

# Health and Human Physiology, MS

## 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 assessment, planning, implementation, and documentation of developmentally appropriate child life interventions;
- demonstrate an understanding of stressful life experiences and coping techniques for children and families from a family systems perspective;
- demonstrate the ability to maintain relationships with children, families, peers, and an approach to teamwork and collaboration skills;
- demonstrate an understanding of therapeutic play and creating a therapeutic environment with opportunities in health care and community settings;
- 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; and
- present scientific results to the department, university, or regional/national scientific community.

## Requirements

The Master of Science program in health and human physiology requires 30–36 s.h. of graduate credit. Required credit varies by subprogram: the child life subprogram requires a minimum of 36 s.h. and is offered without a thesis; the clinical exercise physiology subprogram requires a minimum of 33 s.h. and is offered without a thesis; the MS program in health and human physiology 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 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.

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

- hold a BS or BA degree with a grade-point average (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
- 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 Introduction to Child Life during their first semester.

Students who pursue the child life subprogram must successfully pass comprehensive exams in the last semester prior to their child life internship. The comprehensive exam committee works with each student to develop exam questions.

The MS in health and human physiology with the child life subprogram requires the following coursework (minimum of 36 s.h.).

## Core Courses

Course #	Title	Hours
All of these:		
PSQF:4143/ STAT:4143	Introduction to Statistical Methods	3
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
One of these:		
CSED:4131	Loss, Death, and Bereavement	3
SSW:3786/ ASP:3786	Death/Dying: Issues Across the Life Span	3-4
One of these:		
HHP:6020	Advanced Research Methods and Ethics	1-3
TR:5205	Research Methods and Play Behavior	3

## Internship

The supervised internship requires 600 contact hours with a certified child life specialist.

Course #	Title	Hours
This course:		
TR:5270	Child Life Internship	9

## Clinical Exercise Physiology Subprogram

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.

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.).

The Master of Science with the clinical exercise physiology subprogram requires the following coursework (minimum of 33 s.h.).

## Core

Course #	Title	Hours
All of these:		
HHP:6030	Physical Activity and Dietary Behavior Change	3

HHP:6150	Advanced Clinical Exercise Physiology (consult advisor for semester hours required)	1,3
HHP:6200	Advanced Metabolic Exercise Testing and Prescription	4
HHP:6260	Advanced Respiratory Pathophysiology (consult advisor for semester hours required)	1,3
HHP:6410	Advanced Integrative Physiology of Exercise (consult advisor for semester hours required)	1,3
HHP:6460	Advanced Cardiovascular Physiology (consult advisor for semester hours required)	1,3
PCOL:3101	Pharmacology I: A Drug's Fantastic Journey	3

## Statistics

Course #	Title	Hours
One of these introductory courses (or equivalent):		
BIOS:4120	Introduction to Biostatistics	3
PSQF:6242	Selected Applications of Statistics	3
STAT:3510/ IGPI:3510	Biostatistics	3
STAT:4143/ PSQF:4143	Introduction to Statistical Methods	3

## Research Methods

Course #	Title	Hours
This course:		
HHP:6020	Advanced Research Methods and Ethics	2

## Internships

Students complete an individually arranged internship, usually during their second year, earning at least 3 s.h. of credit.

Course #	Title	Hours
This course:		
HHP:5935	Clinical Exercise Physiology Internship	3-6

## General Electives

With advisor approval, students choose elective coursework that 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:4020	Health Coaching	3
HHP:4420	Planning and Evaluating Health Interventions	3
HHP:5200	Physical Activity Epidemiology	3
HHP:6130	Advanced Skeletal Muscle Physiology	1,3
HHP:6300	Motor Control Seminar	1

HHP:6400	Integrative Physiology Seminar	1
HHP:6470	Advanced Physiology of Aging	1,3
HHP:6500	Seminar in Health Promotion	1
HHP:6510	Advanced Energetics in Health and Disease	1,3
HHP:7300	Advanced Sensorimotor Neurophysiology	1,3
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:3010	Health Psychology	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

The health and human physiology program requires a thesis. Students who intend to earn a PhD after completing the master's degree should choose this program. In order to be admitted, students must hold a BS or BA degree with a GPA of at least 3.00.

