Articulation Agreement by Major

Effective during the 2022-2023 Academic Year

To: University of California, Berkeley	From: De Anza College
2022-2023 General Catalog, Semester	2022-2023 General Catalog, Quarter

Chemical Engineering, Lower Division B.S.

COLLEGE ADMISSION REQUIREMENTS

The major in **Chemical Engineering** is offered by the College of Chemistry. It is designed to equip the student for professional work in development, design, and operation of chemical products and processes. It prepares the student for employment in such industries as chemical, petroleum, electrochemical, biochemical, semiconductor, nuclear, aerospace, plastics, food processing, environmental control, or related industries.

Transfer applicants are expected to complete, at a minimum, coursework equivalent to Berkeley's:

CHEMISTRY 1A + 1AL + 1B
MATH 1A + 1B + 53 + 54
PHYSICS 7A + 7B
ENGLISH R1A

Coursework must be completed by the end of the spring term preceding fall enrollment at Berkeley.

IGETC is not required. Students who choose to complete the entire IGETC pattern by the end of the spring term preceding fall enrollment at Berkeley may use IGETC to fulfill the Reading and Composition Requirement.

Lower division courses required for graduation (but not for admission) are also listed in this articulation agreement. Completion of those courses is strongly recommended in order to strengthen one's application. All major courses must be taken for a letter grade. High grades in major courses (B and A grades exclusively) are essential for applicants to be both competitive in the admissions process and to be adequately prepared to continue with junior year coursework at Berkeley.

The applicant's personal statement is important in the admissions process. The personal statement is reviewed for evidence of the student's interest in the chosen field and a thoughtful match between the intended major and academic and career objectives.

For more information on College of Chemistry policies and degree programs:
https://chemistry.berkeley.edu/ugrad/degrees

For more information on admission to UC Berkeley:
https://admissions.berkeley.edu

For more information on majors at UC Berkeley:
Berkeley Academic Guide: http://guide.berkeley.edu

Additional questions about transferring to the College of Chemistry may be addressed to:
Maura Daly, Director of Undergraduate Student Services
mdaly@berkeley.edu
(510) 643-0550

ADDITIONAL REQUIREMENTS

BIOLOGY
Biology 1A (lecture only) is required for the Chemical Engineering B.S. degree.

You may also satisfy this requirement with a score/grade of:
4 or higher on the AP Biology exam satisfies BIOLOGY 1A & 1AL.

MATHEMATICS
You may also satisfy this requirement with a score/grade of:
3 or higher on the AP Calculus AB exam satisfies MATH 1A;
3 or 4 on the AP Calculus BC exam satisfies MATH 1A;
5 on the AP Calculus BC exam satisfies MATH 1A + 1B.

ORGANIC CHEMISTRY WITH LABORATORY
CHEM 12A (organic chemistry) is required for the Chemical Engineering B.S. degree. CHEM 12B is not required for the Chemical Engineering major, but it is acceptable in satisfaction of the science elective for the open elective program.

Transfer students are encouraged to take the organic chemistry sequence at their institution.

Completion of CHEM 3A + 3AL + 3B + 3BL combined with a score in the 75th percentile or higher on the American Chemical Society (ACS) Organic Chemistry Exam will constitute satisfactory completion of Berkeley's CHEM 12A +

12B.
Students are encouraged to take the exam through their community college, if possible. **NOTE**: The College of Chemistry does not accept results from the 1994 and 1998 versions of the ACS Organic Chemistry Exam.

PHYSICS 7C is not required for the Chemical Engineering major, but it is acceptable in satisfaction of the science elective for the open elective program.

READING AND COMPOSITION REQUIREMENT
Coursework equivalent to Berkeley's:
English R1A;
or Entire IGETC pattern completed by the end of the spring term preceding fall enrollment at Berkeley.

NOTE: You may also satisfy this requirement with a score/grade of: 4 or 5 on the AP exam in either English Language and Composition or English Literature and Composition.

