

# Doctor of Philosophy in Rehabilitation Science

The doctorate in rehabilitation science program is designed to prepare outstanding leaders who advance innovative interdisciplinary research in rehabilitation science. A major focus of the program is to advance the science of rehabilitation and to elucidate the scientific basis for the procedures and processes used in clinical practice.

Areas of research emphasis include human and animal studies designed to (1) promote an understanding of the pathophysiology of injury, disease, functional impairment, and associated disabilities, and (2) espouse the rationale for therapies designed to alleviate impaired human function and related physical and mental disabilities.

Applications for this program are submitted online. Detailed instructions on how to apply are available on the Department of Physical Therapy, Rehabilitation Science, and Athletic Training (<http://www.kumc.edu/school-of-health-professions/physical-therapy-and-rehabilitation-science/phd-in-rehabilitation-science/how-to-apply.html>) website. Students are admitted for the fall semester only. Applications for the fall semester must be received by February 1 for consideration.

## Admission Requirements:

- A bachelor's degree from a regionally accredited institution is required and must be documented by submission of official transcript indicating the degree has been conferred before entering the program. A master's or other advanced degree is preferable. Official transcripts for all courses taken at any institution are also required. Applicants are not required to be physical therapists or possess a degree in physical therapy. Applicants are encouraged to have a broad background in biological sciences, including anatomy, physiology, neuroscience, exercise science, biochemistry, genetics, molecular and cell biology, as well as statistics. Students with degrees from outside the U.S. may be subject to transcript evaluation indicating the degree is equivalent to a U.S. degree and meets the minimum cumulative grade-point average requirement.
- Applicants must possess a cumulative grade-point average of at least a 3.0 on a 4.0 scale for his or her bachelor's degree program.
- Applicants who are not native speakers of English, whether domestic or international, must demonstrate they meet the minimum English proficiency requirement.
- A background check is required during the admission process; it may affect the student's eligibility to enter the program.
- A current resume or curriculum vitae is required and must include information on the applicant's educational, professional, and research background. The following information will be critical to evaluate the applicant: research experience (including publications and abstracts), professional presentations, awards and honors, intellectual pursuits (continuing education, seminars attended, lectures, etc.), teaching/mentoring experiences and leadership roles.
- In the online application, a purpose of study will be submitted that provides a succinct explanation of relevant background information and experience indicated on the resume/curriculum vitae. Additionally, applicants are encouraged to identify research areas of interest they wish to pursue in the program. It is recommended, though not required, to identify one or more potential research mentors from the faculty of the Department of Physical Therapy, Rehabilitation

Science, and Athletic Training (<http://www.kumc.edu/school-of-health-professions/physical-therapy-and-rehabilitation-science/our-faculty.html>) whose research programs are related to the applicant's field of interest.

- Three letters of recommendation are required. The recommendations should come from either a faculty member, advisor, employer or other person who is familiar with the applicant's work and character and can comment meaningfully on the applicant's performance in an academic and professional setting. At least one of the three letters of recommendation should come from the applicant's current place of employment or academic program. Letters may not be obtained from family members, friends, etc.

Applicant will be assessed based on these requirements. After an applicant has been admitted, a program may defer an applicant's admission for one year after which time the applicant must submit a new application.

Admission requirements are subject to change. In most cases, the catalog of the year student entered the program is used. *Other years' catalogs*».

The program consists of coursework, research experience, and completion of a doctoral dissertation including its oral defense. Relevant prior graduate work is taken into consideration in setting up individual programs of study leading to the Ph.D. degree.

## Degree Requirements:

- Degree requirements are normally completed within 4-5 years of admission to the program although a maximum of 8 years is allowed.
- Cumulative grade-point average (GPA) of at least a 3.0 for all KU graduate coursework.
- Successful completion of the University's Research Skills and Responsible Scholarship (<http://catalog.ku.edu/graduate-studies/kumc/#programstext>) requirement prior to the semester the Oral Comprehensive Examination is scheduled.

- Successful completion of the following courses meets the Research Skills requirement:

Code	Title	Hours
REHS 856	Research Design and Methods I	2
REHS 857	Research Design and Methods II	2

- Successful completion of the following courses meets the Responsible Scholarship requirement:

Code	Title	Hours
REHS 856	Research Design and Methods I	2
REHS 857	Research Design and Methods II	2
PRVM 853	Responsible Conduct of Research	1

- Successful completion of the Residence Requirement (<http://catalog.ku.edu/graduate-studies/kumc/#programstext>) prior to the semester the Oral Comprehensive Examination is scheduled. The requirement is met by enrollment in full time status a minimum of two semesters.
- Successful completion of the Oral Comprehensive Examination (<http://catalog.ku.edu/graduate-studies/kumc/#programstext>). This examination is an oral defense of a dissertation proposal written in a research grant format. The following skills are assessed as a part of the examination: the ability to critically synthesize literature on a specific topic, identify gaps in knowledge and design a significant research question to address the gaps, execute an independent

research project, understand and use methodology and data analysis techniques and anticipate experimental outcomes. Students are recognized as formal doctoral candidates after they have passed the comprehensive examination.

