

**Basic Info:**

- Tues/Thur. 11:00 am – 12:15 am
- Classroom: Barret 020

Instructor:

- Betsy (Williams) Sanders
 - Office: Olendorf 419
 - Office Phone: 901.843.3791
 - Email*: sandersb@rhodes.edu

**To ensure a quick response, the subject line of your email should read "cs172: [subject of question]"*
NOTE: I will respond to your emails within 24 hours on weekdays and 48 hours on weekends

Office Hours:

- **Tues/Thurs 1:30 pm – 3:00 pm**, or by appointment

Textbook:

- The course textbook is *Discrete Mathematics and Its Application*, 7th ed., by Kenneth Rosen
- I will be assigning a number of problems out of the book. If you have a different edition of this textbook, it is your responsibility to make sure you are working the problems that I assigned. *You will not receive credit for working a problem that I did not assign.*

My Inbox:

- I will make any digital files that I use in class available to you in my inbox. Also, if I distribute any materials in class, I will put a digital copy in my inbox. You can find it on the network:
\\Acad_Dept_Pgm\Math_CompSci\Sanders_Betsy\Public\CS172

Course Description:

- This course provides a tour into the mathematical underpinning of computer science. To understand what this course is about, we must first understand what the term “discrete structures” means. Discrete mathematical structures refer to structures or objects that are fundamentally discrete rather than continuous. Examples of discrete objects are integers (whole numbers), binary numbers (or logical values), graphs, information on a digital computer, etc. In contrast, the real number set is not discrete. For example, there are infinitely many real numbers (even rational numbers) between 7 and 8 while there is no integer “between” 7 and 8.
- In computer science, the topics that are normally covered in a discrete mathematics course are counting (permutations and combinations), discrete functions, basic number theory, relations and order relations, number systems, logic, sets, graph theory (especially trees), proof techniques, and finite state machines and languages. We’ll introduce all of these ideas in this course!
- This course is important to your studies in computer science because it lays the mathematical reasoning and problem solving background necessary for approaching more advanced computing problems. It provides you with a language that you need to discuss computer systems and it provides you with a toolbox full of problem solving techniques.

Course Objectives:

- Cultivate clear thinking and creative problem solving.
- Use logical notation to define and reason about fundamental mathematical concepts such as sets, relations, functions, and integers.
- Learn various proof strategies (such as induction) and learn when and how to apply them to create a sound mathematical proof.
- Calculate the number of possible outcomes using combinatorics (permutations and combinations).
- Calculate probabilities.

- Analyze the running time of non-recursive algorithms with loops by means of counting.
- Analyze the running time of divide and conquer recursive algorithms by the means of recurrence equations.
- Use trees and graphs to formulate computational problems.

Workload:

- It is important to stay current with the material. You should be prepared to devote regular weekly hours to this course. I will assign homework that will not be graded. I expect you do those problems and come prepared to class with questions about those problems. Practice is critical to mastering this material so that you can learn how to apply the skills and techniques that we will cover in class.

Problem Sets:

- There will be weekly problem sets that will be due in hard copy form at the beginning of class. You may type out your answers but you must provide me with a hard copy. You will not receive credit for illegible handwriting.
- These problem sets will be challenging and you may have questions about them that only your instructor can answer. **Do not wait to the last minute to start your problem sets!**
- **LATE** problem sets will not receive credit. (If a genuine emergency situation prevents you from turning it, please see me and we will work something out.)
- You are allowed to use the course textbook and the course notes for these problems sets. The use of any other material (*a classmate or the internet*) to solve your problem sets is forbidden.
- Collaboration: You are expected to work individually on assigned problem sets. If group work is allowed, it will be mentioned explicitly in the assignment.
- **General GRADING RUBRIC:**
 - **4 points** Correct solution clearly written. Everything is justified with only very minor errors, if that (for example a simple copy error).
 - **3 points** The solution is mainly correct with only **A** minor error (arithmetic mistake for instance), or there is a correct statement asserted but not justified.
 - **2 points** The solution may technically be correct but there is little or no justification of it (you've skipped some steps), or the solution may contain a more serious error (something that is clearly a misunderstanding of a crucial step).
 - **1 point** The problem started on the right track and then things went bad quickly. For example, a major error was made early on, or wild claims with no justification, or the whole point of the problem was misunderstood.
 - **0 points** Did not attempt the problem or only stated trivial consequences of the problem.
- Some questions will be graded using a binary system where no points are received for an incorrect answer and full credit is received for a correct answer. I will denote these problems with a * in the assignment.

