



### Basic Info:

- MWF 2:00 – 2:50pm
- Briggs 119
- Course Webpage: [http://cs.rhodes.edu/welshc/COMP355\\_F17/](http://cs.rhodes.edu/welshc/COMP355_F17/)
- Prerequisites: COMP 172 and COMP 241 or permission of the instructor

### Instructor:

- Catie Welsh
  - Office: Briggs 208
  - Email: [welshc@rhodes.edu](mailto:welshc@rhodes.edu) (please include “COMP 355” in the subject)
  - Office Hours: Mon/Wed 3-4pm, Thurs 10am-noon or by appointment

### Book:

- Algorithm Design, by Jon Kleinberg and Eva Tardos, Addison-Wesley, 2005.
- (optional) Introduction to Algorithms, 3rd Edition by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, 2009.

### Course Description:

This course is an in-depth study of the design and analysis of advanced algorithms, including the performance tradeoffs and resources required by various algorithmic implementations. Major classes of computational problems will be identified and explored. Advanced data structures and approximation heuristics are introduced as required for solution design. Topics will include the Master Theorem, dynamic programming, divide-and-conquer and greedy algorithms.

### Workload:

- It is important to stay current with the material. You should be prepared to devote regular weekly hours to this course. Do not wait until the last minute to start your assignments.

### Projects:

- Coursework will consist of 5-7 assignments involving both programming and written components. Programming will be in Python. You should be prepared to do regular work each week to keep up with the material and the assignments.
- Assignments should be submitted at the beginning of class on the day that they are due.
- You are allowed to use the course textbook and the course notes for these programs. The use of any other material to solve the problem sets is forbidden.
- Collaboration: You are expected to work individually on assigned problems. However, you are allowed and encouraged to discuss high-level details of the problems. If group work is allowed, it will be mentioned explicitly in the assignment.

### Exams:

- There will be two midterms and one final exam:
  - **Midterm 1: Wednesday, September 27, 2017, in class**
  - **Midterm 2: Wednesday, November 1, 2017, in class**
  - **Final Exam: Tuesday, December 12, 2017, 5:30-8pm**

**Grade Breakdown:**

- 50% Assignments
- 15% Midterm 1
- 15% Midterm 2
- 20% Final

**Grade Assignments:**

- Grading is based on the below scale:

|       |             |       |            |
|-------|-------------|-------|------------|
| ○ A : | [93%, 100%] | ○ C:  | [73%, 77%) |
| ○ A-: | [90%, 93%)  | ○ C-: | [70%, 73%) |
| ○ B+: | [87%, 90%)  | ○ D:  | [65%, 70%) |
| ○ B:  | [83%, 87%)  | ○ D-: | [60%, 65%) |
| ○ B-: | [80%, 83%)  | ○ F:  | [0%, 60%)  |
| ○ C+: | [77%, 80%)  |       |            |
- 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 and participation may also be considered when assigning a final grade.

**Special Accommodations:**

- If you are in need of special accommodations, please register with the Office of Student Disability Services x3885 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 I can.

**Diversity:** A diverse learning community is a necessary element of a liberal arts education, for self-understanding is dependent upon the understanding of others. We are committed to fostering a community in which diversity is valued and welcomed. To that end any discrimination or harassment on the basis of race, gender, color, age, religion, disability, sexual orientation, gender identity or expression, genetic information, and national or ethnic origin, will not be tolerated in the classroom.

We are committed to providing an open learning environment. Freedom of thought, a civil exchange of ideas, and an appreciation of diverse perspectives are fundamental characteristics of a community that is committed to critical inquiry. To promote such an academic and social environment we expect integrity and honesty in our relationships with each other and openness to learning about and experiencing cultural diversity. We believe that these qualities are crucial to fostering social and intellectual maturity and personal growth.

Intellectual maturity also requires individual struggle with unfamiliar ideas. We recognize that our views and convictions will be challenged, and we expect this challenge to take place in a climate of open-mindedness and mutual respect.

*I reserve the right to alter this syllabus as necessary.*