The Master of Science program in health and human physiology requires the following coursework (minimum of 30 s.h.).

### Introductory Statistics Courses

Course #	Title	Hours
One of these:		
BIOS:4120	Introduction to Biostatistics	3
PCOL:5204	Basic Biostatistics and Experimental Design	1
PSQF:6242	Selected Applications of Statistics	3
STAT:3510/ IGPI:3510	Biostatistics	3
STAT:4143/ PSQF:4143	Introduction to Statistical Methods	3

### Advanced Statistics Courses

Course #	Title	Hours
One of these:		
BIOS:5120/ IGPI:5120/ STAT:5610	Regression Modeling and ANOVA in the Health Sciences	3
STAT:6513/ PSQF:6243	Intermediate Statistical Methods	3

## Research Methods Course

Course #	Title	Hours
This course:		
HHP:6020	Advanced Research Methods and Ethics	3

## Seminar Courses

Course #	Title	Hours
Two enrollments (1 s.h. each) chosen from these:		
HHP:6300	Motor Control Seminar	1
HHP:6400	Integrative Physiology Seminar	1
HHP:6500	Seminar in Health Promotion	1

## General Elective Courses

Students choose elective courses that broaden their knowledge in health and human physiology and related disciplines, and enhance their knowledge in their specific areas of interest, with guidance from their advisor/mentor; electives may include the following.

Course #	Title	Hours
HHP:3050	Obesity	3
HHP:3450	Immunology in Health and Disease	3
HHP:4020	Health Coaching	3
HHP:4320	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	Physical Activity Epidemiology	3
HHP:6000	Research	arr.
HHP:6030	Physical Activity and Dietary Behavior Change	3
HHP:6130	Advanced Skeletal Muscle Physiology	1,3
HHP:6150	Advanced Clinical Exercise Physiology	1,3
HHP:6200	Advanced Metabolic Exercise Testing and Prescription	1,4
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
HHP:7300	Advanced Sensorimotor Neurophysiology	1,3
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

### Thesis

Course #	Title	Hours
This course:		
HHP:7500	Thesis: MS	4

### Admission

Applicants to the MS program must have an undergraduate grade-point average 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.

### 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.

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#### Child Life Subprogram

Course	Title	Hours
<b>Academic Career</b>		
<b>Any Semester</b>		
36 s.h. of graduate level coursework must be completed; graduate transfer credits allowed upon approval. More information is included in the General Catalog and on department website. <sup>a</sup>		
<b>Hours</b>		<b>0</b>
<b>First Year</b>		
<b>Fall</b>		
TR:5165	Child Life: Child Development and Healthcare Interventions	3
TR:5260	Play and Childhood	3

TR:5261	Family Systems	3
TR:6200	Child Life Graduate Forum	0
<b>Hours</b>		<b>9</b>

#### Spring

STAT:4143 or PSQF:4143	Introduction to Statistical Methods or Introduction to Statistical Methods	3
TR:5166	Child Life: Seminar	3
TR:5167	Child Life Practicum	3
<b>Hours</b>		<b>9</b>

#### Second Year

##### Fall

CSED:4131 or SSW:3786	Loss, Death, and Bereavement or Death/Dying: Issues Across the Life Span	3
TR:5205 or HHP:6020	Research Methods and Play Behavior or Advanced Research Methods and Ethics	3
TR:5211	Professional Ethics and Practice in Pediatrics	3
TR:6200	Child Life Graduate Forum	0
Final Exam <sup>b</sup>		
<b>Hours</b>		<b>9</b>

##### Spring

TR:5270	Child Life Internship <sup>c</sup>	9
<b>Hours</b>		<b>9</b>
<b>Total Hours</b>		<b>36</b>

- a Students must complete specific requirements in the University of Iowa Graduate College after program admission. Refer to the Graduate College website and the Manual of Rules and Regulations for more information.
- b Written four-hour exam covering three areas: research, child life practice, and case study analysis.
- c Supervised internship; requires 600 contact hours with a certified child life specialist.

