

Nebraska Wesleyan University  
Math 3600: Mathematical Problem Solving  
Fall 02017

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**Instructor:** Austin Mohr  
**Text:** Think Python (Second Edition)  
Allen Downey  
<http://greenteapress.com/wp/think-python-2e/>  
**Time:** W 3:00 pm – 4:15 pm  
**Room:** Olin 113  
**Office:** Olin 109D  
**Office Hours:** Typically available MWThF 12 – 1, 2 – 3 (appointment preferred)  
**Email:** [amohr@nebrwesleyan.edu](mailto:amohr@nebrwesleyan.edu)  
**Cell:** (803)-543-8735  
**Course Website:** [AustinMohr.com/Sage](http://AustinMohr.com/Sage)  
**CoCalc Website:** [CoCalc.com](http://CoCalc.com)  
**Drop Deadline:** Monday, October 31 at 5:00 pm  
**Final Exam:** Monday, December 11 at 11:00 am

## Course Description

A seminar on problem solving skills and their application to nontrivial problems. Students will learn basic programming skills in Sage and use this knowledge to solve computational problems.

## Assignments

### Participation

Attending and participating in at least six class sessions earns one point. Attending and participating in at least twelve class sessions earns two points.

### Homework

Homework will consist of eight short programming exercises to help reinforce the algorithmic concepts discussed during class meetings. Each assignment will be crudely graded out of two points. A correctly functioning and commented program will earn two points. Good faith efforts that nevertheless do not function properly will earn one point.

## Final Project

Each group will choose an extended programming project near the end of the semester. Ideally, the chosen problem will make use of one of the algorithmic techniques demonstrated during the course (or a new algorithm of equivalent sophistication). Each group will describe its chosen problem and solution during the final exam time slot. The final project is worth a total of four points. Good sources for programming projects include, but are not limited to:

- Project Euler (ProjectEuler.net): Browse the Archives for an interesting problem. There are many good choices.
- Online Encyclopedia of Integer Sequences (OEIS.org): Visit the WebCam (no idea why it's called that) to browse interesting sequences at random. Even better, select "Sequences Needing More Terms" to find a sequence where you can make a novel contribution.
- Open Problem Garden (OpenProblemGarden.org): This site describes popular unsolved problems in mathematics. The problems in Combinatorics, Graph Theory, and Number Theory are particularly relevant. To form a project from this site, find a problem that sounds interesting to you and come discuss it with me. We will discuss it together to simplify the problem to something more manageable, since solving it as stated will be much too ambitious for a two-week project.

## Grading Scale

The following grading scale assumes two attendance points, eight two-point homework assignments, and a four-point final project (for a total of 22 points).

| Grade | Points |
|-------|--------|
| A     | 20     |
| A-    | 19     |
| B+    | 18     |
| B     | 17     |
| B-    | 16     |
| C+    | 15     |
| C     | 14     |
| C-    | 13     |
| D+    | 12     |
| D     | 11     |
| D-    | 10     |

## Support for Students with Disabilities

Nebraska Wesleyan University seeks to maintain a supportive academic environment for students with disabilities. To ensure their equal access to all educational programs, activities and services, Federal law requires that students with disabilities notify the university, provide documentation, and request reasonable accommodations. If you need accommodations in this course, please meet with Prof. Sandy McBride, the Coordinator of Services for Students with Disabilities (Old Main 126, 465-2346, [smcbride@nebrwesleyan.edu](mailto:smcbride@nebrwesleyan.edu)).

## Title IX

The Nebraska Wesleyan community and I seek to create a safe learning environment for our students. This includes promoting freedom from violence, harassment, and discrimination based on sex and gender. For the sake of NWU students safety and welfare, I am required to share information regarding sexual misconduct or information about a crime that may have occurred on NWUs campus with the Title IX Coordinator or Deputy Coordinator. Confidential resources and assistance from Title IX are available for all NWU students.

### On Campus Confidential Resources (Lincoln)

- Campus Victim Advocate: Lindsay Spaulding ([lindsay@voicesofhopelincn.org](mailto:lindsay@voicesofhopelincn.org), (402)-465-2533)
- Campus Minister: Eduardo Bousson ([ebousson@nebrwesleyan.edu](mailto:ebousson@nebrwesleyan.edu))
- Counseling Center: (402)-465-2224

### Off Campus Confidential Resources, Lincoln

- 24-Hour Crisis Line: (402) 475-7273
- Voices of Hope (relationship violence, sexual assault, and abuse support center): 2545 N Street; Lincoln, NE 68510; (402)-476-2110

### Off Campus Confidential Resources, Omaha

Womens Center for Advancement  
Office Number: (402)-345-6555  
24/7 Crisis Line (English and Spanish): (402)-345-7273  
222 S. 29th Street; Omaha, NE 68131  
8:00 am – 5:00 pm, Monday-Friday  
<http://www.wcaomaha.org/>

### Title IX Resources

- Title IX coordinator: T.J. McDowell ([tmcdowe2@nebrwesleyan.edu](mailto:tmcdowe2@nebrwesleyan.edu), (402)-465-2149)
- Deputy Title IX Coordinator, Lincoln: Dr. Susan L. Wortmann ([swortman@nebrwesleyan.edu](mailto:swortman@nebrwesleyan.edu), (402)-465-2305)
- Deputy Title IX Deputy Coordinator, Omaha: Amy Harrison ([aharriso@nebrwesleyan.edu](mailto:aharriso@nebrwesleyan.edu), (402)-827-3555)

## Academic Integrity Statement

Academic Integrity is one of the basic principles of a university community. Nebraska Wesleyan University encourages and expects the highest standards of academic honesty from all students. The Student Code of Conduct states that “cheating, plagiarism, or other forms of academic dishonesty” are subject to disciplinary action. Refer to the Student Code of Conduct for additional information.