

The City University of New York  
CURRICULUM DATA TRANSMITTAL SHEET

DEPARTMENT: **PHYSICAL SCIENCES**

DATE: **Spring 2018**

Title of Course or Degree Change: **A.S. PHYSICS**

Change(s) Initiated: (Please Check)

- |   |  |
|---|--|
| <input type="checkbox"/> Closing of Degree        | <input checked="" type="checkbox"/> Change in Degree or Certificate Requirements |
| <input type="checkbox"/> Closing of Certificate   | <input type="checkbox"/> Change in Degree Requirements (adding concentration)    |
| <input type="checkbox"/> New Certificate Proposal | <input type="checkbox"/> Change in Pre/Co-Requisite                              |
| <input type="checkbox"/> New Degree Proposal      | <input type="checkbox"/> Change in Course Designation                            |
| <input type="checkbox"/> New Course               | <input type="checkbox"/> Change in Course Description                            |
| <input type="checkbox"/> New 82 Course            | <input type="checkbox"/> Change in Course Title, Numbers Credit and/or Hour      |
| <input type="checkbox"/> Deletion of Course       | <input type="checkbox"/> Change in Academic Policy                               |
|   | <input type="checkbox"/> Pathways Submission:                                    |
|   | <input type="checkbox"/> Life and Physical Science                               |
|   | <input type="checkbox"/> Math and Quantitative Reasoning                         |
|   | <input type="checkbox"/> A. World Cultures and Global Issues                     |
|   | <input type="checkbox"/> B. U.S. Experience in its Diversity                     |
|   | <input type="checkbox"/> C. Creative Expression                                  |
|   | <input type="checkbox"/> D. Individual and Society                               |
|   | <input type="checkbox"/> E. Scientific World                                     |

Other (please describe):

PLEASE ATTACH PERTINENT MATERIAL TO ILLUSTRATE AND EXPLAIN ALL CHANGES

I. DEPARTMENTAL ACTION

Action by Department &/or Departmental Curriculum Committee, if required:

Date approved:

Signature, Committee Chairperson:

Signature, Department Chair:

Date:

Appended are:

1. Proposed Degree Requirements A.S. Physics
2. Proposed 4 semester Degree Map A.S. Physics
3. List of Proposed Changes A.S. Physics
4. Current catalog description A.S. Physics (Marked-up to show add/drop changes)
5. Proposed catalog description A.S. Physics

Reason for Changes:

Comport with CUNY Degree and Academic Standards policies memo of 20 July 2016 requiring degree to be 60 credits including all pre-requisites and completed 4 semesters.

## **Degree Requirement A.S. Physics**

**CUNY's General Education requirements:** [excluding math and science requirement]

One year of English Composition: ENG 12 & ENG 24 (6 crs.)

Group A: One semester World (3 crs.)

Group B: One semester United States (3 crs.)

Group C: One semester Creative (3 crs.)

Group D: One semester Individual (3 crs.)

***18 credits***

### **Department Major Requirements**

#### **Physical Science Requirements:**

CHM 1100 – General Chemistry I (4 crs.)

CHM 1200 – General Chemistry II (4 crs.)

EGR 2200 – Introduction to Electrical Engineering (3 crs.)

EGR 2300 – Introduction to Engineering Thermodynamics (3 crs.)

PHY 1300 – Advanced General Physics I (4 crs.)

PHY 1400 – Advanced General Physics II (4 crs.)

One of the following:

EPS 3100 – Meteorology (4 crs.) OR

EPS 3200 – Oceanography (4 crs.) OR

EPS 3600 – Planetology: A Trip Through the Solar System (4 crs.) OR

EPS 3300 – Physical Geology (4 crs.) OR

EPS 3500 – Introduction to Astronomy (4 crs.) OR

EPS 3600 – Planetology: A Trip Through the Solar System (4 crs.)OR

Advanced Elective Credits in PHY(4 crs.)

***26 credits***

#### **Mathematics Requirements:**

MAT 9900 Pre-Calculus (3 crs)

MAT 1500 Calculus I (3 crs)

MAT 1600 Calculus II (3 crs)

Two of the following:

MAT 2100 Calculus III (3 crs) OR

MAT 5500 Differential Equations (3 crs) OR

MAT 5600 Linear Algebra (3 crs) OR

***15 credits***

#### **Elective Credits**

***1 credits***

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***Total 60 credits***

## AS Physics Degree Map

CHM, ENG, MAT development (if required) 0 crs.