Recommended Exercises:

- I will suggest exercises from the book that you may find useful. They will not be turned in for a grade, and you are encouraged to work with your classmates on these exercises.

Exams:

- There will be two preliminary exams and one final exam:
 - **Prelim 1:** Tuesday, February 21st, in class.
 - **Prelim 2:** Thursday, April 24th, in class.
 - **Final Exam** (pick one of the following):
 - Friday, May 4th at 11:00 am in our classroom, Barret 020
 - Friday, May 4th at 1:00 pm in Barret 035 (this is COMP142's official exam time)
 - Tuesday, May 1st at 1:00 pm in Olendorf 225
- These exams will be closed-notes, closed-book, and closed-neighbor. Exam work will represent your own individual effort.
- Make-up exams will only be given in extreme circumstances.

Grade Breakdown:

- 40 % Problem Sets
- 35 % Preliminary Exam
- 25 % Final Exam

- *Note: You are responsible for keeping track of your grades. I do not use an online gradebook. Here is how your final average will be calculated:*

Final Average= $40 * (\text{sum of all your problem set grades}) / (\text{total \# of points on all problem sets}) + 35 * (\text{sum of Prelim1 and Prelim2}) / (200) + 25 * (\text{your final exam grade}) / (100)$

Grade Assignments:

- Grading is based on the below scale:
 - **A** : [93%, 100%]
 - **A-** : [90%, 93%]
 - **B+** : [87%, 90%]
 - **B** : [83%, 87%]
 - **B-** : [80%, 83%]
 - **C+** : [77%, 80%]
 - **C** : [73%, 77%]
 - **C -** : [70%, 73%]
 - **D** : [65%, 70%]
 - **D-** : [60%, 65%]
 - **F** : [0%, 60%]
- For borderline cases, I may take into account participation, and/or attendance, and improvement during the semester.

Attendance:

- Attendance is expected for each class as material that is not covered in the book may appear in class. If your attendance deteriorates you will be referred to the dean and asked to drop the course. Attendance, participation, and apparent overall improvement may also be considered when assigning a final grade.
- Attendance will be checked each class lecture.
- After 5 unexcused absences, I reserve the right to reduce the final letter grade for the course by one letter grade for each additional absence.

Special Accommodation:

- If you are in need of special accommodations, please register with the Office of Student Disability Services (<http://www.rhodes.edu/disability>) as soon as possible so that all necessary arrangements can be made.

Scholastic Behavior

- Plagiarism, cheating, and similar anti-intellectual behavior are serious violations of academic ethics and will be correspondingly penalized. If you are concerned about a possible violation of this kind, please talk with me. I understand the pressure that students may experience while at Rhodes, and I will try to help as best as we can.
- All problem sets must be the student's own work, unless otherwise instructed by me. These are all included in the definition of reportable Honor Code violations for this course:
 - Copying all or part of a problem, downloading solutions from the internet and submitting it as your own, having someone else provide the solution for you or help you with the solution, or allowing someone else to copy from you
- **NOTE: This scholastic behavior policy is different than COMP142.**
- If you have any doubt about what type of behavior is acceptable, please clear it with me.
- When you come to class, you are expected to pay attention! Cell phones are prohibited.

Important Dates

- Drop Add Ends: 1/18/2012
- Extended Drop Period and Pass Fail Period End: 2/1/2012
- Withdrawal Period Ends: 3/23/2012