

シラバス参照

科目ナンバリング	TCH-MAC303J
開講年度	2024
科目名	化学・バイオ工学 I
科目名(英語)	Chemical and Biomolecular Engineering I
単位数	2
担当教員	大井 秀一 久保 正樹 PICHIERRI FABIO 熊谷 将吾 中川 善直 藤本 裕 丸山 伸伍
メディア授業科目 /Media Class Subjects	○
主要授業科目 /Essential Subjects	○

開講言語	
授業の 目的・ 概要及び 達成方法等	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)
授業の 目的・ 概要及び 達成方法等 (E)	<p>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)</p> <p>Purpose/Abstract We are surrounded by a large number of chemical products manufactured with various types of materials including organic, inorganic and their composite materials. Even in our body, biological materials are constantly being produced with the help of specialized enzymes and biochemical reactions. The objective of the present course is to provide chemistry-oriented topics concerned with the development of functional materials in various areas of engineering.</p> <p>Goal Students will learn some basic aspects of chemical production, with special emphasis on environmentally friendly methodologies for the synthesis of fine chemicals and advanced materials.</p> <p>Contents This course is offered in the Spring semester with the goal of understanding chemical and biomolecular engineering. Various topics will be presented by different instructors, as listed in the course schedule below, with each instructor giving two lectures for each topic.</p>
他の授業 科目との 関連及び 履修上の 注意	
他の授業 科目との 関連及び 履修上の 注意(E)	It would be desirable that the students attending this class have wide knowledge of fundamental chemistry at the undergraduate course level.
授業計画	
授業計画 (E)	<p>1. Chemistry of carbon nanomaterials by Assoc. Prof. Fabio PICHIERRI 1-1. Structure and bonding in organic molecules 1-2. Fullerenes, carbon nanotubes and graphene</p> <p>2. Particle dynamics in nanofluids by Prof. Masaki KUBO 2-1. Aggregation / dispersion of particles 2-2. Aggregation kinetics and colloidal dynamics</p> <p>3. Catalytic production of chemicals from biomass by Assoc. Prof. Yoshinao NAKAGAWA 3-1. Production of pure platform chemicals from biomass 3-2. Conversions of biomass-derived platform chemicals</p> <p>4. Feedstock Recycling of Waste Plastics by Assoc. Prof. Shogo KUMAGAI 4-1. Latest Trends and Challenges in Plastic Recycling 4-2. Technologies for Chemical Feedstock Recovery from Plastics</p> <p>5. Fine synthetic organic chemistry using metallic reagents by Prof. Shuichi OI 5-1. Synthetic methodologies using metallic reagent 5-2. Synthesis of luminescent materials</p>

	6. Phosphors for radiation detectors by Assoc. Prof. Yutaka FUJIMOTO 6-1. Ionizing radiation induced luminescence 6-2. Inorganic scintillators and their applications 7. Science and technology of thin films by Assoc. Prof. Shingo MARUYAMA 7-1. Fundamental aspects and practical applications of thin films 7-2. Fabrication techniques of thin films
🕒 授業時間外学習	ノートや配布資料を復習し、理解を深める。
🕒 授業時間外学習(E)	To deepen understanding after each class, review and summarize the content of learning looking back at one's own notes, the handout or prints that were delivered by each instructor.
📊 成績評価方法及び基準	レポート、課題、授業で実施する小テスト等により学修目標への達成度を総合的に評価する。
📊 成績評価方法及び基準(E)	Evaluation is performed comprehensively based on reports, homework, short tests etc.
📖 教科書および参考書	
🌐 関連URL	
📎 添付ファイル	
🖥️ オフィスアワー	
🖥️ オフィスアワー(E)	After each lecture in the class room, otherwise any time at his/her office but an appointment should be made in advance.
📧 連絡先(メールアドレス等) ※Emailは@の置き換えに注意/Contact (Email, etc.)	クラスルームで連絡可能
📎 備考	The handout and/or prints will be delivered by each instructor in his/her class.
📌 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	
🗂️ その他	
📅 更新日付	2024/03/21 15:50

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.