<p><b><u>Semester 1 (16 Credits)</u></b></p> <ul style="list-style-type: none"> <li>• CHM11 Chemistry I 4 crs.</li> <li>• ENG12 English Composition I 3 crs.</li> <li>• Group A or B or C or D 3 crs.</li> <li>• Group A or B or C or D 3 crs.</li> <li>• MAT 9900 Pre-Calculus 3 crs</li> </ul>	<p><b><u>Semester 2 (14 Credits)</u></b></p> <ul style="list-style-type: none"> <li>• CHM12 -Chemistry II 4 crs.</li> <li>• ENG24 -English Composition II 3 crs.</li> <li>• PHY13 -Advanced Physics I 4 crs.</li> <li>• MAT 1500 Calculus I 3 crs</li> </ul>
<p><b><u>Semester 3 (15 credits)</u></b></p> <ul style="list-style-type: none"> <li>• PHY14 Advanced Physics II 4 crs.</li> <li>• EPS 31, 32, 33, 35 or 36 4 crs.</li> <li>• Group A or B or C or D 3 crs.</li> <li>• MAT 1600 Calculus I 3 crs</li> <li>• Elective Credit .....1 crs.</li> </ul>	<p><b><u>Semester 4 (15 credits)</u></b></p> <ul style="list-style-type: none"> <li>• EGR 22 (Electric Circuits) 3 crs.</li> <li>• EGR 23 (Thermodynamics) 3 crs.</li> <li>• Group A or B or C or D 3 crs.</li> <li>• MAT 21, 55 or 56 .....3 crs</li> <li>• MAT 21, 55 or 56 .....3 crs</li> </ul>

PROPOSED CHANGES A.S. PHYSICS

FROM:

~~Required Core (4 Courses, 14 Credits):~~

Mathematical & Quantitative Reasoning Course\* ~~MAT 1500 – Calculus I (4 crs.)~~

TO:

Required Core (4 Courses, 13 Credits):

Mathematical & Quantitative Reasoning Course\* MAT 99 Pre-Calculus(3crs)

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FROM:

Flexible Core (6 Courses, 20 Credits):

E. Scientific World Designated Courses\*

~~MAT 1600 – Calculus II (4 crs.)~~

CHM 1200 – General Chemistry II (4 crs)

TO:

Flexible Core (6 Courses, 20 Credits):

E. Scientific World Designated Courses\*

**PHY 1300 – Advanced General Physics I (4 crs.)**

CHM 1200 – General Chemistry II (4 crs)

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FROM:

~~Major Requirements (5 to 6 Courses, 20 to 23 Credits):~~

~~PHY 1300 – Advanced General Physics I (4 crs.)~~

~~PHY 1400 – Advanced General Physics II (4 crs.) AND~~

~~Select only ONE, Either~~

~~MAT 5500 – Differential Equations (3 crs.) or~~

~~MAT 5600 – Linear Algebra (3 crs.)~~

OR

~~Select only ONE, Either~~

~~EGR 2200 – Introduction to Electrical Engineering (3 crs.) or~~

~~EGR 2300 – Introduction to Engineering Thermodynamics (3 crs.)~~

OR

~~Select only ONE, Either~~

~~EPS 3100 – Meteorology (4 crs.) OR~~

~~EPS 3200 – Oceanography (4 crs.) OR~~

~~EPS 3600 – Planetology: A Trip Through the Solar System (4 crs.) OR~~

~~EPS 3300 – Physical Geology (4 crs.) OR~~

~~EPS 3500 – Introduction to Astronomy (4 crs.) OR~~

~~EPS 3600 – Planetology: A Trip Through the Solar System (4 crs.)~~

OR

~~PHY 81XX – Independent Study (1 to 3 crs.)~~

Electives

~~DROP: 7 to 10 credits sufficient to meet required total of 60 credits~~

TO:

**Additional Department Degree Requirements:**

**Physical Science Requirements (4 Courses, 14 Credits):**

EGR 2200 – Introduction to Electrical Engineering (3 crs.)

EGR 2300 – Introduction to Engineering Thermodynamics (3 crs.)

PHY 1400 – Advanced General Physics II (4 crs.)

