# COURSE DESCRIPTION

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| **Course No.**<br>**Course Type** | CSC 350<br>Required | **Course Title** | Foundations of Computer Science II |
| **Sem. Hours** | 3 | **Coordinator** | Fereidoon Sadri |

**Current Catalog Description:**

High level concepts in the theoretical foundations of computer science.

**Textbook:**

Discrete Structures, Logic, and Computability, 3rd ed., James L. Hein, Jones and Bartlett, 2010.

**References:**

None

**Course Outcomes:**

Upon successful completion of the course, a student should be able to:

1. *define* basic terminology relating to logic, discrete probability, languages and automata
2. *practice* the application of appropriate mathematical principles used to create logical expressions, languages and automata
3. *evaluate* logical expressions, languages, and automata

**Activities Enabling Program Outcomes (POx refers to program student outcome x)**

*Instruction*: This course concentrates on mathematical topics including propositional and predicate logic, and discrete probability. Syntax (well-formed formulas), semantics (truth values, interpretations, evaluating propositional and first-order logic formulas), and equivalences are discussed (POa). Concepts of discrete probability (samples space, event, probability, conditional probability) are discussed (POa). Introductory topics in language theory (grammar, regular grammars, and regular languages) are discussed (POa).

*Student Activities and Assessment*: Every offering of this course will include (details of assessment criteria and expectations are in outcome rubrics):

- One or more test questions or assignments in which students demonstrate proper use of computing and mathematical terminology (POa)
- One or more test questions or assignments in which students demonstrate an ability to execute mathematical calculations (POa)

**Prerequisites by Topic:**

Students must have

- a grade of at least C (2.0) in CSC 250 (Foundations of Computer Science I), or
- permission of instructor

**Major Topics Covered in the Course:**

- Elementary Logic
- Predicate Logic
- Discrete Probability
- Order Relations
- Regular Languages and Finite Automata

**Estimated Curriculum Category Content (Semester hours):**

| *Area* | *Core* | *Advanced* | *Area* | *Core* | *Advanced* |
|---|---|---|---|---|---|
| **Algorithms** | 1.5 | 0 | **Software design** | 0.5 | 0 |
| **Data structures** | 0 | 0 | **Prog. Languages** | 0.5 | 0 |
| **Comp Org & Arch** | 0.5 | 0 | | | |