

## **PROPOSAL**

### **THREE TRACKS IN THE HEALTH AND HUMAN PHYSIOLOGY MAJOR AS MAJORS**

Department of Health and Human Physiology

February 27, 2020

#### **CONTACT INFORMATION**

- Warren Darling, Professor, DEO, Department of Health and Human Physiology, (319) 335-9514, [warren-darling@uiowa.edu](mailto:warren-darling@uiowa.edu)
- Lucas Carr, Associate Professor, Health and Human Physiology, (319) 353-5432, [lucas-carr@uiowa.edu](mailto:lucas-carr@uiowa.edu)

#### **OVERVIEW**

Administered by the Department of Health and Human Physiology, the Health and Human Physiology (HHP) major is focused on the benefits and physiology of exercise. The HHP major offers three tracks: Exercise Science, Health Promotion, and Health Studies.

We are proposing to create three majors from the above tracks, each awarded with the appropriate degree.

- The proposed Exercise Science major and the proposed Health Promotion major would be awarded with the BS degree.
- The Health Studies track would continue to be awarded with the BA.

All three tracks share foundational and core requirements (22-26 s.h.) while also requiring elective hours, with the total required hours for each track ranging from a minimum of 43-48 s.h. The electives required vary to better prepare students for a range of first careers or entry into various professional and graduate programs. Students thus leave the UI with distinctive training as provided by a track.

Given the number of hours earned, students completing a track deserve to have the specialization visible for future institutions or employers. Tracks are only displayed on the transcript and not on the degree award. Offering each track as a major lends appropriate acknowledgement of the students' achievement.

The HHP major is currently awarded with the BA. However, based on the guidelines recommended by the CLAS Undergraduate Educational Policy and Curriculum Committee and as approved by the College of Liberal Arts and Sciences, two tracks in this major are more appropriately awarded with the BS degree rather than with the BA.

## **GUIDELINES FOR THE BS**

The CLAS Undergraduate Educational Policy and Curriculum Committee recently defined the BS degree as appropriate when the following occurs:

- Foundational sequenced courses are required in math, statistics, or data computation and in the sciences with prerequisites that progressively become more advanced, with fewer course choices than one typically finds in the more expansive majors offered with the BA.
- Laboratory course work with applied learning as a tool for the discovery of key principles for the major is required.
- Higher-level courses and content that help to integrate the above learning experiences by expanding on these earlier concepts is also required.

The curriculum for the Exercise Science and Health Promotion tracks fulfill these requirements. Foundational, sequenced courses are required in both math or statistics and in chemistry and biology, with the HHP curriculum building on this foundation. Labs are required for work in these two tracks, with this lab experience and upper-level courses helping to integrate foundational and advanced work. The Health Studies track is more fluid and does not require lab work.

## **CURRENT CURRICULUM**

While these three tracks are being proposed as new majors, there will be no change in the required course work. The curriculum itself has been continually updated and additional changes are not needed at this time. Detailed curricular plans may be found on pages 5-6, with sample plans and a four-year graduation plan in the Appendix.

### *Exercise Science*

The Exercise Science track is composed of sequential course work and labs that requires 48-50 s.h. of work for the major, providing a knowledge of physical fitness, physical activity, sport nutrition, and sport conditioning.

The curriculum has been approved by the American College of Sports Medicine (ACSM) indicating it prepares students to become an ACSM certified exercise physiologist or an ACSM certified personal trainer. The National Strength and Conditioning Association has also certified that this curriculum prepares students for becoming a certified strength and conditioning specialist and certified special population specialist.

Just as importantly, many students choose this major because it prepares them for entry into in medical or physical therapy programs. Students also enter graduate and professional programs in related areas.

*Health Promotion*

The health promotion track requires a total of 46-50 s.h. of work for the major and teaches students to assess an individual’s health as well as how to plan, implement, and assess changes to create healthy behaviors. Strong communication and interpersonal skills are especially important to this field. Students graduating in this area take the National Commission for Health Education Credentialing as a first career step. The mix of natural and social sciences in this track also provides a foundation for professional or graduate study in allied health and health management.

*Health Studies*

The health studies track provides flexible opportunities to acquire knowledge and skills needed to understand health determinants and to anticipate continuing changes in preventive and clinical health delivery. Students often choose this track after trying coursework in the other two HHP areas and then deciding that they are more interested in health-related fields rather than in applied practice. The track allows students to count completed foundational and core course work toward a major while choosing related electives of interest. The track is thus more flexible than the others and does not require lab courses. Because of its focus on policy, service and education with a wider choice of elective courses, this proposed major should be awarded with the BA. CLAS majors in the sciences and social sciences typically offer students a choice between the BA or the BS, helping students to tailor the major to their interests and goals.

**NATIONAL PROGRAMS**

In reviewing other top Exercise Science and Health Promotion programs across the country, the large majority (if not all) are offered with the BS degree. That is, nationally this discipline is noted as being science-based and using related research strategies and theory as associated with other disciplines in the sciences, such as biology, chemistry, neuroscience, or biochemistry.

The top 20 Kinesiology programs in the country offer the BS degree in the areas of Exercise Science, Health Promotion

<b>University</b>	<b>Exercise Science Degree</b>	<b>Health Promotion Degree</b>	<b>Health Studies Degree</b>
<a href="#"><u>University of Iowa</u></a>	BA in Exercise Science	BA in Health Promotion	BA in Health Studies
<a href="#"><u>University of South Carolina</u></a>	BS in Exercise Science	Minor in Health Promotion, Education and Behavior	None

<a href="#">University of Texas at Austin</a>	BS in Exercise Science	BS in Health Promotion and Behavioral Science	None
<a href="#">University of Illinois at Champaign-Urbana</a>	BS in Kinesiology	BS Community Health (emphasis in Health Education and Promotion)	BS Interdisciplinary Health Sciences
<a href="#">Penn State University</a>	BS in Kinesiology	BS in Biobehavioral Health	None
<a href="#">University of Florida</a>	BS in Applied Physiology and Kinesiology (emphasis in Exercise Physiology, Fitness, Wellness)	BS in Health Education and Behavior (emphasis in Community Health Promotion)	BS in Health Education and Behavior (emphasis in Health Studies)
<a href="#">Ohio State University</a>	BS in Education, Exercise Science	BS in Health Promotion, Nutrition, Exercise Science	BS in Health Sciences
<a href="#">University of Minnesota</a>	BS in Kinesiology	None	
<a href="#">Arizona State University</a>	BS in Exercise and Wellness	BS Health Education and Promotion	BS Health Sciences
Iowa State University	BS in Exercise Science	BS in Physical Activity and Health Promotion	None

Top Kinesiology Programs (per [National Academy of Kinesiology](#))

### ADDITIONAL CONSIDERATIONS

- Faculty members from the department of HHP met in December of 2018 to discuss this issue and all agreed to this change.
- Emails of support from departmental chairs of Biology and Chemistry are attached in the Appendix of this proposal (pages 18-19).

