

Human Physiology, BS

Learning Outcomes

The BS degree in human physiology:

- provides a broad understanding of the form (anatomy) and function (physiology) of the human body through evaluation of organ system function and integrative function across systems in health and disease;
- prepares students to employ their fundamental knowledge of human physiology together with the scientific method, disciplinary research, and evidence-based reasoning to solve problems in their chosen professional and/or graduate career fields;
- develops skills and interpersonal competencies relevant to a diverse range of career pathways; and
- instills an understanding and appreciation of the relevance of healthy behaviors to a fulfilling and productive life, and the importance of lifelong learning in the rapidly evolving fields of human physiology and the health sciences.

Requirements

The Bachelor of Science with a major in human physiology requires a minimum of 120 s.h., including 63 s.h. of work for the major. Students must maintain a grade-point average of at least 2.00 in all courses for the major and in all UI courses for the major. They must also complete the College of Liberal Arts and Sciences GE CLAS Core. Transfer students must complete a minimum of 16 s.h. in human physiology coursework at the University of Iowa, including HHP:3550 Human Physiology With Laboratory.

The major in human physiology is designed primarily for individuals who intend to continue their education beyond the BS in the health professions, including medicine, physician assistant, physical therapy, dentistry, occupational therapy, chiropractic, and optometry, and for those who intend to pursue graduate degrees in basic life sciences.

Students may complete the BS with a major in human physiology without an emphasis area or with one of three optional emphasis areas: clinical physiology, neuromuscular physiology and metabolism, or research.

Students may earn a BS in human physiology, health promotion, or exercise science, but not more than one of these.

Students who earn a BS in human physiology may not earn the minor in human physiology.

For policies concerning transfer credit, credit by examination, cumulative grade-point average, general rules relating to regression and duplication, and so forth, see For Undergraduate Students on the College of Liberal Arts and Sciences website.

The BS with a major in human physiology requires the following coursework.

| Requirements | Hours |
|------------------|-------|
| Core Courses | 14 |
| Elective Courses | 18 |

| | |
|----------------------|----|
| Cognate Area Courses | 31 |
| Area of Emphasis | |

Core Courses

| Course # | Title | Hours |
|---------------|---------------------------------------|-------|
| All of these: | | |
| HHP:1050 | Exploring Health and Human Physiology | 1 |
| HHP:3115 | Anatomy for Human Physiology With Lab | 5 |
| HHP:3550 | Human Physiology With Laboratory | 5 |
| One of these: | | |
| HHP:2200 | Physical Activity and Health | 3 |
| HHP:2280 | Cultural Competency and Health | 3 |
| HHP:2310 | Nutrition and Health | 3 |

Elective Courses

At least 18 s.h. from these with at least 12 s.h. in health, sport, and human physiology courses (prefix HHP).

| Course # | Title | Hours |
|--|---|-------|
| At least 6 s.h. from these (organ system-based courses): | | |
| HHP:3450 | Immunology in Health and Disease | 3 |
| HHP:4110 | Advanced Human Anatomy Laboratory | 4 |
| HHP:4130 | Skeletal Muscle Physiology | 3 |
| HHP:4260 | Respiratory Pathophysiology | 3 |
| HHP:4300 | Neurophysiology | 3 |
| HHP:4460 | Cardiovascular Physiology | 3 |
| At least 3 s.h. from these (integrative physiology courses): | | |
| HHP:4150 | Clinical Exercise Physiology | 3 |
| HHP:4250 | Human Pathophysiology | 3 |
| HHP:4410 | Integrative Physiology of Exercise | 3 |
| HHP:4470/ASP:4470 | Physiology of Aging | 3 |
| HHP:4510 | Energetics in Health and Disease | 3 |
| May include up to 9 s.h. from these: | | |
| HHP:3300 | Human Growth and Motor Development | 3 |
| HHP:3700 | Health Care Communications | 1 |
| HHP:3900 | Writing for Health and Human Physiology | 3 |
| HHP:3994 | Undergraduate Research (may be repeated; up to 3 s.h. may be applied toward the degree) | 1-3 |
| HHP:4197 | Therapeutic Recreation: Experiences in Adaptive and Inclusive Sports | 3 |
| HHP:4200 | Metabolic Exercise Testing and Prescription | 4 |
| HHP:4210 | Musculoskeletal Exercise Testing and Prescription | 4 |

