Exercise Physiology, B.S.

Degrees Offered

• Bachelor of Science

Randall W. Bryner, Ed.D, Associate Professor, Chair and Director of Undergraduate Education, rbryner@hsc.wvu.edu; (rbryner@hsc.wvu.edu) http://medicine.hsc.wvu.edu/ep/students/bachelor-of-science/

John M. Hollander, Ph.D., Professor, Senior Assistant Dean for Research and Graduate Education, jhollander@hsc.wvu.edu; (johollander@hsc.wvu.edu) http://medicine.hsc.wvu.edu/ep/students/phd-program/

Nature of the Program

The mission of the Division of Exercise Physiology is to prepare qualified professionals at the B.S., M.S., and Ph.D. levels to promote health and quality of life through the use of appropriate physical activity and lifestyle behaviors. In addition it is our mission to provide exercise physiology programs and expertise at the community, state, and national level, and to make meaningful scientific contributions to the discipline of exercise science through faculty research and by training graduate students in research skills. The WVU Exercise Physiology Program was established in the Health Sciences Center’s School of Medicine in July 1993. The program offers a four-year curriculum leading to a bachelor of science degree in exercise physiology, a one or two-year program leading to a masters of science (clinical or thesis track), and a doctoral program leading to a Ph.D. in exercise physiology. The Bachelor of Science program meets the knowledge, skill, and aptitude (KSA) requirements for students to be eligible to take the certification examinations offered by the American College of Sports Medicine and the National Strength and Conditioning Association.

What is an Exercise Physiologist?

Exercise physiology is the study of the biological and biochemical processes associated with exercise and overload that affects the underlying function of cells and organ systems in the human body. Exercise physiology is a rapidly evolving field that is becoming increasingly important in the delivery of healthcare. Exercise physiologists work to prevent or delay the onset of chronic disease in healthy participants or to provide therapeutic or functional benefits to patients with known disease. Services may be offered in a variety of medical settings such as hospitals, rehabilitation centers, and out-patient clinics; in community, corporate, commercial, and university fitness and wellness centers; in nursing homes and senior citizens centers; as well as in research and academic settings.

Research by scientists trained in exercise physiology have greatly expanded our understanding of the ways in which exercise affects cell function. Advances in research in exercise physiology have provided a foundation for many types of medical treatment in areas that include but are not limited to cardiovascular diseases, diabetes, aging, obesity, and disuse atrophy. Employment opportunities are expanding and increase with experience and level of education.

Exercise physiologists are trained to evaluate people in the areas of cardiovascular fitness, muscular strength and endurance, flexibility, neuromuscular integration, and body composition. They are also trained to provide exercise programs based on the results of these evaluations that are designed to increase the functional capacity of the participants.

Exercise physiologists work with athletes, patients, and healthy participants in the areas of disease prevention in wellness programs or rehabilitation in hospital settings. The bachelor of science program is a preparatory program for graduate school. Graduates of this program continue their studies in exercise physiology, physical therapy, medicine, or other health-related careers. Graduates of the master of science or doctoral program find employment in corporate wellness, hospital rehabilitation, higher education, or other research settings. Graduates of our Ph.D. program have obtained postdoctoral positions in prestigious universities and medical schools. Additionally, they may be employed in a wide variety of private, community, state, and national agencies. Exercise physiology is an evolving field that is becoming increasingly important with the integration of preventive medicine into the healthcare system.

ADMINISTRATION

CHAIR

• Randall Bryner - Ed.D.
  Director of Undergraduate Education

VICE CHAIR AND DIRECTOR OF GRADUATE STUDIES

• John Hollander - Ph.D.
  Director of Graduate Studies
FACULTY

CHAIR
• Randall Bryner - Ed.D. (West Virginia University)
  Associate Professor, Director of Undergraduate Studies, Diabetes, Exercise

PROFESSOR
• John M. Hollander - Ph.D (University of Wisconsin)
  Senior Assistant Dean for Research and Graduate Education

