

# A.S. IN PHYSICAL SCIENCE

Physical science is a branch of science which focuses on the study of non-living systems. The Associate in Science in Physical Science is designed to prepare students for transfer to four-year institutions as majors in chemistry, Earth science/geology or related science disciplines.

## Learning Outcomes

### A.S. Degree Level Student Learning Outcomes

Students completing the Physical Science A.S. Degree will:

1. Describe physical phenomena in multiple forms (verbal, pictorial, graphical and mathematical).
2. Qualitatively and quantitatively predict, analyze and/or explain the behavior of physical systems using fundamental physical principles and models.
3. Develop and implement a plan of experimental measurements and data analysis.

## Requirements

Students receiving this degree must meet the following requirements:

1. Complete the District General Education Pattern (<http://catalog.citruscollege.edu/programs-study/graduation-requirements-associate-degree/general-education-requirements-option-i/>), CSUGE (<http://catalog.citruscollege.edu/programs-study/graduation-requirements-associate-degree/general-education-requirements-transfer-csu-csuge-option-ii/>) or IGETC (<http://catalog.citruscollege.edu/programs-study/graduation-requirements-associate-degree/general-education-requirements-transfer-csu-uc-igetc-option-iii/>).

*If transferring to a CSU or UC students are strongly recommended to complete the CSUGE or IGETC General Education Patterns. Students looking to transfer to an out of state or private college should consult with a counselor for the appropriate GE pattern selection.*

2. Complete with a "C" or better each course as specified by the major.
3. Maintain an overall GPA of a 2.0 or better in all degree applicable coursework.
4. Meet the local area requirement of Kinesiology/Dance.

Code	Title	Units
<b>Required courses:</b>		
CHEM 111	General Chemistry I	5
MATH 190	Calculus with Analytic Geometry I	5
PHYS 201	Physics A: Mechanics	5

### Areas of Emphasis

Select one of the following areas of emphasis - Chemistry or Geology/Earth Science - and complete all required courses and electives within that area:

*Chemistry area of emphasis - required courses:*

CHEM 112	General Chemistry II	5
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*Chemistry area of emphasis - select eight (8) to ten (10) units from the following courses:<sup>1</sup>*

CHEM 210	Organic Chemistry A	3
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Code	Title	Units
CHEM 211L	Organic Chemistry A Laboratory	1
CHEM 220	Organic Chemistry B	3
CHEM 221L	Organic Chemistry B Laboratory	1
PHYS 202	Physics B: Thermodynamics and Electromagnetism	5
PHYS 203	Physics C: Waves, Optics & Modern Physics	5
<i>Geology/Earth Science area of emphasis - required courses:</i>		
ESCI 120	Physical Geology	4
ESCI 122	Earth History	3
<i>Geology/Earth Science area of emphasis - select six (6) to eight (8) units from the following courses:</i>		
CHEM 112	General Chemistry II	5
ESCI 124	Natural Disasters	3
ESCI 130	Physical Oceanography	3
PHYS 202	Physics B: Thermodynamics and Electromagnetism	5
PHYS 203	Physics C: Waves, Optics & Modern Physics	5
<b>Total Units</b>		<b>28-30</b>

<sup>1</sup> Students should consult their transfer institution regarding the transferability of the Organic Chemistry Sequence (CHEM 210 Organic Chemistry A, CHEM 211L Organic Chemistry A Laboratory, CHEM 220 Organic Chemistry B, AND CHEM 221L Organic Chemistry B Laboratory) as lower division.

## Curriculum Map

### 2- and 3- Year Curriculum Map Examples

These maps represent three possible pathways through the program and are only for reference.

\*It is highly recommended that you make an appointment (<https://www.citruscollege.edu/stdntsrvcounsel/Pages/ApptSchedule.aspx>) to create a customized education plan that fits your needs.

Note: Co-requisite MATH course (2 units) and/or substitute ENGL 101E (5 units) may be needed based on placement.

### Chemistry Emphasis 2-Year Map:

Course	Title	Units
<b>Fall Term 1</b>		
CHEM 110	Beginning General Chemistry	5
MATH 175	Pre-Calculus	6
ENGL 101 or ENGL 101H	Reading and Composition or Reading and Composition - Honors	4
KIN 170 or KIN 171 or KIN 171H or KIN 173	Fitness for Life or Health and Wellness in Society or Health and Wellness - Honors or Introduction to Nutrition	3
<b>Units</b>		<b>18</b>