#### Clinical Exercise Physiology Subprogram

Course	Title	Hours
<b>Academic Career</b>		
<b>Any Semester</b>		
33 s.h. of graduate level coursework must be completed; graduate transfer credits allowed upon approval. More information is included in the General Catalog and on department website. <sup>a</sup>		
<b>Hours</b>		<b>0</b>
<b>First Year</b>		
<b>Fall</b>		
HHP:6020	Advanced Research Methods and Ethics	2
HHP:6200	Advanced Metabolic Exercise Testing and Prescription	4
HHP:6460	Advanced Cardiovascular Physiology	3
Elective course or Statistics requirement <sup>b, c</sup>		3
<b>Hours</b>		<b>12</b>
<b>Spring</b>		
HHP:6030	Physical Activity and Dietary Behavior Change	3

HHP:6150	Advanced Clinical Exercise Physiology	3
HHP:6260	Advanced Respiratory Pathophysiology	3
<b>Hours</b>		<b>9</b>
<b>Second Year</b>		
<b>Fall</b>		
HHP:6410	Advanced Integrative Physiology of Exercise	3
PCOL:3101	Pharmacology I: A Drug's Fantastic Journey	3
<b>Hours</b>		<b>6</b>
<b>Spring</b>		
HHP:5935	Clinical Exercise Physiology Internship <sup>d</sup>	3
Elective course <sup>e</sup>		3
Final Exam <sup>f</sup>		
<b>Hours</b>		<b>6</b>
<b>Total Hours</b>		<b>33</b>

- a Students must complete specific requirements in the University of Iowa Graduate College after program admission. Refer to the Graduate College website and the Manual of Rules and Regulations for more information.
- b Work with faculty advisor to determine appropriate graduate elective coursework and sequence.
- c If statistics course completed as an undergraduate, may be waived upon approval; otherwise choose one introductory course from BIOS:4120, PSQF:6242, STAT:3510/IGPI:3510, STAT:4143/PSQF:4143 and work with faculty advisor to determine which course to take.
- d May complete in summer of year one or during year two of the program.
- e Work with faculty advisor to determine appropriate graduate elective coursework and sequence. Note: may complete a second HHP:5935 Internship instead of a second elective.
- f Written one-day (4-6 hour) exam.

**Second Year**

<b>Fall</b>		
HHP:6000	Research	3
Seminar course <sup>e</sup>		1
Elective course <sup>c</sup>		3
<b>Hours</b>		<b>7</b>
<b>Spring</b>		
HHP:7500	Thesis: MS	4
HHP:6000	Research <sup>c</sup>	3
Final Exam: Thesis Defense		
<b>Hours</b>		<b>7</b>
<b>Total Hours</b>		<b>30-32</b>

- a Students must complete specific requirements in the University of Iowa Graduate College after program admission. Refer to the Graduate College website and the Manual of Rules and Regulations for more information.
- b Choose one course from BIOS:4120, PCOL:5204, PSQF:6242, STAT:3510/IGPI:3510, STAT:4143/PSQF:4143.
- c See the General Catalog for a list of approved courses.
- d Choose one course from BIOS:5120/IGPI:5120/STAT:5610, STAT:6513/PSQF:6243.
- e Choose from HHP:6300, HHP:6400, HHP:6500; enroll two times for 1 s.h. each.

**Health and Human Physiology with Thesis**

Course	Title	Hours
<b>Academic Career</b>		
<b>Any Semester</b>		
30 s.h. of graduate level coursework must be completed; graduate transfer credits allowed upon approval. More information is included in the General Catalog and on department website. <sup>a</sup>		
<b>Hours</b>		<b>0</b>
<b>First Year</b>		
<b>Fall</b>		
HHP:6020	Advanced Research Methods and Ethics	3
Introductory Statistics course <sup>b</sup>		1, 3
Elective course <sup>c</sup>		3
<b>Hours</b>		<b>7-9</b>
<b>Spring</b>		
HHP:6000	Research	2
Advanced Statistics course <sup>d</sup>		3
Seminar course <sup>e</sup>		1
Elective course <sup>c</sup>		3
<b>Hours</b>		<b>9</b>