

# EXSC - Exercise Science

## **EXSC 225 Introduction to Exercise Science (3 Credit Hours)**

Broad overview of exercise science including the history of the discipline and introduction to the following: Healthy People 2010 goals and objectives related to physical activity and nutrition; basic principles of nutrition, body composition, applied physiology, functional anatomy, and exercise prescription/programming for healthy individuals and those who are high risk/diseased; career opportunities in various allied-health fields such as physical therapy, physician assistant, personal training, community/corporate/hospital-based wellness programs, cardiac rehabilitation; and research areas in exercise science.

**Prerequisites:** open only to students with Exercise Science as a concentration or major or minor

## **EXSC 240 Prevention and Care of Injuries Related to Physical Activity (3 Credit Hours)**

Practice in the skills of injury recognition and evaluation and training in cardiopulmonary resuscitation. Principles and uses of therapeutic modalities are also discussed.

**Prerequisites:** BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better

## **EXSC 250 Strength and Conditioning Leadership (3 Credit Hours)**

This course will provide the student with skills in exercise leadership. The student will learn how to lead resistance training, flexibility training, cardiovascular training involving a variety of exercise modes, and group exercise, such as step aerobics.

**Prerequisites:** BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better

## **EXSC 309 Fundamentals of Exercise Physiology (3 Credit Hours)**

This course is intended for non-exercise science majors. The course will investigate the metabolic adaptations, neuromuscular, endocrinological, cardiovascular and respiratory responses to acute and chronic exercise. Implications for health and physical performance will be integrated through applied exercise physiology. Specifically, the effects of different training modes, environmental factors, aging, disease states, nutrition, and ergogenic aids.

**Prerequisites:** BIOL 240 or BIOL 250

## **EXSC 322 Anatomical Kinesiology (3 Credit Hours)**

Anatomical and mechanical analysis of human musculoskeletal function including skeletal, muscular, and neuromuscular control aspects necessary for movement.

**Prerequisites:** BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better

## **EXSC 326 Exercise Physiology I (3 Credit Hours)**

An investigation into the metabolic adaptations, neuromuscular, endocrinological, and respiratory responses to acute and chronic exercise endeavors. Implications for enhanced health and physical performance are integrated.

**Prerequisites:** BIOL 240 or BIOL 250 with a C or better and MATH 102M or higher with a C or better

**Pre- or corequisite:** BIOL 241 or BIOL 251 with a C- or better and CHEM 121N and CHEM 122N with a C- or better

## **EXSC 327 Exercise Physiology II (3 Credit Hours)**

Focuses on cardiovascular responses to exercise and applied exercise physiology, specifically the effects of different training modes, environmental factors, aging, disease states, nutrition, and ergogenic aids.

**Prerequisites:** BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better; EXSC 326

## **EXSC 366 Exercise Science Seminar (1 Credit Hour)**

Seminar will include resume and cover letter writing skills, internship requirements, agency placement referrals, interviewing techniques, and certification options.

**Prerequisites:** BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better; EXSC 326

## **EXSC 368 Internship (12 Credit Hours)**

Final field placement required for all students with an emphasis in exercise science. Students will be placed in an agency to gain experience in methodologies, administration techniques, and programs specific to their area of emphasis. Minimum of 400 clock hours. (qualifies as a CAP experience)

**Prerequisites:** senior standing, permission of the instructor, and completion of all required courses in appropriate emphasis areas

## **EXSC 369 Practicum in Exercise Science (3-6 Credit Hours)**

Field-based experience in a fitness or allied-health setting. Minimum of 200 clock hours.

**Prerequisites:** EXSC 225

## **EXSC 397 Independent Study (1-3 Credit Hours)**

Independent study of special topics under supervision of faculty.

**Prerequisites:** Junior standing and permission of the instructor

## **EXSC 403 Lifetime Fitness and Wellness (3 Credit Hours)**

The focus of this course is on a positive healthy lifestyle designed to enhance the current and future quality of life. Topics include: proper exercise programs, healthful nutrition, stress management techniques, and avoidance of high-risk health behaviors in order to reduce disease risk and promote healthful aging. Various laboratory assessments are used to identify health status and recommend remedial approaches.

**Prerequisites:** Junior standing

## **EXSC 408/508 Nutrition for Fitness and Sport (3 Credit Hours)**

Emphasizes the role of nutrition as a means to enhance health and performance in sport. Topics covered include energy metabolism and nutrients, regulation of metabolism by vitamins and minerals, and weight control.

**Prerequisites:** BIOL 240 or BIOL 250 with a C or better and MATH 102M or higher with a C or better

**Pre- or corequisite:** BIOL 241 or BIOL 251 with a C- or better and CHEM 121N and CHEM 122N with a C- or better

## **EXSC 415/515 Exercise Testing for Normal and Special Populations (4 Credit Hours)**

The application of different methodologies in the measurement of physiologic responses to exercise. Emphasis is placed on understanding American College of Sports Medicine guidelines, appropriate experimental techniques, and equipment necessary to evaluate changes in body composition and various metabolic, cardiovascular, and respiratory adjustments during exercise.

