Physical Rehabilitation Science, Ph.D.

Through course work and participation in research, the Doctor of Philosophy program in physical rehabilitation science emphasizes the development of an individual's expertise as a researcher in rehabilitation science. Approximately 20 students are enrolled in the Ph.D. program each year. Graduates who complete the program are prepared for academic appointments that emphasize research, scholarship, and teaching. They possess:

- theoretical and scientific knowledge to perform basic, applied, or clinical-level original research that leads to scientific presentations, publication in peer-reviewed journals, and competition for extramural funding through scientific grant writing;
- breadth of knowledge in exercise physiology, biomechanics, neuroscience, or motor control specialty areas as they relate to impairment, functional limitation, and disability; and
- theoretical and practical skills required for college or university teaching at the professional entry and advanced graduate levels.

Requirements

The Doctor of Philosophy with a major in physical rehabilitation science requires a minimum of 72 s. h. of graduate credit. The program is designed to advance a student's ability to independently develop and carry out research that establishes the scientific basis for prevention, evaluation, and treatment of impairments, functional limitations, and disability. The curriculum is flexible enough to accommodate research focusing on basic, applied, or clinical studies in the rehabilitation sciences. Students have access to the program's research laboratories (see Facilities in this section of the Catalog).

Curriculum

Students and their faculty advisor develop an individualized study plan. A preliminary study plan is developed within the first 9 s. h. of graduate study; a final plan is submitted to the Graduate College when the Ph.D. comprehensive examination is scheduled.

To ensure breadth of knowledge, all students complete specific core, research, and scientific specialty area content courses. Elective courses are selected to provide in-depth study of the specialty; they are complemented by an advanced seminar course specific to a student's specialty and taken in preparation for the comprehensive examination.

Students must satisfactorily complete the comprehensive examination, which is taken after all required course work is completed. Doctoral study culminates with 12 s. h. of thesis research and an oral examination.

General Core Requirement

Ph.D. students must complete the following core requirements. In addition to the courses below, the Collaborative Institutional Training Initiative (CITI)—online, web-based training—must be completed before a student enrolls in BMED:7270 Scholarly Integrity/Responsible Conduct of Research I and BMED:7271 Scholarly Integrity/Responsible Conduct of Research II.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>PTRS:7812</td>
<td>Biomedical Instrumentation and Measurement</td>
<td>3</td>
</tr>
<tr>
<td>PTRS:7820</td>
<td>Seminar in Rehabilitation Science (taken twice for 1 s. h. each)</td>
<td>2</td>
</tr>
<tr>
<td>PTRS:7880</td>
<td>Teaching Practicum</td>
<td>arr.</td>
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<tr>
<td>BIOS:5120/IGPI:5120/STAT:5610</td>
<td>Regression Modeling and ANOVA in the Health Sciences</td>
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<tr>
<td>BMED:7270</td>
<td>Scholarly Integrity/Responsible Conduct of Research I</td>
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<tr>
<td>BMED:7271</td>
<td>Scholarly Integrity/Responsible Conduct of Research II</td>
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<tr>
<td>PTRS:7884</td>
<td>Practicum in Research</td>
<td>arr.</td>
</tr>
<tr>
<td>PTRS:7895</td>
<td>Advanced Seminar in Rehabilitation Science</td>
<td>arr.</td>
</tr>
<tr>
<td>PTRS:7900</td>
<td>Rehabilitation Research Capstone Project</td>
<td>arr.</td>
</tr>
<tr>
<td>PTRS:7927</td>
<td>Research in Rehabilitation Science</td>
<td>arr.</td>
</tr>
<tr>
<td>PTRS:7931</td>
<td>Critical Thinking in Pain</td>
<td>arr.</td>
</tr>
<tr>
<td>PTRS:7932</td>
<td>Critical Thinking in Biomechanics and Human Performance Assessment</td>
<td>arr.</td>
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<tr>
<td>PTRS:7933</td>
<td>Critical Thinking in Movement Control/Human Performance</td>
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<tr>
<td>PTRS:7934</td>
<td>Critical Thinking in Neural Plasticity</td>
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<tr>
<td>PTRS:7935</td>
<td>Critical Thinking in Movement Science</td>
<td>arr.</td>
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<tr>
<td>PTRS:7936</td>
<td>Critical Thinking in Cardiovascular Physiology</td>
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</table>
Specialty Content Requirement