## **CURRICULUM FOR THE PROPOSED MAJORS**

Course descriptions and prerequisites as well as GE status for HHP courses may be found in the Appendix, pages 20-28.

### *FOUNDATION CORES*

Students in each of the proposed three majors must complete these foundation courses in the sciences and mathematics (minimum of 10 s.h.): one each in chemistry, biology, and mathematics or statistics.

Chemistry—one of these:

- CHEM:1080 General Chemistry II 3 s.h. (Requirements: CHEM:1070 or high school chemistry.)
- CHEM:1120 Principles of Chemistry II 4 s.h. (Requirements: MATH:1005 with a minimum grade of C-, or ACT math subscore of 24, or ALEKS score above 60%.)

Biology—one of these:

- BIOL:1141 Introductory Animal Biology 4 s.h. (Recommendations: CHEM:1070.)
- BIOL:1140 Human Biology 4 s.h.
- BIOL:1411 Foundations of Biology 4 s.h. (Prerequisites: CHEM:1110 with a minimum grade of C- or CHEM:1070 with a minimum grade of A-.)

Mathematics or statistics—one of these:

- MATH:1020 Elementary Functions 4 s.h.
- MATH:1440 Mathematics for the Biological Sciences 4 s.h.
- MATH:1460 Calculus for the Biological Sciences 4 s.h.
- MATH:1380 Calculus and Matrix Algebra for Business 4 s.h.
- MATH:1850 Calculus I 4 s.h.
- STAT:1030 Statistics for Business 4 s.h.
- STAT:1020 Elementary Statistics and Inference 3 s.h.
- STAT:3510 Biostatistics 3 s.h.
- STAT:4143 (PSQF:4143) Introduction to Statistical Methods 3 s.h.

### *DEPARTMENTAL CORE*

A total of 12 s.h. in core Health and Human Physiology courses are required in all three majors:

- HHP:2200 Physical Activity and Health 3 s.h.
- HHP:2310 Nutrition and Health 3 s.h.
- HHP:1100 Human Anatomy 3 s.h.
- HHP:1300 Fundamentals of Human Physiology 3 s.h.

## **ADDITIONAL EXERCISE SCIENCE REQUIREMENTS (BS)**

### EXERCISE SCIENCE CORE (20 s.h.)

- HHP:2500 Physical Activity Psychology 3 s.h.
- HHP:2350 Biomechanics of Sport and Physical Activity 3 s.h. (prerequisite HHP:1100)
- HHP:3400 Applied Exercise Physiology 3 s.h. (prerequisite HHP:1300)

- HHP:4200 Metabolic Exercise Testing and Prescription 4 s.h. (prerequisite HHP:2200, and HHP:3400 or HHP:3500)
- HHP:4210 Musculoskeletal Exercise Testing and Prescription 4 s.h. (prerequisite HHP:2200, and HHP:3400 or HHP:3500)
- HHP:4310 Sport and Exercise Nutrition 3 s.h. (prerequisite HHP:2200 and HHP:2310)

**EXERCISE SCIENCE MAJOR ELECTIVES** (must complete 6 s.h.)

Students must complete at least 6 s.h. selected from courses numbered HHP:2000 or above. (See the Appendix for a list of these courses.)

**ADDITIONAL HEALTH PROMOTION REQUIREMENTS (BS)**

**HEALTH PROMOTION CORE** (15 s.h.)

- HHP:3200 Health Behavior and Health Promotion 3 s.h. (prerequisite HHP:2200, HHP:2310)
- HHP:3430 Health Management and Administration 3 s.h. (prerequisite HHP:3200)
- HHP:4010 Behavioral and Clinical Health Assessment Laboratory 3 s.h. (prerequisite HHP:2200, HHP:2310, HHP:1100, HHP:1300)
- HHP:4020 Health Communication and Coaching Strategies 3 s.h. (prerequisite HHP:2200, HHP:2310)
- HHP:4420 Planning and Evaluating Health Interventions 3 s.h. (prerequisite HHP:3200)

**HEALTH PROMOTION MAJOR ELECTIVES** (9 s.h.)

Students must complete at least 9 s.h. selected from courses numbered HHP:2000 or above (See the Appendix for a list of these courses.)

**ADDITIONAL HEALTH STUDIES REQUIREMENTS (BA)**

**HEALTH STUDIES CORE** (9 s.h.)

- HHP:4030 Policy, Environmental, and Social Determinants of Health 3 s.h. (prerequisite HHP:2200, HHP:2310)
- HHP:4040 Health Services: Current Barriers and Innovative Solutions 3 s.h. (prerequisite HHP:2200, HHP:2310)
- HHP:4390 Understanding Human Disease 3 s.h. (prerequisite HHP:1300)

**HEALTH STUDIES MAJOR ELECTIVES** (12 s.h.)

Students must complete at least 12 s.h. selected from courses numbered HHP:2000 or above. (See the Appendix for a list of these courses.)

**COMPUTATION OF MAJOR GPA**

The major GPA for the three majors will be calculated using courses with the HHP acronym. Students are advised to enroll in cross-listed courses using the HHP acronym in order for the course GPA to count for the major.

## HONORS IN THE MAJOR REQUIREMENTS FOR ALL HHP MAJORS

Students have the opportunity to graduate with honors in the major. The College of Liberal Arts and Sciences requires that students who earn honors in the major maintain a minimum University of Iowa cumulative g.p.a. of 3.33. Students completing Honors in the Major must also do the following:

- Maintain an overall g.p.a. of at least 3.33 in work for their major.
- Successfully complete the honors research courses **HHP:4800** Research Methods and Ethics and **HHP:4900** Honors Research
- Write an honors thesis judged by HHP faculty to be of honors quality
- Make an oral or poster presentation of the honors thesis in an approved venue, such as a department research seminar or professional conference.

## ENROLLMENT TRENDS

Each track shows vigorous growth and interest from students.

	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Grand Total	Trend line
Exercise Science				48	223	250	326	360	393	404	2004	
Health Promotion	14	117	108	88	56	142	184	183	170	116	1178	
Health Studies	4	220	394	573	530	409	342	376	358	374	3580	
Totals:	18	337	502	709	809	801	852	919	921	894	6762	

## ADVISING

The Department of HHP currently has three full time academic advisors on staff who share advising responsibilities across all HHP majors.

- Joe Cilek, Undergraduate Academic Advisor – Health and Human Physiology
- Elizabeth Rook, Undergraduate Academic Advisor - Health and Human Physiology
- Ian Ely-Cate, Undergraduate Academic Advisor – Sports and Recreation Management

## CAREER OUTLOOK FOR STUDENTS

Students graduating in these majors are prepared to work in the fitness/performance professions, with strong job outlooks particularly for fitness trainers (+13%), sport coaching (+11%), and recreation workers (+8%). Graduates are also prepared for entrance into graduate and professional programs leading to careers in the fast-growing health professions, including physical therapy (+22%), occupational therapy (+18%), and exercise physiologists (+10%). (Source: US Bureau of Labor Statistics, 2019).

