

MAT 243 – <i>class SLN</i>	DISCRETE MATHEMATICAL STRUCTURES	Spring 2020 ASU/SoMSS
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Note: This syllabus is tentative and should not be considered definitive. The instructor reserves the right to modify it (including the dates of the tests) to meet the needs of the class. It is the student responsibility to attend class regularly and to make note of any change.

Instructor: <i>instructor's name</i>	Class temporal/spatial coordinates: <i>specific coordinates</i>
Email: <i>instructor's email</i>	Office Hours:
Office: <i>instructor's office</i>	& by appointment

Email is the best way to contact your instructor. Include your class (e.g. MAT 243, MWF 12:55PM) in the subject line. According to the university's rules, only emails from your ASU email account will be answered. Also, all email sent to you, the student, will go to your ASU email. You are responsible to check the spam folder, as sometimes (even if seldom) email is wrongly sorted. FERPA does not allow instructors to tell you or discuss grades by email!

Course Description Logic, sets, functions, elementary number theory and combinatorics, recursive algorithms, and mathematical reasoning, including induction. Emphasizes proofs and connections to computer science.

Prerequisites Minimum sophomore standing; MAT 210, 251, 265, or 270 with a grade of C or better.

Textbook *Discrete Mathematics and its Applications* by Kenneth Rosen (8th edition) – any variant: bound, loose-leaf or pdf

Additional Content will be posted in the **Canvas page** for our class.

Calculators: A graphing calculator is recommended for this class, though not allowed on Test 1. If you already own one, you may use it, but keep in mind that calculators with QWERTY keyboards or that can do symbolic algebra are not allowed for tests and quizzes. For example, TI83/84, TI-*nspire* CX or Casio fx-9750 Plus are allowed; but TI89, TI 92, TI-*nspire* CAS, Casio FX2 Casio 9970Gs are NOT. If in doubt - ask your instructor.

Grading: The class grade will be computed using the Final Exam (25%), 3 Midterm Tests (50%), HW & Quizzes (20%) and a Paper on Structural Induction (5%).

Grading Scale:

[97, 100] → A+	[87, 90] → B+	[76, 80] → C+	[60, 70] → D
[93, 97) → A	[83, 87) → B	[70, 76) → C	[0, 60) → E
[90, 93) → A-	[80, 83) → B-		

Academic Status Reports: are provided weekly during the semester in case your performance up to that point is unsatisfactory, indicating a probable failing grade. Students can view ASRs in My ASU within 24 hours after each weekly reporting period closes on Sundays. If you receive a status report alerting you that your performance is not good, especially if the report states that you should contact your instructor, you should act on it promptly and show up to the office hours within a week of receiving the report. Status reports are **not** a real-time running tally of your grades in the class and are not updated to reflect grades earned after the report has been issued. They are simply an ALERT to hopefully make you work harder and prevent failure. They are not recorded in your transcript.

Homework will consist of two portions: written assignments (from the textbook or prepared by your instructor – check Canvas for more info) and online homework (done in the *WeBWork* system). *WeBWork* can be accessed directly at <http://webwork.asu.edu> and choosing your instructor's class from the MAT 243 group. If you are not familiar with *WeBWork* you should start by working out the Introduction unit (which will not count towards the grade). Due dates for *WeBWork* will be listed in the system. **No late assignments will be accepted in either portion of the homework**, but, at the discretion of the instructor, one assignment in each portion will be dropped.

A special homework will be a **Paper on Recursion and Structural Induction**, which require students to show proficiency in understanding recursion and be able to apply the method of structural induction to prove properties of objects defined by recursion.

Quizzes: Quizzes may be either announced or unannounced, and are given at the discretion of the instructor. Quizzes usually cover material that has recently been discussed in class. No make-up quizzes will be given; nevertheless, the lowest quiz grade will be dropped.

Midterm Tests: Three tests will be given during the semester. The best possible preparation for all tests is regular attendance and completion of assigned homework. The tests will be administered in the regular classroom, during class time, on the dates indicated in the tentative schedule below. The tests are closed-books, closed-notes. Some formulas may be provided if deemed necessary and you will be made aware of the specifics in advance. When the calculators are allowed, they should have a “clear memory”. Make-up tests are to be given at the discretion of the instructor and only in the case of verified medical or other reasonable emergency. The instructor must be notified before the test occurs. E-mail instructor or call the Undergraduate Math Office (480-965-3951).

