

Inver Hills Community College

CS 2350: Discrete Structures of Computer Science

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 4

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites:

This course requires both of these prerequisite categories

1. One of these two

CS 1110 - Computer Science I with Java

CS 1119 - Computer Programming with C++

And

2. One of these two

MATH 1118 - College Algebra I (Minimum grade: 2.0 GPA Equivalent and Number of Years

Valid: 2)

MATH 1127 - PreCalculus (Minimum grade: 2.0 GPA Equivalent and Number of Years Valid: 2)

Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

Introduces theoretical concepts of computer science, number systems, coding schemes, formal logic, sets and relations, induction, recursion, recurrences, graphs, proofs of program correctness, analysis of algorithms, asymptotic complexity measure at an advanced level.

B. COURSE EFFECTIVE DATES: 04/02/2018 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Logic and Proof (14%)
2. Mathematical induction, including both strong and weak induction (17%)
3. Elementary set theory (6%)
4. Relations and functions (14%)
5. Recurrence relations (7%)
6. Elementary number theory and applications (14%)
7. Elementary graph theory and applications (14%)
8. Combinatorics and probability (7%)
9. algorithm analysis (7%)

D. LEARNING OUTCOMES (General)

1. Describe how symbolic logic can be used to model real-life situations or applications, including those arising in computing contexts such as software analysis (e.g., program correctness), database queries and algorithms.
2. Examine the logical validity of arguments and proofs as they apply to Boolean expressions.
3. Apply mathematical induction and other techniques to prove mathematical results.
4. Perform computations using recursively defined functions and structures.
5. Solve problems involving sets, relations, functions and congruence.
6. Illustrate the basic terminology and properties of graphs and trees.
7. Use graphs and trees to solve problems algorithmic-ally.
8. Use methods of combinatorics to solve counting and basic probability problems.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 04 - Mathematical/Logical Reasoning

1. Illustrate historical and contemporary applications of mathematical/logical systems.
2. Clearly express mathematical/logical ideas in writing.
3. Explain what constitutes a valid mathematical/logical argument(proof).
4. Apply higher-order problem-solving and/or modeling strategies.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted