

# PHYSICS, A.S-T

An AS-T in Physics for Transfer will fulfill the requirements for students to transfer to a CSU institution as a Physics major. The courses in the AS-T in Physics for Transfer provide students with the ability to solve complex physics problems, to conduct research, and to read and think critically.

AS.PHY.OPTBAST and AS.PHY.OPTCAST

## Program Map

### Design Your Future!

Begin by exploring MSJC program maps to find career or transfer (<https://msjc.emsicc.com/?radius=&region=All%20Regions>) opportunities. Program maps show the recommended course sequence that leads to graduation or transfer. The maps were developed by program experts to give you the skills and knowledge you need to succeed.

- **Starting in Spring?** Choose Fall Semester 1 courses.
- **Are you a part-time student?** Start Fall Semester 1 courses and follow the course sequence.

## CSU: General Education Option B

| Fall Semester 1 |  | Units     |
|-----------------|--|-----------|
| MATH-211        | Analytic Geometry and Calculus I                 | 4         |
| ENGL-101        | College Composition                              | 3         |
| PHIL-101        | Introduction to Philosophy I                     | 3         |
| PS-101          | Introduction to American Government and Politics | 3         |
| COMM-100        | Public Speaking                                  | 3         |
| <b>Units</b>    |  | <b>16</b> |

| Spring Semester 1            |                                   | Units     |
|------------------------------|-----------------------------------|-----------|
| MATH-212                     | Analytic Geometry and Calculus II | 4         |
| Select one of the following: |                                   | 3         |
| ART-104                      | World Art                         |           |
| DAN-100                      | History and Appreciation of Dance |           |
| MUS-108                      | History of Jazz and Blues         |           |
| PHY-201                      | Mechanics and Wave Motion         | 4         |
| ENGL-103                     | Critical Thinking and Writing     | 3         |
| <b>Units</b>                 |                                   | <b>14</b> |

| Fall Semester 2              |                                    | Units     |
|------------------------------|------------------------------------|-----------|
| MATH-213                     | Analytic Geometry and Calculus III | 5         |
| PHY-202                      | Electricity and Magnetism          | 4         |
| or PHY-203                   | or Optics and Modern Physics       |           |
| HIST-111                     | U.S. History to 1877               | 3         |
| or HIST-112                  | or U.S. History Since 1865         |           |
| Select one of the following: |                                    | 4         |
| SPAN-101                     | Elementary Spanish I               |           |
| FREN-101                     | Elementary French I                |           |
| ASL-100                      | American Sign Language I           |           |
| <b>Units</b>                 |                                    | <b>16</b> |

| Spring Semester 2 |                           | Units |
|-------------------|---------------------------|-------|
| ANTH-101          | Biological Anthropology   | 3     |
| PHY-203           | Optics and Modern Physics | 4     |

|                              |  |           |
|------------------------------|--|-----------|
| CSIS-113A                    | C++ Programming - Level 1                  | 3         |
| Select one of the following: |  | 3         |
| PS/ETHS-103                  | Ethnic Politics in America                 |           |
| HIST/ETHS-160                | Black History in the American Context      |           |
| LIT/ETHS-275                 | Latinx/Chicanx Literature                  |           |
| LIT/ETHS-280                 | Multiethnic Literature (formerly ENGL-280) |           |
| ENVS-101                     | Environmental Science                      | 3         |
| <b>Units</b>                 |  | <b>16</b> |
| <b>Total Units</b>           |  | <b>62</b> |

**Recommended:** Students should take courses the summer before the Fall start of the semester.

## UC: General Education Option C

| Fall Semester 1 |  | Units     |
|-----------------|--|-----------|
| MATH-211        | Analytic Geometry and Calculus I                 | 4         |
| ENGL-101        | College Composition                              | 3         |
| PHIL-101        | Introduction to Philosophy I                     | 3         |
| PS-101          | Introduction to American Government and Politics | 3         |
| COMM-100        | Public Speaking                                  | 3         |
| <b>Units</b>    |  | <b>16</b> |

| Spring Semester 1            |                                   | Units     |
|------------------------------|-----------------------------------|-----------|
| MATH-212                     | Analytic Geometry and Calculus II | 4         |
| Select one of the following: |                                   | 3         |
| ART-104                      | World Art                         |           |
| DAN-100                      | History and Appreciation of Dance |           |
| MUS-108                      | History of Jazz and Blues         |           |
| PHY-201                      | Mechanics and Wave Motion         | 4         |
| ENGL-103                     | Critical Thinking and Writing     | 3         |
| <b>Units</b>                 |                                   | <b>14</b> |

| Summer 1     |                                    | Units    |
|--------------|------------------------------------|----------|
| MATH-213     | Analytic Geometry and Calculus III | 5        |
| SPAN-101     | Elementary Spanish I               | 4        |
| <b>Units</b> |                                    | <b>9</b> |

