

**University of Idaho**  
**ME 548 Elasticity**  
**Fall Semester, 2013**

**Course description:**

Elasticity theory is a fundamental topic in solid mechanics. In this class, students will learn about the main principles and techniques that are used to formulate the framework (kinematics) and the constitutive (kinetics) theories of deformable elastic bodies. Students will also learn how to apply tensor algebra and calculus as a necessary means to formulate and solve elasticity problems in two and three dimensions. Formulas for the stress and strain fields in elastic bodies subjected to various loads will be derived using analytical methods, such as stress functions. Analytical solutions to these fields will provide a greater understanding of the behavior of elastic components. Most of the problems will deal with continuum domains; however, a brief introduction to discrete methods in elasticity, such as atomistic methods will also be discussed.

**Class hours:** M W F 12:30 am - 1:20 pm, JEB 025

**Instructor:** Dr. Gabriel Potirniche  
324Q Engineering-Physics Building  
phone: (208) 885-4049  
e-mail: gabrielp@uidaho.edu

**Office hours:** Mon. 2:30pm-3:30 pm  
Tue. 2:30 pm-4:00 pm  
Thurs. 2:30 pm- 4:30 pm

**Textbook:** Arthur P. Boresi, Ken P. Chong, James D. Lee. "Elasticity in Engineering Mechanics", third edition, John Wiley & Sons, Inc., 2011, ISBN 978-0-470-40255-9

**Webpage:** <http://www.webpages.uidaho.edu/~gabrielp/ME548/ME548.html>

**Grading:**

Homework	30%
Midterm Exams	35%
Final Exam (comprehensive)	35%

A: 90-100 B: 80-89 C: 70-79 D: 60-69 F: 0-59

**Homework:** No late homework allowed.

**Course Outline:**

1. Introductory mathematical concepts
2. Deformation and strain
3. Stress
4. Plane theory of elasticity (Cartesian coordinates)
5. Plane theory of elasticity (polar coordinates)
6. Three-dimensional elasticity theory
7. Prismatic bars subjected to end loads
8. General solutions of elasticity

**Disability Support Services Reasonable Accommodations Statement:**

*Reasonable accommodations are available for students who have documented temporary or permanent disabilities. All accommodations must be approved through Disability Support Services located in the Idaho Commons Building, Room 306 in order to notify your instructor(s) as soon as possible regarding accommodation(s) needed for the course.*

- 885-6307
- email at <dss@uidaho.edu>
- website at [www.uidaho.edu/dss](http://www.uidaho.edu/dss)

**University of Idaho Classroom Learning Civility Clause:**

*In any environment in which people gather to learn, it is essential that all members feel as free and safe as possible in their participation. To this end, it is expected that everyone in this course will be treated with mutual respect and civility, with an understanding that all of us (students, instructors, professors, guests, and teaching assistants) will be respectful and civil to one another in discussion, in action, in teaching, and in learning. Should you feel our classroom interactions do not reflect an environment of civility and respect, you are encouraged to meet with your instructor during office hours to discuss your concern. Additional resources for expression of concern or requesting support include the Dean of Students office and staff (5-6757), the UI Counseling & Testing Center's confidential services (5-6716), or the UI Office of Human Rights, Access, & Inclusion (5-4285).*

**University of Idaho Student Code of Conduct, Article II, Section 1:**

*Cheating on classroom or outside assignments, examinations, or tests is a violation of this code. Plagiarism, falsification of academic records, and the acquisition or use of test materials without faculty authorization are considered forms of academic dishonesty and, as such, are violations of this code. Because academic honesty and integrity are core values at a university, the faculty finds that even one incident of academic dishonesty seriously and critically endangers the essential operation of the university and may merit expulsion.*