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.
4.6. Achieve success in Human Physiology, including applying persistence, motivation, interpersonal communications, leadership, goal setting, and career skills.

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

Code	Title	Credits
Lower-Division Requirements		
CH 221Z	General Chemistry I [1]	4
or CH 224H	Advanced General Chemistry I	

CH 222Z	General Chemistry II [1]	4
or CH 225H	Advanced General Chemistry II	
CH 223Z	General Chemistry III [1]	4
or CH 226H	Advanced General Chemistry III	
Select one of the following:		
Option A: [2]		6
CH 227Z & CH 217	General Chemistry I Laboratory and Chemistry Tools I	
CH 228Z & CH 218	General Chemistry II Laboratory and Chemistry Tools II	
CH 229Z & CH 219	General Chemistry III Laboratory and Chemistry Tools III	
Option B:		
PHYS 204–206	Introductory Physics Laboratory	
BI 221Z & BI 222Z & BI 223Z	Principles of Biology I: Cells and Principles of Biology II: Organisms and Principles of Biology III: Ecology and Evolution (may substitute BI 214 for BI 223Z)	15-18
or BI 281H & BI 282H & BI 283H	Accelerated Biology I: Cells, Biochemistry and Physiology and Accelerated Biology II: Genetics and Molecular Biology and Accelerated Biology III: Evolution, Diversity and Ecology	
PHYS 201–203	General Physics [3]	12
or PHYS 251–253	Foundations of Physics I	
MATH 246	Calculus for the Biological Sciences I [1]	4
or MATH 251Z	Differential Calculus	
HPHY 211	Medical Terminology	3
HPHY 212	Scientific Investigation in Physiology	4
Upper-Division Requirements		
HPHY 321	Human Anatomy I [4]	5
HPHY 322	Human Physiology I [4]	5
HPHY 323	Human Anatomy II [4]	5
HPHY 324	Human Physiology II [4]	5
HPHY 325	Human Anatomy and Physiology III [4]	5
HPHY 371	Physiology of Exercise	4
Upper-Division Electives [5]		**16**
List A - select at least two of the following:		
HPHY 333	Motor Control	
HPHY 362	Tissue Injury and Repair	
HPHY 374	Clinical Electrocardiography and Exercise	
HPHY 375	Metabolism and Nutrition	
HPHY 381	Biomechanics	
HPHY 399	Special Studies: [Topic]	
ANTH 362	Human Biological Variation	
ANTH 366	Human Osteology Laboratory	
ANTH 369	Human Growth and Development	
BI 320	Molecular Genetics	
BI 322	Cell Biology	
BI 358	Investigations in Medical Physiology	
BI 360	Neurobiology	
CH 360	Physiological Biochemistry	
CH 462	Biochemistry	
List B - select at least one of the following capstone courses:		
HPHY 412	Sleep Physiology	
HPHY 413	Muscle Structure, Function, and Plasticity	
HPHY 414	Muscle Metabolism	
HPHY 422	Physiology of Obesity	
HPHY 423	Physiology of Aging	
HPHY 432	Neural Development	
HPHY 433	Neurophysiology of Concussion	
HPHY 434	Movement Disorders	
HPHY 436	Clinical Neuroscience	
HPHY 462	Therapeutic Techniques	
HPHY 470	Environmental Physiology	
HPHY 473	High Altitude Physiology and Medicine	
List C - select any of the following (optional):		
HPHY 401	Research: [Topic]	
HPHY 403	Thesis	
HPHY 404	Internship: [Topic]	
HPHY 405	Special Problems: [Topic]	
HPHY 406	Practicum: [Topic]	
HPHY 408	Workshop: [Topic]	
HPHY 409	Terminal Project	
HPHY 411	Scientific Teaching	
HPHY 420	Human Anatomy Dissection	
Total Credits		**101-104**

1. Should be taken in the first year.
2. Students who transfer CH 227Z/228Z/229Z credits from other schools may have the corresponding CH 217/218/219 course and credit requirements waived.
3. Students may also take PHYS 251, 202, and 203 or PHYS 251, 252, and 203. Students may not go from the 201-203 series to the 251-253 series without approval from the department.
4. Must be taken in residence at the University of Oregon.
5. Students must take two courses from List A, one course from List B, and one course from List A, B, or C (total of 16 credits).

Courses required for the major must be taken for letter grades and passed with grades of C- or better.

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 221Z	General Chemistry I	4	
CH 227Z	General Chemistry I Laboratory	1	
Core-education course [2]		4	
Elective course		1	
	Credits	**14**	
Winter			
WR 121Z	Composition I	4	
CH 222Z	General Chemistry II	4	
CH 228Z	General Chemistry II Laboratory	1	
MATH 251Z or MATH 246	Differential Calculus or Calculus for the Biological Sciences I	4	
Elective course		2	
	Credits	**15**	
Spring			
CH 223Z	General Chemistry III	4	
CH 229Z	General Chemistry III Laboratory	1	
STAT 243Z	Elementary Statistics I	4	
Core-education course [2]		4	
Elective Course		2	
	Credits	**15**	
Second Year			
Fall			
BI 221Z	Principles of Biology I: Cells	5	
HPHY 211	Medical Terminology	3	
Core-education course [2]		4	
Elective course		4	
	Credits	**16**	
Winter			
BI 222Z	Principles of Biology II: Organisms	5	
HPHY 212	Scientific Investigation in Physiology	4	
Core-education course [2]		4	
Elective course		4	
	Credits	**17**	
Spring			
WR 122Z or WR 123	Composition II or College Composition III	4	
BI 223Z or BI 214	Principles of Biology III: Ecology and Evolution or General Biology IV: Biochemistry and Genetics	5	
Core-education course [2]		4	
Elective course		4	
	Credits	**17**	
Third Year			
Fall			
HPHY 321	Human Anatomy I	5	
HPHY 322	Human Physiology I	5	
Upper-division elective courses		3	
	Credits	**13**	
Winter			
HPHY 323	Human Anatomy II	5	
HPHY 324	Human Physiology II	5	
Upper-division elective courses		3	
	Credits	**13**	
Spring			
HPHY 325	Human Anatomy and Physiology III	5	
HPHY 371	Physiology of Exercise	4	Completion of HPHY 321-325 & 371
Core-education course [2]		4	
Upper-division elective course		2	
	Credits	**15**	
Fourth Year			
Fall			
PHYS 201	General Physics	4	
Human physiology course chosen from List A [3]		4	
Core-education course [2]		4	
Upper-division elective course		3	
	Credits	**15**	
Winter			
PHYS 202	General Physics	4	
Human physiology course chosen from List A [3]		4	
Human physiology course chosen from List B [3]		4	
Upper-division elective course		3	
	Credits	**15**	
Spring			
PHYS 203	General Physics	4	
Human physiology course chosen from List A or List B [3]		4	
Core-education course [2]		4	
Upper-division elective course		3	
	Credits	**15**	
	Total Credits	**180**	

1. Students not starting in Precalculus II: Trigonometry (MATH 112Z) may require additional terms to graduate.
2. To complete core-education requirements within eight courses, students must take arts and letters or social science area-satisfying courses that also satisfy cultural literacy requirements.
3. List A and List B options may be found online. (https://cas.uoregon.edu/physiology/undergraduates/major-requirements/)