## HEALTH AND HUMAN PHYSIOLOGY FACULTY

Lucan Carr, Associate Professor

Warren Darling, Professor, DEO

Shawn Flanagan, Associate Professor of Instruction

Amy Fletcher, MS, Lecturer

Katie Hosteng, PhD, Lecturer  
Erin Litton, MS, Lecturer/Internship Director  
Katherine Mellen, PhD, Associate Professor of Instruction  
Clay Peterson, PhD, Associate Professor of Instruction  
Alison Reichter, PhD, Lecturer  
Aaron Schneider, PhD (starting Fall 2020)  
Michael Ward, PhD, Lecturer  
Kara M. Whitaker, PhD, Assistant Professor  
Gayle Walter, PhD, Lecturer

### **REQUIRED RESOURCES**

The Department of HHP recently hired three fulltime instructors to help meet student demand. Professor Erin Litton (Internship Coordinator and Lecturer in Health Promotion and Health Studies) and Professor Katie Hosteng (Lecturer in Health Studies and Health Promotion) both started in January of 2020. Aaron Schneider was also hired in the area of Exercise Science and Health Studies but will not begin until Fall 2020 as he finalizes his doctoral degree. So, from a teaching standpoint, we feel we have the necessary resources to make the proposed changes.

We did recently lose a full-time academic advisor (Kristina Sosa) in January of 2020 which limits our ability to meet student demand. We are requesting permission to replace this advisor.



## APPENDIX

### SAMPLE PLANS OF STUDY

#### Exercise Science Major 4-Year Plan

First Year		
Fall		Hours
<u><b>RHET:1030</b></u> or <u><b>ENGL:1200</b></u>	Rhetoric or The Interpretation of Literature	3 - 4
<u><b>CHEM:1070</b></u>	General Chemistry I <sup>a</sup>	3
	GE CLAS Core: Diversity and Inclusion <sup>b</sup>	3
	GE CLAS Core: Social Sciences <sup>b</sup>	3
<u><b>CSI:1600</b></u>	Success at Iowa	2
	<b>Hours</b>	<b>14-15</b>
Spring		
<u><b>HHP:2200</b></u>	Physical Activity and Health	3
<u><b>CHEM:1080</b></u>	General Chemistry II	3
<u><b>ENGL:1200</b></u> or <u><b>RHET:1030</b></u>	The Interpretation of Literature or Rhetoric	3 - 4
	Major: math/statistics major requirement <sup>c</sup>	3
	Elective course <sup>d</sup>	3
	<b>Hours</b>	<b>15-16</b>
Second Year		
Fall		
<u><b>HHP:2310</b></u>	Nutrition and Health	3
	Major: biology requirement <sup>c</sup>	4
	GE CLAS Core: Historical Perspectives <sup>b</sup>	3

GE CLAS Core: World Languages First Level Proficiency or elective course <sup>e</sup>	4 - 5
Elective course <sup>d</sup>	2
<b>Hours</b>	<b>16-17</b>
<b>Spring</b>	
<b><u>HHP:1100</u></b> Human Anatomy	3
<b><u>HHP:2500</u></b> Physical Activity Psychology	3
GE CLAS Core: International and Global Issues <sup>b</sup>	3
GE CLAS Core: World Languages Second Level Proficiency or elective course <sup>e</sup>	4 - 5
Elective course <sup>d</sup>	3
<b>Hours</b>	<b>16-17</b>
<b>Third Year</b>	
<b>Fall</b>	
<b><u>HHP:1300</u></b> Fundamentals of Human Physiology	3
<b><u>HHP:4310</u></b> Sport and Exercise Nutrition	3
GE CLAS Core: Literary, Visual, and Performing Arts <sup>b</sup>	3
GE CLAS Core: World Languages Second Level Proficiency or elective course <sup>e</sup>	4 - 5
Elective course <sup>d</sup>	3
<b>Hours</b>	<b>16-17</b>
<b>Spring</b>	
<b><u>HHP:2350</u></b> Biomechanics of Sport and Physical Activity	3
<b><u>HHP:3400</u></b> Applied Exercise Physiology	3
GE CLAS Core: World Languages Fourth Level Proficiency or elective course <sup>e</sup>	4 - 5
Elective course <sup>d</sup>	3

Elective course <sup>d</sup>	3
<b>Hours</b>	<b>16-17</b>
<b>Fourth Year</b>	
<b>Fall</b>	
<b><u>HHP:4200</u></b> Metabolic Exercise Testing and Prescription	4
Major: elective course <sup>f</sup>	3
Elective course <sup>d</sup>	3
Elective course <sup>d</sup>	3
Elective course <sup>d</sup>	2
<b>Hours</b>	<b>15</b>
<b>Spring</b>	
<b><u>HHP:4210</u></b> Musculoskeletal Exercise Testing and Prescription	4
Major: elective course <sup>f</sup>	3
Elective course <sup>d</sup>	3
Elective course <sup>d</sup>	3
Elective course <sup>d</sup>	2
Degree Application: apply on MyUI before deadline (typically in February for spring, September for fall) <sup>g</sup>	
<b>Hours</b>	<b>15</b>
<b>Total Hours</b>	<b>123-129</b>
<b>Plan of Study Grid (Manual)</b>	

### Health Promotion Major 4-Year Plan

#### First Year

Fall		Hours
<b><u>CHEM:1070</u></b>	General Chemistry I <sup>a</sup>	3
<b><u>ENGL:1200</u></b> or <b><u>RHET:1030</u></b>	The Interpretation of Literature or Rhetoric	3 - 4
GE CLAS Core: Diversity and Inclusion <sup>b</sup>		3
GE CLAS Core: Social Sciences <sup>b</sup>		3
<b><u>CSI:1600</u></b>	Success at Iowa	2
<b>Hours</b>		<b>14-15</b>
Spring		
<b><u>HHP:2200</u></b>	Physical Activity and Health	3
<b><u>CHEM:1080</u></b>	General Chemistry II	3
<b><u>ENGL:1200</u></b> or <b><u>RHET:1030</u></b>	The Interpretation of Literature or Rhetoric	3 - 4
Major: math/statistics requirement <sup>c</sup>		3
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>15-16</b>
Second Year		
Fall		
<b><u>HHP:2310</u></b>	Nutrition and Health	3
Major: biology requirement <sup>c</sup>		4
GE CLAS Core: International and Global Issues <sup>b</sup>		3
GE CLAS Core: World Languages First Level Proficiency or elective course <sup>e</sup>		4 - 5
Elective course <sup>d</sup>		2
<b>Hours</b>		<b>16-17</b>
Spring		

