



ICS-141 – Discrete Mathematics for Computer Science I

Welcome to Discrete Mathematics for Computer Science I. In this course, you will be introduced to Logic, Proofs, Set Theory, Theory of Algorithms, Theory of Counting, Induction, and Probability. In this course you will learn to:

- Master precision in formal systems.
- Understand the concept of proofs as a chain of inferences.
- Apply formal rules of Algorithms to problem solving.
- Be able to develop a rigorous argument to support a concept.

Instructor Information

David Maxson

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Office Hours: Online

Student Learning Outcomes

By the end of this class, you will be able to analyze issues and apply mathematical problem solving skills to plan courses of action in decision-making situations, using:

1. Mathematical Logic
2. Proofs
3. Recursion
4. Analysis of algorithms
5. Sets
6. Combinatorics
7. Functions
8. Matrices
9. Probability
10. Relations

Class times and location

This is an online class. All lessons and interaction will be through Lulima.

Grading

Your final grade will be determined using a series of assignments. There will be a total of 31 assignments. Assignments 1.1 and 1.2 are worth 25 points each. Assignments 2.1 – 15.2 are worth 50 points each. The maximum number of points possible is 1500.

Each assignment will have a due date. You may turn them in at any time before the end of the semester, but if they are turned in after the due date you will lose 15% of the possible points (3.75 points for 25 point assignments and 7.5 points for 50 point assignments) for the assignment.

Your letter grade is based upon the number of points you earn.

- A – 1350 to 1500 points.
- B – 1200 to 1349 points.
- C – 1050 to 1199 points.
- D – 900 to 1049 points.
- F – 0 to 899 points.

Bonus points may be earned to demonstrate knowledge in certain areas and will only be allowed in sections you perform poorly in. Check with the instructor for bonus assignments.

Resources

Your textbook for this class is Rosen's *Discrete Mathematics and Its Applications* (6th edition) from McGraw-Hill.

We will use Lulima for submitting and returning all assignments including extra credit assignments. All grades will be posted in Lulima and you will be able to track your progress by utilizing the grade book. In addition, there will be discussion boards in Lulima where you may post or answer questions. Use the private message tool in Lulima to contact the instructor.

Other resources

- Tutoring may be available from the TRIO office in Na'auao 146 on the WCC campus.
- The Library and The Learning Center at WCC have computers configured with all of the software needed for this class.

Statement and Policies

Disabilities Accommodation Statement

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached by phone at 235-7448, by email at lemke@hawaii.edu, or by stopping by her office in Hale 'Akoakoa 213 for more information.

Academic Dishonesty - Cheating and Plagiarism

You are responsible for the content and integrity of all work you submit. The guiding principle of academic integrity will be that all files, work, examinations, reports, and projects that you submit are your own work. See page 16 of the Windward Community College catalog for further clarification.

You will be guilty of cheating if you:

Represent the work of others as your own (plagiarism).

User or obtain unauthorized assistance in any academic work.

Give unauthorized assistance to other students.

Modify, without instructor approval, an examination, paper, record, or report for the purpose of obtaining additional credit.

Misrepresent the content of submitted work.

A final thought

A computer is a computing machine. Everything it does involves numbers and mathematics, even when it doesn't seem to (such as writing a paper). Discrete Mathematics gives a basic understanding of the most common mathematical concepts used to create professional programs. You will need to study and, possibly, go through a section more than once to understand most of these concepts. But if you stick with it and apply these concepts to your programs you will be rewarded with applications that operate efficiently and correctly. Good luck!

Schedule

Week	Lesson	Textbook Section	Assignment
1	Introduction to ICS-141		
	Introduction to Laulima		1.1, 1.2
	Propositional Logic	1.1	1.3
2	Propositional Equivalences	1.2	2.1
	Predicates & Quantifiers	1.3	2.2
3	Nested Quantifiers	1.4	3.1
	Rules of Inference	1.5	3.2
4	Introduction to Proofs	1.6	4.1
	Proof Methods & Strategies	1.7	4.2
5	Sets	2.1	5.1
	Set Operations	2.2	5.2
6	Functions	2.3	6.1
	Sequences and Summations	2.4	6.2
7	Introduction to Algorithms	3.1	7.1
	The Growth of Functions	3.2	7.2
8	Complexity of Algorithms	3.3	8.1
	Integers and Algorithms	3.4	8.2
9	Primes and Greatest Common Divisors	3.5	9.1
	Applications of Number Theory	3.7	9.2
10	Matrices	3.8	10.1
	Mathematical Induction	4.1	10.2
11	Recursive Definitions	4.3	11.1
	Recursive Algorithms	4.4	11.2
12	Basics of Counting	5.1	12.1
	The Pigeonhole Principle	5.2	12.2
13	Permutations & Combinations	5.3	13.1
	Binomial Coefficients	5.4	13.2
14	Introduction to Discrete Probability	6.1	14.1
	Probability Theory	6.2	14.2
15	Bayes Theorem	6.3	15.1
	Expected Value & Variance	6.4	15.2