Human Physiology (BA/BS)

Human physiology is the science of the mechanical, physical, and biochemical function of humans, and serves as the foundation of modern medicine. As a discipline, it connects science, medicine, and health and creates a framework for understanding how the human body adapts to stresses, physical activity, and disease.

Undergraduate students in human physiology complete preparatory science courses in chemistry, biology, mathematics and physics that prepare them for upper level coursework in human anatomy and physiology as well as courses that explore the functional and structural mechanisms underlying human health and performance across the life span. The majority of our students aspire to be professionals in health-science fields such as medicine, physical therapy, nursing, dentistry, pharmacy, education, and research.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Content Intellectual Breadth: Demonstrate content knowledge and understanding of terminology, concepts, and relationships in human anatomy and physiology.
- Inquiry: Utilize a broad foundation of anatomical relationships and physiological principles in analysis, application, and synthesis related to human physiology and pathophysiology.
- Critical Thinking: Critically evaluate scientific information to help make decisions with respect to personal health, clinical applications, and research in human physiology.
- Life-long Learning: Demonstrate life-long learning skills, which include deciding what needs to be learned, articulating a learning plan, and implementing this plan.
- Communication: Communicate effectively, to a variety of audiences, in various modes.
- Ethics Professionalism: Demonstrate knowledge of ethical and professional behavior related to academic integrity, communication with others, and during individual and cooperative work.

Program Learning Outcomes with Sub-Outcomes

1. Content & Intellectual Breadth: Demonstrate content knowledge and understanding of terminology, concepts, and relationships in human anatomy and physiology.
   1.1. Identify problems, articulate questions or hypotheses, and determine the need for information.
   1.2. Access and collect the needed information from appropriate primary and secondary sources.
   1.3. Use quantitative and qualitative methods, including the ability to recognize assumptions, draw inferences, make deductions, and interpret information to analyze problems in context and draw conclusions.

2. Inquiry: Utilize a broad foundation of anatomical relationships and physiological principles in analysis, application, and synthesis related to human physiology and pathophysiology.
   2.1. Recognize the complexity of problems and identify different perspectives from which problems and questions can be viewed.

2.2. Evaluate and report on conclusions, including discussing the basis for and strength of findings, and identify areas where further inquiry is needed.

3. Critical Thinking: Critically evaluate scientific information to help make decisions with respect to personal health, clinical applications, and research in human physiology.
   3.1. Identify, analyze, and evaluate reasoning and construct and defend reasonable arguments and explanations.

4. Life-long Learning: Demonstrate life-long learning skills, which include deciding what needs to be learned, articulating a learning plan, and implementing this plan.
   4.1. Demonstrate in-depth knowledge and skills in Human Physiology.
   4.2. Identify the fundamental principles of Human Physiology.
   4.3. Apply the research methods and theoretical models of Human Physiology to define, solve, and evaluate problems.
   4.4. Transfer knowledge and skills gained from general and specialized studies to new settings and complex problems.
   4.5. Demonstrate life-long learning skills, including the ability to place problems in personally meaningful contexts, reflect on one's own understanding, demonstrate awareness of what needs to be learned, articulate a learning plan, and act independently on the plan using appropriate resources.

5. Communication: Communicate effectively, to a variety of audiences, in various modes.
   5.1. Demonstrate general academic literacy, including how to respond to needs of audiences and to different kinds of rhetorical situations, analyze and evaluate reasons and evidence, and construct research-based arguments using Standard Written English.
   5.2. Effectively use the common genres and conventions for writing within Human Physiology.
   5.3. Prepare and deliver effective oral presentations.
   5.4. Collaborate effectively with others to share information, solve problems, or complete tasks.
   5.5. Produce effective visuals using different media.
   5.6. Apply the up-to-date technologies commonly used to research and communicate within Human Physiology.

