

**MATH 565: CONTINUOUS OPTIMIZATION (SPRING 2017, 3 CREDITS)**  
**TTH 2:10PM – 3:30PM, 118 CARVER HALL**  
<http://www.public.iastate.edu/~rossmani/math565/>

**INSTRUCTOR** James Rossmanith  
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Office Hours: TTh 10:00am-11:00am (or by appointment)

**PREREQS** Math 265 (Calculus III) and Math 317, 507, or 510 (Theory of Linear Algebra) or equivalent.

**TEXTBOOK** Jorge Nocedal and Stephen J. Wright. *Numerical Optimization*, 2<sup>nd</sup> edition, Springer Series in Operations Research, Springer, 2006.

**COMPUTER LANGUAGE** MATLAB (MATrix LABoratory): Available in computer labs and can be freely download via IT Services.  
SCIPY (Scientific Python): Can be freely to download at <https://enthought.com/products/canopy/academic/>.

**COURSE TOPICS**

1. Chap 1: Introduction
2. Chap 2: Fundamentals of Unconstrained Optimization
3. Chap 3-6, 9-10: Various Methods for Unconstrained Optimization
4. Chap 12: Theory of Constrained Optimization
5. Chap 13-14: Linear Programming
6. Chap 15: Fundamentals of Nonlinear Programming
7. Chap 16: Quadratic Programming
8. Chap 17: Penalty and Augmented Lagrangian Methods
9. Chap 19: Interior-Point Methods for Nonlinear Programming

**LEARNING OUTCOMES**

- Learn about classification of optimization problems
- Learn various numerical methods for unconstrained optimization
- Learn basic theory of constrained optimization
- Learn numerical techniques for linear and quadratic programming problems

**GRADING**

50% – Homework (~5)

25% – Take-home Midterm

25% – Take-home Final

Score	Letter Grade
92–100	A
87–91	A–
82–86	B+
73–81	B
68–72	B–
59–67	C
50–58	D
< 50	F

**ATTENDANCE** I do not take attendance, but it is very likely if you skip classes that you will not do well in the course. If you decide to skip class for no good reason, then you are deciding that you are okay with missing what I teach that day. In this case, do not come to my office hours expecting me to teach you the things you missed.

**DISABILITY  
ACCOMMODA-  
TIONS**

If you have a disability and require accommodations, please contact the instructor early in the semester so that your learning needs may be appropriately met. You will need to provide documentation of your disability to the Disability Resources (DR) office, located on the main floor of the Student Services Building, Room 1076, 515-294-6624.

## Class Days

WEEK	TUESDAY	THURSDAY
1	Jan. 10	Jan. 12
2	Jan. 17	Jan. 19
3	Jan. 24	Jan. 26
4	Jan. 31	Feb. 2
5	Feb. 7	Feb. 9
6	<b>Feb. 14</b> Substitute	Feb. 16
7	Feb. 21	Feb. 23
8	<b>Feb. 28</b> Assign Take-Home Midterm	<b>March 2</b> No Class/Work on Midterm
9	March 7	March 9
10	<b>March 14</b> Spring Break	<b>March 16</b> Spring Break
11	March 21	March 23
12	March 28	March 30
13	April 4	April 6
14	April 11	April 13
15	April 18	April 20
16	<b>April 25</b> Assign Take-Home Final	April 27

**FINAL EXAM:** Take-home final is due on Monday, May 1<sup>st</sup> at 2pm.