Math 3336 – 12494 (Spring 2020)
Discrete Mathematics Course Syllabus

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Course Homepage: www.math.uh.edu/~irina
Lecture Time/Room: 10:00am-11:00am/SEC 104
Office: PGH 214
Office Hours: Mondays/Wednesdays 12:00pm - 2:00pm
or by appointment
Prerequisites: MATH 2331 (formerly 2431) or equivalent.


The information contained in this class outline is an abbreviated description of the course. Additional important information is contained at your instructor’s personal webpage. You are responsible for knowing all of this information.

IMPORTANT: The instructor reserves the right to make changes on these policies. Any changes will be announced on the instructor’s website in a timely manner.

MODIFICATIONS ON THE 3336 COURSE SYLLABUS

In response to the City of Houston and Harris County emergency health declarations, and to mitigate the spread of COVID-19, the University of Houston paused face-to-face instructional activities and will start to deliver all classes remotely using online and/or virtual learning platforms. The following policies will be in place until further notice.

Please read the following carefully, regarding the precise details of the switch to online instruction. Many other details remain precisely as on the course syllabus. Your instructor reserves the right to make changes to the syllabus/grades/policies of the course and to announce such information as needed. Indeed, a few such changes are to be expected given the emerging guidance coming from the department and university, questions and issues that arise, etc. You are responsible for knowing the content of any announcements concerning changes.

Note that some of these modifications will supersede the policies announced in the original MATH 3336 Syllabus. If you are in doubt of a specific policy, contact your instructor to clarify it.
General Changes:

1) Lectures

Lectures will be recorded and shared online. Links to the recorded lectures will be posted on our CASA page. The video files will be posted as BlackBoard files and/or mp4 files. For live meetings the Online Classroom link will be provided on your instructor’s CASA page; to access this classroom click on the link and then log in using your real name. The schedule of live meetings will be posted in the class CASA calendar. Students are expected to behave professionally and courteously during live meetings. Video recordings of live meetings will be posted for those unable to attend.

2) Attendance:

Prerecorded lecture videos will have questions (attendance poppers) embedded in them. After you watch these videos, you need to turn in answers under EMCF tab at CASA before the due date. It is important to watch these videos in a timely manner so that we can follow the teaching schedule and you do not fall behind. Attendance Poppers due dates can be seen under EMCF tab at CASA. There might be attendance poppers during live meetings as well. If you unable to attend a live meeting, watch the recording and turn in the popper given there under EMCF tab before the due date.

Attendance poppers will count as one homework grade.

3) Homework

Homework will be submitted as usual.

4) Technical Equipment Needed

The following are required for this course. Students will need
  • A functioning and updated computer or tablet
  • Internet connection
  • PDF viewer
  • Ability to log in to CASA for online assignments
  • Ability to watch mp4 files
  • Ability to access Blackboard Classrooms to attend live meetings

The following are strongly suggested for this course. Students will benefit from having
  • A functioning and updated computer or tablet with microphone, speaker/headphones, and a webcam
5) Testing
Math Department and CASA Testing Center are working on plans for our future tests. More information will be provided as soon as these plans are finalized. **Testing dates are subject to change and the means of testing will be announced soon.**

6) Grade distribution
Grade distribution is subject to change, and changes will be announced in a timely manner. There are no changes to the grade distribution at this point.

7) OFFICE HOURS
Office Hours will be held via the BlackBoard Online Classroom and/or the Microsoft Teams platform and specific Office Hours will be posted on your instructor’s CASA page soon.

8) Academic Honesty
In online assignments and tests, you may be required to write and sign an Academic Honesty Statement (something along the lines of “I have neither given nor received unauthorized aid on this …”) Students at the University of Houston are expected to adhere to the Academic Honesty Policy as described in the UH Undergraduate Catalog. “Academic dishonesty” refers to any method, technique or behavior in an academic endeavor that contravenes the standards of ethical integrity expected at the University of Houston or set by a course instructor. “Academic dishonesty” covers a variety of activities, including

- Plagiarism
- Cheating and Unauthorized Group Work
- Fabrication, Falsification and Misrepresentation
- Stealing and Abuse of Academic Materials
- Complicity in Academic Dishonesty
- Academic Misconduct
- Sharing answers for poppers or homework questions online (via group chats or other tools)

For this course students are expected to

- know the difference between providing / receiving help and sharing / copying answers
- follow specific instructions for assignments and exams so that they do not violate Academic Honesty policies

If a student is caught engaging in academic dishonesty, they may be reported to the department hearing officer. If a student becomes aware of cheating or any other violations, that student is responsible for informing the instructor.

