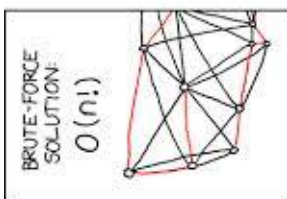
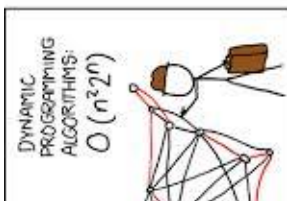


OTTERBEIN UNIVERSITY  
DEPARTMENT OF MATHEMATICAL SCIENCES

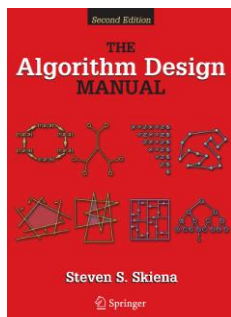
**COMP 4500**  
**Algorithm Design/Analysis**  
Spring Semester 2018



<b>Class</b>	MW 10:50 - 12:00 p.m. in Towers 117
<b>Lab</b>	TR 10:00 - 11:45 a.m. in Towers 127/107B
<b>Class Web Page</b>	<a href="http://faculty.otterbein.edu/DStucki/COMP4500/index.html">http://faculty.otterbein.edu/DStucki/COMP4500/index.html</a>
<b>Instructor</b>	David J. Stucki
<b>Office</b>	Towers 133
<b>Office Hours</b>	MW 12:30 – 1:30, R 1:00 – 2:00, or by appointment
<b>Email</b>	<a href="mailto:DStucki@otterbein.edu">DStucki@otterbein.edu</a>
<b>Phone</b>	823-1722
<b>Home Phone</b>	878-8002 (After <b>9 a.m.</b> and before <b>midnight</b> , please)

<b>Description</b>	Introduces formal techniques for the analysis of algorithmic complexity, both space and time. Algorithm design techniques, such as brute force, divide and conquer, dynamic programming, backtracking, etc., are explored. Advanced algorithms and data structures are introduced. The concept of computational complexity is discussed by way of the theory of NP-completeness.
<b>Prerequisites</b>	COMP 2100 and Math 1700
<b>Work Load</b>	"Students are expected to spend three hours per week (including class hours) in study for each semester hour of credit attempted." (Otterbein College Bulletin) Since COMP 4500 is 4 Semester Hours, 168 hours of study is expected: 84 hours in class (6 hours per week in lecture and lab), and <b>84 hours beyond class hours</b> (6 hours per week).
<b>Participation</b>	We pose and solve problems in a social context. Therefore, we need each other. This need is the reason we have classroom and lab sessions. <b>Attendance is required.</b> Each time you are absent without <i>advance</i> permission, you will lose 1% of your grade up to a maximum of 3% (taken from the participation category). Each student is expected to participate in the class discussions throughout the semester. To this end, all assigned readings for each day should be completed before the class period in which they are discussed.
<b>Submissions</b>	All submissions (lab reports, homework, and any extra credit reports) must be word processed unless specifically told otherwise. Submissions should be formatted in a professional manner. Headers and/or footers should be used for identifying what the submission is for, who is submitting it, and the page number for each page. Failure to properly format the submission will result in a 5% deduction.
<b>Exams</b>	There will be one midterm exam and a final. These will be closed-book exams. They will cover lecture material, readings, homework, and questions regarding the lab exercises. Make-ups will be scheduled only for documented emergencies. If you can document that you have three or more exams scheduled for the same day I will attempt to arrange for an alternate time <i>only</i> if given at least a week's notice.
<b>Labs</b>	We will have regular laboratory assignments. <i>Additional lab time may be required outside of class time to complete the exercises, depending on the individual student's working style and experience.</i> I often hear of students spending an hour or more trying to do one step that they were confused about. <b>Work smart by asking questions when you are stuck.</b>

## Texts



[\*Introduction to The Design & Analysis of Algorithms\*](#), 3<sup>rd</sup> ed. Anany Levitin, Addison-Wesley, 2011.

- [Amazon.com](#): \$123.38 (new) \$85.99 (used)
- [Google Shopping best price](#): \$38.85 (used)
- [Otterbein Bookstore](#): \$128.25 (used)

## Homework

Regular homework assignments will be made. These assignments will include reading from the text, preparation of discussion questions, and problems to solve.

## Academic Misconduct Policy

All members of the Otterbein University community of learners are expected to follow the rules and customs of proper academic conduct. Proper conduct includes avoiding academic misconduct as defined in the [Student Life Handbook](#). Students are encouraged to help each other learn the course material. Unless specifically prohibited, you may discuss homework problems and lab exercises with one another. Participants in these discussions usually enjoy the benefit of deeper and greater learning. However, all work submitted for evaluation that is based on discussions with others must be your own work; created with your own hands and fingers while thinking it through.

Any work submitted for evaluation that includes work done by another, copying of another's work, or the result of following another's step-by-step keystrokes and mouse clicks, is a case of academic misconduct. When academic misconduct is found in any assignment or examination you submit, you will receive a zero grade for that assignment or exam. The misconduct will also be reported to the Office of the Academic Dean. If a previous academic misconduct offense is on your record, you will receive a grade of F for this course and a referral to the judicial system.

## Disability Statement

Otterbein University is committed to ensuring that students with disabilities have access to an education. In order to receive appropriate accommodations in my class, you must first be registered with the Office for Disability Services (823-1618 or [KManley@otterbein.edu](mailto:KManley@otterbein.edu)). If you need an accommodation based on the impact of a disability, you should contact me to arrange an appointment as soon as possible. At the appointment we can discuss the course format, anticipate your needs and explore potential accommodations. If necessary, we can work cooperatively with the Disability Services Coordinator to determine optimal accommodations in this course

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## Grading

<u>Assignment</u>	<u>Weight</u>	<u>Range</u>	<u>Grade</u>	<u>Range</u>	<u>Grade</u>
Lab Exercises	25%	93 - 100%	A	73 - 76.9%	C
Homework	25%	90 - 92.9%	A-	70 - 72.9%	C-
Midterm exam	20%	87 - 89.9%	B+	65 - 69.9%	D+
Final Exam	25%	83 - 86.9%	B	60 - 64.9%	D
Participation	5%	80 - 82.9%	B-	0 - 59.9%	F
		77 - 79.9%	C+		

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The following schedule is tentative and subject to change.

Week	Topics	Skiena
1	Introduction and Foundations	1
2	Mathematical Analysis of Algorithms	2
3	More Analysis of Algorithms	
4	Review of Data Structures	3
5	Sorting & Searching	4
6	Graph Traversal	5
7	Weighted Graphs	6
8	Catch-up/Review <b>Midterm Exam:</b> <b>Thursday, March 1</b>	
9	<b>SPRING BREAK</b>	
10	Combinatorial Search & Heuristic Methods	7
11	Dynamic Programming	8
12	Greedy Algorithms	
13	Intractability	9
14	Advanced Algorithms & Data Structures	TBA
15	Advanced Algorithms & Data Structures	TBA
Finals	<b>Final Exam:</b> <b>Thursday, April 26, 11:00 – 1:00 OR</b> <b>Friday, April 27, 11:00 – 1:00</b>	