

## シラバス参照

④ 科目ナンバリング	TMA-MEE208E
④ 開講年度	2022
④ 科目名	(IMAC-U) 材料力学 I
④ 単位数	2
④ 担当教員	市川 裕士 竹田 陽一
④ 備考/Notes	

④ 開講言語	English
④ 授業の目的・概要及び達成方法等	
④ 授業の目的・概要及び達成方法等 (E)	<p>The class code of this course in Google Classroom system is “h7v5pzb” in the academic year of 2022 .</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 materials and structures and the quantitative analytical method of stress and strain fields in various structures.</p>
④ 他の授業科目との関連及び履修上の注意	
④ 他の授業科目との関連及び履修上の注意 (E)	It is assumed that the students have had some experience in elementary statics (mechanics of rigid bodies) and mathematics (such as differentiation and integration).
④ 授業計画	
④ 授業計画 (E)	<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>
④ 授業時間外学修	---
④ 授業時間外学修 (E)	Homework is assigned at every lecture.
④ 成績評価方法及び基準	
④ 成績評価	1. Homework (every lecture): 10%

④ 方法及び基準(E)	2. Mid-term exams. 1 and 2 (Two-pages of notes are permitted.): 40% (20% each) 3. Final exam.(Closed book and no notes): 50%
④ 教科書および参考書	
④ 関連URL	
④ 添付ファイル	
④ オフィスアワー	
④ オフィスアワー(E)	
④ 備考	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).
④ 実務・実践的授業 / Practical business ※〇は、実務・実践的授業であることを示す。 / Note: "〇" Indicates the 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
④ その他	
④ 更新日付	2022/07/07 16:50
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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時間に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 skill classes, one credit consists of 30-45 hours of class time and 15-0 hours of preparation and review outside of class.