AP EXAM CREDIT

BIOLOGY
You may also satisfy this requirement with a score/grade of:
4 or higher on the AP Biology exam satisfies BIOLOGY 1A & 1AL.

MATHEMATICS
You may also satisfy this requirement with a score/grade of:
3 or higher on the AP Calculus AB exam satisfies MATH 1A;
3 or 4 on the AP Calculus BC exam satisfies MATH 1A;
5 on the AP Calculus BC exam satisfies MATH 1A + 1B.

READING AND COMPOSITION REQUIREMENT
You may also satisfy this requirement with a score/grade of:
4 or 5 on the AP exam in English Language and Composition satisfies ENGLISH R1A;
4 on the AP exam in English Literature and Composition satisfies ENGLISH R1A;

See ADDITIONAL REQUIREMENTS section for additional options to satisfy requirements.

LOWER DIVISION REQUIREMENTS

See details on course preparation for this major below:

GENERAL CHEMISTRY WITH LABORATORY

****REFER TO TOP OF AGREEMENT****

CHEM 1A - General Chemistry (3.00)
--- And ---
CHEM 1AL - General Chemistry Laboratory (2.00)

← Articulates as a Series Only

CHEM 1B - General Chemistry (4.00)

← Articulates as a Series Only

CHEM 1A - General Chemistry (3.00)
--- And ---
CHEM 1AL - General Chemistry Laboratory (2.00)
--- And ---
CHEM 1B - General Chemistry (4.00)

←

CHEM 1A - General Chemistry (5.00)
--- And ---
CHEM 1B - General Chemistry (5.00)
--- And ---
CHEM 1C - General Chemistry and Qualitative Analysis (5.00)

- *Regular and honors courses may be combined to complete this series*

--- Or ---

CHEM 1AH - General Chemistry - HONORS (5.00)
--- And ---
CHEM 1BH - General Chemistry - HONORS (5.00)
--- And ---
CHEM 1CH - General Chemistry and Qualitative Analysis - HONORS (5.00)

- *Regular and honors courses may be combined to complete this series*

ORGANIC CHEMISTRY WITH LABORATORY

****REFER TO TOP OF AGREEMENT****

CHEM 3A - Chemical Structure and Reactivity (3.00) **--- And ---** **CHEM 3AL** - Organic Chemistry Laboratory (2.00)	←	**CHEM 12A** - Organic Chemistry (5.00) **--- And ---** **CHEM 12B** - Organic Chemistry (5.00)
CHEM 3B - Chemical Structure and Reactivity (3.00) **--- And ---** **CHEM 3BL** - Organic Chemistry Laboratory (2.00)	←	**CHEM 12B** - Organic Chemistry (5.00) **--- And ---** **CHEM 12C** - Organic Chemistry (5.00)
CHEM 3A - Chemical Structure and Reactivity (3.00) **--- And ---** **CHEM 3AL** - Organic Chemistry Laboratory (2.00) **--- And ---** **CHEM 3B** - Chemical Structure and Reactivity (3.00) **--- And ---** **CHEM 3BL** - Organic Chemistry Laboratory (2.00)	←	Articulates as Course-to-Course Only

BIOLOGY

****REFER TO TOP OF AGREEMENT****

BIOLOGY 1A - General Biology Lecture (Cells, Genetics, Animal Form & Function) (3.00) **--- And ---** **BIOLOGY 1AL** - General Biology Laboratory (2.00)	←	**BIOL 6A** - Form and Function in the Biological World (6.00) **--- And ---** **BIOL 6B** - Cell and Molecular Biology (6.00) **--- Or ---** **BIOL 6AH** - Form and Function in the Biological World - HONORS (6.00) **--- And ---** **BIOL 6B** - Cell and Molecular Biology (6.00)
BIOLOGY 1A - General Biology Lecture (Cells, Genetics, Animal Form & Function) (3.00) **--- And ---** **BIOLOGY 1AL** - General Biology Laboratory (2.00) **--- And ---** **BIOLOGY 1B** - General Biology (Plant Form & Function, Ecology, Evolution) (4.00)	←	Articulates as Course-to-Course Only

