Course Numbering	TMA-MEE216E
Year	Second semester 2025
Subject (J)	Materials Science I
Subject	(IMAC-U)Materials Science I
Credit(s)	2Credits
Instructor	KAZUHISA SATO,YUJI ICHIKAWA
Media Class Subjects	
Essential Subjects	○
Language of Instruction	
Course Objectives and Summary/ Learning Goals (J)	Google Classroomのクラスコードは工学部Webページにて確認すること。 学部シラバス・時間割(https://www.eng.tohoku.ac.jp/edu/syllabus-ug.html)
Course Objectives and Summary/ Learning Goals	The class code for Google Classroom can be found on the Web site of the School of Engineering: https://www.eng.tohoku.ac.jp/edu/syllabus-ug.html (JP Only) This course will provide concise introduction to the microstructures and processing of materials and how these are related to the properties of engineering materials. In this course, although we mostly deal with metals, properties of other engineering materials will also be discussed. The goal of this course is understanding of basic properties of materials, of how properties are related to microstructures, of how microstructures are controlled by processing, and of how materials are formed and joined.
Relevance to Other Subjects/Considerations for Taking the Class (J)	
Relevance to Other Subjects/Considerations for Taking the Class	Mechanics of Materials I, Thermodynamics
Course Description (J)	
Course Description	1．Course Introduction and Orientation 2．Properties and Structures of Metals 1 3．Properties and Structures of Metals 2 4．Equilibrium Constitution and Phase Diagrams 5．Case Studies in Phase Diagrams 1 6．Case Studies in Phase Diagrams 2 7．Driving Force for Structural Change 8．Kinetics of Structural Change 1 9．Kinetics of Structural Change 2 10．Case Studies in Phase Transformation 1 11．Case Studies in Phase Transformation 2 12．Carbon Steels 13．Alloy Steels 14．Production, Forming, and Joining 15．Review and Final Exam
Preparation and Review(J)	Homework is assigned at every lecture for the class.
Preparation and Review	Homework is assigned at every lecture for the class.
Evaluation methods and criteria (J)	
Evaluation methods and criteria	Evaluation will be based on “class participation and homework assignment” and “final exam”.

Textbooks and references

Title	Author	Publisher	Year	ISBN/ISSN	Classification
Engineering Materials 2	M. F. Ashby and D. R. H. Jones	ELSEVIER	2006		

URL	
Attached File	
Office Hours(J)	Each lecturer assigns different office hour. Please contact directly with the lecturer.
Office Hours	
Contact： Please insert '@' in the email address.	クラスルームで連絡可能
Notes	When remote lecture system (Google Classroom) is used, the class code is "gtrmet4".
Practical Skill/Hands-on Class	
Other Comments/Instructions	
Last Update	2024/02/07 15:56:31

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.