

# CSIS 2226: Foundations of Computer Science

## Section 001, Spring 2010 Syllabus

**Instructor:** Dr. Vincent Cicirello  
**E-mail:** Please use the course Blackboard

**Office:** K-140  
**Phone (office):** 609-626-3526

**Office Hours:** Mondays & Wednesdays: 3:35pm-4:35pm  
Available other times by appointment  
Or, feel free to drop-in any time I'm in my office (if I'm there, I'd be happy to talk to you).

### Course Time and Location:

Monday, Wednesday: 12:45-2:00pm, F212  
Friday: 12:45-2:00pm, CC103 (lab)

**Course Description:** This course will review and build upon the major concepts introduced in MATH 2225 and examine additional mathematical topics needed for the study of computer and information science. A principal goal is the development of the ability to think mathematically about computer science problems and their solutions. Computer-based exercises using mathematically-oriented languages such as Interactive Set Language (ISETL) and Prolog will provide students with additional experience with logic, induction and other methods of mathematical proof, and algorithms. Students will also learn to formulate conjectures and investigate possible answers by experimenting with ISETL and Prolog. Applications studied may include the verification of algorithms, the formal specification of software systems, semantics of programming languages, automata, circuit design, and parallel computing.

**Course Objectives:** The objectives of the course include:

- Gaining knowledge of applied discrete mathematics including the field's terminology and methods, and in particular in relationship to computer science
- Learning the fundamental principles and theories of discrete mathematics and how they apply to computer science and information systems
- Learning to apply topics of discrete mathematics to solving computer science problems

**Prerequisites:** MATH 2225 with a grade of C or better.

**Required Textbooks:** *Discrete Mathematics and Its Applications* (6th Edition), by K. H. Rosen, ISBN: 0-07-288008-2.

### Other Requirements:

- An account on the Portal. This account will be used to access the online course materials that will be available through the Blackboard system. Blackboard will also be used for all e-mail correspondence regarding this course. Any e-mail that I may send regarding assignments, tests, etc will be conducted via Blackboard. Some assignments will be submitted via Blackboard.

<b>Grading:</b>	Exam 1	12%
	Exam 2	12%
	Exam 3	12%
	Homework assignments / Problem sets	60%
	Participation	4%

**Grading Scale:** 90+ is an A, 80+ is at least a B, 70+ is at least a C, 60+ is at least a D, less than 60 is an F.

**Academic Honesty:** Please familiarize yourself with Stockton's policy on academic honesty. Violations will result in a minimum penalty of a grade of 0 for the assignment or test involved in the violation. The in-class exams will be closed book--no texts, other students tests, or other aids may be consulted during these tests. You will, however, be allowed one sheet of 8.5x11 paper of notes for the exams. **A calculator may also be used during exams.** "Other aids" that are not allowed include cell phones (not even for calculator purposes), pagers, PDAs, and other communications devices.

**Incomplete Policy:** In general, no grades of incomplete will be given. The only exception to this rule is an institutionally documented medical emergency that necessitates your complete absence from Stockton for a period greater than two continuous semester weeks. Additionally, you must be caught up on all work up to the point where your medical emergency began and currently in the "C" range or better overall at the point where the emergency began.

**Exam 1, Exam 2, Exam 3:** Exam 1 will cover material from the beginning of class until exam day. Exam 2 will cover material after Exam 1 and up to Exam 2. Exam 3 will cover material after Exam 2 up until the day of Exam 3. The exams will be closed book and closed notes; however, you will be allowed 1 sheet of notes (on paper no larger than 8.5" by 11").

**Homework Assignments / Problem Sets:** The largest part of your grade in this class comes from performance on homework assignments. The type of homework assignment will vary. Some will involve some limited amount of programming in either ISETL or Prolog or some other mathematically-oriented programming language covered in the course. Other homework assignments will consist of sets of problems pertaining to the course topics. Most homework assignments are to be worked on individually. There are a small number of assignments for which I will allow you to work in small groups. I will provide details of this for the assignments in question.

**Participation:** A small portion of your overall grade will come from participation (4%). This will include general participation elements such as contributing to class discussion, etc. To receive the full 4%, you must hand in all homework assignments on time; fully participate in all in class exercises, especially any lab exercises I may assign on some of the days we meet in the lab.