6. Ethics & Professionalism: Demonstrate knowledge of ethical and professional behavior related to academic integrity, communication with others, and during individual and cooperative work.
   6.1. Assembling and analyzing a set of sources that students have determined are relevant to the issue they are investigating.
   6.2. Acknowledging clearly when and how they are drawing on the ideas or phrasings of others.
   6.3. Learning the conventions for citing documents and acknowledging sources appropriate to the field they are studying.
   6.4. Examine various concepts and theories of ethics and how to deliberate and assess claims about ethical issues.
   6.5. Apply ethical concepts and theories to specific ethical dilemmas students will experience in their personal and professional lives.
# Human Physiology Major Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td><strong>Lower-Division Requirements</strong></td>
<td></td>
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<tr>
<td>CH 221 &amp; CH 222 &amp; CH 223</td>
<td>General Chemistry I and General Chemistry II and General Chemistry III</td>
<td>12</td>
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<tr>
<td>or CH 224H &amp; CH 225H &amp; CH 226H</td>
<td>Advanced General Chemistry I and Advanced General Chemistry II and Advanced General Chemistry III</td>
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<tr>
<td>CH 227 &amp; CH 228 &amp; CH 229</td>
<td>General Chemistry Laboratory and General Chemistry Laboratory and General Chemistry Laboratory</td>
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<tr>
<td>or PHYS 204 &amp; PHYS 205 &amp; PHYS 206</td>
<td>Introductory Physics Laboratory and Introductory Physics Laboratory and Introductory Physics Laboratory</td>
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<tr>
<td>BI 211 &amp; BI 212 &amp; BI 213</td>
<td>General Biology I: Cells and General Biology II: Organisms and General Biology III: Ecology and Evolution (may substitute BI 214 for BI 213)</td>
<td>15</td>
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<tr>
<td>or BI 281H &amp; BI 282H &amp; BI 283H</td>
<td>Honors Biology I: Cells, Biochemistry and Physiology and Honors Biology II: Genetics and Molecular Biology and Honors Biology III: Evolution, Diversity and Ecology</td>
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<tr>
<td>MATH 246 or MATH 251</td>
<td>Calculus for the Biological Sciences I</td>
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<tr>
<td>PHYS 201 &amp; PHYS 202 &amp; PHYS 203</td>
<td>General Physics and General Physics and General Physics</td>
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<tr>
<td>or PHYS 251 &amp; PHYS 252 &amp; PHYS 253</td>
<td>Foundations of Physics I and Foundations of Physics I and Foundations of Physics I</td>
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<td>HPHY 211</td>
<td>Medical Terminology</td>
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<td>HPHY 212</td>
<td>Scientific Investigation in Physiology</td>
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<tr>
<td><strong>Upper-Division Requirements</strong></td>
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<tr>
<td>HPHY 321 &amp; HPHY 322 &amp; HPHY 323 &amp; HPHY 324 &amp; HPHY 325 &amp; HPHY 326 &amp; HPHY 327</td>
<td>Human Anatomy I and Human Physiology I and Human Anatomy II and Human Physiology II and Human Anatomy and Physiology III</td>
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<tr>
<td>HPHY 360 &amp; HPHY 411 &amp; HPHY 420</td>
<td>Neurobiology and Medical Terminology and Scientific Teaching and Human Anatomy Dissection</td>
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<tr>
<td><strong>Upper-Division Electives</strong></td>
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<tr>
<td>Select at least two of the following:</td>
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<tr>
<td>HPHY 333</td>
<td>Motor Control</td>
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<tr>
<td>HPHY 362</td>
<td>Tissue Injury and Repair</td>
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<tr>
<td>HPHY 374</td>
<td>Clinical Electrocardiography and Exercise</td>
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<td>HPHY 375</td>
<td>Metabolism and Nutrition</td>
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<td>HPHY 381</td>
<td>Biomechanics</td>
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<td>HPHY 399</td>
<td>Special Studies: [Topic]</td>
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<td>ANTH 362</td>
<td>Human Biological Variation</td>
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<td>ANTH 366</td>
<td>Human Osteology Laboratory</td>
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<td>ANTH 369</td>
<td>Human Growth and Development</td>
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<td>BI 309</td>
<td>Tropical Diseases in Africa</td>
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<tr>
<td>BI 320</td>
<td>Molecular Genetics</td>
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<tr>
<td>BI 322</td>
<td>Cell Biology</td>
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<tr>
<td>BI 358</td>
<td>Investigations in Medical Physiology</td>
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<tr>
<td><strong>Total Credits</strong></td>
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<td>101</td>
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</tbody>
</table>

1. Should be taken in the first year.
2. Must be taken in residence at the University of Oregon.

Courses required for the major must be taken for letter grades and passed with grades of C- or better. Additional requirements for the bachelor’s degree are described in the Bachelor’s Degree Requirements section of this catalog.

## Honors

To apply to graduate with departmental honors, a student must have a GPA of 3.50 or better in courses applied toward the human physiology degree requirements and complete an honors thesis under the supervision of a human physiology thesis committee. In addition, human physiology majors enrolled in the Robert Donald Clark Honors College at the University of Oregon are eligible to complete an honors thesis through that program.

## Four-Year Degree Plan

The degree plan shown is only a sample of how students may complete their degrees in four years. There are alternative ways. Students should consult their advisor to determine the best path for them.

The bachelor of science is shown below. A bachelor of arts in human physiology may be earned by completing (or demonstrating proficiency in) two years of a foreign language.
### Bachelor of Science in Human Physiology

#### Course Title Credits Milestones

**First Year**

**Fall**
- **MATH 112Z** Precalculus II: Trigonometry $^1$ 4
- **CH 221** General Chemistry I 4
- **CH 227** General Chemistry Laboratory 2
- General-education course $^2$ 4
- Elective course 1

**Credits** 15

**Winter**
- **WR 121Z** Composition I 4
- **CH 222** General Chemistry II 4
- **CH 228** General Chemistry Laboratory 2
- **MATH 251** Calculus I or **MATH 246** Calculus for the Biological Sciences I 4
- Elective course 2

**Credits** 16

**Spring**
- **CH 223** General Chemistry III 4
- General-education course $^2$ 4
- Elective course 2

**Credits** 16

**Total Credits** 47

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**Second Year**

**Fall**
- **BI 211** General Biology I: Cells 5
- **HPHY 211** Medical Terminology 3
- General-education course $^2$ 4
- Elective course 4

**Credits** 16

**Winter**
- **BI 212** General Biology II: Organisms 5
- **HPHY 212** Scientific Investigation in Physiology 4
- General-education course $^2$ 4
- Elective course 4

**Credits** 17

**Spring**
- **WR 122Z** Composition II or **WR 123** College Composition III 4
- **BI 213** General Biology III: Ecology and Evolution or **BI 214** General Biology IV: Biochemistry and Genetics 5

**Credits** 45

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1. Students not starting in Precalculus II: Trigonometry (MATH 112Z) may require additional terms to graduate.
To complete general-education requirements within eight courses, students must take arts and letters or social science group-satisfying courses that also satisfy multicultural requirements.

List A and List B options may be found online. (https://cas.uoregon.edu/physiology/undergraduates/major-requirements/)