Global Optimization
ESI 6492   Section 13D4
Academic Term: Spring 2018

Instructor:
Distinguished Professor Panagote (Panos) M. Pardalos, http://www.ise.ufl.edu/pardalos/
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Office Hours: By appointment, WEIL 401

Teaching Assistants:
TBA

Course Description
Catalog description: Global optimization problems appear in a wide range of applications in operations research, economics, statistics, medicine, engineering and computer sciences. In this course we introduce the student to the main concepts and techniques of global optimization. Topics to be covered include: Properties of Nonconvex Functions, Convex Envelopes, Duality, Complexity, Applications and Software Issues, Algorithms for Quadratic Programming, Concave Minimization, D.C. Programming, Lipschitz Optimization, Nonconvex Network Flow Problems and Decomposition Algorithms.

Course Pre-Requisites / Co-Requisites
Linear and Nonlinear Programming, or any equivalent.

Meeting Times and Location
T, R | Periods 5-6 (11:45 AM - 1:40 PM), WEIL 0238

Relation to Program Outcomes (ABET):

Outcome	Coverage*
a. Apply knowledge	Medium
b1. Conduct experiments	
b2. Statistical design of experiments	
c. Design	
d. Function on teams	
e. Solve problems	High
f. Professional and ethical responsibility	
g. Communicate	
h1. Economic impact	
h2. Global, societal, and environmental impact	
i. Lifelong learning	
j. Contemporary issues	
k. Techniques, skills, and tools for degree program	High

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not part of the course.

Course Objectives

1) To gain an understanding and appreciation of the principles and methodologies relevant to global optimization
2) To solve advanced problems with the sophisticated global optimization techniques

3) To build a solid theoretical background in optimization and explore the recent topics for future research and study

Materials and Supply Fees
No fees.

Required Textbooks and Software
Textbook: R. Horst, P.M. Pardalos and N.V. Thoai, "Introduction to Global Optimization", Kluwer Academic Publishers, 2001, ISBN: 0-7923-6756-1 (2nd edition).

Recommended Materials
Selected papers published in the Journal of Global Optimization will be discussed in the class or given to students for study and analysis: www.springeronline.com/journal/10898.

Online Resources
Most of the material for this class will be available on E-learning. It is therefore crucial that you know how to efficiently use E-learning.

Course Schedule
A tentative list of topics for the class is given next. This list might be shortened or lengthened depending on the pace of the class.

1. Fundamental Results on Convexity and Optimization
2. Quadratic Programming
3. General Concave Minimization
4. D.C. Programming
5. Lipschitz Optimization
6. Global Optimization on Networks

Attendance Policy, Class Expectations, and Make-Up Policy
Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

Grading Method and Policy

Exams	60%
Homework	30%
Class Participation	10%

Late Assignments: Assignments are late if not turned in at the first of the period due. Prior approval, or acceptable medical documentation, is necessary for late assignments to receive any credit.
The three exam are tentatively scheduled as follows:

Exam 1 date: Thursday, February 8
Exam 2 date: Thursday, March 22
Exam 3 date: Tuesday, April 24

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu/evals. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:
http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

Campus Resources:

Health and Wellness

U Matter, We Care:
If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*:* https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints*:* http://www.distance.ufl.edu/student-complaint-process.

Teaching Improvement
We are interested in being the best instructors possible. In particular, we would like to know of the problems you face during the semester as soon as they occur. It is a waste for us to learn at the end of the semester that we were not speaking sufficiently loud to be heard, that our handwriting was not readable, that nobody understood the pictures that were drawn on the board or that the software used for the class was very difficult to use. We want you to feel free to make suggestions to improve the content of the class, its exposition and our instructing skills. You can address these suggestions directly to us (in a polite manner) or anonymously by leaving comments in the instructor mailbox. We will consider carefully all these suggestions and if necessary, we will address them in class.

Feedback
If you foresee any problem with adhering to the guidelines set in this syllabus, please discuss them with the instructor as soon as possible. The sooner problems are discussed, the more likely it is that they can be solved.