Course	Title	Units
<b>Winter Term 1</b>		
SPCH 100	Interpersonal Communication	3
or SPCH 100H	or Interpersonal Communication - Honors	
or SPCH 101	or Public Address	
or SPCH 101H	or Public Address - Honors	
or SPCH 106	or Small Group Communication	
<b>Units</b>		<b>3</b>
<b>Spring Term 1</b>		
MATH 190	Calculus with Analytic Geometry I	5
CHEM 111	General Chemistry I	5
ENGL 104	Argumentative Writing and Critical Thinking	3
or ENGL 104H	or Argumentative Writing and Critical Thinking - Honors	
ARCH 250	History of Architecture: Prehistory to Mannerism	3
or ARCH 251	or History of Architecture: Baroque to the Present Day	
or ART 100	or Art History - Fundamentals of Global Art History	
or ART 105	or Art History - Topics in Contemporary Art	
or ART 108	or History of Photography	
or ART 110	or Introduction to the Visual Arts	
or ART 199	or Motion Picture Appreciation	
or ART 199H	or Motion Picture Appreciation - Honors	
or DANC 102	or History of Dance	
or MUSE 113	or History of Rock and Roll	
or THEA 101	or Introduction to Theatre Arts	
or THEA 101H	or Introduction to Theatre Arts - Honors	
<b>Units</b>		<b>16</b>
<b>Summer Term 1</b>		
POLI 103	American Government and Politics	3
or POLI 103H	or American Government and Politics - Honors	
<b>Units</b>		<b>3</b>
<b>Fall Term 2</b>		
MATH 191	Calculus with Analytic Geometry II	5
CHEM 112	General Chemistry II	5
PHYS 201	Physics A: Mechanics	5
or PHYS 201H	or Physics A: Mechanics - Honors	
ARCH 250	History of Architecture: Prehistory to Mannerism	3
or ARCH 251	or History of Architecture: Baroque to the Present Day	
or ART 100	or Art History - Fundamentals of Global Art History	
or ART 105	or Art History - Topics in Contemporary Art	
or ART 108	or History of Photography	
or ART 110	or Introduction to the Visual Arts	
or ART 199	or Motion Picture Appreciation	
or ART 199H	or Motion Picture Appreciation - Honors	
or DANC 102	or History of Dance	
or ENGL 290	or Ethnic Voices in Film	
or ENGL 293	or Children's Literature	
or ENGL 293H	or Children's Literature - Honors	
or ENGL 298	or Literature of the Bible	
or KIN 166	or American Food And Culture: Global Origins, History, and Current Impacts	
or MUSE 113	or History of Rock and Roll	
or PHIL 101	or Great Religions of the World	
or SOC 130	or Introduction to LGBTQ Studies	
or THEA 101	or Introduction to Theatre Arts	
or THEA 101H	or Introduction to Theatre Arts - Honors	
<b>Units</b>		<b>18</b>
<b>Spring Term 2</b>		
CHEM 210	Organic Chemistry A	3
CHEM 211L	Organic Chemistry A Laboratory	1
ETHN 101	Introduction to Ethnic Studies	3
or ETHN 116	or Introduction to Chicano/Latino Studies	
HIST 107	History of the United States before 1877	3
or HIST 107H	or History of the United States before 1877 - Honors	
or HIST 108	or History of the United States since 1877	
or HIST 108H	or History of the United States since 1877 - Honors	
or HIST 160	or History of Women in the United States	
PHYS 202	Physics B: Thermodynamics and Electromagnetism	5
or PHYS 203	or Physics C: Waves, Optics & Modern Physics	

Course	Title	Units
ANTH 210	Introduction to Cultural Anthropology	3
or ANTH 210H	or Introduction to Cultural Anthropology - Honors	
or PSY 101	or Introduction to Psychology	
or PSY 101H	or Introduction to Psychology - Honors	
or SOC 201	or Introduction to Sociology	
or SOC 201H	or Introduction to Sociology - Honors	
<b>Units</b>		<b>18</b>
<b>Total Units</b>		<b>76</b>