<b><u>HHP:1100</u></b>	Human Anatomy	3
GE CLAS Core: Historical Perspectives <sup>b</sup>		3
GE CLAS Core: Literary, Visual, and Performing Arts <sup>b</sup>		3
GE CLAS Core: World Languages Second Level Proficiency or elective course <sup>e</sup>		4 - 5
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>16-17</b>
<b>Third Year</b>		
<b>Fall</b>		
<b><u>HHP:1300</u></b>	Fundamentals of Human Physiology	3
<b><u>HHP:3200</u></b>	Health Behavior and Health Promotion	3
Major: Elective course <sup>f</sup>		3
GE CLAS Core: World Languages Second Level Proficiency or elective course <sup>e</sup>		4 - 5
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>16-17</b>
<b>Spring</b>		
<b><u>HHP:4020</u></b>	Health Communication and Coaching Strategies	3
Major: Elective course <sup>f</sup>		3
GE CLAS Core: World Languages Fourth Level Proficiency or elective course <sup>e</sup>		4 - 5
Elective course <sup>d</sup>		3
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>16-17</b>
<b>Fourth Year</b>		
<b>Fall</b>		
<b><u>HHP:3430</u></b>	Health Management and Administration	3

<b><u>HHP:4010</u></b>	Behavioral and Clinical Health Assessment Laboratory	3
Elective course <sup>d</sup>		3
Elective course <sup>d</sup>		3
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>15</b>
<b>Spring</b>		
<b><u>HHP:4420</u></b>	Planning and Evaluating Health Interventions	3
Major: Elective course <sup>f</sup>		3
Elective course <sup>d</sup>		3
Elective course <sup>d</sup>		3
Elective course <sup>d</sup>		3
Degree Application: apply on MyUI before deadline (typically in February for spring, September for fall) <sup>g</sup>		
<b>Hours</b>		<b>15</b>
<b>Total Hours</b>		<b>123-129</b>
<b>Plan of Study Grid (Manual)</b>		

### Health Studies Major 4-Year Plan

<b>First Year</b>		
<b>Fall</b>		<b>Hours</b>
<b><u>CHEM:1070</u></b>	General Chemistry I <sup>a</sup>	3
<b><u>ENGL:1200</u></b> or <b><u>RHET:1030</u></b>	The Interpretation of Literature or Rhetoric	3 - 4
GE CLAS Core: Diversity and Inclusion <sup>b</sup>		3
GE CLAS Core: Social Sciences <sup>b</sup>		3

<b><u>CSI:1600</u></b>	Success at Iowa	2
<b>Hours</b>		<b>14-15</b>
<b>Spring</b>		
<b><u>HHP:2200</u></b>	Physical Activity and Health	3
<b><u>CHEM:1080</u></b>	General Chemistry II	3
<b><u>ENGL:1200</u></b> or <b><u>RHET:1030</u></b>	The Interpretation of Literature or Rhetoric	3 - 4
Major: math/statistics requirement <sup>c</sup>		3
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>15-16</b>
<b>Second Year</b>		
<b>Fall</b>		
<b><u>HHP:2310</u></b>	Nutrition and Health	3
Major: biology requirement <sup>c</sup>		4
GE CLAS Core: Historical Perspectives <sup>b</sup>		3
GE CLAS Core: World Languages First Level Proficiency or elective course <sup>e</sup>		4 - 5
Elective course <sup>d</sup>		2
<b>Hours</b>		<b>16-17</b>
<b>Spring</b>		
<b><u>HHP:1100</u></b>	Human Anatomy	3
GE CLAS Core: Literary, Visual, and Performing Arts <sup>b</sup>		3
GE CLAS Core: International and Global Issues <sup>b</sup>		3
GE CLAS Core: World Languages Second Level Proficiency or elective course <sup>e</sup>		4 - 5
Elective course <sup>d</sup>		3

<b>Hours</b>		<b>16-17</b>
<b>Third Year</b>		
<b>Fall</b>		
<b><u>HHP:1300</u></b>	Fundamentals of Human Physiology	3
<b><u>HHP:4030</u></b>	Policy, Environmental, and Social Determinants of Health	3
Elective course <sup>d</sup>		3
GE CLAS Core: World Languages Second Level Proficiency or elective course <sup>e</sup>		4 - 5
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>16-17</b>
<b>Spring</b>		
<b><u>HHP:4390</u></b>	Understanding Human Disease	3
Major: Elective course <sup>f</sup>		3
Elective course <sup>d</sup>		3
GE CLAS Core: World Languages Fourth Level Proficiency or elective course <sup>e</sup>		4 - 5
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>16-17</b>
<b>Fourth Year</b>		
<b>Fall</b>		
<b><u>HHP:4040</u></b>	Health Services: Current Barriers and Innovative Solutions	3
Major: Elective course <sup>f</sup>		3
Elective course <sup>d</sup>		3
Elective course <sup>d</sup>		3
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>15</b>



Spring	
Major: Elective course <sup>f</sup>	3
Major: Elective course <sup>f</sup>	3
Elective course <sup>d</sup>	3
Elective course <sup>d</sup>	3
Elective course <sup>d</sup>	3
Degree Application: apply on MyUI before deadline (typically in February for spring, September for fall) <sup>g</sup>	
<b>Hours</b>	<b>15</b>
<b>Total Hours</b>	<b>123-129</b>

#### FOUR-YEAR GRADUATION PLANS

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:** one foundation course 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



COLLEGE OF  
LIBERAL ARTS & SCIENCES

Department of Biology

143 Biology Building

February 17, 2020

Warren Darling, Ph.D.  
Professor and Chair of Health and Human Physiology  
College of Liberal Arts and Sciences  
The University of Iowa  
E102A Field House

Dear Warren:

As requested, I am writing to express support of the Department of Biology for the proposal to change the BA in HHP major with tracks in Health Studies, Health Promotion and Exercise Science to a BA in Health Studies, BS in Health Promotion and BS in Exercise Science.

Sincerely,

A handwritten signature in cursive script that reads "Diane Slusarski".

Diane Slusarski  
Professor and Chair of Biology



COLLEGE OF  
LIBERAL ARTS & SCIENCES

**Department of Chemistry**

E331 Chemistry Building  
Iowa City, Iowa 52242-1294  
319-335-1350 Fax 319-335-1270

February 16, 2020

Warren Darling, Ph.D.  
Professor and Chair of Health and Human Physiology  
College of Liberal Arts and Sciences  
The University of Iowa  
E102A Field House

Dear Warren:

As requested, I am writing to express support of the Department of Chemistry for the proposal to change the BA in HHP major with tracks in Health Studies, Health Promotion and Exercise Science to a BA in Health Studies, BS in Health Promotion and BS in Exercise Science. If further information is needed, I will be happy to provide it.

