

Bioengineering and Chemical Pre-Engineering AS-T (Chemical Option)



2022-23

Program map for Bioengineering and Chemical Pre-Engineering Associate in Science-Transfer (AS-T), Chemical Engineering Option

Complete basic background studies for transfer to a bachelor's degree program in engineering disciplines. Careers may be found in research, development, design, operations management, teaching, sales and consulting.

See also

- [Degree Requirements for Science, Technology, Engineering and Math programs \(lowercolumbia.edu/programs/stem \)](https://lowercolumbia.edu/programs/stem)
- [Course descriptions in LCC Catalog \(lowercolumbia.edu/publications/catalog/courses \)](https://lowercolumbia.edu/publications/catalog/courses)
- [Distribution lists in LCC Catalog \(lowercolumbia.edu/publications/catalog/distribution-lists \)](https://lowercolumbia.edu/publications/catalog/distribution-lists)

(lowercolumbia.edu/program-maps/stem/) **Important:** Many course sequences only begin in fall quarter. Check with your program advisor.

By Quarter Overview

First Quarter

- CHEM& 161: General Chemistry w/ Lab I (5 credits)
- COLL 101: College Success 101 (2 credits)
- MATH& 141: Precalculus I (6 credits)

Make plan with advisor (lowercolumbia.edu/advising/meet-with-advisor)

Second Quarter

- CHEM& 162: General Chemistry w/ Lab II (5 credits)
- MATH& 142: Precalculus II (5 credits)

- Choose one:
 - ART& 100: Art Appreciation (5 credits)
 - CMST 250: Intercultural Communication (5 credits)
 - HIST& 126: World Civilization I (5 credits)

Third Quarter

- CHEM& 163: General Chemistry w/ Lab III (5 credits)
- ENGL& 101: English Composition I (5 credits)
- Choose one:
 - ANTH& 100: Survey of Anthropology (5 credits)
 - ANTH& 206: Cultural Anthropology (5 credits)
 - HIST& 128: Western Civ III (5 credits)
 - HIST& 215: Women in US History (5 credits)

Fourth Quarter

- CHEM& 261: Organic Chemistry w/ Lab I (5 credits)
- MATH& 151: Calculus I (5 credits)

Fifth Quarter

- CHEM& 262: Organic Chemistry w/ Lab II (5 credits)
- MATH& 152: Calculus II (5 credits)

Sixth Quarter

- CHEM& 263: Organic Chemistry w/ Lab III (5 credits)
- MATH& 153: Calculus III (5 credits)

Research 4-year institutions and electives (lowercolumbia.edu/university-center)

Seventh Quarter

- PHYS& 221: Engineering Physics I w/ Lab (5 credits)
- MATH& 254: Calculus IV (5 credits)

Visit 4-year schools (lowercolumbia.edu/university-center)

Eighth Quarter

- PHYS& 222: Engineering Physics II w/ Lab (5 credits)
- MATH 240: Differential Equations (5 credits)

Apply to 4-year schools (lowercolumbia.edu/university-center)

Ninth Quarter

- PHYS& 223: Engineering Physics III w/ Lab (5 credits)
- Choose one:
 - ECON& 201: Micro Economics (5 credits)
 - ECON& 202: Macro Economics (5 credits)
- MATH 220 Linear Algebra (5 credits)

[Apply for Graduation \(lowercolumbia.edu/graduation \)](http://lowercolumbia.edu/graduation)

Detailed Class Sequence

1. Pre-Major Requirement

CHEM& 161: General Chemistry w/ Lab I (5 credits)

- *Prerequisites: CHEM& 100 or high school chemistry and MATH 098.*

2. College Success

COLL 101: College Success 101 (2 credits)

3. Prerequisite Coursework / Elective

MATH& 141: Precalculus I (6 credits)

- *Prerequisites: C or better in MATH 098, B or better in ABE 092, or placement.*

4. Pre-Major Requirement

CHEM& 162: General Chemistry w/ Lab II (5 credits)

- *Prerequisites: CHEM& 161*

5. Prerequisite Coursework / Elective

MATH& 142: Precalculus II (5 credits)