- Successful completion of the Post-Comprehensive Enrollment (<http://catalog.ku.edu/graduate-studies/kumc/#programstext>) requirement.
- Enrollment in a minimum of one (1) credit hour of REHS 990 Dissertation in Rehabilitation Science the semester the student will defend dissertation and graduate.
- Successful completion of the Final Oral Examination (<http://catalog.ku.edu/graduate-studies/kumc/#programstext>) (dissertation defense). For this examination, the PhD candidate defends their written dissertation in an oral forum. The written dissertation consists of an introduction chapter, three experimental chapters (on average), and a chapter for the conclusions, clinical application and future directions. The dissertation should be composed at the level of a high quality scholarly work, with experimental chapters being suitable for peer reviewed publishing as separate manuscripts.
- Successful Dissertation Submission and Publication (<http://catalog.ku.edu/graduate-studies/kumc/#programstext>) (according to Office of Graduate Studies policy).
- Successful completion of the following core courses. The specific number of credit hours for REHS 870, REHS 873 and REHS 980 is determined in consultation with the student's academic advisor.

Code	Title	Hours
Core Courses		
REHS 803	Research Observations (Take a minimum of one semester during the first year.)	1
REHS 805	Seminar in Rehabilitation Science (Take in Fall and Spring semesters for the first two years.)	1
REHS 856	Research Design and Methods I	2
REHS 857	Research Design and Methods II	2
REHS 862	Cellular and Molecular Basis of Rehabilitation	2
REHS 864	Introduction to Rehabilitation Science	3
REHS 866	Developing Research Aims in Rehabilitation Science	2
REHS 870	Teaching Practicum	1-3
REHS 873	Research Practicum	1-3
REHS 889	Grant Writing	3
REHS 980	Graduate Research	1-10
NRSRG 870	Designing a Student Learning Environment	3

- Successful completion of a minimum of 8 credit hours of research tools courses as determined in consultation with the student's academic advisor. BIOS 714 and BIOS 720 or equivalents are mandatory.

Code	Title	Hours
Research Tools Courses		
REHS 970	Instrumented Analysis of Human Biomechanical Function	3
BIOS 714	Fundamentals of Biostatistics I	3
BIOS 720	Analysis of Variance	3
EPSY 710	Introduction to Statistical Analysis	3
EPSY 711	Lab for Introduction to Statistical Analysis	1
NRSRG 700	Analysis of Variance for Nursing Research	2

- Successful completion of a minimum of 6 credit hours of elective courses as determined in consultation with the student's academic advisor. Electives may be chosen from this list but are not limited to:

Code	Title	Hours
REHS Elective Course Options		
REHS 760	Introduction to Matlab Programming	1
REHS 865	Independent Study (The specific number of credit hours for this course is determined in consultation with the student's academic advisor.)	1-3
REHS 884	Motor Control and Learning	3
REHS 886	Musculoskeletal Rehabilitation	3
REHS 887	Neurorehabilitation	3

Elective Course Options from Other Departments (selected in consultation with the student's academic advisor)

- Successful completion of a minimum of 12 credit hours of REHS 990 Dissertation in Rehabilitation Science. The specific number of credit hours for this course taken in a specific semester is determined in consultation with the student's academic advisor.

Degree requirements and course descriptions are subject to change. Any courses taken as an equivalent must be approved by the Graduate Director and the Office of Graduate Studies. In most cases, use the catalog of the year student entered the program. *Other years' catalogs*.

Students may enter this program beginning with the fall semester. This plan of study suggests a typical progression through the program. Students will develop a specific plan of study in consultation with his or her academic advisor. Note: semester credit hours will vary based on elective courses taken.

### Typical Plan of Study

Year 1			
Fall	Hours Spring	Hours Summer	Hours
REHS 803	1 REHS 803 or 873	1 REHS 866	2
REHS 805	1 REHS 805	1 REHS 873 or 980	1
REHS 856	2 REHS 857	2	
REHS 864	3 REHS 862	2	
REHS 970	3 BIOS 720	3	
BIOS 714	3		
	<b>13</b>	<b>9</b>	<b>3</b>

Year 2			
Fall	Hours Spring	Hours Summer	Hours
REHS 805	1 REHS 805	1 REHS 980	3
REHS 889	3 REHS 887 (elective)	3	
REHS 980	1 REHS 980	2	
PRVM 853	1		
	<b>6</b>	<b>6</b>	<b>3</b>

Year 3			
Fall	Hours Spring	Hours Summer	Hours
REHS 870 (may be taken any semester)	1 REHS 883 (elective)	3 REHS 980	3