Sincerely,

Professor of Chemistry  
Chair, Department of Chemistry  
Collegiate Fellow, College of Liberal Arts and Sciences  
Phone: (319) 335-3504; E-mail: len-macgillivray@uiowa.edu

## HEALTH AND HUMAN PHYSIOLOGY MAJOR COUNTS AND DEGREES EARNED

### HEALTH AND HUMAN PHYSIOLOGY MAJOR COUNTS:

#### Health and Human Physiology Undergraduate Primary and not Primary (Other) Major Counts by Subprogram

SESSION	Exercise Science		Exercise Science Total	Health Promotion		Health Promotion Total	Health Studies		Health Studies Total	Grand Total
	Primary	Other		Primary	Other		Primary	Other		
Fall 2010				13	1	14	2	2	4	18
Fall 2011				105	12	117	199	21	220	337
Fall 2012				95	13	108	360	34	394	502
Fall 2013	44	4	48	77	11	88	519	54	573	709
Fall 2014	210	13	223	54	2	56	479	51	530	809
Fall 2015	238	12	250	137	5	142	367	42	409	801
Fall 2016	315	11	326	178	6	184	319	23	342	852
Fall 2017	353	7	360	170	13	183	356	20	376	919
Fall 2018	378	15	393	161	9	170	340	18	358	921
Fall 2019	388	16	404	111	5	116	361	13	374	894
<b>Totals:</b>	<b>1926</b>	<b>78</b>	<b>2004</b>	<b>1101</b>	<b>77</b>	<b>1178</b>	<b>3302</b>	<b>278</b>	<b>3580</b>	<b>6762</b>

### HEALTH AND HUMAN PHYSIOLOGY DEGREES EARNED

Sub-Program (Track)	Effective Session	Academic Year	Total
Exercise Science	Fall 2013	2013-2014 AY	12
		2014-2015 AY	40
		2015-2016 AY	67
		2016-2017 AY	65
		2017-2018 AY	64
		2018-2019AY	86
<b>Exercise Science Total</b>			<b>334</b>
Health Promotion	Fall 2010	2010-2011 AY	23
		2011-2012 AY	55
		2012-2013 AY	62
		2013-2014 AY	53
		2014-2015 AY	41
		2015-2016 AY	38
		2016-2017 AY	67
		2017-2018 AY	56
2018-2019AY	67		
<b>Health Promotion Total</b>			<b>462</b>
Health Studies	Fall 2010	2010-2011 AY	3
		2011-2012 AY	44

		2012-2013 AY	80
		2013-2014 AY	155
		2014-2015 AY	177
		2015-2016 AY	148
		2016-2017 AY	126
		2017-2018 AY	133
		2018-2019AY	156
<b>Health Studies Total</b>			<b>1022</b>
<b>Grand Total</b>			<b>1818</b>

### HHP 2000-LEVEL COURSES: ELECTIVE CHOICES

#### **HHP:2130 Human Development Through the Life Span 3 s.h.**

Overview of human developmental theories across the life-span; aspects of cognitive, physical, and personality development from birth to death; the role of culture, environment, health, and economic factors over the developmental process and life continuum.

#### **HHP:2148 Personal Training 3 s.h.**

Essential aspects of personal training including theory and applied practice of screening, assessment, exercise prescription, and technique for development of safe and effective training programs for clients. Prerequisites: (**HHP:1300** or **HHP:1350**) and **HHP:2200**.

#### **HHP:2200 Physical Activity and Health 3 s.h.**

Physical activity determinants in society; school, workplace, community-based health promotion interventions to improve activity levels. GE: Values and Culture.

#### **HHP:2280 Cultural Competency in Health Interventions 3 s.h.**

Examination of the importance of ethnic and cultural factors for community health practice; essential theories, models, and practices for working with race, ethnicity, gender, and social issues; topics may include demographics, disparities, complementary and alternative medicine, spiritually grounded approaches, multicultural populations, communication, workforce, aging, sexual orientation, and future challenges.

#### **HHP:2310 Nutrition and Health 3 s.h.**

Physiology, biochemistry of human nutrition; appropriate food sources; qualitative and quantitative evaluation of diets using standard references. GE: Natural Sciences without Lab.

#### **HHP:2350 Biomechanics of Sport and Physical Activity 3 s.h.**

Principles of biomechanics, kinesiology, and anatomy; quantitative aspects of sport and physical activity; emphasis on developing a qualitative grasp on mechanical principles of human movement within sports and physical activity; how to apply these principles in a sport/exercise environment.

Prerequisites: **HHP:1100** or **HHP:1150**.

#### **HHP:2500 Physical Activity Psychology 3 s.h.**

Psychological theory and research related to sport and physical activity; motivation, aggression, attribution, socialization, competitive anxiety, leadership.

#### **HHP:3000 Equity Issues in the Health Sciences 3 s.h.**

Examination of equity issues in the health sciences, including a review of the historical challenges that led to Human Subjects Review Boards, FDA oversight of drug development and clinical trials, inclusion of women in research; effect of situational ethics in the workplace; potential danger of making assumptions about clients/patients; importance of developing an inclusive communication style; assessing the effectiveness of family-friendly employment policies in providing equitable opportunities for career advancement for both women and men. Recommendations: junior or senior standing. Same as **INTD:3020**.

**HHP:3030 Coaching for Health and Wellness 3 s.h.**

Opportunities to expand knowledge and develop skills to help individuals change behavior and meet health-related goals; general health and wellness principles; principles and techniques for change; experience providing health-coaching services to clients. Prerequisites: **HHP:2200** and **HHP:2310**. Same as **INTD:3030**.

**HHP:3050 Obesity: Causes, Consequences, Prevention, and Treatment 3 s.h.**

In-depth overview of biological, behavioral, and societal causes and consequences of obesity epidemic; potential solutions from primary and secondary prevention standpoints; causes of obesity, available treatments, and global impact that obesity epidemic presents to society.

Prerequisites: **HHP:2200** and **HHP:2310**.

**HHP:3060 Advanced Human Anatomy for Athletic Trainers 4 s.h.**

Extremities and relevant body cavity anatomy; anatomical terminology, anatomical relationships of human body, 3-D view of anatomy, clinical relevance of anatomy; basic science lectures, radiologic imaging discussions, introduction to clinically relevant anatomy, dissection laboratories, small group learning and teaching, faculty interaction, and computer-assisted resources. Offered summer sessions.

Prerequisites: **HHP:1100**.

**HHP:3105 Anatomy for Human Physiology 3 s.h.**

All major systems of the body are covered with focus on the normal structure of the human body; appropriate for preprofessional students planning on careers in the various health professions.

**HHP:3110 Advanced Anatomy Laboratory 2 s.h.**

Detailed gross anatomy of all major systems of the body; structure of the human body at organ, tissue, and cellular levels; examination of various human and other mammalian specimens.

**HHP:3115 Anatomy for Human Physiology with Lab 5 s.h.**

Covers all major systems of the body in a combined lecture and laboratory anatomy course; focus on normal structure of the human body; laboratory includes gross anatomy of some human structures and dissection of other mammalian specimen; appropriate for preprofessional students planning on careers in various health professions. Prerequisites: **BIOL:1411**.