One of the following:

EPS 3100 – Meteorology (4 crs.) OR

EPS 3200 – Oceanography (4 crs.) OR

EPS 3600 – Planetology: A Trip Through the Solar System (4 crs.) OR

EPS 3300 – Physical Geology (4 crs.) OR

EPS 3500 – Introduction to Astronomy (4 crs.) OR

EPS 3600 – Planetology: A Trip Through the Solar System (4 crs.)OR

Advanced Elective Credits in PHY(4 crs.)

**Mathematics Requirements: (4 Courses, 12 Credits):**

MAT 1500 Calculus I (3 crs)

MAT 1600 Calculus II (3 crs)

Two of the following:

MAT 2100 Calculus III (3 crs) OR

MAT 5500 Differential Equations (3 crs) OR

MAT 5600 Linear Algebra (3 crs) OR

**1 credit sufficient to meet required total of 60 credits**

## CURRENT

### A.S. PHYSICS

ACADEMIC DEPARTMENT: Physical Sciences

HEGIS: 5619.00

PROGRAM CODE: 01042

CHAIRPERSON: Dr. John Mikalopas

OFFICE LOCATION: S-243

TELEPHONE: (718) 368-5746

The curriculum presented here applies to students who started the major in Fall 2017 or Spring 2018. If you enrolled as a matriculant prior to that, please see the *College Catalog* for the year you started the major as a matriculant for the curriculum requirements that apply to you.

***Consultation with the Program Advisor is required.***

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#### Learning Outcomes:

Upon successful completion of the Physics degree program requirements, graduates will:

1. be able to understand the fundamental laws, theories, and ideas of Physics (and related Mathematics and Physical Sciences)
  2. be able to evaluate and express empirical evidence supporting the fundamental laws, theories, and ideas of Physics (and related Mathematics and Physical Sciences)
  3. be able to apply the fundamental laws, theories, and ideas of Physics (and related Mathematics and Physical Sciences) to analyze problems or questions
  4. be able use the tools and methods of Physics (and related Mathematics and Physical Sciences) to gather, analyze, and interpret data
  5. be able to express themselves effectively in written exams and laboratory reports using the terminology, notations, and symbols of Physics (and related Mathematics and Physical Sciences)
  6. be able to understand the basic principles of Physics (and related Mathematics and Physical Sciences) underlying technological developments, scientific discovery, and matters of public policy and concern
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#### College Requirements:

Successful completion of CUNY Assessment Tests in Reading, Writing, and ACCUPLACER CUNY Assessment Test in Math with passing examination scores, unless otherwise exempt, or developmental courses may be required.

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#### Civic Engagement Experiences:

Two (2) Civic Engagement experiences satisfied by Civic Engagement Certified or Civic Engagement Component courses or approved outside activity.

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#### Writing Intensive Requirement:

One (1) Writing Intensive course in any discipline is required. Participation in a Learning Community that includes ENG 1200 or ENG 2400 also satisfies this requirement.

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*Refer to course descriptions for prerequisite, corequisite and/or pre-corequisite requirements*

~~DROP: Required Core (4 Courses, 14 Credits):~~

**ADD: Required Core (4 Courses, 13 Credits):**

**When Required Core Courses are specified for a category, they are required for the major**

ENG 1200      Composition I (3 crs.)

ENG 2400      Composition II (3 crs.)

Mathematical & Quantitative Reasoning Course\*

~~DROP: MAT 1500 — Calculus I (4 crs.)~~

**ADD: MAT 99 Pre-Calculus(3crs)**

Life & Physical Sciences Course\* - CHM 1100 – General Chemistry I (4 crs.)

\*This program has a waiver to require particular courses in the Common Core, otherwise more than the minimum credits for the degree may be necessary.

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**Flexible Core (6 Courses, 20 Credits):**

**When Flexible Core Courses are specified for a category, they are required for the major**

One course from each Group A to D (Group E is satisfied by the courses shown).

- A. World Cultures and Global Issues Designated Course
- B. U.S. Experience in its Diversity Designated Course
- C. Creative Expression Designated Course
- D. Individual and Society Designated Course
- E. Scientific World Designated Courses\*

~~DROP: MAT 1600 – Calculus II (4 crs.)~~

**ADD: PHY 1300 – Advanced General Physics I (4 crs.)**

CHM 1200 – General Chemistry II (4 crs.)

\*This program has a waiver to require particular courses in the Common Core, otherwise more than the minimum credits for the degree may be necessary.

