114-115-116 Courses

The PHYS 114-115-116 introductory physics sequence is targeted for students in life sciences. Upon successful completion students should be able to develop algebra-based models to describe the physical world and apply them to other fields of science and everyday phenomena. Each course consists of two major components: lecture and tutorial. There is no lab component in these courses. But there are associated lab courses, PHYS 117-118-119. If you would like to take the lab course, or if your major requires the associated lab course, then we recommend taking the associated lab course concurrently.

<table>
<thead>
<tr>
<th>Course/Section</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>Physics 114 A</td>
<td>Usama al-Binni</td>
</tr>
<tr>
<td>Physics 114 B</td>
<td>David Smith</td>
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<tr>
<td>Physics 114 C</td>
<td>David Smith</td>
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<tr>
<td>Physics 115 A</td>
<td>Usama al-Binni</td>
</tr>
<tr>
<td>Physics 116 A</td>
<td>Amal al-Wahish</td>
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</tbody>
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PHYS 114

- **Prerequisites**: None
- **Recommendations**: A previous algebra course covering concepts such as trigonometry and exponential functions is strongly recommended, but it is not required.
- **Associated lab course**: PHYS 117
- **Contents**:
  - Scaling
  - One- and two-dimensional kinematics
  - Forces
  - Circular and rotational motion
  - Rotational dynamics
  - Static equilibrium
  - Momentum
  - Work and energy

PHYS 115

- **Prerequisites**: PHYS 114
- **Recommendations**: a minimum grade of 1.7 in PHYS 114
- **Associated lab course**: PHYS 118
- **Contents**:
  - Thermodynamics
• Ideal gas law
• Fluids
• Electric force, field, potential, and potential energy
• Electric circuits
• Magnetic field and force

PHYS 116

• **Prerequisites:** PHYS 115
• **Recommendations:** a minimum grade of 1.7 in PHYS 115
• **Associated lab course:** PHYS 119

• **Contents:**
  - Oscillations
  - Mechanical waves
  - Physical optics
  - Geometric optics
  - Electromagnetic waves
  - Matter waves
  - Atomic physics
  - Nuclear physics

Grading Standard

A student who understands some of the material very well but needs some improvement in the remaining material should get a grade of about 3.0.

Textbook

*College Physics A Strategic Approach, 4th edition, by Knight Jones Field*

Enrollment in these courses come with an access code for the eTextbook, which will be provided on the course syllabus. If you would also like a hardcopy of the textbook, it is available for purchase at the University Bookstore.

Department of Physics
University of Washington
Physics-Astronomy Building, Rm. C121
Box 351560
Seattle, WA 98195-1560

Phone: (206) 543-2770
Fax: (206) 685-0635
physrecp@uw.edu

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