ASSOCIATE PROFESSORS
• Daniel Bonner - MS (West Virginia University)
  Clinical Exercise Physiology
• Randall W. Bryner - Ed.D. (West Virginia University)
  Vice Chair, Director of Undergraduate Studies, Diabetes, Exercise, Cancer
• Paul D. Chantler - Ph.D. (Liverpool John Moores University)
  Metabolic Syndrome, Vascular Biology, Effects of Aging and CV Diseases on Arterial and Ventricular Structure and Function
• David Donley - MS (West Virginia University)
  Obesity and Metabolic Syndrome
• Diana Gilleland - MS (West Virginia University)
  Cardiac Rehabilitation
• Jean L. McCrory - Ph.D. (Penn State University)
  Gait and Balance Biomechanics
• Beth Nardella - M.A. (West Virginia University)
  Writing Instructor, Global Engagement Coordinator
• I. Mark Olvert - Ph.D. (Loma Linda University)
  Angiogenesis, Respiratory Physiology
• Emidio E. Pistilli - Ph.D (West Virginia University)
  Muscular Dystrophy, Muscle Injury, Cytokines, Cancer Biology
• Lori Sherlock - Ed.D. (West Virginia University)
  Aquatic Therapy in Diabetes
• Sergiy Yakovenko - Ph.D. (University of Alberta)
  Neuromuscular Integration of Movement

ASSISTANT PROFESSORS
• Miriam E. Leary - Ph.D. (University of Texas at Austin)
  Student Retention, Teaching and Learning, Community Engagement, Exercise Nutrition
• Emily Ryan - Ph.D. (Kent State University)
  Obesity Exercise
• James Thomas - M.S. (West Virginia University)
  Exercise, Children, Strength Training

ADJUNCT ASSOCIATE PROFESSOR
• Ming Pei - Ph.D. (Beijing University, China)
  Stem Cells, Cartilage Repair

Admissions
Due to Covid-19 – Admission requirements may differ from what is listed on this page. Please review the most up-to-date program admission requirements for the Bachelor of Science in Exercise Physiology (https://admissions.wvu.edu/academics/majors/exercise-physiology/) major.

First time Freshmen eligible to be admitted to WVU are directly admitted to the program.

Transfer students must have a 2.75 cumulative GPA to be admitted to the program.

Current WVU students must attend a major change advising session and have a 2.75 cumulative GPA to be admitted to the program.

ADMISSION REQUIREMENTS 2022-2023
The Admission Requirements above will be the same for the 2022-2023 Academic Year.
Major Code: 8335

Click here to view the Suggested Plan of Study (p. 5)

General Education Foundations

Please use this link to view a list of courses that meet each GEF requirement. (http://registrar.wvu.edu/gef/)

NOTE: Some major requirements will fulfill specific GEF requirements. Please see the curriculum requirements listed below for details on which GEFs you will need to select.

General Education Foundations

F1 - Composition & Rhetoric

ENGL 101 & ENGL 102 Introduction to Composition and Rhetoric and Composition, Rhetoric, and Research

or ENGL 103 Accelerated Academic Writing

F2A/F2B - Science & Technology

F3 - Math & Quantitative Reasoning

F4 - Society & Connections

F5 - Human Inquiry & the Past

F6 - The Arts & Creativity

F7 - Global Studies & Diversity

F8 - Focus (may be satisfied by completion of a minor, double major, or dual degree)

Total Hours 31-37

Please note that not all of the GEF courses are offered at all campuses. Students should consult with their advisor or academic department regarding the GEF course offerings available at their campus.

Curriculum Requirements

University Requirements 43
Exercise Physiology Program Requirements 44
Exercise Physiology Major Requirements 33
Total Hours 120

University Requirements

General Education Foundations (GEF) 1, 2, 3, 4, 5, 6, 7, and 8 (31-37 Credits)
Outstanding GEF Requirements 1, 5, 6, and 7

EXPH 191 First-Year Seminar 1

General Electives 27

Total Hours 43

Exercise Physiology Program Requirements

A grade of C- or higher must be earned in all graded courses required for the Exercise Physiology Program Requirements. In addition, students must maintain a minimal cumulative GPA of 2.5 to remain in the program. Students who fail to meet or maintain these minimal requirements will be eligible for dismissal.

