

# Mathematics 2345—Discrete Mathematics

Fall 2016

## Instructor

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## Office Hours

M,W 3:00–4:00 PM  
T, R 11:00 AM –1:00 PM  
F 12:00 – 1:00 PM  
or by appointment

**Class Meetings:** MWF 9:00–9:50 AM, Old Main 3413

## Text:

- Rosen, *Discrete Mathematics and Its Applications*, 6th ed., McGraw-Hill, 2007.

**Catalogue Description:** Survey of discrete structures and methods. Includes set theory, graph theory, recurrence relations, analysis of algorithms and Boolean algebras. (Includes: logic, proofs, sets, functions, algorithms, recursion, recurrence relations, and Boolean algebra.)

**Prerequisite:** Successful completion of MAT1441G (Calc I); some computer programming may be required for this course. (*Note: for this term there will be Python programming.*)

**Learning Objectives:** By the end of this course you should be able to:

- apply the fundamentals of logical thought to solving problems (critical thinking);
- read, interpret, formulate mathematically, and solve word problems (writing, critical thinking, citizenship);
- accurately express and analyze mathematical reasoning in writing (writing, critical thinking, citizenship);
- appreciate and understand mathematical presentations, terminology, and data displays;

**Participation:** As with all university level mathematics courses it will be crucial that you do the homework and practice the techniques. It will be equally important for you to come to class, to participate in the discussions, and to come and see me if you have problems. If you know you will miss a class you should let me know about it in advance.

**Study Groups:** Few things have been proven more effective at advancing student achievement in mathematics classes than participating in “study groups.” This is obviously a small class so more than one ‘group’ seems a bit silly. Nonetheless, I encourage you to get together regularly outside of class to go over the class material, discuss textbook examples, and work on problems. There is no doubt that students who spend some time with others in the class talking about the material and working through problems almost invariably do better than those who work alone!

## Desire2Learn:

I will use the Desire2Learn account for the course to post this course outline and as much of the class handout materials as possible. Some of the homework will be writing assignments. These will be submitted through D2L. I will also post grades on D2L so you can keep track of your progress in the course.

## Topics Covered:

MATHEMATICS 2345 – Tentative Schedule – Fall 2016				
WEEK	STARTING	READING	TOPICS	NOTES
1	8/22	1.1-1.4	Logic	8/26 - last day to add
2	8/29	1.5-1.6	Inference; Proofs	9/2 - last day drop/no grade
3	9/5	1.7	Proof Methods & Strategy	9/5 - Labor Day - no classes
4	9/12	2.1-2.3	Sets; Functions	
5	9/19	2.4, 3.1	Sequences; Algorithms	
6	9/26	3.2-3.4	Growth of Functions; Integers	
7	10/3	3.5-3.7	Primes; Integers (Algorithms)	<b>Exam 1</b> – Friday, 10/7
8	10/10	4.1; 5.2	Induction Proofs	10/12 - Midterm 10/14 - Fall Break, no classes
9	10/17	4.2-4.3	Recursion	
10	10/24	4.4-4.5	Recursion; Correctness	11/1 - Daylight Savings Time Ends
11	10/31	7.1-7.3	Recurrence Relations	11/4 - last day withdraw W
12	11/7	11.1-11.3	Boolean Functions; Logic Gates	
13	11/14	11.4	Circuit Minimization	<b>Exam 2</b> — Friday, 11/18
14	11/21			Thanksgiving Recess, no classes
–	11/28	12.1-12.3	Modeling Computation, FSM	
15	12/5	12.4-12.5	Languages, Turing Machines	12/9 - last class day
2345	MWF 9:00	<b>FINAL</b>	Tuesday, 12/13	8:00 – 10:00 am

**Quizzes and Tests:** There will be two in-class tests. Tentative dates are given in the table above but may depend on the pace at which we cover the material. You will be given at least one week notice for each test if there is a change in the schedule. There will be a 10-15 minute quiz at the end of each Friday class period other than the weeks that have tests.

**Evaluation:** The grade for this course will be computed using homework and quizzes, the in-class tests, and a final exam. The final examination will be comprehensive and it will be Wednesday, December 14 from 8:00 to 10:00 AM. The relative weights of the components of the course are as follows:

Test 1	25%
Test 2	25%
Quizzes	15%
Homework	5%
Final	8-10 AM Dec. 13 30%

**Course Grade:** The following scale will be used as a first approximation to your grade:

90–100: A    80–89: B    70–79: C    55–69: D    0–54: F

In borderline cases, factors such as overall trends and the final exam score will be taken into consideration. It is possible that the “cut-off” scores given above will be lowered. As a result, an overall score of 80 is *guaranteed* to receive at least a B, whereas a score of 78 *might* result in a B.

## Miscellaneous:

- Please ask questions when you experience problems. Ask in class or see me outside of the regularly scheduled meeting times. If you can't make my posted office hours we can almost always arrange a separate appointment.
- I will be happy to provide make-up privileges (when make-up is possible) to students for properly verified absences due to illness, emergency, or participation in an official University activity. It is the student's responsibility to initiate plans for make-up work and to complete it promptly. Whenever possible, you should contact me *before* such absences rather than after.
- As I hope you have already discovered, success in a university mathematics course requires a lot of work outside the classroom. You need to read the textbook before class to be prepared. You need to go over your notes and the textbook after class to consolidate what has been covered. Above all, you need to do problems and write out solutions.
- You must, of course, recognize the principles of academic honesty. Anything you hand in for credit *must* be your own work and not the direct result of collaboration. I will operate under the assumption that everyone in the class understands this concept. Should you violate this, I will be greatly disappointed and I will report such behavior to the Office of Student Standards. The typical consequence of such a violation is a grade of F in the class.

**Academic integrity:** Students are expected to maintain principles of academic integrity and conduct as defined in EIU's Code of Conduct (<http://www.eiu.edu/judicial/studentconductcode.php>). Violations will be reported to the Office of Student Standards.

**Students with disabilities:** If you are a student with a documented disability in need of accommodations to fully participate in this class, please contact the Office of Student Disability Services (OSDS). All accommodations must be approved through OSDS. Please stop by Ninth Street Hall, Room 2006, or call 217-581-6583 to make an appointment.

**The Student Success Center:** Students who are having difficulty achieving their academic goals are encouraged to contact the Student Success Center ([www.eiu.edu/~success](http://www.eiu.edu/~success)) for assistance with time management, test taking, note taking, avoiding procrastination, setting goals, and other skills to support academic achievement. The Student Success Center provides individualized consultations. To make an appointment, call 217-581-6696, or go to 9th Street Hall, Room 1302.