Health and Human Physiology, MS

The MS in health and human physiology is offered with three subprograms. The child life subprogram provides expertise in child development through services to support families and to promote children's mastery of life experiences, particularly children's health care events. Professionals in this area enhance effective coping skills through play, education, communication, and family-centered care. The program prepares students to meet credentialing requirements. For more information about the profession, visit the Association of Child Life Professionals.

The clinical exercise physiology subprogram provides advanced scientific and clinical education. It prepares students to be allied health professionals who work in the application of physical activity and behavioral interventions for clinical diseases and health conditions including cardiovascular, pulmonary, metabolic, orthopedic, neuromuscular, immunologic, and hematologic diseases.

The MS with thesis prepares students who hold a bachelor's degree for doctoral programs in the broad areas of health promotion and human physiology. It also equips students for leadership roles in industry and government that require strong research and evaluation skills.

Learning Outcomes

Child Life Subprogram

Graduates will:

- demonstrate an understanding of developmental and psychosocial needs of children and families in health care settings and the child life process of assessment, planning, implementation, and documentation of child life interventions;
- demonstrate an understanding of patient– and family–centered care during stressful life experiences and bereavement, providing coping techniques for children and families;
- demonstrate the ability to establish and maintain relationships with children, families, peers, and an approach to interdisciplinary collaboration skills;
- demonstrate an understanding of therapeutic play and creating a therapeutic environment with an approach of cultural competency, adapting interventions and play to children and families with all abilities;
- demonstrate effective oral and written communication and strong critical thinking skills;
- learn to analyze and present research and evidenced-based practice related to children and families;
- prepare for the role of a certified child life specialist in hospitals and community-based facilities; and
- successfully complete a child life practicum, a child life internship, and meet all requirements and pass the certification exam.

Clinical Exercise Physiology Subprogram

Graduates will:

- demonstrate a comprehensive understanding of normal and abnormal cardiovascular, respiratory, and exercise physiology;
- demonstrate a comprehensive understanding of pharmacokinetics, mechanisms of action, indication, contraindication, and names of common cardiac, vascular, metabolic, pulmonary, hematological, and neurological drugs;
- demonstrate a comprehensive understanding of physical activity assessment, the major determinants of physical activity behaviors, and the application of physical activity behavior change strategies;
- demonstrate a comprehensive understanding of metabolic exercise testing and exercise prescription for healthy adults;
- demonstrate understanding of beginning and intermediate electrocardiography (ECG), exercise testing, and exercise prescription for adults with cardiovascular, pulmonary, or metabolic disease;
- demonstrate competency in clinical skills, including taking health screening, heart rate pulse, blood pressure, and pulse oximetry at rest and during exercise;
- understand basic research methods, study design, and statistical analysis; and
- read, interpret, and critique scientific papers in clinical exercise physiology.

MS in Health and Human Physiology Without Subprogram

Graduates will:

- demonstrate understanding and critical evaluation of the scholarly literature in the area of specialization within human physiology and/or health promotion;
- formulate testable research questions and hypotheses resulting in proper experimental study design and analysis plan;
- conduct quantitative or qualitative research including data collection, analysis, and interpretation of results in the context of current scientific knowledge;
- present scientific results to the department, university, or regional/national scientific community; and
- contribute to original research manuscript(s) as the first or co-author for submission to a peer-reviewed scientific journal.

Requirements

The Master of Science in health and human physiology requires 30–37 s.h. of graduate credit. Required credit varies by subprogram: the child life subprogram requires a minimum of 37 s.h. and is offered without a thesis; the clinical exercise physiology subprogram requires a minimum of 34 s.h. and is offered without a thesis; the MS program in health and human physiology without a subprogram requires a minimum of 30 s.h. and is offered with a thesis.

Students interested in pursuing a PhD after earning a master's degree should choose the MS in health and physiology program with a thesis.

Child Life Subprogram

The MS in health and human physiology with the child life subprogram requires the following coursework. All courses except PSQF:4143/STAT:4143 are required to be taken on

an A–F graded basis. Additional elective options not listed here may be possible with the permission of the director of graduate studies.

Requirements	Hours
Child Life Core Courses	27
Capstone Project	1
Child Life Internship	9

Child Life Core Courses

Course #	Title	Hours
All of these:		
TR:5165	Child Life: Child Development and Healthcare Interventions	3
TR:5166	Child Life: Seminar	3
TR:5167	Child Life Practicum	3
TR:5211	Professional Ethics and Practice in Pediatrics	3
TR:5260	Play and Childhood	3
TR:5261	Family Systems	3
CSED:4131	Loss, Death, and Bereavement	3
PSQF:4143/ STAT:4143	Introduction to Statistical Methods	3
One of these:		
HHP:6020	Advanced Research Methods	3
TR:5205	Research Methods and Play Behavior	3

Child Life Internship

Students take TR:5270 Child Life Internship for 9 s.h. The supervised internship requires 600 contact hours with a certified child life specialist.

