University at Buffalo
Department of Computer Science & Engineering
338 Davis Hall – (716) 645-3180

Syllabus

Please read this sheet carefully, and save it for future reference.
The syllabus is subject to change based on the needs of the course and will be communicated with you as appropriate.

Instructors

Name	Email	Office	Office Hours
Dr. Eric Mikida	epmikida@buffalo.edu	208 Capen Hall	TBD

Course Information
CSE 191 Introduction to Discrete Structures – 4 credits

Prerequisites
One prerequisite course of: CSE 115, EAS 230, EAS 240 or EAS 999TRCP.

Course Description
Foundational material for further studies in computer science. Topics include logic, proofs, sets, functions, relations, recursion, recurrence relations, mathematical induction, graphs, trees, basic counting theory, regular languages, and context free grammars.

This course provides some of the mathematical foundations and skills that you will need in your further study of computer science and engineering. The topics covered explore a number of mathematical concepts and provide fundamental tools necessary to formally express problems using mathematical terminology. This allows for encountered problems to be expressed formally and concisely, in order to prove or derive properties necessary for applications and other solutions.
These topics include:
- Propositional and predicate logic
- Logical inferences and mathematical proofs
- Sets and set operations
  - Strings
- Functions and relations
- Counting methods
- Sequences and summations
- Graph and tree properties
- Regular languages
  - Formal languages, regular expressions, finite automata

Course Learning Outcomes
Upon completion of the course, students will be able to…
1. read, understand, construct formal logical arguments; utilize Boolean logic to compute Boolean formulas, predicates, and write logic proofs using logical equivalence and deduction.
2. be able to specify and manipulate basic mathematical objects such as sets and functions.
3. be able to apply basic counting techniques for solving combinatorial problems.
4. identify and reason about basic mathematical properties of discrete structures such as graphs and trees.

Textbook
Kenneth Rosen, Discrete Mathematics and Its Applications, Seventh Edition, 2011 (ISBN: 978-0073383095).

Computing Resources
You will be using various free on-line tools for this course – links will be posted on the course website. Course-related communications should be via the Piazza forum linked from the course website. Piazza posts can be either public to the class or private to instructors. Any email communications must come from your UB email account and include [CSE 191] in the subject line. All communications with course staff are expected to be professional. Graded work will be both submitted and returned via UBLearns.

Homework Policy
Homework assignments will be posted to the course website with specified due dates/times. You will generally have around 2 weeks per assignment and homework will be assigned bi-weekly. However, you may have weekly assignments during some weeks. For written homework assignments, we will only be accepting electronic submissions. All written submissions must be in the form of a PDF submitted to UBLearns.

There will be specific submission instructions with each homework. There are two ways to complete your written homework:
- You may typeset your submissions using any word processor you wish (Microsoft Word and LaTeX are good options). Some web-based options for using LaTeX include ShareLaTeX and Overleaf.
- You may handwrite your submission and then scan it. If you prefer to scan your documents, you may do so with your own scanner or on campus, the libraries provide scanning services.

It is recommended that you write your homework by hand so that you commit it to memory. Make sure to double check your assignments before and after submission to ensure that part of your writing wasn't chopped off or distorted, as **the integrity of your submission is your responsibility.** Also, if you handwrite an assignment, make sure that you write legibly. **You will not receive credit if your submission is invalid/corrupt/wrong file format or if your submission is illegible.**

It is fully your responsibility to determine if your submission is valid. If we can't read your assignment, we can't grade you.

Late homework will be accepted up to 1 day late for a penalty of 25% of the total earned points.
Late homework will not be accepted after one day late.

Attendance and Participation
The conceptual and theoretical course content will be delivered primarily through the in-person lectures. You are expected to attend lectures and take your own notes to prepare for later assessments. If you are out of class for an extended period of time because of sickness, notify your instructor as soon as possible. If you miss a significant portion of the semester it is recommended that you resign from the course.