Select one of the following sequences:

BIOL 101 & BIOL 103 General Biology and General Biology Laboratory (GEF 2)

BIOL 102 & BIOL 104 General Biology and General Biology Laboratory (GEF 2)

OR

BIOL 115 & BIOL 116 Principles of Biology and Principles of Biology Laboratory

BIOL 117 & BIOL 118 Introductory Physiology and Introductory Physiology Laboratory

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 115 &amp; 115L</td>
<td>Fundamentals of Chemistry and Fundamentals of Chemistry 1 - Laboratory (GEF 8)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 116 &amp; 116L</td>
<td>Fundamentals of Chemistry and Fundamentals of Chemistry 2 - Laboratory</td>
<td>4</td>
</tr>
</tbody>
</table>

Select one of the following sequences:

- CHEM 231 & 231L | Organic Chemistry: Brief Course and Organic Chemistry: Brief Course - Laboratory | 4 |
- OR |
- CHEM 233 & CHEM 235 | Organic Chemistry and Organic Chemistry Laboratory | 4 |
- OR |
- CHEM 233 & CHEM 235 & CHEM 234 & CHEM 236 | Organic Chemistry and Organic Chemistry Laboratory | 4 |

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>PHYS 101</td>
<td>Introductory Physics (or)</td>
<td>4</td>
</tr>
<tr>
<td>or PHYS 111</td>
<td>General Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 102</td>
<td>Introductory Physics (or)</td>
<td>4</td>
</tr>
<tr>
<td>or PHYS 112</td>
<td>General Physics</td>
<td>4</td>
</tr>
<tr>
<td>PSYC 101</td>
<td>Introduction to Psychology (GEF 4)</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 241</td>
<td>Introduction to Human Development</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one of the following:

- PSIO 241 | Elementary Physiology | 4 |
| PSIO 441 | Mechanisms of Body Function | 4 |

Select one of the following (GEF 3):

- STAT 211 | Elementary Statistical Inference | 3 |
| ECON 225 | Elementary Business and Economics Statistics | 3 |

Total Hours: 41

**Exercise Physiology Major Requirements**

A grade of C- or higher must be earned in all graded courses required for the major. In addition, students must maintain a minimal cumulative GPA of 2.5 to remain in the program. Students who fail to meet or maintain these minimal requirements will be eligible for dismissal.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EXPH 101</td>
<td>Introduction to Exercise Physiology</td>
<td>1</td>
</tr>
<tr>
<td>EXPH 240</td>
<td>Medical Terminology</td>
<td>1</td>
</tr>
<tr>
<td>EXPH 364</td>
<td>Kinesiology</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 369</td>
<td>Strength/Conditioning Methods</td>
<td>4</td>
</tr>
<tr>
<td>EXPH 370</td>
<td>Writing for Exercise Science</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 386</td>
<td>Advanced Physiology of Exercise 1</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 387</td>
<td>Advanced Physiology of Exercise 2</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 388</td>
<td>Physiology of Exercise Laboratory 1</td>
<td>1</td>
</tr>
<tr>
<td>EXPH 389</td>
<td>Advanced Physiology of Exercise Lab 2</td>
<td>1</td>
</tr>
<tr>
<td>EXPH 440</td>
<td>Anatomy for Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 461</td>
<td>Exercise is Medicine</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 491</td>
<td>Professional Field Experience</td>
<td>4</td>
</tr>
<tr>
<td>or EXPH 497</td>
<td>Research</td>
<td>4</td>
</tr>
<tr>
<td>EXPH 475</td>
<td>Industry Organization in Exercise Physiology (or)</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 493</td>
<td>Special Topics (Nutrition and Exercise)</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 496</td>
<td>Senior Thesis</td>
<td>3</td>
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</table>

All students must complete 25 hours of community service per year.

Total Hours: 39

* BIOL 115/BIOL 116, BIOL 117/BIOL 118, CHEM 233/CHEM 235 and CHEM 234/CHEM 236 are required for students selecting the Health Professions Area of Emphasis. Students in the General Track can take CHEM 231/CHEM 231L or CHEM 233/CHEM 235.
** Additional MATH prerequisites may be required for PHYS and STAT courses which are determined by placement. These prerequisite courses will be part of the required General Electives.