**Prerequisites:** BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better; EXSC 326

## **EXSC 417/517 Biomechanics (4 Credit Hours)**

Application of physical laws and mechanical principles to the human musculoskeletal system.

**Prerequisites:** BIOL 240 or BIOL 250 and MATH 102M or higher with a C or better; PHYS 111N with a C- or better; EXSC 322

## **EXSC 420 Research Methods in Exercise Science (3 Credit Hours)**

Introduction to the scientific method applied to exercise science research including bioethics, review of the literature, research design, data collection, appropriate statistical analysis, research writing, and peer review.

**Prerequisites:** BIOL 240 or BIOL 250 and MATH 102M or higher with a C or better; STAT 130M

## **EXSC 421/521 Strength and Conditioning Applications (3 Credit Hours)**

A study of the principles and techniques utilized in optimizing physical performance and reducing injury through proper and effective strength and conditioning programs. Special emphasis will be placed on current research findings, breakthrough techniques, advanced weight training techniques, and popular conditioning practices.

**Prerequisites:** EXSC 250 and EXSC 322

**EXSC 428/528 Exercise Prescription for Chronic Disease (3 Credit Hours)**

A study of pathophysiology of common diseases with concentration in the design, implementation and administration of exercise prescription for a variety of chronic diseases.

**Prerequisites:** BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better; EXSC 326

**EXSC 431W/531 Wellness Programming and Administration (3 Credit Hours)**

This course provides an introduction to the principles of administration and implementation of fitness and wellness programs to individuals, groups, centers, and corporate settings. This is a writing intensive course.

**Prerequisites:** BIOL 240 or BIOL 250, MATH 102M or MATH 103M or MATH 162M, and ENGL 211C or ENGL 221C or ENGL 231C with a C or better

**EXSC 480/580 Exercise Psychology (3 Credit Hours)**

Exercise Psychology examines the dynamic influences that psychological factors, environmental factors, and exercise behaviors exert upon one another. The field of exercise psychology actively promotes evidence-based interventions guided by theory and behavior change techniques. Utilization of the scientist-practitioner model involves the ability to consume and appropriately apply contemporary theory and scientific findings to the practice of applied exercise psychology. The content and assignments emphasize the theoretical and applied perspectives on the science and practice of exercise psychology.

**Prerequisites:** BIOL 240 or BIOL 250; and BIOL 241 or BIOL 251

**EXSC 495 Special Topics In Exercise Science (1-3 Credit Hours)**

The study of special topics in exercise science.

**Prerequisites:** Permission of the instructor

**EXSC 498 Directed Research in Exercise Science (1-6 Credit Hours)**

Supervised research on a specific problem in exercise science. Regular meetings with faculty and a written/oral report are required.

**Prerequisites:** Permission of the instructor

**EXSC 508 Nutrition for Fitness and Sport (3 Credit Hours)**

Emphasizes the role of nutrition as a means to enhance health and performance in sport. Topics covered include energy metabolism and nutrients, regulation of metabolism by vitamins and minerals, and weight control.

**EXSC 515 Exercise Testing for Normal and Special Populations (4 Credit Hours)**

The application of different methodologies in the measurement of physiologic responses to exercise. Emphasis is placed on understanding American College of Sports Medicine guidelines, appropriate experimental techniques, and equipment necessary to evaluate changes in body composition and various metabolic, cardiovascular, and respiratory adjustments during exercise.

**EXSC 517 Biomechanics (4 Credit Hours)**

Application of physical laws and mechanical principles to the human musculoskeletal system.

**Prerequisites:** BIOL 240 or BIOL 250 and MATH 102M or higher with a C or better; PHYS 111N with a C- or better; EXSC 322

**EXSC 521 Strength and Conditioning Applications (3 Credit Hours)**

A study of the principles and techniques utilized in optimizing physical performance and reducing injury through proper and effective strength and conditioning programs. Special emphasis will be placed on current research findings, breakthrough techniques, advanced weight training techniques, and popular conditioning practices.

**EXSC 528 Exercise Prescription for Chronic Disease (3 Credit Hours)**

A study of pathophysiology of common diseases with concentration in the design, implementation and administration of exercise prescription for a variety of chronic diseases.

**EXSC 531 Wellness Programming and Administration (3 Credit Hours)**

An introduction to the principles of administration and implementation of fitness and wellness programs to individuals, groups, centers and corporate settings.

**EXSC 580 Exercise Psychology (3 Credit Hours)**

Exercise Psychology examines the dynamic influences that psychological factors, environmental factors, and exercise behaviors exert upon one another. The field of exercise psychology actively promotes evidence-based interventions guided by theory and behavior change techniques. Utilization of the scientist-practitioner model involves the ability to consume and appropriately apply contemporary theory and scientific findings to the practice of applied exercise psychology. The content and assignments emphasize the theoretical and applied perspectives on the science and practice of exercise psychology.

**EXSC 612 Applied Research Methods in Exercise and Health Science (3 Credit Hours)**

This course will prepare students to read, analyze, and apply research related to exercise science, performance, and health. Students will acquire experience in designing research proposals and gain fundamental knowledge related to research methodology. Specific topics covered may include experimental, quasi-experimental and observational research; validity and reliability; sampling strategies; principles of measurement; statistical analysis; and ethics of research.

