

Subject Numbering	TMA-MEE208E
Year	2021
Subject	(IMAC-U)Mechanics of Materials I
Credit(s)	2
Instructor	HIDEO MIURA YUJI ICHIKAWA

Language	English
Object in Class subject and Object and summary of class and Goal of study(J)	
Object in Class subject and Object and summary of class and Goal of study	<p>The class code of this course in Google Classroom system is "5xqfpda" in the academic year of 2021 .</p> <p>1. Class subject Mechanics of materials is a branch of applied mechanics that deals with the basic behavior of solid bodies subjected to various types of loading. The knowledge of the stress and strain set up within the bodies and resulting deflection is a prerequisite for the structural design of industrial products and infrastructures such as buildings, roads, bridges, and various equipments. In this course, the basic idea of the structural design is provide based on the quantitative evaluation of mechanical stress and strain fields in various structures.</p> <p>2. Object and summary of class This course is intended as an introductory course in the mechanics of solids offered to engineering students. It concentrates on developing analysis techniques from principle for a range of practical problems that include simple structures, pressure vessels, beams and shafts.</p> <p>3. Goal of study The goal of this course is the acquisition of the basic concept of stress and strain in material s and structures and the quantitative analytical method of stress and strain fields in various structures.</p>
Other subject is relevant and complete a point to notice(J)	
Other subject is relevant and complete a point to notice	It is assumed that the students have had some experience in elementary statics (mechanics of rigid bodies) and mathematics (such as differentiation and integration).
Contents and progress schedule of class(J)	
Contents and progress schedule of class	<ol style="list-style-type: none"> <li>1. Introduction: Highly functional and reliable design of structures</li> <li>2. Basic concept of stress and strain</li> <li>3. Mechanical properties of materials</li> <li>4. Hook' s law and strength of materials</li> <li>5. Two-dimensional stress and strain fields (Pin-jointed structure)</li> <li>6. Thermal stress and residual stress</li> <li>7. Thin rings and stress concentration</li> <li>8. Mid-term exam. 1</li> <li>9. Biaxial stress and strain fields: Normal stress shear stress,</li> <li>10. Biaxial stress and strain fields: Plane stress</li> <li>11. Biaxial stress and strain fields: Relationship between stress and strain</li> <li>12. Torsion: Circular shafts</li> <li>13. Torsion: Close-coiled helical spring, Rectangular shaft</li> <li>14. Torsion: Thin-walled tube</li> <li>15. Mid-term exam. 2</li> <li>16. Final exam</li> </ol>
self study(J)	
self study	Homework is assigned at every lecture.
Record and evaluation method(J)	
Record and evaluation method	<ol style="list-style-type: none"> <li>1. Homework (every lecture): 10%</li> <li>2. Mid-term exams. 1 and 2 (Two-pages of notes are permitted.): 40% (20% each)</li> </ol>

	3. Final exam.(Closed book and no notes): 50%
Textbook and references	
URL	
Attached file	
Office hours(J)	
Office hours	
Notes	<p>1) W. Nash and M. Potter, "Strength of Materials, Fifth Ed.", Schaum's Outline Series, McGraw-Hill, (2010).  2) S. Timoshenko and D. H. Young, "Elements of Strength of Materials," Van Nostrand Reinhold Company, (1968).  3) Crandall, S. H., T. J. Lardner, and N. C. Dahl, "An Introduction to the Mechanics of Solids, 2nd ed.", McGraw-Hill, (1999).</p>
Practical business	主として実践的教育から構成される実務・実践的授業/Practical business
In addition	
Last Update	2021/08/23 16:03
	<p>1単位の授業科目は、45時間の学修を必要とする内容をもって構成することを標準としています。1単位の修得に必要な学修時間の目安は、「講義・演習」については15～30時間の授業および授業時間外学修(予習・復習など)30～15時間、「実験、実習及び実技」については30～45時間の授業および授業時間外学修(予習・復習など)15～0時間です。  One-credit courses require 45 hours of study. In lecture and exercise-based classes, one credit consists of 15-30 hours of class time and 30-15 hours of preparation and review outside of class. In laboratory, practical training, and practical skill classes, one credit consists of 30-45 hours of class time and 15-0 hours of preparation and review outside of class.</p>