### SUGGESTED PLAN OF STUDY

#### First Year

<table>
<thead>
<tr>
<th>Program Code</th>
<th>Description</th>
<th>Fall Hours</th>
<th>Spring Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 101 &amp; BIOL 103 (GEF 2)</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EXPH 191</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MATH 124 (GEF 3)</td>
<td>3</td>
<td>3</td>
<td></td>
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<tr>
<td>PSYC 101 (GEF 4)</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>EXPH 240</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>GEF 5, 6, or 7</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
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#### Second Year

<table>
<thead>
<tr>
<th>Program Code</th>
<th>Description</th>
<th>Fall Hours</th>
<th>Spring Hours</th>
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</thead>
<tbody>
<tr>
<td>PHYS 101</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CHEM 115 &amp; 115L (GEF 8)</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>PSYC 241</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ENGL 102 (GEF 1)</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EXPH 364</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
<td><strong>15</strong></td>
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#### Third Year

<table>
<thead>
<tr>
<th>Program Code</th>
<th>Description</th>
<th>Fall Hours</th>
<th>Spring Hours</th>
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<tbody>
<tr>
<td>STAT 211</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EXPH 386</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EXPH 388</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EXPH 370</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>EXPH 440</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>General Elective</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>15</strong></td>
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</table>

#### Fourth Year

<table>
<thead>
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<th>Program Code</th>
<th>Description</th>
<th>Fall Hours</th>
<th>Spring Hours</th>
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</thead>
<tbody>
<tr>
<td>EXPH 491</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>EXPH 475</td>
<td>3</td>
<td>3</td>
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</tr>
<tr>
<td>GEF 5, 6, or 7</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>General Electives</td>
<td>6</td>
<td></td>
<td></td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
<td><strong>13</strong></td>
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</table>

Total credit hours: 120

### Areas of Emphasis

- Aquatic Therapy
- Dance Science
- Health Professions

### AQUATIC THERAPY AREA OF EMPHASIS REQUIREMENTS

<table>
<thead>
<tr>
<th>Program Code</th>
<th>Description</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EXPH 450</td>
<td>Theory of Aquatic Therapy</td>
<td>4</td>
</tr>
<tr>
<td>EXPH 451</td>
<td>Application of Aquatic Therapy</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 452</td>
<td>Aquatic Therapy Facility Management</td>
<td>3</td>
</tr>
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</table>
**DANCE SCIENCE AREA OF EMPHASIS REQUIREMENTS**

A GPA of 3.0 is required for acceptance in to the Dance Science Area of Emphasis. An interview with the coordinator of the program is required for admission. The first class in the area of emphasis as seen in the Suggested Plan of Study is offered in the fall semester of junior year.

Minimum GPA of 2.5 required.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EXPH 480</td>
<td>Tissue Biomechanics</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 481</td>
<td>Applied Neuromechanics</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 482</td>
<td>Dance Injury Prevention</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 483</td>
<td>Seminar in Applied Anatomy for Dance Movements</td>
<td>1</td>
</tr>
<tr>
<td>EXPH 491</td>
<td>Professional Field Experience</td>
<td>5</td>
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</table>

Total Hours: 15

**HEALTH PROFESSIONS AREA OF EMPHASIS REQUIREMENTS**

All courses must be completed but 12 hours replace courses from the general course list

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOC 339</td>
<td>Introduction to Biochemistry</td>
<td>3 or 4</td>
</tr>
<tr>
<td>or BIOC 531</td>
<td>General Biochemistry</td>
<td></td>
</tr>
<tr>
<td>or AGBI 410</td>
<td>Introductory Biochemistry</td>
<td></td>
</tr>
<tr>
<td>BIOL 219 &amp; BIOL 220</td>
<td>The Living Cell and The Living Cell Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>EXPH 460</td>
<td>Pathophysiology</td>
<td>3</td>
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Select one of the following: 3 or 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>AEM 341</td>
<td>General Microbiology</td>
<td></td>
</tr>
<tr>
<td>GEN 371</td>
<td>Principles of Genetics</td>
<td></td>
</tr>
</tbody>
</table>

Upper Division BIOL Courses (Excluding BIOL 491, 495, 497)