Child Life Capstone Project Course

Students complete TR:5267 Child Life Capstone Project (1 s.h.). The capstone project will be the development of a project applying child life practice to an area of interest related to the student's professional ambitions; it includes a final presentation and a written paper to support the presentation in the capstone course.

Clinical Exercise Physiology Subprogram

The Master of Science with the clinical exercise physiology subprogram requires the following coursework. The amount of credit earned in core courses and electives may vary based on a student's undergraduate coursework, but the total for the degree must be at least 34 s.h.

All courses except HHP:5935 Clinical Exercise Physiology Internship must be taken on an A–F graded basis.

Requirements	Hours
Clinical Exercise Physiology Core Courses	17-25
Statistics Course	3
Clinical Exercise Physiology Internship	3-6
Electives	0-13

Clinical Exercise Physiology Core Courses

Course #	Title	Hours
Both of these:		
HHP:6020	Advanced Research Methods	3
PCOL:3101	Pharmacology I: A Drug's Fantastic Journey	3
One of these:		
HHP:4020	Health Coaching	3
HHP:6030	Advanced Health Behavior Change	3

With the permission of an advisor, students who have a prior undergraduate equivalent to any of these courses enroll in the 1 s.h. option.

Course #	Title	Hours
All of these:		
HHP:4240	Exercise Testing and Prescription With Lab	4
HHP:6150	Advanced Clinical Exercise Physiology	1,3
HHP:6260	Advanced Respiratory Pathophysiology	1,3
HHP:6410	Advanced Integrative Physiology of Exercise	1,3
HHP:6460	Advanced Cardiovascular Physiology	1,3

Statistics Course

Course #	Title	Hours
One of these introductory courses (or equivalent with department approval):		
BIOS:4120	Introduction to Biostatistics	3
PSQF:4143/ STAT:4143	Introduction to Statistical Methods	3
STAT:3510/ IGPI:3510	Biostatistics	3

Clinical Exercise Physiology Internship

Students complete an individually arranged internship, usually during their second year. They are required to enroll in HHP:5935 Clinical Exercise Physiology Internship for a minimum of 3 s.h. and are permitted to enroll in a maximum of 6 s.h.

Electives

Elective courses must bring the total credit for the degree to a minimum of 34 s.h.

Though any health, sport, and human physiology (prefix HHP) course numbered 3000 or above is approved as an elective option, students are strongly encouraged to select from the following courses, as it enhances their concentration in human and exercise physiology, clinical exercise physiology, prescriptive exercise and training for health and fitness, health maintenance, and understanding human disease.

Course #	Title	Hours
HHP:4230	Motor Control Theory	3
HHP:4300	Neurophysiology	3
HHP:4420	Planning and Evaluating Health Interventions	3

HHP:5200/ EPID:5250	Physical Activity Epidemiology	3
HHP:6130	Advanced Skeletal Muscle Physiology	1,3
HHP:6470	Advanced Physiology of Aging	1,3
HHP:6510	Advanced Energetics in Health and Disease	1,3

The following courses outside the Department of Health, Sport, and Human Physiology are also approved elective options. Additional elective options not listed here may be possible with the permission of the student's advisor.

Course #	Title	Hours
ACB:5203	Gross Human Anatomy for Graduate Students	5-6
EPID:6350	Nutritional Epidemiology	2
EPID:6360	Nutrition Intervention in Clinical Trials Research	2
EPID:6600	Epidemiology of Chronic Diseases	3
PSY:3340	Behavior Modification	3
PTRS:6224	Activity-Based Neural and Musculoskeletal Plasticity in Health Care	4
PTRS:7812	Biomedical Instrumentation and Measurement	3
PTRS:7875	Analysis of Activity-Based Neural and Musculoskeletal Plasticity	3

MS in Health and Human Physiology With Thesis

Students who intend to earn a PhD after completing the master's degree should choose the health and human physiology program with a thesis. In order to be admitted, students must hold a BS or BA degree with a GPA of at least 3.00. All courses are required to be taken on an A–F graded basis.

The MS in health and human physiology with thesis requires the following coursework.

Requirements	Hours
Required Courses	13-15
General Elective Courses	15-17

Required Courses

Course #	Title	Hours
One of these (or equivalent with department approval):		
BIOS:4120	Introduction to Biostatistics	3
PSQF:4143/ STAT:4143	Introduction to Statistical Methods	3
STAT:3510/ IGPI:3510	Biostatistics	3
One of these:		
BIOS:5120/ IGPI:5120/ STAT:5610	Regression Modeling and ANOVA in the Health Sciences	3
PSQF:6243/ STAT:6513	Intermediate Statistical Methods	3
All of these:		
HHP:6020	Advanced Research Methods	3
HHP:6600	Professional Skills for Graduate Students Seminar (taken twice for 1 s.h. each)	2
HHP:7500	Thesis: MS	2-4

General Elective Courses

Elective courses must bring the total credit for the degree to a minimum of 30 s.h. With guidance from an advisor, students choose electives that broaden their knowledge in health and human physiology and related disciplines and enhance their knowledge in their specific areas of interest.