| Fall Semester 2              |                                   | Units     |
|------------------------------|-----------------------------------|-----------|
| MATH-218                     | Linear Algebra                    | 3         |
| Select one of the following: |                                   | 3         |
| ART-104                      | World Art                         |           |
| DAN-100                      | History and Appreciation of Dance |           |
| MUS-108                      | History of Jazz and Blues         |           |
| HIST-111                     | U.S. History to 1877              | 3         |
| or HIST-112                  | or U.S. History Since 1865        |           |
| CSIS-113A                    | C++ Programming - Level 1         | 3         |
| PHY-202                      | Electricity and Magnetism         | 4         |
| <b>Units</b>                 |                                   | <b>16</b> |

| Spring Semester 2            |                                       | Units |
|------------------------------|---------------------------------------|-------|
| BIOL-150                     | General Biology I                     | 4     |
| MATH-215                     | Differential Equations                | 4     |
| PHY-203                      | Optics and Modern Physics             | 4     |
| Select one of the following: |                                       | 3     |
| PS/ETHS-103                  | Ethnic Politics in America            |       |
| HIST/ETHS-160                | Black History in the American Context |       |

|                    |  |           |
|--------------------|--|-----------|
| LIT/ETHS-240       | American Indian Literature (formerly ENGL-240) |           |
| LIT/ETHS-275       | Latinx/Chicanx Literature                      |           |
| LIT/ETHS-280       | Multiethnic Literature (formerly ENGL-280)     |           |
| <b>Units</b>       |  | <b>15</b> |
| <b>Total Units</b> |  | <b>70</b> |

**Recommended:** Students should take courses the summer before the Fall start of the semester.

**NOTE:** If the Student does not place into MATH-211 Analytic Geometry and Calculus I or CHEM-101 General Chemistry I, they will need to take MATH-110 Pre-Calculus and/or CHEM-100 Introduction to Chemistry in the Summer before starting this plan. Students encouraged to check with the counselor to see if Java would be preferred over C++ by transfer institution.

## Requirements

| Course                       | Title                                     | Credits   |
|------------------------------|---|-----------|
| <b>Required Core Courses</b> |   |           |
| PHY-201                      | Mechanics and Wave Motion                 | 4         |
| PHY-202                      | Electricity and Magnetism                 | 4         |
| or PHY-202H                  | Honors Electricity and Magnetism          |           |
| PHY-203                      | Optics and Modern Physics                 | 4         |
| MATH-211                     | Analytic Geometry and Calculus I          | 4         |
| MATH-212                     | Analytic Geometry and Calculus II         | 4         |
| or MATH-212H                 | Honors Analytic Geometry and Calculus II  |           |
| MATH-213                     | Analytic Geometry and Calculus III        | 5         |
| or MATH-213H                 | Honors Analytic Geometry and Calculus III |           |
| <b>Total Units</b>           |   | <b>25</b> |

| Course  | Title | Credits      |
|---|-------|--------------|
| <b>Units for Major</b>  |       | <b>25</b>    |
| <b>CSU General Education or IGETC Pattern (<a href="https://catalog.msjc.edu/degrees-certificates-curricula/general-education-transfer-requirements/">https://catalog.msjc.edu/degrees-certificates-curricula/general-education-transfer-requirements/</a>)</b> |       | <b>37-39</b> |
| <b>Possible double counting: 7 units</b>  |       |              |
| <b>Transferable Electives (as needed to reach 60 CSU transferable units)</b>  |       |              |

**Total Units for A.S.-T Degree: 60 units**

The overall requirements for this Associates Degree for Transfer (ADT) can be met by:

- Completion of 60 semester units or 90 quarter units that are eligible for transfer to the California State University (CSU) or University of California (UC).
- Completion of California State University General Education-Breadth Requirements (CSUGE) or the Intersegmental General Education Transfer Curriculum (IGETC).
- Completion of a minimum of 18 semester units or 27 quarter units in a major or area of emphasis, as determined by the community college district.
- Completion of a minimum grade point average of 2.0.

ADTs also require that students earn a C or better in all courses required for the major or area of emphasis. A "P" (Pass) grade is acceptable if

pass is defined as a grade of C or better. ADTs are intended for students who plan to complete a bachelor's degree in a similar major at a CSU campus. A student completing an ADT is guaranteed admission to the CSU system, but not a particular campus or major. Students should meet with a Counselor to develop a comprehensive educational plan to further understand university and transfer requirements.

## Career Exploration

Discover information about careers that interest you!

1. Take a **Career Quiz** (<https://msjc.emsicc.com/assessment/>) to learn about yourself and receive career suggestions based on your interests.
2. Search available **in-demand jobs** (<https://msjc.emsicc.com/browse-careers/>) in your career areas of interest and find up-to-date salaries and education requirements.
3. Find the **MSJC Program** (<https://msjc.emsicc.com/browse-programs/>) that connects your interests to a career.

Note: There are no guaranteed positions for students completing these programs. Education and work experience required will vary by employer. The salary and benefits for specific occupations will be dependent on work experience, education, background, and employer.