COMPUTER PROGRAMMING

ENGIN 7 - Introduction to Computer Programming for Scientists and Engineers (MATLAB) (4.00)	←	No Course Articulated

MATHEMATICS

****REFER TO TOP OF AGREEMENT****

MATH 1A - Calculus (4.00)	←	**MATH 1A** - Calculus (5.00) **--- And ---** **MATH 1B** - Calculus (5.00) • *Regular and honors courses may be combined to complete this series* **--- Or ---** **MATH 1AH** - Calculus - HONORS (5.00) **--- And ---** **MATH 1BH** - Calculus - HONORS (5.00) • *Regular and honors courses may be combined to complete this series*
MATH 1B - Calculus (4.00)	←	**MATH 1B** - Calculus (5.00) **--- And ---** **MATH 1C** - Calculus (5.00) • *Regular and honors courses may be combined to complete this series* **--- Or ---** **MATH 1BH** - Calculus - HONORS (5.00) **--- And ---** **MATH 1CH** - Calculus - HONORS (5.00) • *Regular and honors courses may be combined to complete this series*
MATH 53 - Multivariable Calculus (4.00)	←	**MATH 1C** - Calculus (5.00) **--- And ---** **MATH 1D** - Calculus (5.00) • *Regular and honors courses may be combined to complete this series* **--- Or ---** **MATH 1CH** - Calculus - HONORS (5.00) **--- And ---** **MATH 1DH** - Calculus - HONORS (5.00) • *Regular and honors courses may be combined to complete this series*
MATH 54 - Linear Algebra and Differential Equations (4.00)	←	**MATH 2A** - Differential Equations (5.00) **--- And ---** **MATH 2B** - Linear Algebra (5.00) • *Regular and honors courses may be combined to complete this series* **--- Or ---** **MATH 2AH** - Differential Equations - HONORS (5.00) **--- And ---** **MATH 2BH** - Linear Algebra - HONORS (5.00) • *Regular and honors courses may be combined to complete this series*

PHYSICS

****REFER TO TOP OF AGREEMENT****

PHYSICS 7A - Physics for Scientists and Engineers (4.00)	←	**PHYS 4A** - Physics for Scientists and Engineers: Mechanics (6.00)

PHYSICS 7B - Physics for Scientists and Engineers (4.00)	←	**PHYS 4B** - Physics for Scientists and Engineers: Electricity and Magnetism (6.00) **--- And ---** **PHYS 4C** - Physics for Scientists and Engineers: Fluids, Waves, Optics and Thermodynamics (6.00)
PHYSICS 7C - Physics for Scientists and Engineers (4.00)	←	**PHYS 4C** - Physics for Scientists and Engineers: Fluids, Waves, Optics and Thermodynamics (6.00) **--- And ---** **PHYS 4D** - Physics for Scientists and Engineers: Modern Physics (6.00)
PHYSICS 7A - Physics for Scientists and Engineers (4.00) **--- And ---** **PHYSICS 7B** - Physics for Scientists and Engineers (4.00)	←	Articulates as Course-to-Course Only
PHYSICS 7A - Physics for Scientists and Engineers (4.00) **--- And ---** **PHYSICS 7B** - Physics for Scientists and Engineers (4.00) **--- And ---** **PHYSICS 7C** - Physics for Scientists and Engineers (4.00)	←	Articulates as Course-to-Course Only

READING AND COMPOSITION (R&C):

****REFER TO TOP OF AGREEMENT****

ENGLISH R1A - Reading and Composition (4.00)	←	**EWRT 1A** - Composition and Reading (5.00) **--- Or ---** **EWRT 1AH** - Composition and Reading - HONORS (5.00) **--- Or ---** **ESL 5** - Advanced Composition and Reading (5.00)

ELECTIVES

MAT SCI 45 - Properties of Materials (3.00) **--- And ---** **MAT SCI 45L** - Properties of Materials Laboratory (1.00)	←	No Course Articulated

END OF AGREEMENT