**HHP:3150 Program Design in Strength and Conditioning 3 s.h.**

Examination of elements of program design for developing muscular fitness and skill related to fitness; applies to programming for individuals with whom a major goal of their physical activity program is to maximize human performance potential; these goals can either be for personal fitness, success in specific sports, or for applications in occupational athletes.

**HHP:3200 Health Behavior and Health Promotion 3 s.h.**

Principles of epidemiology and health behavior theories applied to multilevel frameworks for health promotion. Prerequisites: **HHP:2200** and **HHP:2310**.

**HHP:3230 Psychopharmacology 3 s.h.**

How drugs act to influence behavior; general principles of drug action on the nervous system; licit and illicit drugs, use/abuse, historical perspective on drug use. Prerequisites: (**PSY:2811** with a minimum grade of C- or **PSY:2810** with a minimum grade of C-) or (**HHP:1300** with a minimum grade of C- or **HHP:3500** with a minimum grade of C-). Same as **PSY:3230**.

**HHP:3300 Human Growth and Motor Development 3 s.h.**

Human growth and biological maturation; focus on motor development from birth through puberty. Recommendations: prior course in anatomy, human physiology, or biology.

**HHP:3400 Applied Exercise Physiology 3 s.h.**

Effects of acute exercise and chronic exercise training on different physiological systems (energy, neuromuscular, circulatory, respiratory, endocrine); overview of physiological principles necessary for more advanced study of fitness evaluation and exercise prescription; preparation for ACSM certification. Prerequisites: **HHP:1300** or **HHP:1350**.

**HHP:3420 College Health Education 3 s.h.**

Practical experience in planning, implementing, and evaluating health programs in the college health setting; how health issues apply to individuals and communities to which they belong; foundation of health behavior change in college setting. Prerequisites: **HHP:2310** and **HHP:2200**.

**HHP:3430 Health Management and Administration 3 s.h.**

Introduction to management, administration, and leadership principles as they relate to health promotion programs. Prerequisites: **HHP:3200**.

**HHP:3440 Physical Activity Interventions 3 s.h.**

Development, implementation, evaluation of effective health communication interventions; identification of health education resources for targeted groups. Prerequisites: **HHP:2310** and **HHP:2200**.

**HHP:3450 Immunology in Health and Disease 3 s.h.**

Overview of immunology, beginning at the molecular level and ending with the role of the immune system in disease; fundamental concepts of the immune system; innate and adaptive immunity, focusing on cell-mediated and humoral immune responses, in addition to effector mechanisms in both of these responses; concepts of immunologic tolerance; autoimmune disease; immunodeficiency syndromes; the inflammatory process in disease. Prerequisites: **HHP:3500** or **HHP:3550**.

**HHP:3500 Human Physiology 3 s.h.**

Organ system approach to physiology in order to understand normal function of the human body from the submolecular and cellular levels to the whole organism; emphasis on the development of a mechanistic understanding of organ system function and integrated physiological function across systems to promote homeostatic regulation in the human body. Prerequisites: (**HHP:1300** or **BIOL:1141** or **BIOL:1140** or **BIOL:1411**) and (**CHEM:1070** or **CHEM:1110**).

**HHP:3550 Human Physiology with Laboratory 5 s.h.**

Mechanistic approach to understand organ system function and integrated function across systems as the basis for homeostatic regulation within the human body; experiential laboratory activities that incorporate fundamental measurements of human function and analysis, interpretation, and presentation of experimental findings. Prerequisites:

(**HHP:1300** or **BIOL:1141** or **BIOL:1140** or **BIOL:1411**) and (**CHEM:1070** or **CHEM:1110**).

Recommendations: one semester of human anatomy, and one semester of statistics or biostatistics.

**HHP:3555 Lab for Human Physiology 2 s.h.**

Experiential laboratory activities that incorporate fundamental measurements of human function and analysis, interpretation, and presentation of experimental findings. Prerequisites: **HHP:3500**.

Recommendations: one semester of statistics or biostatistics.

**HHP:3650 Applied Sport and Exercise Psychology 3 s.h.**

Application of sport and exercise psychological theory; theoretical and practical experience using psychological skills training for sport and exercise.

**HHP:3655 Emotional and Psychological Aspects of Health 3 s.h.**

Interfaces among emotional, psychological, and physical aspects of health; examination of how individuals with healthy psychological profiles engage in health behaviors; health-related implications of negative emotional and psychological states; strategies for promoting healthy psychological patterns; designed for health promotion, health studies students, and others interested in health-related careers.

Prerequisites: **HHP:2200**.

**HHP:3850 Promoting Health Globally 3 s.h.**

Major global health threats in the United States and abroad; impact of culture, history, economics on health disparities; approaches, programs, policies to remedy them. Same as **GHS:3850**.

**HHP:3870 Motivational Interviewing for Health Professions 3 s.h.**

Theoretical foundations, empirical research support, and application of motivational interviewing; how people make changes with regard to health behaviors, how health professionals can support positive change, barriers to change process, empowerment and autonomy, intrinsic motivation, applications of motivational interviewing; theory and research; motivational interviewing for health behavior change; extensive applied practice of motivational interviewing techniques and group work to practice skills; discussion and application of techniques, research, and practical knowledge.

**HHP:3900 Writing for Health and Human Physiology 3 s.h.**

Effective written communication specific to health sciences; planning, drafting, revising, and peer-editing materials (e.g., personal statements, professional communications, general articles of interest, scientific papers); practicum experience.

**HHP:4010 Behavioral and Clinical Health Assessment Laboratory 3 s.h.**

Expected assessment skill set for health promotion professionals, including ability to assess and interpret blood pressure, lung function, blood lipids, and heart rate; health behavior measurement issues including how to use objective monitors, self report, interview, and web-based trackers to assess



diet, physical activity, and sleep; general measurement and research concepts will be introduced and students will have laboratory practice in sphygmomanometry, spirometry, anthropometry, accelerometry, sleep tracking, computerized dietary assessments, and graded exercise testing. Prerequisites: **HHP:2200** and **HHP:2310** and (**HHP:1100** or **HHP:1150**) and (**HHP:1300** or **HHP:1350**).

**HHP:4020 Health Communication and Coaching Strategies 3 s.h.**

Science of health communication, including evidence-based development, strategic dissemination, and critical evaluation of relevant, accurate, accessible, and understandable health information communicated to individuals to advance their health; the art of health coaching including the processes that facilitate healthy, sustainable behavior change; health coaching strategies will include motivational interviewing, goal setting, and social support. Prerequisites: **HHP:2200** and **HHP:2310**.

**HHP:4030 Policy, Environmental, and Social Determinants of Health 3 s.h.**

How health is determined by access to social and economic opportunities (e.g., quality of our schools, safety of neighborhoods, and quality of our social interactions); policy, environmental, and social factors that influence health; how collaboration among federal, state, and local-level partners can improve health; goals and objectives of Healthy People 2020 (U.S. Federal Health Promotion Planning Guide) will be used to frame course material. Prerequisites: **HHP:2200** and **HHP:2310**.