Total Hours: 13

**SUGGESTED PLAN OF STUDY**

**First Year**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 115 &amp; 115L (GEF 8)</td>
<td>4</td>
<td>CHEM 116 &amp; 116L</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 115 &amp; BIOL 116 (GEF 2)</td>
<td>4</td>
<td>BIOL 117 &amp; BIOL 118 (GEF 8)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 124 (GEF 3)</td>
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<td>MATH 128 (GEF 8)</td>
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<td>PSYC 101 (GEF 4)</td>
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<td>ENGL 101</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 191 &amp; EXPH 240</td>
<td>1</td>
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Total: 16

**Second Year**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 101 &amp; CHEM 233 &amp; CHEM 235</td>
<td>4</td>
<td>PHYS 102 &amp; CHEM 234 &amp; CHEM 236</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 219 &amp; BIOL 220</td>
<td>4</td>
<td>PSIO 241</td>
<td>4</td>
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<tr>
<td>ENGL 102 (GEF 1)</td>
<td>3</td>
<td>EXPH 493 (Nutrition and Exercise)</td>
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<tr>
<td>EXPH 364</td>
<td>3</td>
<td></td>
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</tbody>
</table>

Total: 18
Major Learning Outcomes

BACHELOR OF SCIENCE (BS) IN EXERCISE PHYSIOLOGY

The Bachelor of Science program in exercise physiology is a preparatory program for graduate or professional school in areas such as exercise physiology, physical therapy, or medicine. The undergraduate program includes courses in science, anatomy, physiology, nutrition, and business, and hands-on laboratories in exercise physiology, and exercise instruction. Students will also complete a 180 hr. clinical internship or research in their senior year. Select senior students can also take a hands-on cadaver dissection gross anatomy laboratory to further enhance their ability to compete for admission to Physician Assistant, Physical Therapy, Medicine or other Rehabilitative Science graduate programs.

Students will:

- Develop, integrate and apply foundational knowledge (e.g., concepts, facts, principles) of physiological, molecular, cellular, and integrative systems concepts in exercise physiology to athletic and diseased populations
- Critically interpret current scientific literature in areas of health and disease that are impacted by exercise
- Develop critical hands-on-experience for identifying health problems through proper evaluations
- Describe, communicate and demonstrate proper exercise techniques for healthy, and unhealthy populations
- Design, implement and interpret stress test experiments for evaluation of health risk
- Demonstrate technical skills in conducting clinical assessments for cardiovascular or skeletal muscle function
- Effectively communicate, verbally and in writing, their understanding of physiology and anatomical concepts in health and disease that are impacted by exercise intervention
- Discuss relevant scientific ethical issues pertinent to working as a team of health care providers
- Actively participate with fellow students and faculty by demonstrating teamwork in research and laboratory assessments of persons with or without health risks

EXPH 100. Orientation: Exercise Physiology 1. 1 Hour.
Orientation to degree requirements, departmental resources, curriculum options, and student responsibilities in Exercise Physiology. Promoting academic success strategies and exposing students to future career opportunities in Exercise Physiology.

EXPH 101. Introduction to Exercise Physiology. 1 Hour.
A broad and foundational look at the function and adaptation of the systems of the human body in response to exercise.

EXPH 191. First-Year Seminar. 1-3 Hours.
Engages students in active learning strategies that enable effective transition to college life at WVU. Students will explore school, college and university programs, policies and services relevant to academic success. Provides active learning activities that enable effective transition to the academic environment. Students examine school, college and university programs, policies and services.

EXPH 230. Exercise in American Culture. 3 Hours.
Covers issues of exercise in America, specifically themes integral to American culture such as age, class, race, gender, and beauty.
EXPH 235. Introduction to Global Issues in Exercise Physiology. 3 Hours.
History, concepts, theories, and ethics of development, colonialism, and charity as they impact health and wellness locally, in the United States, and across the world. Topics such as poverty, food insecurity, women's rights, disease outbreaks, and NGOs are discussed to provide a broader perspective on how the past has impacted our present.

EXPH 240. Medical Terminology. 1 Hour.
PR: Sophomore standing. The study of medical language with special emphasis given to terms used in the field of exercise physiology.