Though any health, sport, and human physiology (prefix HHP) course numbered 3000 or above is approved as an elective option, students are strongly encouraged to select from the following.

Course #	Title	Hours
HHP:3050	Obesity	3
HHP:3450	Immunology in Health and Disease	3
HHP:4020	Health Coaching	3
HHP:4230	Motor Control Theory	3
HHP:4240	Exercise Testing and Prescription With Lab	4
HHP:4300	Neurophysiology	3
HHP:4320	Clinical Nutrition Interventions	3
HHP:4365	Internship in Health Coaching	3
HHP:4390	Understanding Human Disease	3
HHP:4420	Planning and Evaluating Health Interventions	3
HHP:4450	Human Genetics and Disease	3-4
HHP:5200/ EPID:5250	Physical Activity Epidemiology	3
HHP:6000	Research	arr.
HHP:6030	Advanced Health Behavior Change	3
HHP:6130	Advanced Skeletal Muscle Physiology	1,3
HHP:6150	Advanced Clinical Exercise Physiology	1,3
HHP:6260	Advanced Respiratory Pathophysiology	1,3
HHP:6410	Advanced Integrative Physiology of Exercise	1,3
HHP:6460	Advanced Cardiovascular Physiology	1,3
HHP:6470	Advanced Physiology of Aging	1,3
HHP:6510	Advanced Energetics in Health and Disease	1,3

The following courses outside the Department of Health, Sport, and Human Physiology are also approved elective options. Additional elective options not listed here may be possible with the permission of the student's advisor.

Course #	Title	Hours
ACB:5203	Gross Human Anatomy for Graduate Students	5-6
BMB:3110	Biochemistry	3
EPID:4400	Epidemiology I: Principles	3
EPID:6350	Nutritional Epidemiology	2
EPID:6400	Epidemiology II: Advanced Methods	4
EPID:6600	Epidemiology of Chronic Diseases	3
MPB:5153	Graduate Physiology	4
PTRS:7812	Biomedical Instrumentation and Measurement	3
PTRS:7875	Analysis of Activity-Based Neural and Musculoskeletal Plasticity	3

Graduate Education

Graduate education prepares students with advanced knowledge and skills in specialized fields. At the University of Iowa, the Graduate College advocates for student-centered graduate education and supports equitable application of rules and policies across graduate programs.

Academics

University of Iowa graduate credentials are regulated by policies and requirements found in the Graduate College Manual of Rules and Regulations. This includes minimum grade-point average (GPA) requirements for academic standing and degree conferral. The Graduate College sets the minimum requirement. Individual graduate programs may establish higher GPA requirements.

Admissions

Graduate student applicants must meet admission requirements for both the Graduate College and the program to which they have applied. University of Iowa graduate admission requirements are published by the Graduate College and on the Graduate Admissions website.

Financial Support

Graduate students might be eligible for financial support. Several contingencies apply, including degree program and award type, satisfactory progress toward degree, satisfactory completion of all duties related to an appointment, and availability of funding. Graduate students should inquire directly with their program for more information about funding availability. The Graduate Student Employment Standards govern the employment relationship between the University of Iowa and all graduate teaching and research assistants in all matters except wages, which are covered by an existing collective bargaining agreement or the conditions of an applicable federal grant.

Admission

Applicants to the MS program must have an undergraduate grade-point average (GPA) of at least 3.00. They also must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations on the Graduate College website.

Application deadline is Feb. 1 for admission the following fall.

Child Life Subprogram Admission

In order to be admitted to the subprogram, students must:

- hold a BS or BA degree with a GPA of at least 3.00;
- have completed one course each in human anatomy, medical terminology, and two courses in child development that focus on children and adolescents; and
- submit three letters of recommendation (e.g., from a certified child life specialist, professor, advisor, and/or someone who has observed the student working with children and families in health care or non-health care settings)

Students who have not completed an introductory course in child life must enroll in TR:2077 Children and Families in Healthcare during their first semester.

Clinical Exercise Physiology Subprogram

In order to be admitted to the subprogram, students must:

- hold a BS or BA degree with a GPA of at least 3.00; and
- have completed anatomy and physiology with laboratories (8 s.h.).

MS in Health and Human Physiology with Thesis

In order to be admitted to the thesis program, students must:

- hold a BS or BA degree with a GPA of at least 3.00; and
- submit three letters of recommendation (e.g., from a professor, advisor, and/or employer).

Career Advancement

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

Academic Plans

Sample Plans 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.

Health and Human Physiology, MS

- Child Life Subprogram
- Clinical Exercise Physiology Subprogram
- Health and Human Physiology With Thesis

Child Life Subprogram

This sample plan is currently being reviewed and will be added at a later date.

Clinical Exercise Physiology Subprogram

This sample plan is currently being reviewed and will be added at a later date.

Health and Human Physiology With Thesis

This sample plan is currently being reviewed and will be added at a later date.