Please consult the UH Academic Honesty website
Course Description
The course provides a careful treatment of logic, proofs, sets, functions, and mathematical reasoning. Using this basis, counting techniques are studied thoroughly. This course concludes with coverage of relations and graphs with a brief introduction to trees.

A student in this class is expected to complete the following assignments:
1. Weekly Homework
2. 3 Regular Exams
3. Final Exam

Grading
1. Homework 20%
2. 3 Regular Exams: 60% (20% each)
3. Final Exam: 20%

Note: The percentage grade on the final exam (without extra credit) can be used to replace your lowest test score if it is better than your lowest test grade.

Grading Scale: If you call your average “x”:

<table>
<thead>
<tr>
<th>Letter</th>
<th>0 ≤ x ≤ 100</th>
<th>80 ≤ x &lt; 83</th>
<th>67 ≤ x &lt; 70</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93 ≤ x &lt; 100</td>
<td>B-</td>
<td>D+</td>
</tr>
<tr>
<td>A-</td>
<td>90 ≤ x &lt; 93</td>
<td>C+</td>
<td>D</td>
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<tr>
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<td>87 ≤ x &lt; 90</td>
<td>C</td>
<td>D-</td>
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<tr>
<td>B</td>
<td>83 ≤ x &lt; 87</td>
<td>C-</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>70 ≤ x &lt; 73</td>
<td></td>
<td>0 ≤ x &lt; 60</td>
</tr>
</tbody>
</table>

Homework: Homework will be assigned weekly. A list of homework problems can be found under “Assignments” tab in your CASA account. Homework is generally due at midnight and have to be submitted through a CASA account. The detailed instructions for homework submission are posted on your class web page. Late homework or homework by email is not permitted for any reason. Each Homework is worth 50 points. Two (2) lowest homework scores throughout the term will be dropped to allow for missed assignments. The primary reason for this policy is to offset the impact of zero/low quiz scores due to emergencies (medical, personal, or otherwise) on a student’s final course grade. Hence, students should not expect to have an option to make up missed homework.

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.

If you have any issues with the way the homework or a particular problem is graded, please contact me.

Exams
There will be three midterm exams and a final exam.
Test 1: February 14  
Test 2: March 27  
Test 3: April 24  

The **Final exam** will be held in the same classroom at the following date and time: **May 6, 2020 beginning at 11am.**

Books and notes will not be allowed on all exams. Please bring your Student ID to exams. You may be asked to show it to prove that you are the student whose name is on the exam you turn in. Four-function calculators are allowed on each test.

**Late Assignments and Make-up Policy**

*Exceptions may be made per the [Student Academic Adjustments/Auxiliary Aids Policy](#) for students with approved CSD accommodations ([see above](#)), as well as for students with an official excused absence as recognized by University of Houston in accordance with federal and state law.

Your score on the final exam will replace your lowest midterm score if it helps your grade. There are no exceptions in the case of two missed midterms. Students are expected to take the final exam on the date listed above. Makeups will not be offered to accommodate personal travel plans.

**In case of late enrollment or re-registration after being dropped:** No make ups will be provided for assignments missed during the “no access to the course” period due to late enrollment or being dropped.

**Exemption from the Final**

If your final numerical score for the course is 80.0 or higher – calculated by the official Math Department Grade Calculator, then you may **CHOOSE** to be exempt from the final. Your grade will be the grade calculated by the grade calculator at the time of the deadline. The deadline for choosing exemption will be announced shortly after mid-semester. If you are eligible for exemption and do NOT select it by the deadline, then you must take the final. If you choose to exempt, you may not change your mind after the deadline has passed. If you do not have a semester numerical average that starts with an “8” or higher by the exemption deadline, then you **MUST** take the final. This process is called “opt out”.

**Communication via email:** I will be sending class emails using PeopleSoft. You are responsible for checking your UH email. Per UH Policy, notices properly addressed and so sent (for example, 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 (https://www.math.uh.edu/~tomforde/Email-Etiquette.html).