| | | |
|---------------------------|--|------|
| HHP:4230 | Motor Learning: Theory and Application | 3 |
| HHP:4440 | Physiology of Nutrition | 3 |
| HHP:4450 | Human Genetics and Disease | 3-4 |
| HHP:4490 | International Health: Experiential Learning (may be repeated; up to 3 s.h. may be applied toward the degree) | 3 |
| HHP:4500 | Undergraduate Independent Project (may be repeated; up to 3 s.h. may be applied toward the degree) | arr. |
| HHP:4700 | Health and Human Physiology Teaching Internship | 2-3 |
| HHP:4800 | Research Methods | 3 |
| HHP:4900 | Honors Research | 3 |
| HHP:4910 | Honors Research II | 3 |
| HHP:4930 | Health and Human Physiology Internship (may be repeated; up to 3 s.h. may be applied toward the degree) | arr. |
| BIOL:2254 | Endocrinology | 3 |
| BIOL:2723 | Cell Biology | 3 |
| BMB:3110 | Biochemistry | 3 |
| MICR:2157 | General Microbiology | 3 |
| MICR:2158 | General Microbiology Laboratory | 2 |
| May include one of these: | | |
| PSY:2130 | Advanced Psychology for Pre-Medical Track | 3 |
| PSY:2930 | Abnormal Psychology: Health Professions | 3 |
| SOC:3510 | Medical Sociology | 3 |

Cognate Area Courses

Students must earn a minimum of 31 s.h. in cognate areas—subjects outside of human physiology—by completing courses from the following lists.

| Course # | Title | Hours |
|-----------------------|---|-------|
| Biology | | |
| This sequence: | | |
| BIOL:1411 & BIOL:1412 | Foundations of Biology and Diversity of Form and Function | 8 |
| Chemistry | | |
| This sequence: | | |
| CHEM:1110 & CHEM:1120 | Principles of Chemistry I and Principles of Chemistry II | 8 |
| Mathematics | | |
| One of these: | | |
| MATH:1460 | Calculus for the Biological Sciences | 4 |
| MATH:1550 | Engineering Calculus I | 4 |
| MATH:1850 | Calculus I | 4 |
| Physics | | |

| | | |
|-----------------------|--|---|
| This sequence: | | |
| PHYS:1511 & PHYS:1512 | College Physics I and College Physics II | 8 |
| Statistics | | |
| One of these: | | |
| STAT:2010 | Statistical Methods and Computing | 3 |
| STAT:3510/IGPI:3510 | Biostatistics | 3 |
| STAT:4143/PSQF:4143 | Introduction to Statistical Methods | 3 |

Areas of Emphasis

Students majoring in human physiology may declare an emphasis area but are not required to do so to satisfy major requirements. Declaring an emphasis area does not require completion of elective coursework beyond that already required for the major. Major elective requirements can be met through emphasis area courses.

Clinical Physiology Area

| Course # | Title | Hours |
|----------------|---|-------|
| Four of these: | | |
| HHP:3450 | Immunology in Health and Disease | 3 |
| HHP:4150 | Clinical Exercise Physiology | 3 |
| HHP:4200 | Metabolic Exercise Testing and Prescription | 4 |
| HHP:4250 | Human Pathophysiology | 3 |
| HHP:4260 | Respiratory Pathophysiology | 3 |
| HHP:4460 | Cardiovascular Physiology | 3 |

Neuromuscular Physiology and Metabolism Area

| Course # | Title | Hours |
|----------------|--|-------|
| Four of these: | | |
| HHP:4110 | Advanced Human Anatomy Laboratory | 4 |
| HHP:4130 | Skeletal Muscle Physiology | 3 |
| HHP:4230 | Motor Learning: Theory and Application | 3 |
| HHP:4300 | Neurophysiology | 3 |
| HHP:4410 | Integrative Physiology of Exercise | 3 |
| HHP:4510 | Energetics in Health and Disease | 3 |

Research Area

| Course # | Title | Hours |
|------------------------|--|-------|
| All of these: | | |
| HHP:3994 | Undergraduate Research | 3-6 |
| or HHP:4900 & HHP:4910 | Honors Research and Honors Research II | |
| HHP:4800 | Research Methods | 3 |

Honors

Honors in the Major

Students have the opportunity to graduate with honors in the major. Departmental honors students must maintain an

overall grade-point average (GPA) of at least 3.33 in work for their major and a cumulative University of Iowa GPA of at least 3.33.