EXPH 293. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

EXPH 363. Honors Add-On to Kinesiology. 1 Hour.
PR or CONC: EXPH 364 with a minimum grade of C- and students must be an enrolled in the Honors College. This course is a supplemental course for Honors students enrolled in EXPH 364. Each week, we will participate in an enrichment experience with practical application of principles taught in Kinesiology.

EXPH 364. Kinesiology. 3 Hours.
PR: MATH 124 or higher or (ACT math score of 26 or SAT math score of 580 and (QRA Part 1 score of 15 and QRA Part 2 score of 9)) and sophomore standing or consent. Anatomical, mechanical, and musculoskeletal study of the human body as the instrument for efficient performance of motor activities. (Laboratory work included.).

EXPH 365. Exercise Physiology 1. 3 Hours.
PR: Junior standing or consent. The study of the functioning of body systems during exercise and the acute and chronic adaptations that occur from exercise stress.

EXPH 368. Lab Techniques and Methods. 3 Hours.
PR: Junior standing and EXPH 364 and EXPH 365 or consent. Techniques and methods for designing and conducting exercise programs for asymptomatic, healthy individuals.

EXPH 369. Strength/Conditioning Methods. 4 Hours.
PR: EXPH 364 and EXPH 386. Scientific foundations of strength and conditioning with skills and methods to apply that knowledge in clinical exercise training.

EXPH 370. Writing for Exercise Science. 3 Hours.
PR: (ENGL 101 and ENGL 102) or ENGL 103 and PR or CONC: EXPH 386. Writing for medical scientific fields. Students will develop a book review, analyze discipline-specific texts, and write scientific literature reviews. Includes a review of style and language use.

EXPH 386. Advanced Physiology of Exercise 1. 3 Hours.
PR: ((BIOL 101 through BIOL 104) or (BIOL 115 and BIOL 116 and BIOL 117 and BIOL 118)) and CHEM 115 and CHEM 115L and PHYS 101 with a minimum grade of C- in all. The study of the major systems of the body and how they function during acute and chronic adaptations that occur from exercise stress. Special focus is given to metabolism and the neuromuscular, respiratory, and cardiovascular systems.

EXPH 387. Advanced Physiology of Exercise 2. 3 Hours.
PR: EXPH 386 and EXPH 388. A study of the functioning of body systems during exercise and the acute and chronic adaptations that occur from exercise stress. Special focus is given to the endocrine system, obesity and body composition, exercise throughout the lifespan, environmental exercise stress, and clinical exercise physiology.

EXPH 388. Physiology of Exercise Laboratory 1. 1 Hour.
PR or CONC: EXPH 386 with a minimum grade of C-. A study of the laboratory techniques and methods used in clinical and athletic settings by exercise professionals specifically as they relate to those topics covered in EXPH 386.

EXPH 389. Advanced Physiology of Exercise Lab 2. 1 Hour.
PR: EXPH 386 and EXPH 388. A study of the laboratory techniques and methods used in clinical and athletic settings by exercise professionals specifically as they relate to those topics covered in EXPH 387.

EXPH 393. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

EXPH 440. Anatomy for Exercise Physiology. 3 Hours.
PR: (BIOL 101 and BIOL 102 and BIOL 103 and BIOL 104) or BIOL 115, with a minimum grade of C-. Provides students an in-depth integrative understanding of human anatomy. A regional approach will be used to learn typical and atypical anatomical structures of the human body. Clinical correlations will made throughout each topical area.

EXPH 441. Gross Anatomy Laboratory for Exercise Physiology. 2 Hours.
PR: ((BIOL 101 and BIOL 102 and BIOL 103 and BIOL 104) or BIOL 115) and PR or CONC: EXPH 440 with a minimum grade of C- in all and Junior level status. Provides an in-depth integrative understanding of human anatomy. Lab dissection activities associated with co-requisite lectures will be used to learn typical and atypical anatomical structures of the human body.