- *Prerequisites: C or better in MATH& 141.*

6. Humanities / Diversity Requirement

Choose one of these recommended courses:

- ART& 100: Art Appreciation (5 credits)
- CMST 250: Intercultural Communication (5 credits)
 - *Fulfills [DIVR] requirement at WSU*
- HIST& 126: World Civilization I (5 credits)
 - *Fulfills [DIVR] requirement at WSU*

7. Pre-Major Requirement

CHEM& 163: General Chemistry w/ Lab III (5 credits)

- *Prerequisites: CHEM& 162*

8. Communication Requirement

ENGL& 101: English Composition I (5 credits)

- *Prerequisites: College level reading and writing skills or completion of ENGL 099 or TECH 105 with a grade of C or better.*

9. Social Science Requirement

Choose one of these recommended courses:

- ANTH& 100: Survey of Anthropology (5 credits)
 - *Fulfills [DIVR] requirement at WSU*
- ANTH& 206: Cultural Anthropology (5 credits)
 - *Fulfills [DIVR] requirement at WSU*
- HIST& 128: Western Civ III (5 credits)
 - *Fulfills [ROOT] requirement at WSU*
- HIST& 215: Women in US History (5 credits)
 - *Fulfills [DIVR] requirement at WSU*

10. Pre-Major Requirement

CHEM& 261: Organic Chemistry w/ Lab I (5 credits)

- *Prerequisite: CHEM& 163 or instructor permission.*

11. Math Requirement

MATH& 151: Calculus I (5 credits)

- *Prerequisites: MATH& 142 with a grade of C or better.*

12. Pre-Major Requirement

CHEM& 262: Organic Chemistry w/ Lab II (5 credits)

- *Prerequisites: CHEM& 261*

13. Math Requirement

MATH& 152: Calculus II (5 credits)

- *Prerequisite: MATH& 151 with a grade of C or better.*

14. Recommended Elective

CHEM& 263: Organic Chemistry w/ Lab III (5 credits)

- *Prerequisite: CHEM& 262*

15. Math Requirement

MATH& 153: Calculus III (5 credits)

- *Prerequisite: MATH& 152 with a grade of C or better.*

16. Pre-Major Requirement

PHYS& 221: Engineering Physics I w/ Lab (5 credits)

- *Prerequisites: Completion of or concurrent enrollment in MATH& 151 or instructor permission.*

17. Recommended Elective

MATH& 254: Calculus IV (5 credits)

- *Prerequisites: MATH& 153 with a grade of C or better.*

18. Pre-Major Requirement

PHYS& 222: Engineering Physics II w/ Lab (5 credits)

- *Prerequisites: PHYS& 221, MATH& 152 or instructor permission.*

19. Math Requirement

MATH 240: Differential Equations (5 credits)

- *Prerequisite: MATH& 254 with a grade of C or better.*

20. Pre-Major Requirement

PHYS& 223: Engineering Physics III w/ Lab (5 credits)

- *Prerequisites: PHYS& 222 or instructor permission.*

21. Social Science Requirement

Choose one of these recommended courses:

- ECON& 201: Micro Economics (5 credits)
 - *Prerequisites: MATH 088 or TECH 088 or BUS 104 and ENGL& 101 or BUS 190.*
- ECON& 202: Macro Economics (5 credits)
 - *Prerequisite: ECON& 201 or instructor permission.*

22. Recommended Elective

MATH 220: Linear Algebra (5 credits)

- *Prerequisite: MATH& 152 with a grade of C or better.*



Program Maps for Science, Technology, Engineering and Math (STEM) (lowercolumbia.edu/program-maps/stem)

