科目ナンバリング	U-LAS12 10029 LE57						
授業科目名<英訳>	Fundamentals of Materials II-E2 Fundamentals of Materials II-E2			担当者所属職名・氏名	工学研究科　准教授　GAO, Si		
群	自然科学科目群			分野(分類)	物理学(基礎)	使用言語	英語
旧群	B群	単位数	2単位	週コマ数	1コマ	授業形態	講義（対面授業科目）
開講年度・開講期	2026・後期	曜時限	月2	配当学年	主として1・2回生	対象学生	理系向

[授業の概要・目的]

This is the second half of a two-semester course Fundamentals of Materials. The purpose of this course is to give a concise but comprehensive introduction covering all major classes of materials to the students majored in physical engineering. The characteristics of all main classes of materials, metals, polymers and ceramics, as well as their physical properties, are explained with reference to real-world examples. In the second semester we will mainly focus on the structure and physical properties of ceramics, polymers and composites. Electrical, thermal, magnetic and optical properties of materials will also be introduced.

[到達目標]

By taking this course the students are expected to have a broad understanding of fundamental aspects regarding to the processing and properties of ceramics, polymers and composites.

[授業計画と内容]

Week 1-2. Structures and properties of ceramics
Week 3. Applications and processing of ceramics
Week 4-5. Polymer structures
Week 6. Characteristics, applications and processing of polymers
Week 7-8. Composites
Week 9. Corrosion and degradation of materials
Week 10. Electrical properties
Week 11. Thermal properties
Week 12. Magnetic properties
Week 13. Optical properties
Week 14. Economic, environmental, and societal issues in materials science and engineering

A total of 14 lectures and one feedback class will be given.

[履修要件]

特になし

[成績評価の方法・観点]

Attendance and class participation [60%]
Homework assignments [40%]

[教科書]

使用しない

Fundamentals of Materials II-E2(2)へ続く↓↓↓

Fundamentals of Materials II-E2(2)

[参考書等]

（参考書）

William D. Callister, David G. Rethwisch, 『Materials Science and Engineering: An Introduction』（John Wiley & Sons Inc）ISBN:1118319222

[授業外学修（予習・復習）等]

Assignment (Quizes) are set for the review after class. The necessary time for assignments is around 1.5 hours for each class.

[その他（オフィスアワー等）]

[主要授業科目（学部・学科名）]