

## **Movement Science Course Descriptions**

### **MVSC-101. LIFETIME FITNESS AND WELLNESS. 2:3:1**

This course is designed to acquaint the undergraduate student with current and correct information concerning fitness and its components, and wellness concepts. Lifetime fitness and wellness is a general education core course providing life-long learning by addressing general information concerning fitness and wellness promotion, as well as HIV/AIDS and drug abuse prevention. Course includes two hours of lecture and one hour of lab.

Credit: two hours.

### **MVSC-110. INTRODUCTION TO MOVEMENT SCIENCE. 1:1:0**

This course offers a basic introduction to movement science foundational principles from different perspectives. Student will be provided with information about career opportunities, professional organizations, and resources available in the pre-health, health professional, kinesiology, and fitness industry and education.

Credit: one hour.

### **MVSC-124. TEACHING FITNESS & PHYSICAL ACTIVITY CONCEPTS. 3:3:0**

The course will focus upon the Fitness Gram, a health-related fitness test developed by Cooper Institute for Aerobics. Students will be required to demonstrate knowledge and understanding of the Fitness Gram through application and analysis of the data. From data interpretation, the students will plan and develop improvement plans integrating the F.I.T.T. principles to maintain or improve upon the health-related fitness components for self and others. An out-of-class field experience is required.

Credit: three hours.

### **MVSC-191. UNIVERSITY SEMINAR I – PAHS. 1:2:0**

University Seminar is a two-semester General Education course sequence that develops academic skills including critical reading, thinking, writing, speaking, and computer and information literacy. The goals and objectives of the General Education Program are introduced in these courses and subsequently embedded across the curriculum in each of the majors and selected concentrations. Class activities provide each student with the opportunity to cultivate the skills and knowledge necessary to become a life-long learner. A global, multi-cultural perspective is used to discuss moral and ethical issues, values, peer pressure, wellness, nutrition, and health issues. Other goals of this course are: knowledge of the University's history, development of the sense of University community, and a shared common educational experience with other freshmen.

Credit: one hour.

### **MVSC-192. UNIVERSITY SEMINAR II – PAHS. 1:1:0**

University Seminar is a two-semester General Education course sequence that develops academic skills including critical reading, thinking, writing, speaking, and computer and information literacy. The goals and objectives of the General Education Program are introduced in these courses and subsequently embedded across the curriculum in each of the majors and selected concentrations. Class activities provide each student with the opportunity to cultivate the skills and knowledge necessary to become a life-long learner. A global, multi-cultural perspective is used to discuss moral and ethical issues, values, peer pressure, wellness, nutrition, and health issues. The second semester course focuses on career and graduate school information, resume development, and development of communication skills. Other goals of this course are: knowledge of the University's history, development of the sense of University community, and a shared common educational experience with other freshmen.

Credit: one hour.

### **MVSC-200. CPR AND FIRST AID. 1:1:0**

This course provides students with the skills to recognize and respond to emergency situations and enables students to earn the American Red Cross Adult, Child and Infant CPR, AED and First Aid Certification.

Credit: one hour.

### **MVSC-201. HUMAN ANATOMY AND PHYSIOLOGY I. 4:3:1**

These foundation courses are designed to provide fundamental knowledge of the structure and function of the systems of the human body. This first course of the two-semester course sequence presents the study of human anatomy and physiology at the cell, tissue, and organ system levels of organization. An emphasis is placed on anatomical terminology, integumentary, skeletal,

muscular, nervous, and endocrine systems. This second course of the two-semester course sequence focuses on topics, which include the cardiovascular, lymphatic, respiratory, digestive, urinary, reproductive systems, human immunity, electrolytes and water balance, and human growth and development. Both courses consist of three (3) hours of lecture and one (1) one-hour of laboratory per week.

Credit: four hours.

### **MVSC-202. HUMAN ANATOMY AND PHYSIOLOGY II. 4:3:1**

These foundation courses are designed to provide fundamental knowledge of the structure and function of the systems of the human body. This first course of the two-semester course sequence presents the study of human anatomy and physiology at the cell, tissue, and organ system levels of organization. An emphasis is placed on anatomical terminology, integumentary, skeletal, muscular, nervous, and endocrine systems. This second course of the two-semester course sequence focuses on topics, which include the cardiovascular, lymphatic, respiratory, digestive, urinary, reproductive systems, human immunity, electrolytes and water balance, and human growth and development. Both courses consist of three (3) hours of lecture and one (1) one-hour of laboratory per week.