*No more than two courses can be selected from the same discipline*

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**DROP:**

~~Major Requirements (5 to 6 Courses, 20 to 23 Credits):~~

~~PHY 1300 – Advanced General Physics I (4 crs.)~~

~~PHY 1400 – Advanced General Physics II (4 crs.) AND~~

~~MAT 5500 – Differential Equations (3 crs.) or~~

~~MAT 5600 – Linear Algebra (3 crs.)~~

~~OR~~

~~Select only ONE, Either~~

~~EGR 2200 – Introduction to Electrical Engineering (3 crs.) or~~

~~EGR 2300 – Introduction to Engineering Thermodynamics (3 crs.)~~

~~OR~~

~~Select only ONE, Either~~

~~EPS 3300 – Physical Geology (4 crs.) or~~

~~EPS 3500 – Introduction to Astronomy (4 crs.) or~~

~~EPS 3600 – Planetology: A Trip Through the Solar System (4 crs.)~~

~~OR~~

~~PHY 81XX – Independent Study (1 to 3 crs.)~~

**ADD**

**Additional Department Degree Requirements:**

**Physical Science Requirements (4 Courses, 14 Credits):**

EGR 2200 – Introduction to Electrical Engineering (3 crs.)

EGR 2300 – Introduction to Engineering Thermodynamics (3 crs.)

PHY 1400 – Advanced General Physics II (4 crs.)

One of the following:

EPS 3100 – Meteorology (4 crs.) OR

EPS 3200 – Oceanography (4 crs.) OR



EPS 3600 – Planetology: A Trip Through the Solar System (4 crs.) OR  
EPS 3300 – Physical Geology (4 crs.) OR  
EPS 3500 – Introduction to Astronomy (4 crs.) OR  
EPS 3600 – Planetology: A Trip Through the Solar System (4 crs.)OR  
Advanced Elective Credits in PHY(4 crs.)

**Mathematics Requirements: (4 Courses, 12 Credits):**

MAT 1500 Calculus I (3 crs)  
MAT 1600 Calculus II (3 crs)

Two of the following:

MAT 2100 Calculus III (3 crs) OR  
MAT 5500 Differential Equations (3 crs) OR  
MAT 5600 Linear Algebra (3 crs) OR

**Electives**

~~DROP:-7 to 10 credits sufficient to meet required total of 60 credits~~

**ADD:-1 credits sufficient to meet required total of 60 credits**

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**TOTAL CREDITS: 60**

## PROPOSED

### A.S. PHYSICS

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  5. be able to express themselves effectively in written exams and laboratory reports using the terminology, notations, and symbols of Physics (and related Mathematics and Physical Sciences)
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ENG 2400      Composition II (3 crs.)

Mathematical & Quantitative Reasoning Course\*

Mathematical & Quantitative Reasoning Course\* – MAT 9900 Pre-Calculus (3 crs.)

Life & Physical Sciences Course\* - CHM 1100 – General Chemistry I (4 crs.)

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**Flexible Core (6 Courses, 20 Credits):**

**When Flexible Core Courses are specified for a category, they are required for the major**

One course from each Group A to D (Group E is satisfied by the courses show.)

- A. World Cultures and Global Issues Designated Course
- B. U.S. Experience in its Diversity Designated Course
- C. Creative Expression Designated Course
- D. Individual and Society Designated Course
- E. Scientific World Designated Courses\*
  - PHY 1300 – Advanced General Physics I (4 crs.)
  - CHM 1200 – General Chemistry II (4 crs.)

\*This program has a waiver to require particular courses in the Common Core, otherwise more than the minimum credits for the degree may be necessary.

***No more than two courses can be selected from the same discipline***

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**Additional Department Degree Requirements:****Physical Science Requirements (4 Courses, 14 Credits):**

EGR 2200 – Introduction to Electrical Engineering (3 crs.)

EGR 2300 – Introduction to Engineering Thermodynamics (3 crs.)

PHY 1400 – Advanced General Physics II (4 crs.)

One of the following:

EPS 3100 – Meteorology (4 crs.) OR

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Advanced Elective Credits in PHY(4 crs.)

**Mathematics Requirements (4 Courses, 12 Credits):**

MAT 1500 Calculus I (3 crs)

MAT 1600 Calculus II (3 crs)

Two of the following:

MAT 2100 Calculus III (3 crs) OR

MAT 5500 Differential Equations (3 crs) OR

MAT 5600 Linear Algebra (3 crs) OR

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**Electives:**

1 credits sufficient to meet required total of 60 credits

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**TOTAL CREDITS: 60**