 713-743-5149 during clinic hours, Monday through Friday 8 a.m. - 4:30 p.m. to schedule an appointment.

The A.D. Bruce Religion Center offers spiritual support and other programs centered on well-being.

### **Need Support Now?**

If you or someone you know is struggling or in crisis, help is available. Call CAPS crisis support 24/7 at 713-743-5454, or the National Suicide and Crisis Lifeline: call or text 988, or chat [988lifeline.org](https://988lifeline.org).

## **HELPFUL INFORMATION**

**COOGS CARE:** <https://www.uh.edu/dsaes/coogscare/>

**UH Counseling and Psychological Services (CAPS):** <http://www.uh.edu/caps>

### **LAPTOP CHECKOUT REQUESTS:**

<https://www.uh.edu/infotech/about/planning/offcampus/index.php#do-you-need-a-laptop>

**HEALTH FAQS:** <https://uh.edu/covid-19/faq/health-wellness-prevention-faqs/>

### **STUDENT HEALTH CENTER:**

<https://uh.edu/class/english/lcc/current-students/student-healthcenter/index.php>

## TENTATIVE COURSE CALENDAR

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Week 1</b> Introduction and Section 1.1 Section 1.2 Section 1.3	<b>AUGUST 21</b> Introduction Section 1.1	22	23 Section 1.2	24	25 Section 1.3	26	27
<b>Week 2</b> Section 1.4 Section 1.5 Section 1.6	28 Section 1.4 Last day to add a class	29	30 Section 1.5	31	<b>SEPTEMBER 1</b> Section 1.6	2	3
<b>Week 3</b> Section 1.6 Section 1.7 Section 1.8	4 Labor Day No Class	5	6 Section 1.7 Last day to drop without a grade	7	8 Section 1.8	9	10
<b>Week 4</b> Section 2.1 Section 2.2 Section 2.3	11 Section 2.1	12	13 Section 2.2	14	15 Section 2.3	16	17
<b>Week 5</b> Exam 1 Section 3.1	18 Section 3.1	19	20 Review Exam 1	21	22 Exam 1 (Chapter 1, Chapter 2)	23	24
<b>Week 6</b> Section 3.2 Section 4.1 Section 4.3	25 Section 3.2	26	27 Section 4.1	28	29 Section 4.3	30	<b>OCTOBER 1</b>
<b>Week 7</b> Section 4.4 Section 5.1 Section 5.2	2 Section 4.4	3	4 Section 5.1	5	6 Section 5.2	7	8
<b>Week 8</b> Section 5.3 Section 6.1 Section 6.2	9 Section 5.3	10	11 Section 6.1	12	13 Section 6.2	14	15
<b>Week 9</b> Exam 2 Section 6.3	16 Section 6.3	17	18 Review Exam 2	19	20 Exam 2 (Chapter 3, Chapter 4, Chapter 5)	21	22
<b>Week 10</b> Section 6.4 Section 6.5 Section 7.1	23 Section 6.4	24	25 Section 6.5	26	27 Section 7.1	28	29
<b>Week 11</b> Section 7.2 Section 7.3 Section 7.4	30 Section 7.2	31	<b>NOVEMBER 1</b> Section 7.3	2	3 Section 7.4	4	5
<b>Week 12</b> Section 8.1 Section 8.2 Section 8.3*	6 Section 8.1	7	8 Section 8.2	9	10 Section 8.3*	11	12
<b>Week 13</b> Exam 3 Section 9.1	13 Section 9.1	14	15 Review Exam 3 Last day to drop with W grade	16	17 Exam 3 (Chapter 6, Chapter 7*, Chapter 8*)	18	19
<b>Week 14</b> Section 9.3	20 Section 9.3	21	22 HAPPY	23 THANKS	24 GIVING	25 HOLIDAY!	26
<b>Week 15</b> Section 9.5 Section 9.6 Final Review	27 Section 9.5	28	29 Section 9.6	30	<b>DECEMBER 1</b> Final Review Last Day of Classes	2	3
<b>Week 16</b> Final Exams	4	5	6	7	8 Final Exam 11:00am-2:00pm	9	10