EXPH 450. Theory of Aquatic Therapy. 4 Hours.
PR: Junior standing or consent. An introduction to aquatic therapy. It covers the historical perspective, biophysiological response to water immersion, and application of aquatic therapy to specific physical diagnoses.
EXPH 451. Application of Aquatic Therapy. 3 Hours.
PR: Junior standing and EXPH 450 and consent. Design and implementation of aquatic exercise prescriptions to meet rehabilitation goals. Aquatic therapy techniques will be demonstrated and practiced.

EXPH 452. Aquatic Therapy Facility Management. 3 Hours.
PR or CONC: EXPH 450 and Junior standing and consent. Facility design, water chemistry, water safety, and aquatic programming for special populations including rehabilitation, community re-entry, and wellness programs in a comprehensive continuum of care.

EXPH 460. Pathophysiology. 3 Hours.
PR: EXPH 386 and EXPH 387 and PR or CONC: PSIO 241 or PSIO 441 and junior standing or permission. The study of disease etiology and the physiological changes that occur from disease, with special emphasis given to the use of exercise in disease prevention and therapy.

EXPH 461. Exercise is Medicine. 3 Hours.
PR: EXPH 386 and EXPH 388. The primary objective of this course is to examine how exercise is used as a safe and effective treatment for various disease conditions. Additionally, this course will discuss principles of the Exercise is Medicine model set forth by the American Medical Association and American College of Sports Medicine when assessing and prescribing physical activity in individuals.

EXPH 470. Research Methods. 3 Hours.
PR: Senior standing. CoReq: EXPH 496. The study of the scientific method and research design as it relates to the field of exercise physiology and preventive medicine.

EXPH 475. Industry Organization in Exercise Physiology. 3 Hours.
Prepares exercise physiology students to work in health care fitness related fields and promotes knowledge on how to build a business plan for entrepreneurship.

EXPH 480. Tissue Biomechanics. 3 Hours.
PR: EXPH 350 with a minimum grade of C- or consent. An introduction to the biomechanical properties and behavior of human tissues and joints. Human tissue behavior under various loading conditions, including, sitting, standing, gait, and fundamental movement skills will be discussed. In addition, the development and etiology of fractures, strains, sprains, and arthroplasty will be presented and discussed.

EXPH 481. Applied Neuromechanics. 3 Hours.
PR: EXPH 350 with a minimum grade of C- or consent. An introduction to the study of the nervous system control of muscle activation and movement outcomes. Relationships among neural and muscle tissues, neural elements and force production, acute and chronic adaptations to stress, neural plasticity, neural elements of movement disorders, prevention of and recovery from injury will be discussed.

EXPH 482. Dance Injury Prevention. 3 Hours.
PR: EXPH 440 with a minimum grade of C-. Designed for students to understand anthropometrics, movement mechanics, overtraining, environmental and situational factors related to the development of dance injuries and methods used to prevent dance injury and injury progression.

EXPH 483. Seminar in Applied Anatomy for Dance Movements. 1 Hour.
PR: EXPH 440 with a minimum grade of C-. Presentation and discussion of topics of mutual concern to students and faculty. Current topics in the literature include those that are associated with anatomical limitations and movement demands of multiple dance forms.

EXPH 490. Teaching Practicum. 1-3 Hours.
PR: Consent. Teaching practice as a tutor or assistant.

EXPH 491. Professional Field Experience. 1-18 Hours.
PR: Consent. (May be repeated up to a maximum of 18 hours.) Prearranged experimental learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competence development.

EXPH 493. Special Topics. 1-6 Hours.
PR: Consent. Investigation of topics not covered in regularly scheduled courses.

EXPH 494. Seminar. 1-3 Hours.
PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

EXPH 495. Independent Study. 1-6 Hours.
Faculty supervised study of topics not available through regular course offerings.

EXPH 496. Senior Thesis. 1-3 Hours.
PR: Consent.

EXPH 497. Research. 1-6 Hours.
Independent research projects.

EXPH 498. Honors. 1-3 Hours.
PR: Students in Honors Program and consent by the honors director. Independent reading, study or research.

EXPH 499. Global Service Learning. 1-3 Hours.
PR: Consent. Theory and practice of global service-learning. The main objective will be to pair the experiential aspects of meaningful and sustained service in the host community with work from the student's anchor course by offering a methodological framework for cultural immersion and community service as well as adding to the content of the anchor course.