

# Mechanical, Civil, Aeronautical, Industrial, Materials Science Engineering - AS-T (2 year)

2022-23

## Program map for Mechanical, Civil, Aeronautical, Industrial, and Materials Science Associate in Science-Transfer (AST), two year plan

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: ( [lowercolumbia.edu/programs/stem](http://lowercolumbia.edu/programs/stem) )

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

***Please note that many course sequences only begin in fall quarter. Please check with your program advisor for more information.***

***Please review both the "By Quarter Overview" and "Detailed Class Sequence" tabs below.***

## By Quarter Overview

### First Quarter

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- COLL 101: College Success 101 (2 credits)
- PHYS& 221: Engineering Physics I w/ Lab (5 credits)
- ENGR 106: Engineering Problems (3 credits)
- MATH& 151: Calculus I (5 credits)

### Second Quarter

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- PHYS& 222: Engineering Physics II w/ Lab (5 credits)
- MATH& 152: Calculus II (5 credits)
- ENGL& 101: English Comp I (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

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- MATH& 153: Calculus III (5 credits)

- PHYS& 223: Engineering Physics III w/ Lab (5 credits)
- CS 170: Computer Programming (5 credits)
- ENGR& 121: Engineering Graphics I (3 credits)

## Fourth Quarter

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- MATH& 254: Calculus IV (5 credits)
- ENGR& 214: Statics (5 credits)
- CHEM& 161: General Chemistry w/ Lab I (5 credits)
- ENGR& 122: Engineering Graphics II (3 credits)

**Apply for Financial Aid at transfer institution**

## Fifth Quarter

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- MATH 240: Differential Equations (5 credits)
- ENGR& 215: Dynamics (5 credits)
- Choose one:
  - ECON& 201: Micro Economics (5 credits)
  - ECON& 202: Macro Economics (5 credits)
- CHEM& 162: General Chemistry w/ Lab II (5 credits)

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

## Sixth Quarter

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- MATH 220: Linear Algebra (5 credits)
- ENGR& 225: Mechanics of Materials (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)
- ENGR& 123: Engineering Graphics III (3 credits)
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## Detailed Class Sequence

### 1. College Success

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COLL 101: College Success 101 (2 credits)

### 2. Pre-Major Requirement

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

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

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### 3. Elective

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ENGR 106: Engineering Problems (3 credits)

- *Prerequisite: High school or 100-level physics or chemistry, or instructor permission. Concurrent enrollment in MATH& 142.*

### 4. Math Requirement

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MATH& 151: Calculus I (5 credits)

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

### 5. Pre-Major Requirement

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

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

### 6. Math Requirement

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MATH& 152: Calculus II (5 credits)

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

### 7. Communications Requirement

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ENGL& 101: English Comp 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.*

### 8. Humanities / Diversity Requirement

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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*

### 9. Math Requirement

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MATH& 153: Calculus III (5 credits)

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

## 10. Pre-Major Requirement

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

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

## 11. Pre-Major Requirement

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CS 170: Computer Programming (5 credits)

- *Prerequisites: MATH 088 or MATH 097 with a grade of C or better and knowledge of Windows is required; or instructor permission.*

## 12. Elective

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ENGR& 121: Engineering Graphics I (3 credits)

- *It is recommended that sequence courses be completed at one institution.*

## 13. Elective

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MATH& 254: Calculus IV (5 credits)

- *Prerequisites: MATH& 153 with a grade of C or better.*
- *Required to transfer to WSUV at junior level*

## 14. Pre-Major Requirement

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ENGR& 214: Statics (5 credits)

- *Prerequisites: MATH& 151 and either PHYS& 221 or ENGR 106.*

## 15. Pre-Major Requirement

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

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

## 16. Elective

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ENGR& 122: Engineering Graphics II (3 credits)

- *Prerequisite: ENGR& 121 or instructor permission.*
- *It is recommended that sequence courses be completed at one institution.*

## 17. Math Requirement

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MATH 240: Differential Equations (5 credits)

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

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## 18. Pre-Major Requirement

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ENGR& 215: Dynamics (5 credits)

- *Prerequisites: ENGR& 214, MATH& 152, and PHYS& 221, or instructor permission.*

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## 19. Social Science Requirement

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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.*

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## 20. Pre-Major Requirement

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

- *Prerequisites: CHEM& 161*

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## 21. Math Requirement

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MATH 220: Linear Algebra (5 credits)

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

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## 22. Pre-Major Requirement

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ENGR& 225: Mechanics of Materials (5 credits)

- *Prerequisite: ENGR& 214, concurrent enrollment in MATH& 152, and*
- *PHYS& 222 or instructor permission.*

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## 23. Social Science / Diversity Requirement

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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*

## 24. Elective

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ENGR& 123: Engineering Graphics III (3 credits)

- *Prerequisite: ENGR& 121 and ENGR& 122 or instructor permission.*
- *Required to transfer to WSUV at junior level.*
- *It is recommended that sequence courses be completed at one institution.*

## **( [lowercolumbia.edu/program-maps/stem](http://lowercolumbia.edu/program-maps/stem) ) Program Maps for Science, Technology, Engineering and Math (STEM) ( [lowercolumbia.edu/program-maps/stem](http://lowercolumbia.edu/program-maps/stem) )**

- 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) )
- Bioengineering and Chemical Pre-Engineering - AS-T (Chemical Engineering 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) )
- 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 and Electrical Pre-Engineering - AS-T (2 Year Option) ( [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 (3 Year Option) ( [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) )
- Computer Science - AST ( [lowercolumbia.edu/program-maps/stem/AST-Computer-Science](http://lowercolumbia.edu/program-maps/stem/AST-Computer-Science) )
- Computer Science - AST (WSUV) ( [lowercolumbia.edu/program-maps/stem/AST-Computer-Science-WSU-V](http://lowercolumbia.edu/program-maps/stem/AST-Computer-Science-WSU-V) )
- 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 (2 Year Option) ( [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, Materials Science Engineering (3 Year Option) ( [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) )