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# Physics - AS-T

## 2022-23

### Program map for Physics Associate in Science-Transfer (AS-T)

A bachelor's degree in physics is an excellent preparation for advanced study in astronomy and astrophysics, atmospheric science, biophysics, chemical physics, computer science and engineering. Students can complete the first two years of studies toward a bachelor's degree and can also specialize in physics education. Professional careers include research positions with government, universities and private industrial laboratories, observatories and science museums.

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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- PHYS& 221: Engineering Physics I w/ Lab (5 credits)
- MATH& 151: Calculus I (5 credits)
- ENGL& 101: English Composition I (5 credits)
- COLL 101: College Success 101 (2 credits)

### Second Quarter

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- PHYS& 222: Engineering Physics II w/ Lab (5 credits)
- MATH& 152: Calculus II (5 credits)
- Choose one:
  - ANTH& 204: Archaeology (5 credits)
  - POLS& 202 American Government (5 credits)
  - PSYC& 100: General Psychology (5 credits)
  - SOC& 101: Introduction to Sociology (5 credits)

### Third Quarter

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

- MATH& 153: Calculus III (5 credits)
- Choose one:
  - ART& 100: Art Appreciation (5 credits)
  - CMST 250: Intercultural Communication (5 credits)
  - HIST& 126: World Civilization I (5 credits)

## Fourth Quarter

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- CHEM& 161: General Chemistry w/ Lab I (5 credits)
- MATH& 254: Calculus IV (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)

## Fifth Quarter

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- CHEM& 162: General Chemistry w/ Lab II (5 credits)
- MATH 240: Differential Equations (5 credits)
- ASTR& 101: Intro to Astronomy (5 credits)

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## Sixth Quarter

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- CHEM& 163: General Chemistry w/ Lab III (5 credits)
- MATH 220: Linear Algebra (5 credits)
- CS 170: Computer Programming (5 credits)

## Detailed Class Sequence

### 1. 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.*

### 2. Math Requirement

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MATH& 151: Calculus I (5 credits)

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

### 3. Communications Requirement

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ENGL& 101: English Comp I (5 credits)

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

#### 4. College Success

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COLL 101: College Success 101 (2 credits)

#### 5. Pre-Major Requirement

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

- *Prerequisites: PHYS& 221, MATH& 152 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. Social Science Requirement

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Choose one of these recommended courses:

- ANTH& 204: Archaeology (5 credits)
- POLS& 202 American Government (5 credits)
- PSYC& 100: General Psychology (5 credits)
- SOC& 101: Introduction to Sociology (5 credits)

#### 8. Pre-Major Requirement

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

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

#### 9. Pre-Major Requirement

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MATH& 153: Calculus III (5 credits)

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

#### 10. 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*

### 11. 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.*

### 12. Pre-Major Requirement

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MATH& 254: Calculus IV (5 credits)

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

### 13. Social Sciences 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*

### 14. Recommended Elective

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

- *Prerequisites: CHEM& 161*

### 15. Pre-Major Requirement

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MATH 240: Differential Equations (5 credits)

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

### 16. Recommended Elective

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ASTR& 101: Intro to Astronomy (5 credits)

### 17. Recommended Elective

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

- *Prerequisites: CHEM& 162*
- *It is recommended that sequence courses be completed at one institution.*

## 18. Pre-Major Requirement

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MATH 220: Linear Algebra (5 credits)

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

## 19. Recommended Elective

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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.*

## **( [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)