Course Information	
Course title	Elasticity (I)
Semester	114-2
Designated for	COLLEGE OF ENGINEERING GRADUATE INSTITUTE OF APPLIED MECHANICS
Instructor	PEI LING LIU
Curriculum Number	AM7050
Curriculum Identity Number	543EM5110
Class	
Credits	3.0
Full/Half Yr.	Half
Required/ Elective	Required
Time	Monday 3,4(10:20~12:10) Wednesday 2(9:10~10:00)
Remarks	Restriction: MA students and beyond The upper limit of the number of students: 98.
Course introduction video	
Table of Core Capabilities and Curriculum Planning	Table of Core Capabilities and Curriculum Planning
Course Syllabus	
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Course Description	When a body is subjected to external loads, internal stress is induced in the body and the body deforms accordingly. If the body restores its original shape as the external loads are removed, it is called an elastic body. On the other hand, if the loading is so large such that permanent deformation takes place, the response of the body is inelastic. Usually engineering materials are designed to behave in the elastic range. The objective of the course is to discuss methods that can be used to analyze the stress and deformation of elasitic bodies under external loading.

Course Objective	The students should acquire the following knowledge as the semester ends: 1. various measures to describe the deformation of a body, the physical meanings and the transformation of these measures, and compatibility condtions of strains. 2. relation between stress vector and stress tensor; equations of motion, principal stress, and maximum shearing stress. 3. hyperelastic materials and the generalized Hooke's law, isotropic materials, and the relation between elastic constants and engineering constants. 4. formulation of elasticity problems in rectangular, cylindrical, and spherical coordinate systems, and the principle of virtual work. 5. analysis of problems with only on independent variables, such as a spherical shell subjected to internal pressure. 6. analysis of plane strain and plane stress problems, and the airy stress function. 7. analysis of torsion problems. 8. analysis of bending problems and the Timoshenko beam theory.
Course Requirement	Students of the class are expected to do before-class preparations and all the weekly assignments.
Student Workload (Expected weekly study hours before and/or after class)	
Office Hours	Wed. 10:00~12:00
Designated reading	
References	
Grading	1. NTU has not set an upper limit on the percentage of A+ grades. 2. NTU uses a letter grade system for assessment. The grade percentage ranges and the single-subject grade conversion table in the NATIONAL TAIWAN UNIVERSITY Regulations Governing Academic Grading are for reference only. Instructors may adjust the percentage ranges according to the grade definitions. For more information, see the Assessment for Learning Section.

Progress

Week	Date	Topic
No data		