Admission Procedures

Admission into the biomechanics program is a two-tiered process that requires you to meet our program requirements as well as those of the Ball State Graduate School. Students must submit application materials by February 15 each year to be considered for admission the following fall semester.

For a full list of Graduate School requirements visit the Graduate School website at bsu.edu/gradschool.

For a full list of Biomechanics program requirements and additional information regarding our program visit the Biomechanics website at bsu.edu/biomechanics.

Our Mission

The mission of the Ball State Biomechanics Program is to contribute to the field of human movement science and to provide an experiential learning environment for students.

Contact Information

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Ball State University is committed to the principles of nondiscrimination and equal opportunity in education and employment. Further, the University is committed to the pursuit of excellence by prohibiting discrimination and being inclusive of individuals without regard to race, religion, color, sex (including pregnancy), sexual orientation, gender identity or expression, disability, genetic information, ethnicity, national origin or ancestry, age, or protected veteran status.

School of Kinesiology

Kinesiology: The study of the impact of physical activity on health, society, and quality of life.
Program Overview

Ball State’s biomechanics master’s program prepares graduates to excel in doctoral programs or clinical, academic, and industry settings. Our lab’s ongoing research projects challenge students to assess various aspects of human movement and evaluate individuals with movement disorders and disabilities. Engaging faculty work closely with students as they investigate the latest in the development and control of muscular strength across a wide range of ages and abilities.

Innovative Research

Our clinical biomechanics research centers on gait and posture analysis in numerous populations, including neurotypical individuals as well as those with cerebral palsy, Parkinson’s disease, stroke, Alzheimer’s disease, and impairments common to older adults. Past projects have also assessed bone and muscular changes in healthy young adults and the elderly, tendonitis rehabilitation, orthopedic knee replacements, and the muscular mechanics of injury. Sports biomechanics research focuses on the effects of fatigue on performance across a wide number of movement skills. In addition to neuromuscular research, the laboratory has also engaged in the development and validation of equipment and technologies for various companies.

Advanced Technology

Our fully equipped laboratory features numerous biomechanical tools for students to conduct research into the mechanical and neuromuscular aspects of human movement. Lab instruments include:

• Force plates and split-belt force instrumented treadmill to measure forces during locomotion as well as more dynamic movements
• 28 high-speed cameras to conduct 3-D motion analysis
• Computer simulation and modeling of movements
• Hard-wired, telemetry, and indwelling electromyography
• Dynamic posture and balance assessments, in addition to whole body vibration and muscular reflex responsiveness

Rewarding Partnerships

Our lab collaborates within the School of Kinesiology, throughout the university, and with the region’s hospitals and rehabilitative care facilities. Through these partnerships, students work in hands-on, interdisciplinary learning environments.

Curriculum

Students accepted into the biomechanics program must complete a minimum of 33 credit hours of graduate course work, including 6 hours of a thesis project toward a master of science degree. Students must take a final oral examination to detail their thesis.

Required Core Courses:
- EXSC 616  Motor Control
- EXSC 634  Mechanical Analysis of Movement
- EXSC 651  Lab Techniques in Biomechanics
- EXSC 655  Advanced Biomechanics
- EXSC 652  Clinical Biomechanics

Directed Electives:
- EXSC 603  Exercise Physiology
- EXSC 604  Essentials of Resistance Training and Conditioning
- EXSC 633  Seminar in Exercise Science
- BIO 548  Biometry
- EDPS 642  Intermediate Statistics
- CS 699  Reading and Honors

Research Requirements:
- EXSC 611  Research Methods
- EDPS 641  Statistical Methods in Educational and Psychological Research
- THES 698  Thesis

bsu.edu/biomechanics