In order to graduate with honors in the major, students must successfully complete the honors research course sequence HHP:4900 Honors Research and HHP:4910 Honors Research II; write an honors thesis that is judged to be of honors quality; and make an oral or poster presentation of the honors thesis in an approved venue, such as a department research seminar or professional conference.

University of Iowa Honors Program

In addition to honors in the major, students have opportunities for honors study and activities through membership in the University of Iowa Honors Program. Visit Honors at Iowa to learn about the university's honors program.

Membership in the UI Honors Program is not required to earn honors in the human physiology major.

Career Advancement

The Pomerantz Career Center offers multiple resources to help students find internships and jobs.

Academic Plans

Four-Year Graduation Plan

The following checkpoints list the minimum requirements students must complete by certain semesters in order to stay on the university's Four-Year Graduation Plan. Courses in the major are those required to complete the major; they may be offered by departments other than the major department.

Before the fifth semester begins: calculus and at least six more courses in the major.

Before the seventh semester begins: at least six more courses in the major (total of 13) and at least 90 s.h. earned toward the degree.

Before the eighth semester begins: at least two more courses in the major (total of 15).

During the eighth semester: enrollment in all remaining coursework in the major, all remaining GE CLAS Core courses, and a sufficient number of semester hours to graduate.

Sample Plan of Study

Sample plans represent one way to complete a program of study. Actual course selection and sequence will vary and should be discussed with an academic advisor. For additional sample plans, see MyUI.

Human Physiology, BS

| Course | Title | Hours |
|---|-------|----------|
| Academic Career | | |
| Any Semester | | |
| Transfer students must complete a minimum of 16 s.h. in human physiology coursework at the University of Iowa, including HHP:3550 Human Physiology with Laboratory. | | |
| GE CLAS Core: Sustainability ^a | | |
| Hours | | 0 |

First Year

Fall

| | | |
|--|--|--------------|
| MATH:1550 or MATH:1460 or MATH:1850 | Engineering Calculus I ^{b, c} or Calculus for the Biological Sciences or Calculus I | 4 |
| RHET:1030 or ENGL:1200 | Rhetoric: Writing and Communication or The Interpretation of Literature | 3 - 4 |
| GE CLAS Core: Understanding Cultural Perspectives (may be satisfied by core course if opting to take HHP:2280 Cultural Competency and Health) ^d | | 3 |
| GE CLAS Core: Literary, Visual, and Performing Arts ^d | | 3 |
| CSI:1600 | Success at Iowa | 1 |
| Hours | | 14-15 |

Spring

| | | |
|---|--|--------------|
| HHP:1050 | Exploring Health and Human Physiology | 1 |
| CHEM:1110 | Principles of Chemistry I ^{c, e} | 4 |
| RHET:1030 or ENGL:1200 | Rhetoric: Writing and Communication or The Interpretation of Literature | 3 - 4 |
| GE CLAS Core: Social Sciences ^d | | 3 |
| GE CLAS Core: Values and Society ^d | | 3 |
| Elective course ^f | | 2 |
| Hours | | 16-17 |

Second Year

Fall

| | | |
|---|---|--------------|
| BIOL:1411 | Foundations of Biology ^c | 4 |
| CHEM:1120 | Principles of Chemistry II | 4 |
| HHP:2310 or HHP:2280 or HHP:2200 | Nutrition and Health ^g or Cultural Competency and Health or Physical Activity and Health | 3 |
| GE CLAS Core: World Languages First Level Proficiency or elective course ^h | | 4 - 5 |
| Hours | | 15-16 |