Final Exam: The final exam is minimally **comprehensive** (the formal logic may be skipped and the portion after and including Section 5.1 will be covered more heavily) and will be administered in the regular classroom. The ASU final exams schedule lists our final exam on [REDACTED] - according to the university schedule and it will be strictly followed. Except to resolve those situations described below, no changes may be made in this schedule without prior approval of the Dean of the college in which the course is offered. Under this rule, if a conflict occurs, or a student has more than three exams in one day, the instructors may be consulted about an individual schedule adjustment. If necessary, the matter may be pursued further with the appropriate dean(s). This procedure applies to conflicts among any combination of Downtown Phoenix campus, Tempe campus, Polytechnic campus, West campus, and/or off campus class. Make-up exams **will NOT** be given for reasons of a non-refundable airline tickets, vacation plans, work schedules, weddings, family reunions, and other such activities. Students should consult the final exam schedule before making end-of-semester plans.

Attendance is essential to pass the class. This statement alone is the biggest advice for any math class, even more so in this class! Also, the university rules allow a maximum of SIX missed classes (equivalent of 2 weeks of instruction) during a semester; exceeding this number, you can be penalized, including getting a grade of **E**.

Course Policies Students are responsible for assigned material whether or not it is covered in class and for material covered in class whether or not it is in the text. **Working regularly** on assigned problems and **attending class** are essential to survive. You are expected to read the text, preferably before the material is covered in class

Extra Support: To supplement your instructor’s lectures and office hours, ASU has a vast system of tutoring options.

- Here is the link to the schedule and location for the free [Math Tutor Centers](https://math.asu.edu/resources/math-tutoring-center) on campus:
<https://math.asu.edu/resources/math-tutoring-center>
- The [Engineering Tutor Center](#) (free of charge, as well) is in ECF 102.
- Online tutoring: <https://studentsuccess.asu.edu/onlinetutoring> .
- Many residence halls, the Memorial Union and the Student Pavilion also offer evening or weekend free tutoring to all ASU students as part of the [ASU Learning Support Services](#).

In order to be admitted to the Tutor Centers students must present their valid ASU Sun Card.

TENTATIVE SCHEDULE		
Week of	Sections	Description of subjects/activities
Jan 13	1.1 1.2	Introductions Propositional Logic Applications of Propositional Logic
Jan 20	1.3 1.4	<i>Jan 20 – MLK Day observed – no classes</i> Propositional Equivalences Predicates and Quantifiers
Jan 27	1.5 1.6	Nested Quantifiers Rules of Inference (and Formal Proofs)
Feb 3	1.7	Introduction to Proofs
Feb 10	Review for Test 1, Test 1 2.1	Test 1: Wed of this week Sets
Feb 17	2.2 2.3 2.4	Set Operations Functions Sequences and Summation
Feb 24	(3.1 and) 3.2 3.3	(Algorithms and) The Growth of Functions Complexity of Algorithms
March 2	4.1 4.2 4.3	Divisibility and Modular Arithmetic Integer Representation and Algorithms Primes & Greatest Common Divisor (& Euclid's Alg)
March 9		<i>Spring Break – no classes</i>
March 16	Review for Test 2, Test 2 5.1	Test 2: Wed of this week Mathematical Induction
March 23	5.1 5.3	Mathematical Induction (cont'd) Recursive definition and Structural Induction
March 30	8.2 6.1, 6.2	Solving Linear Recurrence Relations The Basics of Counting; The Pigeonhole Principle
April 6	6.3	Permutations, Combinations (<i>Paper on Recursion and Structural Induction due</i>)
April 13	Review for Test 3, Test 3	Test 3: Wed of this week
April 20	8.5 9.1	Inclusion-Exclusion Principle Relations and Their Properties
April 27	9.1 9.5 Review for Final	Relations and Their Properties (cont'd) Equivalence Relations
May 4 – May 8	FINAL EXAMS	Our Final Exam:

Withdrawal Deadlines:

Course Withdrawal Deadline: April 5, 2020

Complete Withdrawal Deadline: May 1, 2020

Course Withdrawal A student may withdraw from a course with a grade of W during the withdrawal period. The instructor's signature is not required. It is a student's responsibility to verify that they have in fact withdrawn from a class.

