

Table of Curriculum (Undergraduate)

| Classification | | Course No. | Course Title | Lecture:Lab:C redit (Homework) | Semester (lecture cycle) | lecture plan | Note | |
|------------------------------|------------------------------------|------------|---|--------------------------------------|--------------------------------|--------------------------------|---------------------------------------|--|
| Elective Basic Courses | | CBE.10000 | Integrating Chemistry and Biology into Engineering | 3:0:3(3) | Fall (1 year) | '25 Fall, '26 Fall | | |
| Mandatory Major Courses | | CBE.20001 | Molecular Engineering Laboratory | 1:6:3(6) | Fall (1 year) | '25 Fall, '26 Fall | | |
| | | CBE.20003 | Industrial Organic Chemistry | 3:0:3(3) | Spring (1 year) | '25 Spring, '26 Spring | | |
| | | CBE.20005 | Chemical and Biomolecular Engineering Analysis | 3:0:3(3) | Spring (1 year) | '25 Spring, '26 Spring | ☐MAS.10001, MAS.10002 | |
| | | CBE.30001 | Chemical and Biomolecular Engineering Laboratory | 1:6:3(6) | Spring (1 year) | '25 Spring, '26 Spring | | |
| | | CBE.30011 | Reaction Engineering | 3:0:3(3) | Spring (1 year) | '25 Spring, '26 Spring | | |
| | | CBE.30022 | Chemical and Biomolecular Engineering Thermodynamics | 3:0:3(3) | Fall (1 year) | '25 Fall, '26 Fall | | |
| Elective Major Courses | Advanced Major | CBE.20002 | Basic Principles for Chemical and Biomolecular Engineering | 3:0:3(3) | Spring (1 year) | '25 Spring, '26 Spring | | |
| | | CBE.20006 | Introduction to Numerical Methods for Chemical and Biomolecular Engineers | 3:0:3 | Fall (1 year) | '25 Fall, '26 Fall | ☐MAS.10001, MAS.10002 | |
| | | CBE.20061 | Biochemical Engineering | 3:0:3(3) | Fall (1 year) | '25 Fall, '26 Fall | | |
| | | CBE.30031 | Fluid Mechanics for Chemical and Biomolecular Engineering | 3:0:3(3) | Spring (1 year) | '25 Spring, '26 Spring | ☐CBE.20005 | |
| | | CBE.30032 | Heat and Molecular Transfer | 3:0:3(3) | Fall (1 year) | '25 Fall, '26 Fall | | |
| | | CBE.30051 | Introduction to Macromolecular Engineering | 3:0:3(3) | Spring (1 year) | '25 Spring, '26 Spring | | |
| Elective Major Course | | CBE.20007 | My CBE-Career Planning in Chemical and Biomolecular Engineering | 1:0:1 | Spring (1 year) | '25 Spring, '26 Spring | | |
| | | CBE.20008 | Physical Chemistry for Chemical and Biomolecular Engineers I | 3:0:3 | Fall (1 year) | '25 Fall, '26 Fall | | |
| | | CBE.20060 | Biomolecular Engineering | 3:0:3(3) | Spring (1 year) | '25 Spring, '26 Spring | | |
| | | CBE.30021 | Separation Processes | 3:0:3(3) | Fall (1 year) | '25 Fall, '26 Fall | ☐CBE.20002, CBE.30022 | |
| | | CBE.30041 | Process Simulation and Control | 3:1:3(3) | Spring (1 year) | '25 Spring, '26 Spring | | |
| | | CBE.30062 | Bioinformatics | 3:0:3(3) | Spring (2 year) | '25 Spring, '27 Spring | | |
| | | CBE.30063 | Introduction to Metabolic Engineering and Synthetic Biology | 3:0:3 | Fall (2 year) | '26 Fall | | |
| | | CBE.30071 | Electrochemical Principles for Chemical and Biomolecular Engineering | 3:0:3 | Spring (1 year) | '25 Spring, '26 Spring | | |
| | | CBE.40004 | Physical Chemistry for Chemical and Biomolecular Engineers II | 3:0:3(3) | Fall (1 year) | '25 Fall, '26 Fall | ◎ | |
| | | CBE.40041 | Techniques of Process and Product Design | 3:0:3(3) | Spring (1 year) | '25 Spring, '26 Spring | ◎ ☐CBE.20002, CBE.30021, CBE.30022 | |
| | | CBE.40042 | Chemical and Biomolecular Engineering Capstone Design Project | 3:0:3(3) | Fall (2 year) | '25 Fall, '27 Fall | ◎ ☐CBE.30011, CBE.30021, CBE.40041 | |
| | | CBE.40044 | Introduction to Molecular Modeling and Simulations | 3:0:3 | Spring (2 year) | '25 Spring, '27 Spring | ◎ ☐CBE.20006 | |
| | | CBE.40052 | Polymer Synthesis for Chemical and Biomolecular Engineers | 3:0:3 | Fall (1 year) | '25 Fall | ◎ | |
| | | CBE.40055 | Nanochemical Technology | 3:0:3(3) | Fall (1 year) | '25 Fall, '26 Fall | ◎ | |
| | | CBE.40061 | Biorefineries for Fuels and Chemicals | 3:0:3(3) | Fall | not open | ◎ | |
| | | CBE.40062 | Bioseparation Engineering | 3:0:3 | Fall (1 year) | '25 Fall, '26 Fall | ◎ | |
| | | CBE.40063 | Engineering Principles in Biological Systems | 3:0:3 | Fall (2 year) | '25 Fall | ◎ | |
| | | CBE.40064 | Big Data Analysis and Machine Learning for Biotechnology | 3:0:3 | Spring (2 year) | '25 Spring, '27 Spring | ◎ ☐CBE.20060, CBE.20061 | |
| | | CBE.40072 | Introduction to New and Renewable Energy | 3:0:3 | Spring (1 year) | '25 Spring, '26 spring(TBD) | ◎ | |
| | | CBE.40073 | Microelectronics Processes | 3:0:3(3) | Spring (1 year) | '25 Spring, '27 Spring | ◎ | |
| | | CBE.40074 | Instrumental Analysis for Chemical and Biomolecular Engineering | 3:0:3 | Fall (1 year) | '25 Fall, '26 Fall | ◎ | |
| | | CBE.40075 | Introduction to Environmental Chemical Engineering | 3:0:3 | Spring (2 year) | '26 Spring: not open | ◎` | |
| | | CBE.49900 | Special Topics in Chemical and Biomolecular Engineering | 3:0:3(3) | Spring-Fall | | ◎Subtitle is assigned | |
| | | CBE.49901 | Special Topics in Chemical and Biomolecular Engineering II | 2:0:2(2) | Spring-Fall | | ◎Subtitle is assigned | |
| | | CBE.49902 | Special Topics in Chemical and Biomolecular Engineering III | 1:0:1(1) | Spring-Fall | | ◎Subtitle is assigned | |
| | | Research | | CBE.91000 | Undergraduate Research | 0:6:3 | Spring-Fall | |
| | | | | CBE.91100 | Individual Study | 0:6:1 | Spring-Fall | |
| CBE.93000 | Seminar for Undergraduate Students | | | 1:0:1 | Spring-Fall | | | |