Spring

| | | |
|--|--------------------------------|--------------|
| BIOL:1412 | Diversity of Form and Function | 4 |
| GE CLAS Core: Historical Perspectives ^d | | 3 |
| GE CLAS Core: International and Global Issues ^d | | 3 |
| GE CLAS Core: World Languages Second Level Proficiency or elective course ^h | | 4 - 5 |
| Elective course ^f | | 2 |
| Hours | | 16-17 |

Third Year

Fall

| | | |
|---|---|---|
| HHP:3115 | Anatomy for Human Physiology With Lab | 5 |
| PHYS:1511 | College Physics I | 4 |
| STAT:2010 or STAT:4143 or STAT:3510 | Statistical Methods and Computing or Introduction to Statistical Methods or Biostatistics | 3 |

| | | |
|---|----------------------------------|----------------|
| GE CLAS Core: World Languages Third Level Proficiency or elective course ^h | | 4 - 5 |
| Hours | | 16-17 |
| Spring | | |
| HHP:3550 | Human Physiology With Laboratory | 5 |
| PHYS:1512 | College Physics II | 4 |
| GE CLAS Core: World Languages Fourth Level Proficiency or elective course ^h | | 4 - 5 |
| Elective course ^f | | 3 |
| Hours | | 16-17 |
| Fourth Year | | |
| Fall | | |
| Major: elective or emphasis area course ^{j, k} | | 3 |
| Major: elective or emphasis area course ^{j, k} | | 3 |
| Major: elective or emphasis area course ^{j, k} | | 3 |
| Elective course ^f | | 3 |
| Elective course ^f | | 3 |
| Hours | | 15 |
| Spring | | |
| Major: elective or emphasis area course ^{j, k} | | 3 |
| Major: elective or emphasis area course ^{j, k} | | 3 |
| Major: elective or emphasis area course ^{j, k} | | 3 |
| Elective course ^f | | 3 |
| Elective course ^f | | 3 |
| Degree Application: apply on MyUI before deadline (typically in February for spring, September for fall) ^l | | |
| Hours | | 15 |
| Total Hours | | 123-129 |

Programs Office with questions concerning the World Languages requirement.

i This course must be completed at the University of Iowa.

j Students may declare an emphasis area in clinical physiology; neuromuscular physiology and metabolism; or research. Major elective requirements can be met by completing emphasis area courses. See the General Catalog for approved emphasis area course lists.

k Students complete at least 18 s.h. of major electives, of which 12 s.h. must be in HHP coursework; at least 6 s.h. will be taken from designated organ system-based courses and 3 s.h. from courses emphasizing integrative physiology. See the General Catalog for a list of approved elective courses.

l Please see Academic Calendar, on Office of the Registrar website, for current degree application deadlines. Students should apply for a degree for the session in which all requirements will be met. For any questions on appropriate timing, contact your academic advisor or Degree Services.

a Sustainability must be completed by choosing a course that has been approved for Sustainability AND for one of these General Education areas: Natural Sciences; Quantitative or Formal Reasoning; Social Sciences; Historical Perspectives; International and Global Issues; Literary, Visual, and Performing Arts; or Values and Society.

b Enrollment in math courses requires completion of a placement exam.

c Fulfills a major requirement and may fulfill a GE requirement.

d GE CLAS Core courses may be completed in any order unless used as a prerequisite for another course. Students should consult with an advisor about the best sequencing of courses.

e Enrollment in chemistry courses requires completion of a placement exam.

f Students may use elective courses to earn credit towards the total s.h. required for graduation or to complete a double major, minors, or certificates.

g Students opting to take HHP:2310 must complete other courses to satisfy the following GE requirements: Understanding Cultural Perspectives; and Values and Society.

h Students who have completed four levels of a single language or two levels of two different languages in high school or college have satisfied the GE CLAS Core World Languages requirement. Students who have completed three levels of a single language may complete a fourth-level course in the same language or may choose an approved World Language and Cultural Exploration course. Enrollment in world languages courses requires a placement exam, unless enrolling in a first-semester-level course. Contact your academic advisor or CLAS Undergraduate