A-4 Alignment of Physics Courses with UH-System

Proposal to Align Course Numbering in Physics at UH Hilo with the UH System – January 2017

Background:
It has been found that the course number at UH Hilo for the following Physics courses interfere or do not align with equivalent courses at other UH System Institutions.

- PHYS 106 College Physics I (3)
- PHYS 106L College Physics I Lab (1) – New course approved for Fall 2017
- PHYS 107 College Physics II (3)
- PHYS 107L College Physics II Lab (1) – New course approved for Fall 2017
- PHYS 171 General Physics II: Elec & Magnetism (4)
- PHYS 171L General Physics II Lab (1)

A chart of the 10 UH System campuses and course equivalencies is provided below:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hilo</th>
<th>Manoa</th>
<th>West Oahu</th>
<th>UH Mauí</th>
<th>Haw CC</th>
<th>Hon CC</th>
<th>Kap CC</th>
<th>Kau CC</th>
<th>LCC</th>
<th>Win CC</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Physics I</td>
<td>106</td>
<td>151</td>
<td>151</td>
<td>151</td>
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<tr>
<td>College Physics I Lab</td>
<td>106L</td>
<td>151L</td>
<td>151L</td>
<td>151L</td>
<td>N/A</td>
<td>151L</td>
<td>151L</td>
<td>151L</td>
<td>151L</td>
<td>151L</td>
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<tr>
<td>College Physics II</td>
<td>107</td>
<td>152</td>
<td>152</td>
<td>152</td>
<td>152</td>
<td>152</td>
<td>152</td>
<td>152</td>
<td>152</td>
<td>152</td>
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<tr>
<td>College Physics II Lab</td>
<td>107L</td>
<td>152L</td>
<td>152L</td>
<td>152L</td>
<td>N/A</td>
<td>152L</td>
<td>152L</td>
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<td>152L</td>
</tr>
<tr>
<td>General Physics II:</td>
<td>171</td>
<td>272</td>
<td>N/A</td>
<td>272</td>
<td>171*</td>
<td>272</td>
<td>272</td>
<td>272</td>
<td>272</td>
<td>272</td>
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<tr>
<td>Elec &amp; Magnetism</td>
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</tr>
<tr>
<td>General Physics Lab II</td>
<td>171L</td>
<td>272L</td>
<td>N/A</td>
<td>272L</td>
<td>171L*</td>
<td>272L</td>
<td>272L</td>
<td>272L</td>
<td>272L</td>
<td>272L</td>
</tr>
<tr>
<td>General Physics III</td>
<td>270</td>
<td>274</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>274</td>
<td>274</td>
<td>N/A</td>
<td>274</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* Hawaii CC will be informed of this change and will also be aligning with the system wide numbering.

Proposal:
It is proposed that UH Hilo change the course numbering for the above-mentioned courses to align with the UH System Campuses. UH System Academic Planning and Policy has been consulted.

<table>
<thead>
<tr>
<th>Existing Number</th>
<th>New Number</th>
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<tbody>
<tr>
<td>PHYS 106</td>
<td>PHYS 151</td>
</tr>
<tr>
<td>PHYS 106L</td>
<td>PHYS 151L</td>
</tr>
<tr>
<td>PHYS 107</td>
<td>PHYS 152</td>
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<tr>
<td>PHYS 107L</td>
<td>PHYS 152L</td>
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<td>PHYS 171</td>
<td>PHYS 272</td>
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<td>PHYS 171L</td>
<td>PHYS 272L</td>
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<tr>
<td>PHYS 270</td>
<td>PHYS 274</td>
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</tbody>
</table>
The number of course credits and content for each course remains the same.

**PHYS 151 (Previously 106):**

*Existing:*

**Title:** College Physics I

**Course description:**
Principles of physics with the use of algebra and trigonometry. Covers electricity mechanics, oscillations, fluids, waves, kinetic theory and thermodynamics.

**Prerequisite:**
MATH 140x or MATH 140 or MATH 125. See also PHYS 170L which serves as the lab course.

**Catalog Description:**
**PHYS 106 College Physics I (3)** Principles of physics with the use of algebra and trigonometry. Covers electricity mechanics, oscillations, fluids, waves, kinetic theory and thermodynamics. Pre: MATH 140x or MATH 140 or MATH 125. See also PHYS 170L which serves as the lab course.

*Proposed:*

**Title:** College Physics I

**Course Description:**
Principles of physics with the use of algebra and trigonometry. Covers electricity mechanics, oscillations, fluids, waves, kinetic theory and thermodynamics.