**EXSC 630 Exercise Physiology (3 Credit Hours)**

Review of current physiological literature related to muscular exercise including the cardiovascular-respiratory system, metabolic effects of exercise, neuromuscular relationships, and the effects of training or diet, environment, ergogenic aids, temperature, attitude, and other factors on performance and health.

**Prerequisites:** HPE 509 or equivalent

**EXSC 636 Research Problems in Exercise Science (3 Credit Hours)**

Practice in the use of statistical and analytical techniques in solving problems in exercise science; supervised student research.

**EXSC 642 Clinical Exercise Testing and Prescription (3 Credit Hours)**

Principles of diagnostic exercise assessment, cardiovascular physiology, electrocardiography, ACSM guidelines to exercise testing and prescription for symptomatic and asymptomatic populations. Course includes laboratory assignments.

**Prerequisites:** EXSC 630 or permission of instructor

**EXSC 661 Nutrition for Sports and Health (3 Credit Hours)**

This course is an in-depth analysis of the role of nutrition in health and human physical and athletic performance. General areas covered include the role of the six major classes of nutrients in health and sport, physiologic and metabolic interrelationships, malnutrition, nutrition in growing and aging, and diet and nutrition in the prevention of disease.

**EXSC 668 Internship in Exercise Science (6 Credit Hours)**

Designed to provide detailed practical experience (200 clock hours) in an exercise science field setting.

**Prerequisites:** completion of 18 credit hours of graduate coursework, a minimum graduate GPA of at least 3.0, and permission of the instructor

**EXSC 695 Topics in Exercise Science (1-3 Credit Hours)**

Selected topic courses in exercise science and wellness.

**EXSC 697 Independent Study in Exercise Science (1-3 Credit Hours)**

Investigations in exercise science. Problems approved in advance are investigated under the supervision of the faculty advisor.

**EXSC 698 Thesis Research in Exercise Science (3-6 Credit Hours)**

Master's level thesis research in topics related to Exercise Science.

**Prerequisites:** permission of the advisor and committee

**EXSC 699 Thesis in Exercise Science (3-6 Credit Hours)**

Preparation and writing of the master's thesis.

**Prerequisites:** Permission of the advisor and committee

**EXSC 727 Advanced Biomechanics (3 Credit Hours)**

Study of the relationships among mechanics, energetics and control of human movement. Emphasis will be placed on the application of mechanical concepts in biomechanics research. Course includes laboratory assignments.

**Prerequisites:** EXSC 417 or EXSC 517

**EXSC 730 Advanced Cardiovascular Exercise Physiology (3 Credit Hours)**

A study of the physiology and pathophysiology of the cardiovascular system. Effects of exercise on the system will also be discussed.

**Prerequisites:** EXSC 630

**EXSC 738 Exercise Endocrinology (3 Credit Hours)**

This course will focus on the endocrine responses to acute and chronic exercise and how neuroendocrine function relates to health and athletic performance. Emphasis is placed on the role of the endocrine system in regulating substrate utilization during exercise, energy balance, skeletal muscle plasticity, reproductive function, and the aging process.

**Prerequisites:** EXSC 630

**EXSC 740 Ergogenic Aids in Sport and Human Performance (3 Credit Hours)**

An ergogenic aid is any technique or substance (nutritional, drug, etc.) used to enhance mental or physical performance. This course introduces students to the various classes of ergogenic aids and critically explores scientific research regarding their use, prevalence, physiological effects, and safety, as well as ethical concerns.

**EXSC 827 Advanced Biomechanics (3 Credit Hours)**

Study of the relationships among mechanics, energetics and control of human movement. Emphasis will be placed on the application of mechanical concepts in biomechanics research. Course includes laboratory assignments.

**Prerequisites:** EXSC 417 or EXSC 517

**EXSC 830 Advanced Cardiovascular Exercise Physiology (3 Credit Hours)**

A study of the physiology and pathophysiology of the cardiovascular system. Effects of exercise on the system will also be discussed.

**Prerequisites:** EXSC 630

**EXSC 838 Exercise Endocrinology (3 Credit Hours)**

This course will focus on the endocrine responses to acute and chronic exercise and how neuroendocrine function relates to health and athletic performance. Emphasis is placed on the role of the endocrine system in regulating substrate utilization during exercise, energy balance, skeletal muscle plasticity, reproductive function, and the aging process.

**Prerequisites:** EXSC 630

**EXSC 840 Ergogenic Aids in Sport and Human Performance (3 Credit Hours)**

An ergogenic aid is any technique or substance (nutritional, drug, etc.) used to enhance mental or physical performance. This course introduces students to the various classes of ergogenic aids and critically explores scientific research regarding their use, prevalence, physiological effects, and safety, as well as ethical concerns.

**EXSC 999 Doctoral Graduate Credit (1 Credit Hour)**

This course is a pass/fail course doctoral students may take to maintain active status after successfully passing the candidacy examination. All doctoral students are required to be registered for at least one graduate credit hour every semester until their graduation.