Credit: four hours.

### **MVSC-203. FITNESS MANAGEMENT. 3:3:0**

This course examines the health-fitness specialist's role in facility administration and program management. Students will discuss the role of the health and fitness administrator and learn how to conduct health promotion programming, evaluation and marketing strategies, equipment maintenance and legal implications of documented health screening, and safety procedures.

Credit: three hours.

### **MVSC-210. PSYCHOLOGY OF PHYSICAL ACTIVITY. 3:3:0**

This course will address theories of behavior change as they apply to physical activity participation and other health behaviors. There will be an emphasis on application to understand factors related to physical activity and exercise participation, and health behavior intervention planning to maximize adherence. Additionally, this course will address physical activity and exercise as they relate to psychological health issues. The course will be taught with an emphasis on application of concepts and the critical analysis of the scientific research.

Prerequisites: MVSC 110

Credit: three hours.

### **MVSC-212. MEDICAL TERMINOLOGY. 3:3:0**

This course will introduce the root words that comprise the basic prefixes, roots, and suffixes for medical terminology relating to the anatomic, diagnostic, symptomatic, and procedural terms. Practice and interpret standard abbreviations and pharmacological terms used in medical fields.

Credit: three hours.

### **MVSC-218. SPORT AND FITNESS NUTRITION. 3:3:0**

This course is designed to present an overview of nutrition as it relates to physical activity. Course topics include carbohydrate, protein, fat, vitamin, mineral, and water requirements for fitness and sport. Popular nutritional supplements and ergonomic aids used by physically active individuals will also be discussed, along with an in-depth look into specific athlete's nutritional requirements for their given sport.

Prerequisites: None.

Credit: three hours.

### **MVSC-255. INTRODUCTION TO MOTOR CONTROL AND MOTOR LEARNING. 3:3:0**

This course introduces students to the principles related to learning and control of psychomotor skills. The course focuses on motor skill acquisition and control. Primary focus is placed on the cognitive and neuromuscular processes underlying acquisition of motor skills and neuromuscular factors related to skilled motor performance.

Prerequisites: None

Credit: three hours.

### **MVSC-257. EXERCISE TESTING. 4:3:1**

This course presents practical experiences and theoretical knowledge in the selection, administration, and interpretation of various health-related fitness tests. Emphasis is placed on proper technique and communication throughout the assessment process.

## **Movement Science Course Descriptions**

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Course includes three hours of lecture and one hour of lab.

Prerequisites: MVSC-201, 202, and 355

Credit: four hours.

### **MVSC-265. RESEARCH DESIGN. 3:3:0**

This course examines and compares types of research design. Students will write a literature review and construct a research design. Research protocol, statistical analysis as it relates to research design, reporting techniques, APA formatting, and reference styles are incorporated. This is a writing emphasis class.

Prerequisites: MTSC 241 OR PSYC 322 OR SCWK 310, ENGL 101, ENGL 102.

Credit: three hours.

### **MVSC-319 BIOMECHANICS. 3:3:0**

This course examines fundamental mechanical principles involved in the process of the production of human movement and optimization of performance. Application of kinematics and kinetic principles to human movement are discussed and students are introduced to qualitative and quantitative mechanical analysis of human movement.

Prerequisites: MTSC 121 and MTSC 241 OR PSCY 322 OR SCWK 310.

Credit, three hours.

### **MVSC-355. EXERCISE PHYSIOLOGY. 4:3:1**

This course is designed to provide students with a physiological perspective of how the human body responds, adjusts, and adapts to exercise. Course content includes study of energy transfer and energy expenditure at rest and during exercise, bioenergetics, contributions and adaptations of the neuromuscular, pulmonary and circulatory systems during exercise, environmental aspects (e.g., thermal stress, altitude, microgravity) of physiology related to exercise performance, and body composition.

Prerequisites: MVSC-201, MVSC-202. Course includes three hours of lecture and one hour of lab.

Credit: four hours.

### **MVSC-363. PHYSICAL ACTIVITY EPIDEMIOLOGY. 3:3:0**

This course exposes students to epidemiological methods that are relevant to the study of physical activity. It is intended to enhance students' ability to understand and apply epidemiological methods to physical activity-related research. Basic epidemiological study design, methods, and issues pertinent to the study of physical activity are presented early in the course. Subsequent classes are structured to provide opportunity for in-depth analysis and discussion of how epidemiological methods are used to study injury patterns and trends and physical activity behavior.