**Prerequisite:**
MATH 140X or MATH 140 or MATH 125.

**Catalog Description:**
**PHYS 151 College Physics I (3)** Principles of physics with the use of algebra and trigonometry. Covers electricity mechanics, oscillations, fluids, waves, kinetic theory and thermodynamics. Pre: MATH 140x or MATH 140 or MATH 125. (Previously offered as PHYS 106)
**PHYS 151L (Previously 106L):**

Please note that PHYS 151L (Prev: 106L) is a new course that was approved for Fall 2017 implementation. Current not been posted in the catalog. This proposal would change numbering for the course prior to implementation.

**Title:** College Physics I Lab

**Course Description:**
A required laboratory supplement for PHYS 151; covers basic principles of experimentation and physical measurement. Presents illustrative experiments in mechanics, heat and waves.

**Prerequisite:**
PHYS 151 (which can be taken concurrently).

**Catalog Description:**
**PHYS 151L College Physics I Lab (1) (lab)** A required laboratory supplement for PHYS 151; covers basic principles of experimentation and physical measurement. Presents illustrative experiments in mechanics, heat and waves. Pre: PHYS 151 (Which can be taken concurrently)
**PHYS 152 (Previously 107):**

Existing:

Title: College Physics II

Course description:
Principles of physics with the use of algebra and trigonometry. Covers electricity, magnetism, optics, and rudiments of atomic and nuclear physics.

Prerequisite:
C or better in PHYS 106

Catalog Description:
**PHYS 107 College Physics II (3)** Principles of physics with the use of algebra and trigonometry. Covers electricity, magnetism, optics, and rudiments of atomic and nuclear physics. Pre: C or better in PHYS 106. See PHYS 171L, which serves as the lab course.

Proposed:

Title: College Physics II

Course Description:
Principles of physics with the use of algebra and trigonometry. Covers electricity, magnetism, optics, and rudiments of atomic and nuclear physics.

Prerequisite:
C or better in PHYS 151

Catalog Description:
**PHYS 152 College Physics II (3)** Principles of physics with the use of algebra and trigonometry. Covers electricity, magnetism, optics, and rudiments of atomic and nuclear physics. Pre: C or better in PHYS 151. (Previously offered as PHYS 107)
**PHYS 152L (Previously 107L):**

Please note that PHYS 152L (Prev: 107L) is a new course that was approved for Fall 2017 implementation. Current not been posted in the catalog. This proposal would change numbering for the course prior to implementation.

**Title:** College Physics II Lab

**Course Description:**
A required laboratory supplement for PHYS 152; presents illustrative experiments in electricity, magnetism and optics

**Prerequisites:**
PHYS 152 (which can be taken concurrently).

**Catalog Description:**
PHYS 152L College Phys II Lab (1) (lab) A required laboratory supplement for PHYS 152; presents illustrative experiments in electricity, magnetism and optics. Pre: PHYS 152 (which can be taken concurrently).
**PHYS 272 (Previously 171):**

*Existing:*

**Title:** Gen Physics II: Elec & Magnetism

**Course description:** Introductory calculus-based physics designed for students majoring in physical sciences or engineering. Covers electric fields and potentials, magnetic fields, Maxwell's equations and basic optics. One class hour is dedicated to the development of problem-solving skills in small-group sessions.

**Prerequisite:**
C or better in PHYS 170

**Catalog Description:**
**PHYS 171 Gen Phys II: Elec & Magnetism (4)** Introductory calculus-based physics designed for students majoring in physical sciences or engineering. Covers electric fields and potentials, magnetic fields, Maxwell's equations and basic optics. One class hour is dedicated to the development of problem-solving skills in small-group sessions. Pre: MATH 206 (which can be taken concurrently) and C or better in PHYS 170.

*Proposed:*

**Title:** College Physics II

**Course Description:** Introductory calculus-based physics designed for students majoring in physical sciences or engineering. Covers electric fields and potentials, magnetic fields, Maxwell's equations and basic optics. One class hour is dedicated to the development of problem-solving skills in small-group sessions.

**Prerequisite:**
C or better in PHYS 170

**Catalog Description:**
**PHYS 272 Gen Phys II: Elec & Magnetism (4)** Introductory calculus-based physics designed for students majoring in physical sciences or engineering. Covers electric fields and potentials, magnetic fields, Maxwell's equations and basic optics. One class hour is dedicated to the development of problem-solving skills in small-group sessions. Pre: MATH 206 (which can be taken concurrently) and C or better in PHYS 170. *(Previously offered as PHYS 171)*
PHYS 272L (Previously 171L):

Existing:

Title: Gen Physics II Lab

Course description:
A required laboratory supplement for PHYS 171; presents illustrative experiments in electricity, magnetism and optics.

Prerequisite:
PHYS 171 (which can be taken concurrently)

Catalog Description:
PHYS 171L Gen Phys II Lab (1) (lab) A required laboratory supplement for PHYS 171; presents illustrative experiments in electricity, magnetism and optics. Pre: PHYS 171 (which can be taken concurrently).