Instructor-Initiated Drop At the instructor's discretion, any student who has not attended class during the first week of classes may be administratively dropped from the course. However, students should be aware that non-attendance will NOT automatically result in their being dropped from the course. **Thus, a student should not assume they are no longer registered for a course simply because they did not attend class during the first week. It is the student's responsibility to be aware of their registration status.**

The grade of Incomplete A grade of incomplete will be awarded only in the event that a documented emergency or illness prevents the student **who performed at a passing level up to that point** from completing a **small** percentage of the course requirements. The student must provide written documentation and be passing the class at the time to receive an Incomplete. The guidelines in the current general ASU catalog regarding a grade of incomplete will be strictly followed. *The Dean of the student's college must approve any exceptions to these rules.*

Failing grades (E, EN and EU grades)

The E grade is for students who participated in the class but did not earn enough credit to pass or attain the D grade.

The EN grade is for student who never once participated in the class. At the instructor's discretion, any student who has not attended class during the first week of classes may be administratively dropped from the course. However, students should be aware that non-attendance would NOT automatically result in being dropped from the course. Thus, a student should not assume they are no longer registered for a course simply because they did not attend class during the first week. It is the student's responsibility to be aware of their registration status

The EU grade is for students who participated, but then stopped after a certain point and never resumed.

Academic Dishonesty Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see <http://provost.asu.edu/academicintegrity>.

Disability Accommodations Qualified students with disabilities who will require disability accommodations in this class are encouraged to make their requests to me at the beginning of the semester either during office hours or by appointment. Note: Prior to receiving disability accommodations, verification of eligibility from the Disability Resource Center (DRC) is required. Disability information is confidential.

Students who feel they will need disability accommodations in this class but have not registered with the Disability Resource Center (DRC) should contact DRC immediately. Their office is located on the first floor of the Matthews Center Building. DRC staff can also be reached at: 480-965-1234 (V), 480-965-9000 (TTY). For additional information, visit: www.asu.edu/studentaffairs/ed/drc. Their hours are 8:00 AM to 5:00 PM, Monday through Friday.

Policy on Threatening Behavior All incidents and allegations of violent or threatening conduct by an ASU student (whether on- or off campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students. If either office determines that the behavior poses or has posed a serious threat to personal safety or to the welfare of the campus, the student will not be permitted to return to campus or reside in any ASU residence hall until an appropriate threat assessment has been completed and, if necessary, conditions for return are imposed. ASU PD, the Office of the Dean of Students, and other appropriate offices will coordinate the assessment in light of the relevant circumstances.

Classroom behavior Make sure you **arrive on time for class**. Excessive tardiness will be subject to sanctions.

Under no circumstances should you allow your cell phone to ring during class. Any disruptive behavior, which includes ringing cell phones, listening to your mp3/iPod player, text messaging, constant talking, eating food noisily, reading a newspaper will not be tolerated. The use of laptops (unless for lecture note taking), cell phones, MP3, IPOD, etc are strictly prohibited during class. Students who engage in disruptive classroom behavior may be subject to various sanctions. The procedures for initiating a disruptive behavior withdrawal can be found at <https://clas.asu.edu/resources/disruptive-behavior>.

Absences related to religious observances/practices If you will be absent from class due to a religious observance or practice, it is your responsibility to inform the instructor during the first week of class. Your instructor will work with you on alternative and reasonable arrangements for any time missed.

Absences related to university sanctioned events and activities If you will be absent from class due to participation in a university sanctioned event/activity, it is your responsibility to inform the instructor during the first week of class. Your instructor will work with you on alternative and reasonable arrangements for any time missed.

Course Evaluation Students are expected to complete the course evaluation. The feedback provides valuable information to the instructor and the college and is used to improve student learning. Students are notified when the online evaluation form is available.

Inclusion *The School of Mathematical and Statistical Sciences encourages faculty to address and refer to students by their preferred name and gender pronoun. If your preferred name is different than what appears on the class roster, or you would like to be addressed using a specific pronoun, please let your instructor know.*

Title IX Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/fags>.

As a mandated reporter, the instructor is obligated to report any information he/she becomes aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, <https://eoss.asu.edu/counseling>, is available if you wish discuss any concerns confidentially and privately.

Final ADVICE Plan on spending 6 -7 hours a week outside class on MAT 243. Read class notes, read the book, peruse the materials uploaded on Blackboard, write down definitions and properties, redo with your own hand (and head!) the proofs we had gone over in class. Be active during lectures, ask questions and answer questions. Do the homework ahead of time, not at the last minute. Use instructor's office hours wisely and try the problem(s) yourself before asking for help from instructor or tutor. Do your best to UNDERSTAND. Try to explain it to others - this is the ultimate check for understanding!