- [Bioengineering and Chemical Pre-Engineering AS-T \(Chemical Option\) \(lowercolumbia.edu/program-maps/stem/AST-Bioengineering-and-Chemical-Pre-Engineering-Chemical-Option \)](http://lowercolumbia.edu/program-maps/stem/AST-Bioengineering-and-Chemical-Pre-Engineering-Chemical-Option)
- [Bioengineering and Chemical Pre-Engineering AS-T \(Bioengineering Option\) \(lowercolumbia.edu/program-maps/stem/AST-Bioengineering-and-Chemical-Pre-Engineering-Bioengineering-Option \)](http://lowercolumbia.edu/program-maps/stem/AST-Bioengineering-and-Chemical-Pre-Engineering-Bioengineering-Option)
- [Biological Sciences - AS-T \(lowercolumbia.edu/program-maps/stem/AST-Biological-Sciences \)](http://lowercolumbia.edu/program-maps/stem/AST-Biological-Sciences)
- [Biology - DTA/MRP \(lowercolumbia.edu/program-maps/stem/DTA-MRP-Biology \)](http://lowercolumbia.edu/program-maps/stem/DTA-MRP-Biology)
- [Chemistry - AS-T \(lowercolumbia.edu/program-maps/stem/AST-Chemistry \)](http://lowercolumbia.edu/program-maps/stem/AST-Chemistry)
- [Computer Science - AST \(lowercolumbia.edu/program-maps/stem/AST-Computer-Science \)](http://lowercolumbia.edu/program-maps/stem/AST-Computer-Science)
- [Computer Science AS-T \(WSU-V\) \(lowercolumbia.edu/program-maps/stem/AST-Computer-Science-WSU-V \)](http://lowercolumbia.edu/program-maps/stem/AST-Computer-Science-WSU-V)
- [Computer and Electrical Pre-Engineering - AS-T COMP E EE/MRP \(2 year\) \(lowercolumbia.edu/program-maps/stem/AST-Computer-and-Electrical-Pre-Engineering-2-year \)](http://lowercolumbia.edu/program-maps/stem/AST-Computer-and-Electrical-Pre-Engineering-2-year)
- [Computer and Electrical Pre-Engineering - AS-T COMP E EE/MRP \(3 year\) \(lowercolumbia.edu/program-maps/stem/AST-Computer-and-Electrical-Pre-Engineering-3-year \)](http://lowercolumbia.edu/program-maps/stem/AST-Computer-and-Electrical-Pre-Engineering-3-year)
- [Earth Sciences - AA-DTA \(lowercolumbia.edu/program-maps/stem/AADTA-Earth-Sciences \)](http://lowercolumbia.edu/program-maps/stem/AADTA-Earth-Sciences)
- [Earth Sciences - AS-T \(lowercolumbia.edu/program-maps/stem/AST-Earth-Sciences \)](http://lowercolumbia.edu/program-maps/stem/AST-Earth-Sciences)
- [Environmental Science - AS-T \(lowercolumbia.edu/program-maps/stem/AST-Environmental-Science \)](http://lowercolumbia.edu/program-maps/stem/AST-Environmental-Science)
- [Mechanical, Civil, Aeronautical, Industrial, Materials Science Engineering - AS-T \(2 year\) \(lowercolumbia.edu/program-maps/stem/AST-Mechanical-Civil-Aeronautical-Industrial-Materials-Science-Engineering-2-year \)](http://lowercolumbia.edu/program-maps/stem/AST-Mechanical-Civil-Aeronautical-Industrial-Materials-Science-Engineering-2-year)
- [Mechanical, Civil, Aeronautical, Industrial, and Materials Science Engineering AS-T \(3 year\) \(lowercolumbia.edu/program-maps/stem/AST-Mechanical-Civil-Aeronautical-Industrial-Materials-Science-Engineering-3-year \)](http://lowercolumbia.edu/program-maps/stem/AST-Mechanical-Civil-Aeronautical-Industrial-Materials-Science-Engineering-3-year)
- [Physics - AS-T \(lowercolumbia.edu/program-maps/stem/AST-Physics \)](http://lowercolumbia.edu/program-maps/stem/AST-Physics)
- [Physics - AS-T \(Math Transfer Option\) \(lowercolumbia.edu/program-maps/stem/AST-Physics-Math-Transfer-Option \)](http://lowercolumbia.edu/program-maps/stem/AST-Physics-Math-Transfer-Option)