Proposed:

Title: Gen Physics II Lab

Course Description:
A required laboratory supplement for PHYS 171; presents illustrative experiments in electricity, magnetism and optics.

Prerequisite:
PHYS 272 (which can be taken concurrently)

Catalog Description:
PHYS 272L Gen Phys II Lab (1) (lab) A required laboratory supplement for PHYS 272; presents illustrative experiments in electricity, magnetism and optics. Pre: PHYS 272, which can be taken concurrently. (Previously offered as PHYS 171L)
**PHYS 274 (Previously 270):**

*Existing:*

Title: Gen Phys III: Intro Modern Phy

Course description:
Survey of contemporary physical theory and applications: special relativity; quantum physics; atomic structure and spectra, nuclear structure and reactions; elementary particles and fundamental forces

Prerequisite:
MATH 300 which can be taken concurrently and PHYS 170-171.

Catalog Description:
PHYS 270 Gen Phys III: Intro Modern Phy (3) Survey of contemporary physical theory and applications: special relativity; quantum physics; atomic structure and spectra, nuclear structure and reactions; elementary particles and fundamental forces. Pre: MATH 300 which can be taken concurrently and PHYS 170-171.

*Proposed:*

Title: Gen Phys III: Intro Modern Phy

Course description:
Survey of contemporary physical theory and applications: special relativity; quantum physics; atomic structure and spectra, nuclear structure and reactions; elementary particles and fundamental forces

Prerequisite:
MATH 300 which can be taken concurrently and PHYS 170 and 274.

Catalog Description:
PHYS 274 Gen Phys III: Intro Modern Phy (3) Survey of contemporary physical theory and applications: special relativity; quantum physics; atomic structure and spectra, nuclear structure and reactions; elementary particles and fundamental forces. Pre: MATH 300 which can be taken concurrently and PHYS 170 and 272. (Previously offered as PHYS 270)
Impacted Programs:

Many programs utilize these Physics courses as pre-requisites or include the courses as a part of their Program Requirements (detailed list below). We propose that by approval of this proposal, the Curriculum Office at UH Hilo is allowed to make amendments to all impacted programs at an administrative level separate of the existing Curriculum Change process.

Related Programs/Courses:

PHYS 106:
Related Programs:
- B.A. Biology
- B.A. Chemistry- Biosciences
- B.A. Geology
- B.S. Agriculture- Animal Science Pre-Veterinary
- B.S. Agriculture- Aquaculture
- B.A. Marine Science
- B.A. Natural Sciences
- Energy Science Certificate

Related Courses:
- ASTR 224
- ASTR 352
- PHYS 224
- MARE 440

PHYS 107:
Related Programs:
- B.A. Biology
- B.A. Chemistry- Biosciences
- B.S. Agriculture- Animal Science Pre-Veterinary
- B.A. Natural Science

Related Courses:
None

PHYS 171-171L:
Related Programs:
- B.A. Physics
- B.S. Astronomy
- B.A. Biology
- B.S. Biology- Cell, molecular and biomedical sciences track
- B.S. Biology- EEC track
- B.A. Chemistry- Biosciences
- B.A. Chemistry
- B.S. Computer Science
- B.S. Geology
- B.S. Marine Science
- B.A. Natural Sciences
Related Courses:
- ASTR/PHYS 230
- ASTR 250
- ASTR/PHYS 260
- ASTR/PHYS 260L
- CHEM 352
- PHYS 211
- PHYS 330
- PHYS 331
- PHYS/MATH 380

**PHYS 274: (Prev 270)**

Related Programs:
- B.A. Physics
- Physics Minor
- B.S. Astronomy
- B.A. Natural Sciences
- STEM Research Honors Certificate

Related Courses:
- PHYS 341
- PHYS 430
- ASTR 350
- ASTR 351
- ASTR 460

**Implementation Plan:**
The Physics Department Chair will obtain electronic approvals of the proposed numbering from the Department Chairs from all impacted departments, which will be attached to this document as supporting documentation.

Upon obtaining all electronic approvals, the document will be signed and made final by the following parties: Physics Department Chair and the Vice Chancellor for Academic Affairs.

The Curriculum Office will initiate all program and course modification proposals in Kuali Student Curriculum Management (KSCM) for all above-mentioned changes. The KSCM proposals will be Administratively Approved via a custom approval sequence by the Curriculum Office. All included in this proposal are proposed to be effective for Fall 2017 and the 2017-2018 UH Hilo Catalog.

\[\text{Signature}\]

Marianne Takamiya, PhD
Professor and Department Chair, Physics and Astronomy

\[\text{Date}\]

January 13, 2017

\[\text{Signature}\]

Matthew Platz, PhD
Vice Chancellor for Academic Affairs

\[\text{Date}\]

JAN 20 2017