Students must complete at least 9 s.h. in their scientific specialty area. Students may choose courses from the following list, but other courses suited to a student’s background knowledge and interest area are considered.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Anatomy and Cell Biology</td>
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<tr>
<td>ACB:8401</td>
<td>Advanced Human Anatomy</td>
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<tr>
<td>EPID:6900</td>
<td>Design of Intervention and Clinical Trials</td>
<td>3</td>
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<tr>
<td>Health and Human Physiology</td>
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<td></td>
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<tr>
<td>HHP:6130</td>
<td>Advanced Skeletal Muscle Physiology</td>
<td>1,3</td>
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<tr>
<td>HHP:6150</td>
<td>Advanced Clinical Exercise Physiology</td>
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<tr>
<td>HHP:6300</td>
<td>Motor Control Seminar</td>
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<tr>
<td>HHP:6410</td>
<td>Advanced Exercise Physiology</td>
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<tr>
<td>HHP:6460</td>
<td>Advanced Cardiovascular Physiology</td>
<td>1,3</td>
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<tr>
<td>HHP:6470</td>
<td>Advanced Physiology of Aging</td>
<td>1,3</td>
</tr>
<tr>
<td>HHP:6480</td>
<td>Advanced Human Pharmacology</td>
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</tr>
<tr>
<td>Neuroscience</td>
<td></td>
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<td>NSCI:7235</td>
<td>Neurobiology of Disease</td>
<td>3</td>
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<tr>
<td>Nursing</td>
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<tr>
<td>NURS:3460</td>
<td>Professional Role II: Research</td>
<td>3</td>
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<tr>
<td>Occupational and Environmental Health</td>
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<tr>
<td>OEH:4310</td>
<td>Occupational Ergonomics: Principles</td>
<td>3</td>
</tr>
<tr>
<td>OEH:6310</td>
<td>Occupational Ergonomics: Applications</td>
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<tr>
<td>Pharmacology</td>
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<tr>
<td>PCOL:5137</td>
<td>Neurotransmitters</td>
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<tr>
<td>PCOL:6207</td>
<td>Ion Channel Pharmacology</td>
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<tr>
<td>PCOL:6250</td>
<td>Advanced Problem Solving in Pharmacological Sciences</td>
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<tr>
<td>Physical Therapy</td>
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<tr>
<td>PTRS:5210</td>
<td>Kinesiology and Pathomechanics</td>
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<tr>
<td>PTRS:5206</td>
<td>Cardiopulmonary Therapeutics</td>
<td>3</td>
</tr>
<tr>
<td>PTRS:6250</td>
<td>Critical Inquiry I: Evidence-Based Practice</td>
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<tr>
<td>PTRS:6251</td>
<td>Critical Inquiry II: Rehabilitation Research</td>
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<tr>
<td>PTRS:6253</td>
<td>Functional Neuroanatomy</td>
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<td>PTRS:7875</td>
<td>Analysis of Activity-Based Neural and Musculoskeletal Plasticity</td>
<td>3</td>
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<tr>
<td>PTRS:7899</td>
<td>Introduction to Pain: Overview of Theories, Concepts, and Mechanisms</td>
<td>1</td>
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</table>

Application materials must include a complete Graduate College application form, test scores, transcripts, three letters of recommendation, and a statement of purpose.

Personal interviews are required of all applicants selected for consideration by the admissions committee. On-campus interviews are preferred, but telephone interviews may be substituted when necessary.

Application deadlines are October 15 for spring semester entry (notification by December 15); March 15 for summer entry (notification by May 15); and May 15 for fall semester entry (notification by July 15).

Financial Support

A number of assistantships are available for Ph.D. students. Faculty advisors provide guidance for students seeking external scholarship support through foundations and federal programs that support Ph.D. training.

Career Advancement

The Ph.D. program trains students to obtain positions as professors and researchers in rehabilitation science.