

CS 225 – Discrete Structures in Computer Science

Catalog Description: An introduction to the discrete mathematics of computer science, including logic, set and set operations, methods of proof, recursive definitions, combinatorics, and graph theory.

Credits: 4

Prerequisites: Enforced: (MTH 111 or (MPT ≥ 24 or MPAL ≥ 61)) or MTH 112*

Unenforced: For CS Double Degree students: BA/BS and
(MTH 111 or (MPT ≥ 24 or MPAL ≥ 61))

Co-requisites: Enforced: MTH 112 (can be taken as prereq or coreq)

Courses that require this as a prerequisite: can be used in place of MTH 231 to satisfy discrete math requirement of CS 261, CS 321, CS 325, CS 381

Structure:

Ecampus: Term totals: This course combines approximately 120 hours of instruction, online activities, and assignments for 4 credits (30 hours of online instruction, 10 hours of online participation, 10 hours of online quizzes, 40 hours of offline reading/study, 25 hours of offline homework/lab assignments, and 5 hours of proctored exams).

Instructors: Joseph Jess

Course Content:

- Propositional and Quantified Logic
- Set Theory
- Direct/Indirect/Inductive Proof Techniques
- Combinatorics
- Sequences and Recursive Definitions
- Graph Theory

Course Learning Outcomes:

At the completion of the course, students will be able to...

1. **Construct** and **interpret** logic expressions in propositional and quantified logic
2. **Construct** and **interpret** set definitions and set relations.
3. **Prove** propositions via non-inductive proof techniques.
4. **Prove** propositions via inductive proof techniques.
5. **Construct** and **evaluate** sequences and sums.
6. **Solve** counting problems involving combinations and permutations.
7. **Construct** and **interpret** recursive definitions.
8. **Construct** graph representations of given problem descriptions.
9. **Solve** problems involving graphs by simulating the steps of a graph algorithm.

Learning Resources:

- Johnsonbaugh, R., *Discrete Mathematics*, 7th edition, Prentice-Hall, ISBN 0-13-159318-8

Students with Disabilities:

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

Link to Statement of Expectations for Student Conduct:

<http://oregonstate.edu/studentconduct/http://%252Foregonstate.edu/studentconduct/code/index.php>