**HHP:4040 Health Services: Current Barriers and Innovative Solutions 3 s.h.**

Barriers to quality health care access (e.g., lack of availability, high costs, lack of insurance coverage, health disparities); consequences of such barriers (e.g., unmet health needs, delays in care, lack of preventive services, preventable hospitalization); innovative solutions for improving access and quality of care (e.g., technologies and innovations, improving access to preventive health services, reducing costs); novel ways to improve access and quality of today's health care system. Prerequisites: **HHP:2200** and **HHP:2310**.

**HHP:4110 Advanced Human Anatomy Laboratory 4 s.h.**

Regional dissection of the human body. Prerequisites: **HHP:3110** or **HHP:3115**.

**HHP:4130 Skeletal Muscle Physiology 3 s.h.**

Skeletal muscle structure, contractile mechanisms, production of movement, biomechanical properties; adaptation to increased use, disuse, injury. Prerequisites: **HHP:3500** or **HHP:3550**.

**HHP:4150 Clinical Exercise Physiology 3 s.h.**

Recent advances in exercise physiology for clinical populations; emphasis on acute and chronic responses to exercise in healthy aged adults and in patients with cardiac, vascular, pulmonary, and metabolic diseases; basic and intermediate electrocardiography (ECG), pathophysiology of disease process, clinical assessment of disease severity, diagnostic testing, acute exercise responses, and exercise rehabilitation. Prerequisites: **HHP:3500** or **HHP:3550** or **HHP:3400**. Recommendations: **HHP:4460**.

**HHP:4190 Scientific Basis of Training for Elite Performance 3 s.h.**

Application of scientific principles to goal of improving strength, speed, endurance, and overall human function; general overview of structure and function of muscular, nervous, cardiovascular, and respiratory systems; bioenergetics of exercise; endocrine response to exercise; biomechanics of resistance exercise; adaptations to anaerobic and aerobic training programs; age and sex related considerations on training; nutrition and ergogenic aids. Prerequisites: **HHP:3500** or **HHP:1300**.

**HHP:4195 Exercise Programming for Special Populations 3 s.h.**

Measurement of health-related fitness and exercise capacity in special populations (e.g., children, older adults, obesity, orthopedic problems, cerebral palsy, intellectual disabilities).

Prerequisites: **HHP:3400** and (**HHP:4200** or **HHP:4210**).

**HHP:4200 Metabolic Exercise Testing and Prescription 4 s.h.**

Basic techniques in physical fitness assessment, prescription of exercise for healthy and unhealthy adults, promotion of physical activity within communities; provides knowledge and skill competencies required for certification as American College of Sports Medicine health fitness instructor.

Prerequisites: **HHP:2200** and (**HHP:3400** or **HHP:3500** or **HHP:3550**). Requirements: health promotion, exercise science, or human physiology major.

**HHP:4210 Musculoskeletal Exercise Testing and Prescription 4 s.h.**

Educational and practical experience for designing resistance training and flexibility programs; competencies for certification with National Strength and Conditioning Association.

Prerequisites: **HHP:2200** and (**HHP:3400** or **HHP:3500** or **HHP:3550**). Requirements: health promotion, exercise science, or human physiology major.

**HHP:4220 Biomechanics of Human Motion 3 s.h.**

Application of the principles of mechanics to investigation of human motion in two dimensions; system modeling, force system and equilibrium analysis, particle and rigid body kinematics, Newton's and Euler's equations of motion, work-energy and impulse-momentum integral principles. Prerequisites:

(**HHP:1100** or **HHP:1150** or **HHP:3105** or **HHP:3115**) and (**PHYS:1400** or **PHYS:1511** or **PHYS:1611** or **HHP:2350**).

**HHP:4230 Motor Learning: Theory and Application 3 s.h.**

How skilled motor behavior is acquired; behavioral changes that occur during skill acquisition; structural and physiological changes that occur in central nervous system; principles of training and practice that yield efficient and effective motor learning; how this information is helpful to health professionals involved in motor rehabilitation, physical educators and coaches, music instructors and musicians, strength and conditioning professionals, fitness professionals, and athletes, among others.

Prerequisites: **HHP:1300**. Recommendations: familiarity with basic neuroscience (neurons, synaptic transmission, basic anatomical organization of sensory and motor systems).

**HHP:4250 Human Pathophysiology 3 s.h.**

In-depth study of human pathological processes and their effects on homeostasis; etiology, symptoms, and risk factors of various diseases; emphasis on major diseases impacting worldwide disability and death; how pathological processes are manifested and progress in the body.

Prerequisites: **HHP:3500** or **HHP:3550**.

**HHP:4260 Respiratory Pathophysiology 3 s.h.**

Structure and function of human respiratory system; focus on didactic and case study-based learning; control of breathing, gas exchange, lung mechanics, regulation of pulmonary blood flow, respiratory responses to stress; application of these physiological concepts to case studies of human disease.

Prerequisites: **HHP:3500** or **HHP:3550**. Recommendations: **PHYS:1511**, and **MATH:1460** or **MATH:1850**.

**HHP:4300 Neural Control of Posture and Movement 3 s.h.**

Neuroanatomical and neurophysiological bases of human motor control; mechanisms for locomotion and posture, control of arm and hand movements, role of sensory information.

Prerequisites: **HHP:3500** or **HHP:3550**. Requirements: anatomy or human physiology course.

**HHP:4310 Sport and Exercise Nutrition 3 s.h.**

Relationship between nutrition, fitness and sport performance; basic nutrition, physiology, chemistry, psychology, food preparation. Prerequisites: **HHP:2200** and **HHP:2310**.

**HHP:4320 Nutrition Interventions 3 s.h.**

Strategies that assist in assessment and evaluation of nutrition behaviors of individuals and groups; interventions to meet nutritional needs of individuals and groups with a variety of health issues.

Prerequisites: **HHP:2200** and **HHP:2310**.

**HHP:4350 Health and Human Physiology Practicum 1 s.h.**

Experience in planning and implementing programs in the areas of fitness, strength and conditioning, nutrition, clinical rehabilitation, or health promotion. Prerequisites: (**HHP:1100** or **HHP:1150**) and **HHP:2200** and **HHP:2310** and (**HHP:1300** or **HHP:1350** or **HHP:3500**).

**HHP:4360 Practicum in Group Fitness Instruction 2 s.h.**

Opportunity to observe group-fitness instructors in an applied setting; help organize and execute a group-fitness class. Prerequisites: (**HHP:4410** or **HHP:3400**) and **HHP:2310** and (**HHP:3500** or **HHP:1300**) and **HHP:1100**. Requirements: CPR/AED or Group Fitness Instructor (ACSM, ACE, AFAA) or specific fitness (yoga, indoor cycling, crossfit) certification.

**HHP:4365 Practicum in Health Coaching 3 s.h.**

Opportunity to develop and practice health coaching skills in an observed classroom setting; includes discussion, reviews of case studies, and role playing as health coaches; students dedicate seven-and-one-half hours per week in the community outreach laboratory, remotely (phone, Skype, text messaging) or in person, providing health coach services to referred patients and community members.