Prerequisites: MVSC 201, MVSC 202

Credit: three hours.

### **MVSC-364. EXERCISE PRESCRIPTION. 3:3:0**

This course provides the theoretical knowledge and practical skills to design personalized exercise programs that elicit specific physiological responses and adaptations. Emphasis is placed on prescribing safe and effective individualized cardiorespiratory, musculoskeletal and weight management programs.

Prerequisites: MVSC-201, MVSC-202, MVSC-355, MVSC-362

Credit: three hours.

### **MVSC-370. RESEARCH EXPERIENCE IN MOVEMENT SCIENCE. 1-6:1-6:1-6**

An opportunity to actively engage in a mentored research project in a Movement Science discipline. A scholarly report is required. The sequence begins in the spring semester of the junior year, laying the groundwork for development of a full research project.

Prerequisites: Second semester junior or senior standing in Movement Science

Credit: one to three hours each semester.

### **MVSC-401. NEUROMECHANICS OF HUMAN MOVEMENT. 3:3:0**

An introduction to the study of how the nervous system controls muscle activation and movement. Relationships among neural and muscle tissues, neural elements and force production, acute and chronic adaptations to stress, neural plasticity, neural elements of movement disorders, prevention of and recovery from injury will be discussed.

Prerequisites: MVSC-255, MVSC-360

Credit: three hours.

### **MVSC-402. INTRODUCTION TO HUMAN TISSUE MECHANICS. 3:3:0**

This course is an introduction to the biomechanical properties and behavior of human tissues and joints. Human tissue behavior under various loading conditions, including sitting, standing, gait and fundamental movement skills will be discussed. In addition, the development and etiology of fractures, strains, sprains and arthroplasty will be presented and discussed.

Prerequisites: MVSC-319

Credit: three hours.

### **MVSC-410. CLINICAL EXERCISE PHYSIOLOGY. 3:3:1**

This course provides a comprehensive exposure to and experience in the clinical aspects of exercise physiology by exploring the relationship between exercise and chronic disease. The pathophysiology, medical and clinical considerations, as well as exercise prescriptions designed for specific diseases will be discussed. Course includes two hours of lecture and one hour of lab.

Prerequisites: MVSC-257, MVSC-265, MVSC-355

Credit: three hours.

### **MVSC-415. EXPERIMENTAL EXERCISE PHYSIOLOGY. 3:3:1**

This course will provide students with knowledge of how environment (heat and cold exposure, microgravity, chronobiological factors, altitude, diving, pollution) can impact an individual's capacity to perform exercise and work. Students will be encouraged to participate in and conduct experiments designed to replicate these conditions in the laboratory setting and submit their findings in professional laboratory reports. Course includes two hours of lecture and one hour of lab.

Prerequisites: MVSC-257, MVSC-265, MVSC-355

Credit: three hours.

### **MVSC-461. PREVENTION AND CARE OF ATHLETIC INJURIES. 3:3:1**

The course is designed to introduce roles of the sports medicine team, liability issues, and necessary skills and competencies required for identification, basic injury treatment, and basic rehabilitation principles of basic athletic injuries. Students in this course will modify exercise programs to accommodate injuries. The course includes the study of common causes of injuries and evidence-based best practices of injury prevention and care.

Prerequisites: MVSC-201, MVSC-202, MVSC-355, MVSC-362, MVSC-365

Credit: three hours.

### **MVSC-463. STRENGTH AND CONDITIONING. 4:3:1**

This courses provides an overview of the methods and techniques associated with the strength and conditioning of athletes through cardiovascular and resistance training. The physiological principles for developing strength and conditioning training programs, utilizing both anaerobic and aerobic systems and performance assessment methods, will be addressed. An emphasis will be placed on metabolic energy systems and specific physical adaptations to exercise. The use of plyometrics, speed/agility/speed-endurance training, Pilates, and core training to maximize and athlete's performance will also be addressed. As a final project, students are required to use knowledge gained throughout the semester to develop a one-year training program for a specific athlete.

Prerequisites: MVSC-201, MVSC-202, MVSC-355, MVSC-362, MVSC-364, MVSC-365.

Credit: four hours.