◎: Course mutually recognized by undergraduate and graduate programs □: Prerequisite Courses

※ Course classification, course title, and mutual recognition of credits may differ according to the effective year of the requirements.

※ The lecture plan is subject to change depending on the situation.

Substitute Course List

| Substitute courses in the department | | | | | |
|--------------------------------------|---------------------------|--|-------------------------------|--|---|
| Category | Courses currently offered | | Courses not currently offered | | |
| | Course no. | Course title | Course no. | Course title | Remark |
| Undergraduate | CBE.20002 | Basic Principles for Chemical and Biomolecular Engineering | CBE.20002 | Introduction to Chemical and Biomolecular Engineering | Course title/Course Classification change |
| Undergraduate | CBE.20008 | Physical Chemistry for Chemical and Biomolecular Engineers I | CBE.30003 | Physical Chemistry for Chemical and Biomolecular Engineers I | Course No. change |
| Undergraduate | CBE.30011 | Reaction Engineering | CBE.30011 | Molecular Reaction Engineering | Course Title/Course Classification change |
| Undergraduate | CBE.30022 | Chemical and Biomolecular Engineering Thermodynamics | CBE.20021 | Molecular Thermodynamics and Energy Systems | Course Title/Course No. change |
| Undergraduate | CBE.30031 | Fluid Mechanics for Chemical and Biomolecular Engineering | CBE.30031 | Fluid Mechanics for Chemical Engineering | Course Title change |

| Substitute Courses Offered by Other Departments | | | | | |
|---|-----------------------------------|---|--------------------------------------|--|-----------------------------|
| Category | Courses Offered by the Department | | Courses Offered by Other Departments | | |
| | Course No. | Course Title | Course No. | Course Title | Remark |
| Undergraduate | CBE.20003 | Industrial Organic Chemistry | CH.20021 | Organic Chemistry I | Unidirectional substitution |
| Undergraduate | CBE.20060 | Biomolecular Engineering | BS.20009 | Molecular Biology | Unidirectional substitution |
| Undergraduate | CBE.20008 | Physical Chemistry for Chemical and Biomolecular Engineers I | CH.20012 | Physical Chemistry II | Unidirectional substitution |
| Undergraduate | CBE.30062 | Bioinformatics | BiS.43008 | Bioinformatics | Unidirectional substitution |
| Undergraduate | CBE.40004 | Physical Chemistry for Chemical and Biomolecular Engineers II | CH.20011 | Physical Chemistry I | Unidirectional substitution |
| Graduate | CBE.50067 | Metabolic Engineering | BiS.62002 | Metabolic Engineering | Unidirectional substitution |
| Graduate | CBE.60053 | Mechanical Properties of Polymers | ME.60033 | Mechanical Behavior of Polymeric and Composite Materials | Unidirectional substitution |
| Graduate | CBE.70012 | Surface Phenomena | MS.60054 | Surface Science | Unidirectional substitution |
| Graduate | CBE.89906 | Special Topics in Biochemical Engineering | BS.70060 | Selected Topics in Environmental Biotechnology | Unidirectional substitution |

- ※ Students cannot take both courses to be substituted and courses to be recognized. For example, students can only take either [CBE.20003] Industrial Organic Chemistry or [CH.20021] Organic Chemistry I.
- ※ If you have taken [CH.20012] Physical Chemistry II and [CBE.20008] Physical Chemistry for Chemical and Biomolecular Engineers I, or [CH.20011] Physical Chemistry I and [CBE.40004] Physical Chemistry for Chemical and Biomolecular Engineers II in 2013 or before, credits from both courses can be counted in the graduation credits.
- ※ Substitute courses may differ according to the effective year of the requirements.