

Bachelor of Science - Exercise Science

Bachelor of Science—Exercise Science

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2022 Student Recreation Center
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This program is designed to prepare students for careers in preventive and rehabilitative exercise and wellness programs in settings such as hospitals, wellness and rehabilitation centers, sports medicine clinics, government agencies, health and fitness centers, and corporate industry. Academic preparation focuses on the scientific aspects of exercise related to asymptomatic and symptomatic populations. The program also serves to prepare students for graduate studies in exercise science, physical therapy, and other allied health fields.

Four-Year Plan - Exercise Science - Preventive/ Rehabilitative - BS (<http://catalog.odu.edu/undergraduate/dardencollegeofeducation/humanmovementsscience/exercisescience-preventive-bs-fouryearplan/>)

- *The four-year plan is a suggested curriculum to complete this degree program in four years. It is just one of several plans that will work and is presented only as broad guidance to students. Each student is strongly encouraged to develop a customized plan in consultation with their academic advisor. Additional information can also be found in Degree Works.*

Four-Year Plan - Exercise Science - Scientific Foundations - BS (<http://catalog.odu.edu/undergraduate/dardencollegeofeducation/humanmovementsscience/exercisescience-scientific-bs-fouryearplan/>)

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Prerequisites

1. ENGL 110C and ENGL 211C or the equivalent are prerequisites for EXSC 431W.
2. STAT 130M is a prerequisite for EXSC 420.

Continuance

1. Students must achieve a grade of C or better in BIOL 240 or BIOL 250, MATH 102M, MATH 103M or MATH 162M before taking all EXSC courses except EXSC 225.
2. In order to be eligible to register for the Internship course (EXSC 368) a student must have completed all EXSC courses with a GPA of 2.0 overall and in the major.

Exit

1. Maintain an overall grade point average of 2.0 or better.
2. Maintain a grade point average of 2.0 or better in the major.
3. Complete ENGL 110C, ENGL 211C or ENGL 221C or ENGL 231C, and the writing intensive course in the major with a grade of C or better.
4. Complete the University Senior Assessment Survey.
5. Complete the Exercise Science Interview Form and Self-Study Student Questionnaire.

The requirements for the exercise science concentration are the following:

Lower-Division General Education

Written Communication Skills *	6
Oral Communication	3
Mathematical Skills **	3
MATH 102M College Algebra or MATH 103M College Algebra with Supplemental Instruction or MATH 162M Precalculus I	
Language and Culture	0-6
Information Literacy and Research	3
Human Creativity	3
Interpreting the Past	3
Literature	3
Philosophy and Ethics	3
The Nature of Science	8
BIOL 121N & BIOL 122N General Biology I and General Biology I Lab BIOL 123N & BIOL 124N General Biology II and General Biology II Lab	
Human Behavior	3
Impact of Technology ***	
Total Hours	38-44

- * Grade of C or better required in both courses
- ** Grade of C or better required
- *** Satisfied with EXSC 417 in the major

Exercise Science Requirements

BIOL 240 or BIOL 250	Fundamentals of Anatomy and Physiology I Human Anatomy and Physiology I	4
BIOL 241 or BIOL 251	Fundamentals of Anatomy and Physiology II Human Anatomy and Physiology II	4
CHEM 121N & CHEM 122N	Foundations of Chemistry I Lecture and Foundations of Chemistry I Laboratory (C or better required as prerequisite for CHEM 123N-CHEM 124N)	4
CHEM 123N & CHEM 124N	Foundations of Chemistry II Lecture and Foundations of Chemistry II Laboratory	4
EXSC 225	Introduction to Exercise Science	3
EXSC 240	Prevention and Care of Injuries Related to Physical Activity	3
EXSC 250	Strength and Conditioning Leadership	3
EXSC 322	Anatomical Kinesiology	3
EXSC 326	Exercise Physiology I	3
EXSC 327	Exercise Physiology II	3
EXSC 366	Exercise Science Seminar	1
EXSC 408	Nutrition for Fitness and Sport	3
EXSC 415	Exercise Testing for Normal and Special Populations	4
EXSC 417	Biomechanics	4
EXSC 428	Exercise Prescription for Chronic Disease	3
EXSC 431W	Wellness Programming and Administration *	3
PHYS 111N	Introductory General Physics	4
Total Hours		56

- * Grade of C or better required

Choose One of the Following Options:

Scientific Foundations of Exercise

PHYS 112N	Introductory General Physics	4
EXSC 420	Research Methods in Exercise Science (STAT 130M required as prerequisite)	3
Electives		10
Total Hours		17

Preventive/Rehabilitative Exercise

EXSC 368	Internship	12
Electives		5
Total Hours		17

All EXSC courses will be used to calculate the major grade point average, which must be 2.00 to graduate.

Elective credit may be needed to meet the minimum of 120 credits required for the degree.

Upper-Division General Education

- Option A. Disciplinary Minor (a minimum of 12 hours determined by the department or Second Major or Second Degree)
- Option B. Interdisciplinary Minor (specifically 12 hours, 3 of which may be in the major)
- Option C. An approved Certification Program such as teaching licensure
- Option D. Two Upper-Division Courses from outside the College of Education and Professional Studies and not required by the major (6 hours)

Requirements for Graduation

Additional free elective hours may be needed to make 120 credits total. A minimum 2.00 grade point average is required in the major, minor and overall to meet graduation requirements. Other requirements include completion of a minimum of both 30 credit hours overall and 12 credit hours in upper-level courses in the major program from Old Dominion University, completion of ENGL 110C, ENGL 211C or ENGL 221C or ENGL 231C, and the writing intensive (W) course in the major with a grade of C or better, and completion of the Senior Survey.

EXERCISE SCIENCE Courses

EXSC 225. Introduction to Exercise Science. 3 Credits.

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 Credits.

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 Credits.

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 322. Anatomical Kinesiology. 3 Credits.

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 Credits.

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 Credits.

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.

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 Credits.

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 Credits.

Field-based experience in a fitness or allied-health setting. Minimum of 200 clock hours. Prerequisites: EXSC 225.

EXSC 397. Independent Study. 1-3 Credits.

Independent study of special topics under supervision of faculty. Prerequisites: Junior standing and permission of the instructor.

EXSC 403. Lifetime Fitness and Wellness. 3 Credits.

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 Credits.

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 Credits.

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 Credits.

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 Credits.

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 428/528. Exercise Prescription for Chronic Disease. 3 Credits.

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 Credits.

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.