### **MVSC-464. ELECTROCARDIOGRAPHY. 3:3:0**

Recognition and understanding of normal and abnormal electrocardiographic patterns are examined, with an emphasis on the underlying physiologic mechanisms and pathophysiology. Use of the resting electrocardiogram (ECG) to identify contraindications for exercise and use of the exercise ECG to identify clinically significant cardiovascular disease will be emphasized. A student successfully completing this course will be prepared to successfully complete the ECG portion of the American College of Sports Medicine Exercise Specialist or Registered Clinical Exercise Physiologist Certification Exams.

Prerequisites: MVSC-355, MVSC-362

Credits: three hours.

### **MVSC-465. POPULATION SPECIFIC EXERCISE INTERVENTIONS. 3:3:0**

This course addresses the role of physical activity in at-risk populations for health promotion and disease prevention and treatment. At-risk populations are groups that traditionally report low levels of physical activity and/or have a high risk for chronic disease. Students will learn how to promote physical activity and how to prescribe physical activity for specific high risk populations.

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Prerequisites: MVSC-201, MVSC-202, MVSC-355, MVSC-362, MVSC-364

Credit: three hours.

### **MVSC-470. MOVEMENT ANALYSIS. 3:3:1**

This course introduces the student to the use of technology commonly used in movement analysis techniques. The processes of data collection, analysis, interpretation, and reporting using video, force, and EMG techniques will be introduced and explored. Quantitative analysis of human movement toward understanding the mechanisms of injury, reduction of injury production and improved movement outcomes will include kinematic and kinetic aspects of total body and isolated joint movements and electromyographic activity of muscle. Course includes two hours of lecture and one hour of lab.

Prerequisites: MVSC-319, MVSC-360,

Credit: three hours.

### **MVSC-475. CSCS EXAM WORKSHOP. 1:1:0**

This is an intensive workshop designed to address and fine-tune theory and practice specifically related to the content of NSCA's Certified Strength and Conditioning Specialist examination. Students will review exam topics through a combination of classroom and practical experience. Throughout this course, students will be taking practice CSCS exams.

Prerequisites: MVSC-201, MVSC-202, MVSC-355, MVSC-362, MVSC-463

Credit: one hour.

### **MVSC-476. HEALTH/FITNESS SPECIALIST® CERTIFICATION WORKSHOP. 1:1:0**

This intensive workshop allows students to review the knowledge, skills, and abilities required to sit for and pass American College of Sport Medicines's Health Fitness Specialist Certification Exam. The course focuses on the ten competency areas of the exam, with an emphasis on exercise physiology, testing, and prescription. Practice questions and a practice exam for the HFS exam are provided.

Prerequisites: MVSC-201, MVSC-202, MVSC-355, MVSC-362

Credit: one credit

### **MVSC-481. MOVEMENT SCIENCE SENIOR SEMINAR RESEARCH OPTION I. 3:0:3**

This course will provide an opportunity to actively engage in a mentored individual research project in a Movement Science discipline. A scholarly report is required. This course with MVSC-482 is a senior capstone experience option for movement science students.

Prerequisites: MVSC-200, MVSC-201, MVSC-202, MVSC-355, MVSC-362, MVSC-364, MVSC-361, ENGL-101, ENGL-102

Credit: three hours.

### **MVSC-482. MOVEMENT SCIENCE SENIOR SEMINAR RESEARCH OPTION II. 3:0:3**

This course will provide an opportunity to actively engage in a mentored individual research project in a Movement Science discipline. Students will collect data, write a scholarly report, and submit report to a national or regional association. This course with MVSC-481 is a senior capstone experience option for movement science students.

Prerequisites: MVSC-200, MVSC-201, MVSC-202, MVSC-355, MVSC-362, MVSC-364, MVSC-361, MVSC-481, ENGL-101, ENGL-102

Credit: three hours.

### **MVSC-483. MOVEMENT SCIENCE SENIOR SEMINAR. 6:1:5**

A seminar course and capstone experience required of all Movement Science majors. Students may meet this requirement by completing an internship with a business or company in the health and fitness fields. Students will write a paper describing a field experience and relate it to current literature. Students must present their work orally in an open meeting format and provide a final paper detailing the work to the department.

Prerequisites: MVSC-200, MVSC-201, MVSC-202, MVSC-355, MVSC-362, MVSC-364, MVSC-365.

Credit: six hours.

