REHABILITATION SCIENCE (PHD)

Visit program website. (https://ptrehab.ucsf.edu/rehabilitation-science-phd/)

Degree Offered: PhD
Program Leadership:
Richard Souza, PT, PhD, Program Director, Musculoskeletal Biomechanics Lead
Valerie Block, PT, DPTSc, Assistant Professor, Neuroscience Lead
Admissions Inquiries:
Mike Tressel, Admissions and Recruitment Specialist

Program Description

As the population continues to age, new research in the interdisciplinary field of rehabilitation is essential to support the healthcare needs of society. With this increased demand, rehabilitation scientists with advanced research training are in critical demand to evaluate the effectiveness of current injury prevention and rehabilitation science, and to develop new potential injury prevention and rehabilitation strategies.

The UCSF Department of Physical Therapy and Rehabilitation Science, in collaboration with faculty from the Department of Physical Therapy at San Francisco State University (SFSU), provides a unique opportunity to study rehabilitation science. Our PhD in Rehabilitation Science program addresses the broader perspective of basic and clinical sciences in two research tracks: Neuroscience and Musculoskeletal Biomechanics.

Specialization Areas

Musculoskeletal Biomechanics: Students are trained on the latest advancements in musculoskeletal biomechanics and are prepared for careers in research in academia and industry. Areas of study include assessment of normal and pathological human movement using motion analysis and wearable sensors; robotics for gait augmentation; functional assessments in performance and quality of life measures; and advanced quantitative imaging of bone, muscle, cartilage, and tendons.

Neuroscience: Students can follow a clinically-based pathway focused on neural injury and neurodegenerative disease, or laboratory-based bench science research that focuses on experimental models of neurodegeneration and chronic neuroinflammation. Area of study include assessment of activity and function in patients with neurodegenerative disorders; development of new tools for remote movement evaluation; and evaluation of motor outcomes following interventions.

Admission Requirements

For information about our application requirements, please visit our Program Admissions page (https://ptrehab.ucsf.edu/content/phd-admissions/).

Learning Outcomes

The objective of this program is to develop independent investigators in rehabilitation science with innovative, multidisciplinary approaches to the field. The methods and strategies used for dissertation work will vary depending on the student's focus and needs. The core curriculum is designed to provide broad training in rehabilitation science. Elective and lab activities will be tailored to create an individualized plan for each trainee.

Additional Information

Program Faculty

- *Find a* program faculty list *(*https://ptrehab.ucsf.edu/phd-faculty/*) on the program website.*

Career Outcomes

- *Find* career outcomes and other data on PhD programs *(*https://graduate.ucsf.edu/program-statistics/*) on the Graduate Division website.*

Degree Requirements

- Minimum GPA of 3.0
- Pass all core courses and required activities
- Complete six quarters in residence, including a minimum of three registered quarters after advancement to candidacy
- Pass the qualifying examination
- Complete and submit a dissertation
- For additional details, please see: graduate.ucsf.edu/phd-degree (https://graduate.ucsf.edu/phd-degree/)

Core Courses

Musculoskeletal Biomechanics Track

Code	Title	Units
Core Courses		
REHAB SCI 200A	Laboratory Rotation I	3
REHAB SCI 200B	Laboratory Rotation II	3
REHAB SCI 200C	Laboratory Rotation III	3
REHAB SCI 201	Introduction to Rehabilitation Science	2
REHAB SCI 202	Gross and Regional Anatomy	1
REHAB SCI 203	Doctoral Colloquium	1
REHAB SCI 204	Application of Principles of Learning	3
GRAD 202	Racism in Science	3
GRAD 214	Responsible Conduct of Research and Rigor & Reproducibility	1.5
BIOSTAT 200	Biostatistical Methods in Clinical Research I	3
Also required: second statistics course appropriate to your research goals. (p. 2)		
Foundational Courses		
REHAB SCI 205	Biomechanics of Human Motion	2
BIOENGR 221	Tissue Mechanobiology	2.5-3
Total Units		**28-28.5**

Neuroscience Track

Code	Title	Units
Core Courses		
REHAB SCI 200A	Laboratory Rotation I	3
REHAB SCI 200B	Laboratory Rotation II	3
REHAB SCI 200C	Laboratory Rotation III	3
REHAB SCI 201	Introduction to Rehabilitation Science	2
REHAB SCI 202	Gross and Regional Anatomy	1

REHAB SCI 203	Doctoral Colloquium	1
REHAB SCI 204	Application of Principles of Learning	3
GRAD 202	Racism in Science	3
GRAD 214	Responsible Conduct of Research and Rigor & Reproducibility	1.5
BIOSTAT 200	Biostatistical Methods in Clinical Research I	3
Also required: second statistics course appropriate to your research goals. (p. 2)		
Foundational Courses		
NEUROSCI 201A	Basic Concepts in Cellular and Molecular Neuroscience	5
NEUROSCI 201B	Basic Concepts for Cellular and Developmental Neuroscience	4
ANATOMY 207	Neuroscience (Audit)	3
Total Units		**35.5**

Additional Statistics Courses

Please select an additional statistics course from the subject areas below.

BIOSTATISTICS

Code	Title	Units
BIOSTAT 208	Biostatistical Methods II	3
BIOSTAT 209	Biostatistical Methods III	3
BIOSTAT 210	Biostatistical Methods IV	2
BIOSTAT 211	Mathematical Foundations of Biostatistics	2
BIOSTAT 212	Introduction to Statistical Computing in Clinical Research	1
BIOSTAT 215	Strengthening causal inferences based on observational data	3
BIOSTAT 272	Foundations in Biostatistical Principles and Methods	4
BIOSTAT 273	Introduction to Biostatistics	0.5

DATASCIENCE

Code	Title	Units
DATASCI 202	Opportunities and challenges of complex biomedical data	3
DATASCI 213	Programming for Health Data Science in R	2
DATASCI 214	Programming for Health Data Science in R II	2-3
DATASCI 216	Machine Learning in R for the Biomedical Sciences	3
DATASCI 217	Introduction to Python and Data Science Tools	1-2
DATASCI 220	Data Science Program Seminar I	1
DATASCI 221	Data Science Program Seminar II	1
DATASCI 222	Data Science Capstone Project	8
DATASCI 223	Applied Data Science with Python	2
DATASCI 224	Understanding Machine Learning: From Theory to Applications	3
DATASCI 226	Bayesian Methods and Gaussian Processes	2-3
DATASCI 300	Data Science Educational Practice	2