



SYLLABUS

CSE 215 - DISCRETE STRUCTURES

Course Description and Outcomes

This course introduces discrete structures and analysis techniques for computing by building on student's skills in programming and logic.

Prerequisite: A grade of "C" or better in CSE 121 and ENGR 250

Credits: 5

Class hours/location, instructor information and other important details:

See "Additional Information" in Canvas for section-specific details.

Text Book

"Applied Discrete Structures," Alan Doerr and Kenneth Levasseur, Department Of Mathematical Sciences, University of Massachusetts Lowell, available for free [here](#).

Additional Material (Optional)

USB flash drive
Portable computer

Course Outcomes	Assessments	Program Outcomes
Ability to analyze and design with: Functions, relations and their properties Sets, sequences and tuples Probability, counting (permutations and combinations) Propositional logic and logical connectives Introduction to predicate logic and its limitations Formal proof strategies: counterexample, contraposition, Contradiction, mathematical induction Recursive mathematical definitions Computational Complexity Trees, graphs and traversal strategies Modeling Computation	Programming Assignments, Homeworks and Tests	AST2-B&C



SYLLABUS

CSE 215 - DISCRETE STRUCTURES

Ability to implement resulting algorithms using C or C++ programming language.	Programming Assignments, Homeworks and Tests	AST2-A&B
--	--	----------

Tentative Schedule (subject to change):

WEEK 1

- Welcome/Introduction
- Canvas; syllabus overview; additional policies
- AEW; student resources
- Propositional Logic
- Theorems
- Proofs

WEEK 2

Induction and Recursion

WEEK 3

Number Theory

- Modular arithmetic
- Change of base
- Primes, divisibility, GCD
- Applications: cryptography

WEEK 4

- Sets: definitions, properties, types, operations
- Functions
- Sequences and summations
- Cardinality
- Matrices

WEEK 5

Counting

- Pigeonhole Principle
- Permutations
- Combinations
- Recurrence relations

WEEK 6

Relations



SYLLABUS

CSE 215 - DISCRETE STRUCTURES

WEEK 7

Probability

WEEK 8

- Graphs
- Trees

WEEK 9

Algorithms - Growth and Complexity

WEEK 10

- Regular Expressions
- Finite State Automata
- Turing Machines
- Formal Languages
- Wrap-up and Review

Students are encouraged to participate in course-related service learning such as club activities and special projects. Attend ECS Club meetings for more information.

Support Services

If you have emergency medical information, which should be shared; or if you require assistance in case the building should be evacuated; please make an appointment to see me as soon as possible.

Accommodations. Reasonable accommodations are available for students who have a documented disability. Disability Support Services (DSS) coordinates reasonable accommodations for students with disabilities and/or temporary health conditions (could include a temporary injury or pregnancy). Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the Disability Support Services office as soon as possible to better ensure that accommodations are implemented in a timely manner. All accommodations must first be approved through Disability Support Services. Disability Support Services is located in PUB 013, which is on the lower level. For an appointment or information, please visit www.clark.edu/dss or contact 360-992-2314 (voice) or 360-991-0901 (video phone) or email dss@clark.edu. Once you have established accommodations with Disability Support Services, please contact me as soon as possible to discuss your needs in this course.

Code of Student Conduct:

See http://www.clark.edu/about/governance/policies-procedures/student_code.php for Clark College's Code of Student Conduct.

Engineering & Computer Science Course Policies:

Visit [ECS Course Policies](#) for additional important and supporting materials.