REHS 980	2 REHS 980	3 Oral Comprehensive Examination must be taken before Year 4 Fall semester starts.	
NRSG 870	3		
		<b>6</b>	<b>6</b>
<b>Year 4</b>			
<b>Fall</b>	<b>Hours Spring</b>	<b>Hours Summer</b>	<b>Hours</b>
REHS 990	6 REHS 990	6 REHS 990	3
		<b>6</b>	<b>6</b>
<b>Year 5</b>			
<b>Fall</b>	<b>Hours Spring</b>	<b>Hours</b>	
REHS 990	1 REHS 990	1	
Eligible for reduced enrollment if 18 hour postcomprehens enrollment completed.	Final Oral Examination (dissertation defense) is taken if approved by committee to defend and graduate.		
		<b>1</b>	<b>1</b>

**Total Hours 72**

**Technical Standards**

The graduate of this program must have the knowledge and skills to function in a broad variety of clinical, research, academic and industrial settings. Although not all students will have the same experiences or require the same skills (some students may not work with laboratory chemicals or assist patients in transfers), it is still important that each student have the technical skills necessary, in case they are placed in that situation. The following technical standards, in conjunction with the academic standards, are requirements for admission, retention, and graduation.

The term "candidate" refers to candidates for admission to the rehabilitation science program as well as current rehabilitation science students who are candidates for retention and graduation. The KU rehabilitation science program maintains a strong commitment to equal educational opportunities for qualified candidates with disabilities who apply for admission to the program or who are already enrolled. The technical standards are not intended to deter any candidate for whom reasonable accommodation will allow the fulfillment of the complete curriculum. Candidates with disabilities are encouraged to contact the Academic Accommodation Services (<https://www.kumc.edu/office-of-integrity-and-compliance/ada-compliance/academic-accommodation-services.html>) via email at [ada-kumc@kumc.edu](mailto:ada-kumc@kumc.edu), ([ada-kumc@kumc.edu](mailto:ada-kumc@kumc.edu)) or at (913) 945#7035, or visiting their office located in Room 1006 Dykes Library, early in the application process to begin a confidential conversation about what accommodations they may need to meet these standards. This process is informed by the knowledge that students with varied types of disabilities have the ability to become successful rehabilitation scientists.

**1. Essential Observational Requirements:**

The PhD student must be able to:

- Observe and perform laboratory and/or clinical tests in which human subjects, chemical, and/or biological (body fluids, culture materials, and tissue sections) are tested for their physical attributes including, but not limited to, movement, force, texture, color, sound, odor, viscosity, immunological, microbiological and histochemical components.
- Read and comprehend text, numbers, and graphs displayed in print and on video.
- Perform comparative observations of text, movement, shapes, graphs, colors etc.

**2. Essential Movement Requirements:**

The PhD student must be able to:

- Move freely and safely about a laboratory and clinic.
- Lift a minimum of 25 pounds (depending on the PhD dissertation project chosen by the student, some projects may not require any lifting, while others may require a minimum of 25 pounds weight lifting).
- Travel to numerous laboratory/clinical sites.
- Perform moderately taxing continuous physical work.
- Control equipment and adjust instruments to perform laboratory procedures.
- Manipulate a computer keyboard.

**3. Essential Communication Requirements:**

The PhD student must be able to:

- Comprehend technical and professional materials.
- Follow verbal and written instructions.
- Effectively, confidently, and sensitively converse with human research subjects.
- Communicate effectively and efficiently with faculty members, fellow students, staff, and other members of research and health care community to convey information essential for studying and conducting research.

**4. Essential Intellectual Requirements:**

The PhD student must:

- Possess these intellectual skills: comprehension, measurement, mathematical calculations, problem solving, reasoning, integration, analysis, comparison, self-expression, and criticism.
- Be able to exercise sufficient judgment to recognize and correct performance deviations.

**5. Essential Behavioral Requirements:**

The PhD student must:

- Be able to manage the use of time and be able to systematize actions in order to complete professional and technical tasks within realistic constraints
- Possess the emotional health necessary to effectively employ intellect and exercise appropriate judgment.
- Be able to provide professional and technical services while experiencing the stresses of heavy workloads, task-related uncertainty, emergent demands, and a distracting environment.
- Be flexible and creative and adapt to professional and technical change.
- Recognize potentially hazardous material, equipment, and situations and proceed safely in order to minimize risk of injury to human subjects, self, and other individuals.
- Support and promote the activities of fellow students and of health care and research professionals. Promotion of peers helps to

furnish a team approach to learning, task completion, problem solving, and patient care.

- Be honest, compassionate, ethical, and responsible. The student must be forthright about errors or uncertainty. The student must be able to critically evaluate their own performance, accept constructive criticism, and look for ways to improve. The student must be able to evaluate the performance of fellow students and tactfully offer constructive comments.