If I do not respond to your email within two working days, please resend the email. If you again do not hear from me within one more working day, it is 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.

**Attendance and class participation**

Students are expected to attend all lectures even though attendance is not directly factored into grades. Students are encouraged to participate in class discussions by asking and answering questions. Those who have excellent attendance and participation but are on a grade borderline may get extra consideration at the end of the semester.

**Policy on Incompletes**

Incompletes are given only in very unusual circumstances, and never just to prevent a bad grade or provide the student with more time to prepare for an exam.

**Honor Principle:** University of Houston students are expected to adhere to the 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 be reported to the department for further disciplinary actions, receive sanctions as explained on these documents, and will have an academic dishonesty record at the Provosts office. 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.

**UH CAPS:** Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad and hopeless. You can reach CAPS (www.uh.edu/caps) by calling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis.
No appointment is necessary for the "Let's Talk" program, a drop-in consultation service at convenient locations and hours around campus.  
http://www.uh.edu/caps/outreach/lets_talk.html

**CSD Accommodations:** Academic Adjustments/Auxiliary Aids: The University of Houston System 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 students who have a disability. In accordance with Section 504 and ADA guidelines, University of Houston 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 visit The Center for Students with DisABILITIES (CSD) website at http://www.uh.edu/csd/ for more information.

Accommodation Forms: Students seeking academic adjustments/auxiliary aids must, in a timely manner (usually at the beginning of the semester), provide their instructor with a current Student Accommodation Form (SAF) from the CSD office before an approved accommodation can be implemented.

Details of this policy, and the corresponding responsibilities of the student are outlined in The Student Academic Adjustments/Auxiliary Aids Policy (01.D.09) document under [STEP 4: Student Submission (5.4.1 & 5.4.2), Page 6]. For more information please visit the Center for Students with Disabilities FAQs page.

Additionally, if a student is requesting a (CSD approved) testing accommodation, then the student will also complete a Request for Individualized Testing Accommodations (RITA) paper form to arrange for tests to be administered at the CSD office. CSD suggests that the student meet with their instructor during office hours and/or make an appointment to complete the RITA form to ensure confidentiality.

*Note: RITA forms must be completed at least 48 hours in advance of the original test date. Please consult your counselor ahead of time to ensure that your tests are scheduled in a timely manner. Please keep in mind that if you run over the agreed upon time limit for your exam, you will be penalized in proportion to the amount of extra time taken.

**Math 3336 Discrete Mathematics – Topics List**

The Foundations: Logic and Proofs
   1.1 Propositional Logic  
   1.2 Applications of Propositional Logic  
   1.3 Propositional Equivalences  
   1.4 Predicates and Quantifiers  
   1.5 Nested Quantifiers  
   1.6 Rules of Inference  
   1.7 Introduction to Proofs  
   1.8 Proof Methods and Strategy
Basic Structures: Sets, Functions, Sequences, Sums, and Matrices
   2.1 Sets
   2.2 Set Operations
   2.3 Functions
   2.4 Sequences and Summations

Number Theory and Cryptography
   4.1 Divisibility and Modular Arithmetic
   4.2 Integer Representations and Algorithms
   4.3 Primes and Greatest common Divisors
   4.4 Solving Congruences
   4.6 Cryptography

Induction and Recursion
   5.1 Mathematical Induction
   5.2 Strong Induction and Well-Ordering
   5.3 Recursive Definitions and Structural Induction

Counting
   6.1 The Basics of Counting
   6.2 The Pigeonhole Principle
   6.3 Permutations and Combinations
   6.4 Binomial Coefficients and Identities
   6.5 Generalized Permutations and Combinations

Advance Counting Techniques
   8.1 Applications of Recurrence Relations
   8.2 Solving Linear Recurrence Relations

Relations
   9.1 Relations and Their Properties
   9.3 Representing Relations
   9.5 Equivalence Relations
   9.6 Partial Ordering

Graphs
   10.1 Graphs and Graph Models
   10.2 Graph Terminology and Special Types of Graphs
   10.3 Representing Graphs and Graph Isomorphism
   10.4 Connectivity
   10.5 Euler and Hamilton Paths

Trees
   11.1 Introduction to Trees