While attendance is not mandatory, course participation will be evaluated via weekly quizzes. Quizzes will be posted on UBLearns every Friday. You will be granted access to the quiz before the lecture starts. You will be able to work on the quizzes during the lecture and you will have until the end of the day (before 11:59PM) to complete the problems on your own.

Recitations

Weekly recitation time will be available to meet with a TA to review the course material, ask questions, and receive help with respect to course material.

Exams

There will be one in-class 45-minute midterm exam and one 3-hour final exam. The midterm is worth 25% of your grade. The final exam is worth 30% of your grade.

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No makeup exams will be given except in provably extreme circumstances.

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Grading Policy

The following indicates the grade breakdown which will be used in assigning grades in the course. It is possible that these ranges may be adjusted at the **end** of the semester to address inconsistencies or hardships that arise. **Grades will not be curved/adjusted during the semester.**

Requirement	Weight
Homework	35%
Quiz/Participation	10%
Midterm Exam	25%
Final Exam	30%

Percentage	Letter grade	Percentage	Letter grade
90 - 100	A	65-69	C+
85 - 89	A-	60-64	C
80 - 84	B+	55-59	C-
75-79	B	50-54	D
70-74	B-	0-49	F

Regrading

Any questions about the grading of a piece of work *must be raised within one week of the date that the graded work was returned to you.*

Incomplete (I) grades

A grade of incomplete ("I") indicates that additional coursework is required to fulfill the requirements of a given course. Students may only be given an "I" grade if they have a passing average in coursework that has been completed and have well-defined parameters to complete the course requirements that could result in a grade better than the default grade. An "I" grade may not be assigned to a student who did not attend the course.

Prior to the end of the semester, students must initiate the request for an "I" grade and receive the instructor's approval. Assignment of an "I" grade is at the discretion of the instructor.

The last day to resign the course is **Thursday, March 2, 2023**.

Academic Integrity

Academic integrity is a fundamental university value. Through the honest completion of academic work, students sustain the integrity of the university while facilitating the university's imperative for the transmission of knowledge and culture based upon the generation of new and innovative ideas. Please refer to the university Undergraduate Academic Integrity Policy (*https://catalog.buffalo.edu/policies/academic_integrity_2019-20.html*) for additional information.

As an engineer or computer scientist, you have special ethical obligations. As per the NSPE Code of Ethics, "engineers shall avoid deceptive acts" and "shall conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession (*https://www.nspe.org/resources/ethics/code-ethics*). Similar sentiments of honesty, integrity, fairness, and responsibility are fundamental to the ACM Code of Ethics (*https://www.acm.org/code-of-ethics*).

A violation in this class generally results in an F for the entire course. The Computer Science and Engineering department's policy on academic integrity can be found here:

https://engineering.buffalo.edu/computer-science-engineering/information-for-students/undergraduate-program/cse-undergraduate-academic-policies/cse-academic-integrity-policy.html

What Constitutes a Violation of Academic Integrity?

These bullets should be obvious things not to do (but commonly occur):
- Turning in your friend's work (obvious).
- Turning in solutions you found on Google with all the variable names changed (should be obvious). This is a copyright violation, in addition to an AI violation.
- Turning in solutions you found on Google with all the variable names changed and 2 lines added (should be obvious). This is also a copyright violation.
- Paying someone to do your work. You may as well not submit the work since you will fail the exams and the course.
- Posting to forums asking someone to solve the problem. Note: Aggregating every [stack overflow answer|result from google|other source] because you "understand it" will likely result in full credit on assignments (if you aren't caught) and then failure on every exam. Exams don't test if you know how to use Google, but rather test your understanding (i.e., can you understand the problems to arrive at a solution on your own). Also, other students are likely doing the same thing and then you will be wondering why 10 people that you don't know have your solution.

Other violations that may not be as obvious:
- Working with a tutor who solves the assignment with you. If you have a tutor, please contact me so that I may discuss with them what help is allowed.
- Sending your assignment to a friend to help them. If another student uses/submits your work, you are also liable and will be punished.
- Joining a chatroom for the course where someone posts their assignment once they finish, with the honor code that everyone needs to change it in order to use it.
- Reading your friend's assignment the night before it is due because you just need one more thing to get everything working. It will most likely influence you directly or subconsciously to solve the problem identically, and your friend will also end up in trouble.

