

DEPARTMENT OF MECHANICAL ENGINEERING

SUNY KOREA

ELASTICITY

Course Title: MEC541 Elasticity, Spring 2018 (3 credits)

Instructor: Prof. Changwoon Han, email: changwoon.han@sunykorea.ac.kr

Lecture: W 15:10-18:00 in B104

Office: B604, Phone (032)626-1817

Office Hours: MW 10:00-11:30 or other time by appointment

Course Summary: The course will provide a basic treatment of the formulation of linear elasticity theory and its application to problems of stress and displacement analysis. The objective is to provide students the ability to solve linear elasticity problems. The fundamental field equations will be developed including strain energy concepts. Applications will involve the solution to problems of engineering interest including two-dimensional problems of plane strain and plane stress, fracture mechanics, torsion, bending and stress concentration, and three-dimensional solutions.

Textbook: Martin H. Sadd, "Elasticity: Theory, Applications, and Numerics," 3rd / 2nd ed., Academic Press, 2014 for 3rd, 2009 for 2nd (ISBN: 978-0124081369 for 3rd ed., 978-0323163460 for 2nd ed.)

J. R. Barber, "Elasticity (Solid Mechanics and Its Applications)," 3rd ed., Springer, 2010 (ISBN: 978-9048138081)

R. J. Asaro & V. A. Lubarda, "Mechanics of Solids and Materials," Cambridge, 2006 (ISBN: 978-0-521-16611-9)

Pre-requisite: Mechanics of Materials/Strength of Materials, Mechanics of Solids.

Grading:	H/W & Quiz:	20%
	Attendance:	10%
	Term project:	10%
	First Exam:	20%
	Second Exam:	20%
	Final Exam:	20%

Course Outline:

Week	Date	Class - Plan
1	28-Feb	Review / Ch.5 Formulation and Solution Strategies
2	7-Mar	Ch.5 Formulation and Solution Strategies / Ch.7 2-D Formulation
3	14-Mar	Ch.8 2-D Problem Solution
4	21-Mar	Ch.8 2-D Problem Solution
5	28-Mar	Review / Exam #1
6	4-Apr	Ch.9 Extension, Torsion, and Flexure of Elastic Cylinder
7	11-Apr	Ch.9 Extension, Torsion, and Flexure of Elastic Cylinder
8	18-Apr	Ch.6 Strain Energy and Related Principles
9	25-Apr	Ch.6 Strain Energy and Related Principles
10	2-May	Review / Exam #2
11	9-May	Ch.10 Complex Variable Methods
12	16-May	Ch.10 Complex Variable Methods
13	23-May	Ch.12 Thermoelasticity
14	30-May	Ch.12 Thermoelasticity
15	6-Jun	No class (Memorial Day)
16	13-Jun	No class (National Election Day)
17	14-Jun	Review/Term project PT
18	20-Jun	Final Exam

Blackboard

It is required that you use the Blackboard for this course (<https://blackboard.stonybrook.edu/>).

Blackboard is used for facilitation of communications between faculty and students, submission of assignments, posting of the course materials, important announcements, and grades.

Course Website

Supplementary materials will be posted on the course website.

<https://sites.google.com/sunykorea.ac.kr/cwhan/mec-541>

SUNY Korea Attendance Policy

- (1) All SUNY Korea students are required to attend every class.
- (2) Unexcused absences will significantly affect seriously the student's final course grade.
- (3) Students who are absent without a valid excuse (see below) from more than 20% of scheduled class meetings will receive a grade of "F" for the course as follows:
 - i) For 150-minute classes meeting once a week, the 4th unexcused absence
 - ii) For 75-minute classes meeting twice a week, the 7th unexcused absence
 - iii) For 50-minute classes meeting three times a week, the 10th unexcused absence
 - iv) For Intensive English (IEC) Courses, students who miss more than 40 hours during a semester will receive a grade of "F" for the course.
- (4) Students should report the reason for absences to the instructor in advance, or immediately after the absence.
- (5) Absences may be classified as "excused" at the instructor's discretion.
- (6) For an absence to be "excused," the student must provide the instructor with acceptable documentation for the reason for the absence.
- (7) The course instructor may excuse the absence if the submitted documentation fulfills the conditions below:
 - i) Extreme emergencies (e.g., death in the family)
 - ii) Major medical reasons with doctor's note (not minor ailments)
 - iii) Very important events (e.g., national conferences, official school events)
- (8) At the end of semester, the course instructor will submit the class attendance record to the Academic Affairs Office.

Disability Support Services (DSS) Statement:

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact One-Stop Service Center, Academic Building A201, (82) 32-626-1117. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

In addition, this statement on emergency evacuation is often included, but not required: Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and One-Stop Service Center.

Academic Integrity Statement:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the [academic judiciary website](#).

Critical Incident Management Statement:

The State University of New York, Korea expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn.

Subject to Change Notice

All material, assignments, and deadlines are subject to change with prior notice. It is your responsibility to stay in touch with your instructor, review the course site regularly, or communicate with other students, to adjust as needed if assignments or due dates change.

Syllabus Disclaimer

The instructor views the course syllabus as an educational understanding between the instructor and students. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. The instructor reserves the right to make changes to the syllabus as deemed necessary. Students will be notified in a timely manner of any syllabus changes via email or in the course site Announcements. Please remember to check your email and the course site Announcements often.