

# PHYSICAL THERAPY AND ENGINEERING

Degree Types: DPT/PhD

The combined Doctoral Program in Physical Therapy and Engineering (<https://www.feinberg.northwestern.edu/sites/pthms/our-programs/dpt-phd.html>) (DPT/PhD(Eng)) gives students a unique opportunity to receive training as both PhD level engineers and licensed physical therapy doctors (DPT). Students meet dual degree requirements in less time than if degrees were pursued separately.

This program focuses on the pathophysiology of movement disorders and how the resulting impairments and handicaps impact the design of therapeutic devices, rehabilitation strategies, and patients' quality of life. Graduates from the DPT/PhD(Eng) program are expected to become new leaders in engineering, rehabilitation sciences, physical therapy and in device development for the study and restoration of human function both in the academic, governmental, healthcare and industry environments.

Students interested in the dual degree program are required to apply to each program separately and acceptance into the program is contingent upon acceptance into both programs.

This program is a coordinated effort between the Departments of Physical Therapy and Human Movement Sciences (<https://www.feinberg.northwestern.edu/sites/pthms/>), Biomedical Engineering (<https://www.mccormick.northwestern.edu/biomedical/>), and Mechanical Engineering (<https://www.mccormick.northwestern.edu/mechanical/>).

## **Additional resources:**

- Department website (<https://www.feinberg.northwestern.edu/sites/pthms/our-programs/dpt-phd.html>)
- Program handbook(s)

## Degrees Offered

- Physical Therapy and Engineering DPT/PhD (<https://catalogs.northwestern.edu/tgs/physical-therapy-engineering/physical-therapy-engineering-phd-dpt/>)

Learning objective(s)/Students should be able to...

- Demonstrate expertise in knowledge of:
  - fundamental neurophysiology related to movement behavior and disorders,
  - engineering methods applied to the study of movement disorders and rehabilitation, and
  - clinical physical therapy to treat individuals with movement disorders and musculoskeletal injuries.
- Apply clinically motivated research questions to the PhD research training.
- Demonstrate understanding the pathophysiological mechanisms underlying movement disorders needed to design effective rehabilitation interventions and devices.
- Enact ethical research methodologies and practices.
- Demonstrate oral and written communication skills necessary for success as independent clinician scientists.

## DPT/PhD(Eng) Courses

- Biomedical Engineering (<https://catalogs.northwestern.edu/tgs/biomedical-engineering/#coursestext>)
- Mechanical Engineering (<https://catalogs.northwestern.edu/tgs/mechanical-engineering/#coursestext>)