

# EXERCISE SCIENCE

## Programs

- Exercise Science, Master of Science (<https://catalog.hbku.edu.qa/academic-degrees/chls/ekpt/exercise-science-ms/>)

## Division Courses

### Epidemiology

**EPID 700 Introduction to Epidemiology** **3 Credits**  
Grade Mode: Standard Letter, Audit/Non Audit

The major purpose of this core course is to introduce students to the discipline of epidemiology and its application to public health issues and practice.

### Exercise Science

**EXSC 695 Master's Thesis Hours** **0-6 Credits**  
Grade Mode: Pass/Non Pass

Full time work in a laboratory to perform experiments related to the MS Thesis dissertation. Thesis research is an essential component of the graduate degree in Exercise Science at HBKU. All students are required to engage in thesis research.

**EXSC 700 Physical Activity and Health: Epidemiology, Research and Practice** **3 Credits**  
Grade Mode: Standard Letter, Audit/Non Audit

An introduction to physical activity epidemiology with an emphasis on the relationships between exercise and health for promotion of physical activity in clinical and public health settings.

**EXSC 710 Behavioral Aspects of Physical Activity** **3 Credits**  
Grade Mode: Standard Letter, Audit/Non Audit

The major goal of this course is to increase your understanding of the role that behavioral factors play in physical activity and exercise. The first part of the course covers major behavioral and psychological theories that have been applied to exercise and physical activity. The second part of the course covers behaviorally oriented interventions to promote physical activity and exercise. Issues unique to children, older adults, women, and people of color will be highlighted. The final part of the course covers the impact of physical activity and exercise on mental health outcomes. This section includes an overview of the role that depression plays in morbidity and mortality.

**EXSC 731 Mechanisms of Motor Skill Performance** **3 Credits**  
Grade Mode: Standard Letter, Audit/Non Audit

A study of theories and mechanisms in human movement. Focus is on analysis of principles and systems of gross motor control and learning.

**EXSC 732 Applied Biomechanics** **3 Credits**  
Grade Mode: Standard Letter, Audit/Non Audit

The focus of this course is to apply general principles of mechanics and physics to analyze human movement. Students will develop an understanding of forces within muscles, the strength properties of bones, the variety of joint designs and resulting different degrees of freedom, and how these initiate and control human movement. Basic mechanics (statics, kinematics, and kinetics) will be studied in two and three dimensions. The biomechanics of human walking and running gait will be investigated

**EXSC 742 Clinical Exercise Testing** **1 Credit**  
Grade Mode: Standard Letter, Audit/Non Audit

This course is a clinical exercise laboratory course intended for the student with little or no exercise science laboratory experience. In this course students will acquire the basic knowledge of clinical exercise testing with an overall emphasis on physiological measurement and interpretation of data.

**EXSC 743 Lab Measurements for Exercise Testing** **1 Credit**  
Grade Mode: Standard Letter, Audit/Non Audit

This course expands the student's knowledge of exercise testing through the biochemical determination of plasma variables and how these variables may change during or following exercise. The course emphasizes the importance of matching a biochemical response to the physiological measurements during exercise testing.

**EXSC 780 Physiology of Exercise** **3 Credits**  
Grade Mode: Standard Letter, Audit/Non Audit

Physiological responses to exercise: skeletal muscle structure and function, cardiorespiratory function, physiological determinants of exercise performance, and training adaptations.

**EXSC 781 Physiology, Exercise and Disease** **3 Credits**  
Grade Mode: Standard Letter, Audit/Non Audit

This course is designed to provide students with the basic understanding of physiological adaptations to exercise and disease as it relates to the study of the nervous system, the skeletal muscular system, the cardiovascular system and the gastrointestinal system.

**EXSC 784 Cardiopulmonary Exercise Testing and Prescription** **3 Credits**  
Grade Mode: Standard Letter, Audit/Non Audit

This course will instruct the students in the physiological background and theory underlying cardiopulmonary exercise testing, and provide hands on practical experience in laboratory methods of cardiopulmonary exercise testing, lung function and ECG. General principles of exercise prescription and programming will also be covered

**EXSC 787 Research Methods and Design for Exercise Science** **3 Credits**  
Grade Mode: Standard Letter, Audit/Non Audit

The major goal of this course is to provide an in-depth examination of research concepts, terminology, experimental, non-experimental, and epidemiological designs, internal and external validity, methods for establishing causality and investigating associations, and application of designs to test hypotheses in research of exercise science-related outcomes. Examples will be drawn from numerous disciplines, with the primary emphasis placed on those dealing with topics directly related to exercise science. Students will be required to read, critically evaluate, and discuss research articles and conceptual papers. Issues unique to different research designs will be highlighted. Students should have a basic understanding of statistics (e.g., variance, correlation). While statistics will not be discussed in this class, the overlay of statistics and research design cannot be separated.