

**Professor:** Steve Brinton

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**Office Hours:** 9-10:30 MWF, 10-11:30 Thurs

**Class Hours:** MWF 11:25-12:25am (MAC212)

**Class Website:** <http://www.math-cs.gordon.edu/courses/cps220/index.php>

**Prerequisites:**

CS112: Introduction to Programming and MA229: Discrete Mathematics for Computer Science.

**Introduction**

Before computers as we know them today were invented, people were concerned about algorithms, much like the algorithms we think of when we are programming a computer. Questions like "what problems can be solved using mathematically stated algorithms?" and even "are there problems which cannot be solved algorithmically?" were considered in the late 1920's and 1930's. It is interesting to note that these and many related questions were answered before the modern computer itself was invented.

In this course we examine the mathematical underpinnings of computer science. It is our goal to understand how several simple *logical* machines work and what sorts of problems they can be used to solve. At times, especially during class discussion, it may seem that all of this is very abstract and has no application to real-world programming. However, whether or not a particular problem is solvable is an important fact to know, and when it is solvable there may be a right way rather than a wrong way to go about it. And don't forget, *computer science* as a discipline is much richer and broader than just *computer programming*.

**Content**

This course will cover all or parts of chapters 1—19, 22—24 of the text. I anticipate spending about one class per chapter. The text is fairly verbose; this allows the author to avoid some of the very concise but rather cryptic mathematical notation usually associated with this subject. This means, however, that you will be reading close to 100 pages per week for this class – this may mean you will have to read quickly.

**Text:** *Introduction to Computer Theory*, Second Edition, by Daniel Cohen, Wiley, 1997.

## Course Expectations:

### A. Class and Reading

Reading from our course text will be assigned on a regular basis. All assignments must be read prior to the class in which the material will be discussed since class involvement will assume this degree of familiarity with the topic. Class sessions will include class discussion and student involvement, which will certainly include further presentation of examples. You should not necessarily expect to grasp everything presented in the text when you first read it; however, you should note areas which are unclear to you and be prepared to raise questions about them in class. If you read the material only after class, you will not be able to participate effectively and you will miss out on the rich experience of collaborative learning.

All students are expected to attend class regularly. In the event of an unavoidable absence, it is the student's responsibility to learn of any material or assignments from the missed class. (Also see section entitled: *attendance policy*)

### B. Homework and Assignments

Homework will be due at the start of each class period. Only in unusual circumstances will homework or assignments be accepted more than one day late.

The following are required of all submissions:

- Should be done on standard size paper (8 ½ by 11).
- Pages should not have ragged edges from spiral bound notebooks.
- Solutions should be laid out in an organized, legible manner.
- Multiple page assignments must be fastened together.

You are encouraged to work together on the homework assignments. However, the work you turn in should be your own. These problems should be considered tools to help you better understand the theory and to become more proficient with the techniques of this course. It is essential that you understand the solution to each problem in order to derive the greatest benefit from this course.

A random selection of problems will be graded.

### C. Projects

There will be at least two team projects during the quad. These projects are designed to provide some application and hands-on work with the theoretical concepts discussed.

### D. Exams

There will be two exams. The first exam will be a take-home exam and the other is an in-class final exam covering the entire quad.

**Summary:**

35% Homework Assignments  
 20% Projects  
 15% Exam 1 (take home)  
30% Exam 2  
 100%

**Grading Scale:**

A: $\leq 100\%$ $\geq 95\%$	A-: $< 95\%$ $\geq 90\%$	B+: $< 90\%$ $\geq 86\%$
B: $< 86\%$ $\geq 84\%$	B-: $< 84\%$ $\geq 80\%$	C+: $< 80\%$ $\geq 76\%$
C: $< 76\%$ $\geq 74\%$	C-: $< 74\%$ $\geq 70\%$	D+: $< 70\%$ $\geq 66\%$
D: $< 66\%$ $\geq 64\%$	D-: $< 64\%$ $\geq 60\%$	F: $< 60\%$ $\geq 0\%$

**Being Responsible:**

At times, the amount of work required may seem insurmountable – however it is expected that each student be responsible to strive to do his or her best. On this note, pilfering or borrowing answers from a classmate or other resource is not acceptable. It will result in a failing grade and any further action deemed appropriate by the college.

**Policy Statement on Extensions and Incompletes:**

Extensions of the due dates for homework or projects will be given in the event of extenuating circumstances (such as illness, personal emergency) If you submit a brief written request to the professor as soon as possible after the circumstances arise. This request will be initialed (if approved) and will be returned to you. You must attach it to the piece of work for which the extension was granted.

A grade of Incomplete will be given without penalty if you are unable to complete the course work by the last day of the term due to major illness or other similar emergency. Again, a written request should be submitted. Such a request will only be granted if you are substantially up-to-date with your course work and were making good progress in the course up to the time that the difficulty arose. Of course, you must complete all work for the course by the midpoint of the next semester in accordance with College policy.

**Attendance Policy:**

Regular class and lab attendance is expected of all students, and class attendance will be recorded. Absences from class will be classified as “documented” or “undocumented”. A documented absence is one where written documentation (typically supported with authoritative signatures - like a doctor, nurse, school administrator, etc) is submitted and approved by the professor supporting an absence from class due to circumstances beyond the student’s control (such as illness, family emergencies, etc.) An undocumented absence is any other absence. Students who have more than 2 undocumented absences will have penalty added to their final grade at the discretion of the professor.

A student who is habitually late will have late arrival for class counted as a half undocumented absence for that class, and a student who sleeps through most or all of a given class session will be counted as undocumented absent for that class.

A student who anticipates the need to miss more than three classes due to athletic competitions or other student activities should review the college's attendance policy on page 31 of the catalog, and should then discuss alternatives to class attendance with the professor at the start of the semester.

**Students with Disabilities:**

Gordon College is committed to assisting students with documented disabilities (see Academic Catalog Appendix C, for documentation guidelines). A student with a disability who may need academic accommodations should follow this procedure:

1. Meet with a staff person from the Academic Support Center (Jenks 412 X4746) to:
  - a. make sure documentation of your disability is on file in the ASC,
  - b. discuss the accommodations for which you are eligible,
  - c. discuss the procedures for obtaining the accommodations, and
  - d. obtain a **Faculty Notification Form**.
2. Deliver a Faculty Notification Form to each course professor *within the first full week of the semester*; at that time make an appointment to discuss your needs with each professor.

Failure to register in time with your professor and the ASC may compromise our ability to provide the accommodations. Questions or disputes about accommodations should be immediately referred to the Academic Support Center. See Grievance Procedures available from the ASC.