TEXAS A&M UNIVERSITY

Course Syllabus

Course Information

Course Number:	CSCE 222
Course Title:	Honors – Discrete Structures for Computing
Section:	200
Time:	MWF 10:20 am – 11:10am
Location:	HRBB 126
Credit Hours:	3
Canvas site:	https://canvas.tamu.edu/courses/171681

Instructor Details

Instructor:	Alan Kuhnle
Office:	421 Peterson Building (PETR)
Zoom:	https://tamu.zoom.us/my/kuhnle
E-Mail:	kuhnle@tamu.edu
Office Hours:	Monday, 3 pm – 4 pm, Office + Zoom Tuesday, 3 pm – 4 pm, Office Friday, 1 pm – 2pm, Office + Zoom
Teaching Assistant:	Sunayna Ray
Office:	Online
Zoom:	https://tamu.zoom.us/j/99338512926
E-Mail:	sunayna@tamu.edu
Office Hours:	Wednesday, 11:30 am – 12:30 pm, Zoom

Course Description

This course provides the mathematical foundations from discrete mathematics for analyzing computer algorithms, for both correctness and performance; introduction to models of computation, including finite state machines and Turing machines.

Course Prerequisites

MATH 151 Engineering Mathematics I.

Special Course Designation

None.

Course Learning Outcomes

At the end of the course, students will understand the basic principles of logic, proofs and sets. They will be able to apply results from discrete mathematics to the analysis of algorithms. They will be able to produce proofs by induction and apply counting techniques. They will have a basic understanding of models of computation.

Textbook and/or Resource Materials

Textbook: Mathematics for Computing Science. Eric Lehman, F. Thomson Leighton,Albert R. Meyer.

The textbook is freely distributed under terms of the Creative Commons Attribution-ShareAlike 3.0 license. A PDF version is located under the "Files" section on Canvas. The version on canvas will serve as our reference version, since multiple versions of this book are available on the internet.

Canvas site: https://canvas.tamu.edu/courses/171681

All assignments and grades will be posted on canvas. Assignments must be formatted using LaTeX and submitted through canvas.

LaTex references:

The (Not So Short) Introduction to LaTeX [Skim Chapter 1 and study Chapter 3]

Short Math Guide for LaTeX

Comprehensive LaTeX Symbol List

Grading Policy

In-Class Problems. 5 points each (x12). Students will be randomly assigned into a group to work a problem in-class. One hand-written solution per group turned in at the end of class. 5 points awarded for completeness. Students who arrive to class late will not receive full credit.

Homework Assignments. 20 points each (x11). A subset of each homework will be graded for correctness. The other problems will be graded for completeness only. Your assignments **must be submitted in LaTeX** (see references above). Submit assignments to Canvas.

Exams. There are two exams (100 points each) and one final exam (200 points).

Grading Distribution.

Exams, 380 points.
Homework Assignments, 200 points.
In-Class Problems, 60 points.

The grading scale will be: A ≥ 90%, B ≥ 80%, C ≥ 70%, D ≥ 60% > F.

Extra credit already included in point totals of each category.

Late Work Policy

- *No late work will be accepted. Please abide by all deadlines. Exceptions can be made for documented, excused absences only.*

Course Schedule

Week	Topic	Reading
0 (Aug. 24)	Introduction	Syllabus
	What is a Proof?	1.1-1.5
1 (Aug. 29)	What is a Proof?	1.6-1.10
	Well-Ordering Principle	2.1-2.4
	Wed: HW1 out	
2 (Sep. 5)	Logical Formulas	3.1-3.7
	Mon: No class (Labor Day)	
	Wed: HW1 due, HW2 out	
3 (Sep.12)	Mathematical Data Types	4.1-4.5
	Wed: HW2 due, HW3 out	
4 (Sep. 19)	Induction	5.1-5.3
	Wed: HW3 due, HW4 out	
5 (Sep. 26)	State Machines / Regular Expressions	6.1-6.4
	Exam 1, Sep. 30	
6 (Oct. 3)	Languages and Grammars, Turing Machines	Notes on Canvas
	Wed: HW4 due, HW5 out	
7 (Oct. 10)	Recursive Data Types	7.1-7.7
	Mon. No class (Fall Break)	
	Fri: HW5 due, HW6 out	
8 (Oct. 17)	Infinite Sets	8.1-8.4
	Fri: HW6 due, HW7 out	
9 (Oct. 24)	Sums and Asymptotics	14.1-14.7
	Fri: HW7 due, HW8 out	
10 (Oct. 31)	Cardinality Rules	15.1-15.11
	Fri: HW8 due, HW9 out	
11 (Nov. 7)	Generating Functions	16.1-16.6

	Exam 2, Nov. 11	
12 (Nov. 14)	Events and Probability Spaces Fri: HW9 due, HW10 out	17.1-17.5
13 (Nov. 21)	Conditional Probability No class, Nov. 23 (Reading day) No class, Nov. 25 (Thanksgiving)	18.1-18.4
14 (Nov. 28)	Conditional Probability Random Variables Wed: HW10 due, HW11 out	18.5-18.9 19.1-19.6
15 (Dec. 5)	Review Last day of class, Dec. 7. Wed: HW11 due.	

FINAL EXAM. Tuesday, Dec. 13, 8 – 10 am.
See: http://registrar.tamu.edu/Courses,-Registration,-Scheduling/Final-Examination-Schedules

University Policies

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to Student Rule 7 in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to Student Rule 7 in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" (Student Rule 7, Section 7.4.1).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (Student Rule 7, Section 7.4.2).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See Student Rule 24.)

Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" (Section 20.1.2.3, Student Rule 20).

Texas A&M at College Station
You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below) Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

Texas A&M at College Station
Disability Resources is located in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu.

Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see University Rule 08.01.01.M1):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Texas A&M at College Station
Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with Counseling and Psychological Services (CAPS).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's Title IX webpage.

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care by utilizing available resources and services on your campus

Texas A&M College Station
Students who need someone to talk to can contact Counseling & Psychological Services (CAPS) or call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at suicidepreventionlifeline.org.