**Due Dates:** Depending on the nature of the homework assignment, they will either be due: (a) on paper at the beginning of a class session; or (b) electronically via Blackboard for assignments involving ISETL, Prolog, or some other computing system. Any assignment that is due electronically will be due by midnight on the date due. Late assignments will be penalized by 50% of the grade that would have been obtained if submitted on time, but will not be accepted if more than 1 week late. The first time you are late with an assignment, if less than a week late, I will waive the late penalty (first time late only).

**Make-Up Exams:** Make-up exams in general will not be given (i.e., if you miss an exam, you get a 0). The only exceptions to this rule are the following:

- 1) Documented medical excuse: please provide a note on doctor's letterhead on the first class you return to after the missed exam
- 2) Other institutional excuses: Situations may arise related specifically to Stockton that prevents you from being able to attend an exam. In most such cases, you should be aware of the conflict beforehand. Thus, I must be notified of this conflict one week prior to the missed exam. Send me e-mail via Blackboard with the details of the planned absence.
- 3) Other similar situations: similar documentation must be provided.

**Tentative Schedule: (This is Approximate and is Subject to Change)**

This schedule is subject to change. Changes will be announced via Blackboard (and in class). If tentative exam dates change, they will be announced at least one week prior.

<b>Date</b>	<b>Text and Topic</b>
January 20	Introduction and Overview
<b>22</b>	Introduction and Overview
25	Review of Logic, Sets, Functions, and Relations (Chapters 1 and 2)
27	Review of Logic, Sets, Functions, and Relations (Chapters 1 and 2)
<b>29</b>	Review of Logic, Sets, Functions, and Relations (Chapters 1 and 2)
February 1	Combinatorial Optimization
3	Combinatorial Optimization
<b>5</b>	Boolean Algebra, Logic Gates, and Circuits (Chapter 11)
8	Boolean Algebra, Logic Gates, and Circuits (Chapter 11)
10	Boolean Algebra, Logic Gates, and Circuits (Chapter 11)
<b>12</b>	Boolean Algebra, Logic Gates, and Circuits (Chapter 11)
15	Boolean Algebra, Logic Gates, and Circuits (Chapter 11)
17	Slack and/or Review for Exam
<b>19</b>	<b>EXAM 1</b>
22	Review of discrete probability (Chapter 6)
24	Bayes' Theorem and Application to Bayesian Spam Filters (Chapter 6)
<b>26</b>	Algorithms, Growth of Functions, and Complexity of Algorithms (Chapter 3)
March 1	Algorithms, Growth of Functions, and Complexity of Algorithms (Chapter 3)
3	Algorithms, Growth of Functions, and Complexity of Algorithms (Chapter 3)
<b>5</b>	Review of Induction and Recursion (Chapter 4)
8	Recursive Algorithms (Chapter 4)
10	Recursive Algorithms (Chapter 4)
<b>12</b>	Program Correctness (Chapter 4)
15	<b>NO CLASS: Spring Break</b>
17	<b>NO CLASS: Spring Break</b>
<b>19</b>	<b>NO CLASS: Spring Break</b>
22	Relations and Closures (Chapter 8)
24	Relations and Closures (Chapter 8)
<b>26</b>	Relations and Closures (Chapter 8)
29	Slack and/or Review for Exam
31	<b>EXAM 2</b>
<b>April 2</b>	Graphs (Chapter 9)
5	Graphs (Chapter 9)
7	<b>NO CLASS: Preceptorial Advising Day</b>
<b>9</b>	Graphs (Chapter 9)
12	Graphs (Chapter 9)
14	Graphs (Chapter 9)
<b>16</b>	Trees (Chapter 10)
19	Trees (Chapter 10)
21	Trees (Chapter 10)
<b>23</b>	Trees (Chapter 10)
26	Trees (Chapter 10)
28	Slack and/or Review for Exam
<b>30</b>	<b>EXAM 3 will be at 11:30 - 2:00 (extended class schedule)</b>
May 3	<b>NO CLASS: Extended Class Schedule</b>