What Collaboration is Allowed?

Assignments in this course should be solved individually with only assistance from course staff and allowed resources.
There is a gray area when it comes to discussing the problems with your peers and I do encourage you to work with one another to solve problems. That is the best way to learn and overcome obstacles. At the same time you need to be sure you do not overstep and not plagiarize. Talking out how you eventually reached the solution from a high level is okay, but explaining every step in detail/pseudocode is not okay.

Never come away from discussions with your peers with any written work, either typed or photographed, and especially do not share or allow viewing of your written work.

What Resources are Allowed?
With all of this said, please feel free to use any [files|examples|tutorials] that we provide directly in your work (with proper attribution). Feel free to directly use anything from lectures or recitations. You will never be penalized for doing so, but should always provide attribution/citation. Just remember, if you are citing an algorithm/proof that is not provided by us, then you are probably overstepping.

More explicitly, you may use any of the following resources (with proper citation/attribution in your code):
- Any examples posted on the course webpage (from lecture or recitation).
- Any examples that the instructor provides.
- Any examples that the TAs provide.

Omitting citation/attribution will result in an AI violation (and lawsuits later in life at your job). This is true even if you are using resources provided.

Amnesty Policy
We understand that students are under a lot of pressure and people make mistakes. If you have concerns that you may have violated academic integrity on a particular assignment, and would like to withdraw the assignment, you may do so by sending me an email **BEFORE THE VIOLATION IS DISCOVERED BY ME.** The email should take the following format:

Dear Dr. Mikida,

I wish to inform you that on assignment X, the work I submitted was not entirely my own. I would like to withdraw my submission from consideration to preserve academic integrity.

J.Q. Student
Person #12345678
UBIT: jqstuden

When we receive this email, student J would receive a 0 on assignment X, but would not receive an F for the course, and would not be reported to the office of academic integrity.

Critical Campus Resources
Accessibility Resources
If you have any disability which requires reasonable accommodations to enable you to participate in this course, please contact the Office of Accessibility Resources in 60 Capen Hall, 716-645-2608 and also the instructor of this course during the first week of class. The office will provide you with information and review appropriate arrangements for reasonable accommodations, which can be found on the web at: http://www.buffalo.edu/studentlife/who-we-are/departments/accessibility.html.

Sexual Violence
UB is committed to providing a safe learning environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence and stalking. If you have experienced gender-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), UB has resources to help. This includes academic accommodations, health and counseling services, housing accommodations, helping with legal protective orders, and assistance with reporting the incident to police or other UB officials if you so choose. Please contact UB's Title IX Coordinator at 716-645-2266 for more information. For confidential assistance, you may also contact a Crisis Services Campus Advocate at 716-796-4399.

Mental Health

As a student you may experience a range of issues that can cause barriers to learning or reduce your ability to participate in daily activities. These might include strained relationships, anxiety, high levels of stress, alcohol/drug problems, feeling down, health concerns, or unwanted sexual experiences. Counseling, Health Services, and Health Promotion are here to help with these or other issues you may experience. You can learn more about these programs and services by contacting:

Counseling Services:
- 120 Richmond Quad (North Campus), 716-645-2720
- 202 Michael Hall (South Campus), 716-829-5800

Health Services:
- 4350 Maple Rd, Amherst, NY 14226, 716-829-3316

Health Promotion:
- 114 Student Union (North Campus), 716-645-2837

Diversity

The UB School of Engineering and Applied Sciences considers the diversity of its students, faculty, and staff to be a strength, critical to our success. We are committed to providing a safe space and a culture of mutual respect and inclusiveness for all. We believe a community of faculty, students, and staff who bring diverse life experiences and perspectives leads to a superior working environment, and we welcome differences in race, ethnicity, gender, age, religion, language, intellectual and physical ability, sexual orientation, gender identity, socioeconomic status, and veteran status.