Math 3336 – 2890 (Spring 2019)
Discrete Mathematics Course Syllabus

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Course Homepage: www.math.uh.edu/~irina
Lecture Time/Room: 9:00am-10:00am/CBB104
Office: PGH 212
Office Hours: Mondays/Wednesdays 12:45pm-2:45pm 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.

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 10%
2. Poppers 10%
3. 3 Regular Exams: 60% (20% each)
4. 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>Grade</th>
<th>x Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93 ≤ x ≤ 100</td>
</tr>
<tr>
<td>A-</td>
<td>90 ≤ x &lt; 93</td>
</tr>
<tr>
<td>B+</td>
<td>87 ≤ x &lt; 90</td>
</tr>
<tr>
<td>B</td>
<td>83 ≤ x &lt; 87</td>
</tr>
<tr>
<td>B-</td>
<td>80 ≤ x &lt; 83</td>
</tr>
<tr>
<td>C+</td>
<td>77 ≤ x &lt; 80</td>
</tr>
<tr>
<td>C</td>
<td>73 ≤ x &lt; 77</td>
</tr>
<tr>
<td>C-</td>
<td>70 ≤ x &lt; 73</td>
</tr>
<tr>
<td>D+</td>
<td>67 ≤ x &lt; 70</td>
</tr>
<tr>
<td>D</td>
<td>63 ≤ x &lt; 67</td>
</tr>
<tr>
<td>D-</td>
<td>60 ≤ x &lt; 63</td>
</tr>
<tr>
<td>F</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.

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.

**Poppers:** Beginning the 3rd week of school, you will have daily poppers (short answer or multiple-choice questions on the material from that day’s lecture or from the lectures prior to that day) which will be given during the class.

The poppers are for sale at the BOOK STORE. Please buy the package for Math 3336. You must use the right popper forms for credit; you cannot turn in your answers on any other kind of paper. You are required to fill in your id number, popper number. Make sure that your id number and popper number are correct before turning in the popper at the end of the lecture. If these are not filled out correctly or if the darken circles are too light you will not get credit for that day’s lecture even if you attended.

Do not turn in poppers for classmates. If you turn in a popper for a classmate who was not in class that day, poppers for both students will not be accepted. Repeated offenses might be reported to the Departmental Hearing Officer (see UH Academic Honesty Policy).

Each Popper is worth 5 points. We will drop 10% of poppers given during the semester. Popper grades will be posted in your CourseWare gradebook. There will be no make-up Poppers.

**Exams**

There will be three midterm exams and a final exam.

**Test 1:** February 15  
**Test 2:** March 29  
**Test 3:** April 26

The **Final exam** will be held in the same classroom at the following date and time: **May 8, 2019** 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.
Make-up Policy
There will be no make-up exams offered in this course. 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 dates listed above. A makeup final exam would be offered only in the case of a documented medical emergency. Makeups will not be offered to accommodate personal travel plans.

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).

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](https://uh.edu/academic-honesty/) 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](http://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](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/](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