## Chemistry Emphasis 3-Year Map:

Course	Title	Units
<b>Fall Term 1</b>		
CHEM 110	Beginning General Chemistry	5
MATH 175	Pre-Calculus	6
ENGL 101	Reading and Composition	4
or ENGL 101H	or Reading and Composition - Honors	
<b>Units</b>		<b>15</b>
<b>Winter Term 1</b>		
ARCH 250	History of Architecture: Prehistory to Mannerism	3
or ARCH 251	or History of Architecture: Baroque to the Present Day	
or ART 100	or Art History - Fundamentals of Global Art History	
or ART 105	or Art History - Topics in Contemporary Art	
or ART 108	or History of Photography	
or ART 110	or Introduction to the Visual Arts	
or ART 199	or Motion Picture Appreciation	
or ART 199H	or Motion Picture Appreciation - Honors	
or DANC 102	or History of Dance	
or MUSE 113	or History of Rock and Roll	
or THEA 101	or Introduction to Theatre Arts	
or THEA 101H	or Introduction to Theatre Arts - Honors	
<b>Units</b>		<b>3</b>
<b>Spring Term 1</b>		
CHEM 111	General Chemistry I	5
MATH 190	Calculus with Analytic Geometry I	5
ENGL 104	Argumentative Writing and Critical Thinking	3
or ENGL 104H	or Argumentative Writing and Critical Thinking - Honors	
<b>Units</b>		<b>13</b>
<b>Summer Term 1</b>		
ANTH 210	Introduction to Cultural Anthropology	3
or ANTH 210H	or Introduction to Cultural Anthropology - Honors	
or PSY 101	or Introduction to Psychology	
or PSY 101H	or Introduction to Psychology - Honors	
or SOC 201	or Introduction to Sociology	
or SOC 201H	or Introduction to Sociology - Honors	
<b>Units</b>		<b>3</b>
<b>Fall Term 2</b>		
MATH 191	Calculus with Analytic Geometry II	5
CHEM 112	General Chemistry II	5
PHYS 201	Physics A: Mechanics	5
or PHYS 201H	or Physics A: Mechanics - Honors	
<b>Units</b>		<b>15</b>
<b>Winter Term 2</b>		
SPCH 100	Interpersonal Communication	3
or SPCH 100H	or Interpersonal Communication - Honors	
or SPCH 101	or Public Address	
or SPCH 101H	or Public Address - Honors	
or SPCH 106	or Small Group Communication	
<b>Units</b>		<b>3</b>
<b>Spring Term 2</b>		
MATH 210	Calculus with Analytic Geometry III	5
PHYS 202	Physics B: Thermodynamics and Electromagnetism	5
or PHYS 203	or Physics C: Waves, Optics & Modern Physics	
<b>Units</b>		<b>10</b>

Course	Title	Units
<b>Summer Term 2</b>		
ARCH 250	History of Architecture: Prehistory to Mannerism	3
or ARCH 251	or History of Architecture: Baroque to the Present Day	
or ART 100	or Art History - Fundamentals of Global Art History	
or ART 105	or Art History - Topics in Contemporary Art	
or ART 108	or History of Photography	
or ART 110	or Introduction to the Visual Arts	
or ART 199	or Motion Picture Appreciation	
or ART 199H	or Motion Picture Appreciation - Honors	
or DANC 102	or History of Dance	
or ENGL 290	or Ethnic Voices in Film	
or ENGL 293	or Children's Literature	
or ENGL 293H	or Children's Literature - Honors	
or ENGL 298	or Literature of the Bible	
or KIN 166	or American Food And Culture: Global Origins, History, and Current Impacts	
or MUSE 113	or History of Rock and Roll	
or PHIL 101	or Great Religions of the World	
or SOC 130	or Introduction to LGBTQ Studies	
or THEA 101	or Introduction to Theatre Arts	
or THEA 101H	or Introduction to Theatre Arts - Honors	
<b>Units</b>		<b>3</b>
<b>Fall Term 3</b>		
CHEM 210	Organic Chemistry A	3
CHEM 211L	Organic Chemistry A Laboratory	1
MATH 211	Differential Equations	5
PHYS 202	Physics B: Thermodynamics and Electromagnetism	5
or PHYS 203	or Physics C: Waves, Optics & Modern Physics	
<b>Units</b>		<b>14</b>
<b>Winter Term 3</b>		
HIST 107	History of the United States before 1877	3
or HIST 107H	or History of the United States before 1877 - Honors	
or HIST 108	or History of the United States since 1877	
or HIST 108H	or History of the United States since 1877 - Honors	
or HIST 160	or History of Women in the United States	
POLI 103	American Government and Politics	3
or POLI 103H	or American Government and Politics - Honors	
<b>Units</b>		<b>6</b>
<b>Spring Term 3</b>		
CHEM 220	Organic Chemistry B	3
CHEM 221L	Organic Chemistry B Laboratory	1
BIOL 108	Biology of Cancer	3
or BIOL 117	or Biology of Infectious Diseases	
or BIOL 145	or Environmental Science	
ETHN 101	Introduction to Ethnic Studies	3
or ETHN 116	or Introduction to Chicano/Latino Studies	
<b>Units</b>		<b>10</b>
<b>Total Units</b>		<b>95</b>

## Career Information

### Career Opportunities

There are a variety of careers you can do with this major.

To explore more about this major, schedule an appointment (<https://www.citruscollege.edu/stdntsrv/ctcenter/Pages/ApptSchedule.aspx>) with a career counselor.