Prerequisites: **HHP:4020** or **HHP:3030**.

**HHP:4370 Practicum in Strength and Conditioning 2 s.h.**

Opportunity to observe strength and conditioning professionals in an applied setting; participation in process of helping athletes reach performance goals. Prerequisites: **HHP:2310** and (**HHP:3400** or **HHP:4410**) and **HHP:1100** and (**HHP:3500** or **HHP:1300**). Requirements: CPR/AED certification.

**HHP:4390 Understanding Human Disease 3 s.h.**

Introduction to process of human disease at cell, organ, and whole body level throughout the lifespan; pathophysiological changes occurring with disease, including risk factors, disease development, and overall effects of disease on the body; cancer, diabetes, obesity, cardiovascular, neurodegenerative diseases, and aging. Prerequisites: **HHP:1300** or **HHP:1350**.

**HHP:4400 Health Promotion Clinical Practicum 1 s.h.**

Experience in planning and implementing clinical health promotion programs focusing on nutrition, physical fitness, cardiac rehabilitation, and respiratory rehabilitation. Prerequisites: **HHP:3200** and (**HHP:4200** or **HHP:4010**).

**HHP:4405 Health Promotion Community and Worksite Practicum 1 s.h.**

Planning and implementing community and worksite health promotion programs.

Prerequisites: **HHP:3200** and (**HHP:4200** or **HHP:4010**).

**HHP:4410 Exercise Physiology 3 s.h.**

Mechanisms responsible for the acute and chronic effects of exercise on the different organ systems of the body. Offered fall semesters. Prerequisites: **HHP:1300** or **HHP:1350** or **HHP:3500** or **HHP:3550**.

**HHP:4415 Exercise Science Practicum 1 s.h.**

Experience in planning and implementing exercise programs related to physical fitness, including strength and conditioning in healthy and diseased/injured populations, and in elite athletes.

Prerequisites: **HHP:4200** and **HHP:4210**.

**HHP:4420 Planning and Evaluating Health Interventions 3 s.h.**

Assessment, planning, implementation, and evaluation of health promotion programs.

Prerequisites: **HHP:3200**.

**HHP:4440 Physiology of Nutrition 3 s.h.**

Metabolic and biological aspects of human energy production, relationship to energy consumption; systems or integrative approach. Prerequisites: **HHP:1300** or **HHP:1350** or **HHP:3500** or **HHP:3550**.

**HHP:4450 Genetic Basis of Disease 3 s.h.**

Changes in single molecules that lead to systemic physiological alterations in mammals; relationship of these changes to development, aging, exercise, and specific diseases; current methodologies for studying mammalian genetics and physiology. Prerequisites: **HHP:3500** or **HHP:3550**.

**HHP:4460 Cardiovascular Physiology 3 s.h.**

Structure and function of cardiovascular system; heart, microcirculation, hemodynamics, regional circulation, reflex integration, regulation during physical stress. Prerequisites: **HHP:3500** or **HHP:3550**.

Recommendations: calculus and physics.

**HHP:4465 Environmental Exercise Physiology 3 s.h.**

Study of physiological responses of the human organism to various forms of environmental stress at rest and during exercise; how physical performance is affected by environmental stressors such as heat, cold, altitude, microgravity, and hyperbaria. Prerequisites: **HHP:3400** or **HHP:3500** or **HHP:3550**.

**HHP:4470 Physiology of Aging 3 s.h.**

Aging's effects on cells, tissues, and organs; how aging influences function of major body organ systems and the whole organism; physiological mechanisms that underlie age-related changes in body function and performance; integrative approach with focus on human aging.

Prerequisites: **HHP:3500** or **HHP:3550**.

**HHP:4480 Introduction to Human Pharmacology 3 s.h.**

General pharmacology (e.g., administration, distribution, and elimination of drugs, dose response curves, adverse effects, placebos, homeopathy); pharmacotherapy of selected human diseases, pathophysiologic aspects of the disease, how different classes of drugs modify pathophysiologic effects to restore health or reduce disease's impact; focus on mechanisms of drug actions in humans; adverse effects, pharmacokinetic considerations, drug interactions; how to write prescriptions.

Prerequisites: **HHP:1300** or **HHP:3500** or **HHP:3550**. Requirements: human physiology B.S. majors must complete **HHP:3550**. Same as **PHAR:4480**.

**HHP:4490 Diagnosing Diseases: Patient History and Physical Examination 3 s.h.**

Different diseases studied by interacting with patients at Meenakshi Mission Hospital and Research Center in Madurai, India; formal lectures in mornings followed by bedside teaching in afternoons and grand rounds in evenings; for pre-health professional students.

**HHP:4500 Undergraduate Independent Study arr.**

Library or laboratory research related to a specific topic in human physiology, normally culminating with a written manuscript; work directed by a faculty member.

**HHP:4510 Energy Metabolism in Health and Disease 3 s.h.**

Comprehensive and molecular-driven approach to energy metabolism during exercise and calorie restriction regimens in skeletal muscle, adipose tissue, liver, heart, brain; special emphasis on muscle metabolism and its interaction with other organ systems in treatment and prevention of metabolic diseases (e.g., obesity, diabetes, cardiovascular diseases, cancer). Prerequisites: **HHP:3500** or **HHP:3550**. Recommendations: **HHP:4410** and **BIOL:2723**.

**HHP:4800 Research Methods and Ethics 2 s.h.**

Introduction to concepts, principles, and methods of research; topics include research design, data collection, data analysis, and reporting research; students identify and formulate research questions, design appropriate research, collect data using different methods, conduct data analysis, present research findings, and critically critique research literature; main ethical issues and professional conduct in scientific research. Requirements: honors standing.

**HHP:4900 Honors Research 3 s.h.**

Completion of honors research begun in **HHP:4800**; analysis of data, writing and oral presentation of honors thesis, work with an active research tenure-track faculty member in a laboratory; second of a two-semester sequence. Prerequisites: **HHP:4800** with a minimum grade of B. Requirements: honors standing.

**HHP:4930 Health and Human Physiology Internship3 -9,12 s.h.**

Directed practical field experience involving program planning, implementation, evaluation, and administration; varied areas such as fitness, wellness, nutrition, clinical, and strength and conditioning.

**HHP:4935 Clinical Exercise Physiology Internship 1-6 s.h.**

Directed practical field experience; program planning, implementation, evaluation, and administrative procedures.

**HHP:4940 Health Promotion Honors Readings 1-2 s.h.**

First step to complete an honors thesis; work with health and human physiology faculty member; comprehensive readings in a specific area (e.g., obesity in children, disabilities and sport); readings include primarily research reviews, popular press, and editorials; production of an

annotated bibliography summarizing readings and presentation to faculty member at end of semester;  
brief research proposal summarizing background, research questions, and methods of selected area.