

EXERCISE SCIENCE

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The purpose of the Exercise Science Program at Carroll University is to develop entry-level professionals who can assess, interpret, prescribe, intervene, and manage health and fitness in apparently healthy individuals across the life span and promote positive lifestyle changes through basic interventions and referrals. The program is also designed to prepare students for appropriate professional organization certification exams and for post-graduate study in exercise science or other health related disciplines such as medicine, physical therapy, and physician assistant.

The exercise science program emphasizes the area's body of knowledge, research, and practice. Constant reinforcement of content through practical experiences occurs through observations, exposure to clients in academic courses, practicum experiences, and full-time internships. Graduates are qualified professionals who are liberally educated and possess the foundations for lifelong learning.

Individuals interested in health/fitness management are prepared to provide exercise and general wellness programs to apparently healthy individuals across the life span in safe and effective environments. Those interested in strength and conditioning are prepared to provide training programs to improve athletic performance across the life span. Students are also well prepared for advanced study in either graduate school or a clinical health field. Students who intend to advance into Carroll University's Entry-level Doctor of Physical Therapy Program must also satisfy the physical therapy program progression requirements described in the Admission section of this catalog.

To meet the university's and the exercise science program's educational mission, a variety of academic and professional disciplines are utilized. The curriculum includes core courses in health sciences, exercise science, and physical education as well as courses in supporting academic areas such as chemistry and biology.

Learning Outcomes for Exercise Science

Upon completion of the Exercise Science Program, the individual:

1. Will possess the knowledge and skills for physical activity programming and lifestyle modification techniques and be prepared to work in a variety of health and fitness fields.

EXERCISE SCIENCE

2. Will be able to collaborate with a variety of health care professionals through consultations and referrals in a multi-disciplinary approach to wellness.
3. Will be able to think critically to effectively solve problems in a variety of dynamic environments.
4. Will understand the importance and process of becoming life-long learners in order to contribute to the fields of health and fitness.
5. Will be an effective communicator among health care providers, fitness professionals, clients, administrators, family, and community in the delivery of life-long health and wellness.
6. Will practice with professionalism and integrity in their respective health and fitness field.

Fees

Specific courses that require use of equipment and disposable supplies are assigned a course fee.

Exercise Science Major Bachelor of Science Minor Not Offered

Core courses (33 credits)

Exercise Science 210, Exercise Testing and Prescription (3 credits)
Exercise Science 302, Exercise in Health and Disease (3 credits)
Exercise Science 315, Exercise Science Practicum I (1 credit)
Exercise Science 324, Exercise Science Laboratory (2 credits) or
PTH 414, Biomechanics (4 credits) for pre-physical therapy
Exercise Science 435, Exercise Science Practicum II (1 credit)
Health Sciences 101, Introduction to Health Care Skills (1 credit)
Health Sciences 103, Personal and Community Health (4 credits)
Health Sciences 105, Group Exercise Instruction (1 credit)
Health Sciences 110, Basic Weight Training Instruction (1 credit)
Health Sciences 120, Fundamental Motor Development (4 credits) or
PTH 407, Human Learning and Behavior (4 credits) for pre-physical therapy
Health Sciences 303, Exercise Physiology (4 credits) or
PTH 406, Applied Physiology 1 (4 credits) for pre-physical therapy
Health Sciences 322, Kinesiology (4 credits) or
PTH 404, Biomechanics (4 credits) for pre-physical therapy
Physical Education 421, Psycho-Social Aspects of Physical Activity (4 credits)

Capstone Experience (2 or 12 credits)

Exercise Science 480, Capstone: Internship in Exercise Science

Required Supporting Courses (29 credits)

Biology 130, Introduction to Human Anatomy and Physiology I (4 credits)
Biology 140, Introduction to Human Anatomy and Physiology II (4 credits)
Chemistry 101, General Chemistry (4 credits)
Chemistry 102, Biological Chemistry (4 credits)

Chemistry 208, Nutrition (3 credits)

Computer Science 107, Problem Solving Using Information Technology (2 credits)

Mathematics 112, Introduction to Statistics (4 credits)

Physics 101, Introductory Physics I (4 credits). Pre-physical therapy students must also take Physics 102, Introductory Physics II (4 credits)

Capstone Requirements

Students with a major of Exercise Science are required to take a 12 credit capstone course to help prepare the student for the transition to the workplace or graduate school. Students who are in Phase 1 of the Doctorate of Physical Therapy program at Carroll are allowed to take a minimum of 2 credits of capstone to earn their Bachelor of Science in Exercise Science. If a student is enrolled in Phase 1 of the Physical Therapy program and then drops out of the program during their senior year the student must then take an additional number of Capstone credits to achieve 12 total credits of Capstone.

ESC 201. Sports Nutrition

4 credits

The goal of this course is to develop an understanding of the interaction of good nutrition and exercise habits for optimal functioning of the human body. Focus will be on nutritional strategies to maximize energy and recovery. (*Fa*) Prerequisites: CHE 208 or HED 201 (may be taken concurrently).

ESC 202. Advanced Sports Nutrition

4 credits

This course offers an in-depth study of acute and chronic metabolic adaptations to exercise, followed by a study of diet manipulations to optimize exercise metabolism and improve performance. (Course Fee Required) (*Sp*) Prerequisites: ESC 201 or consent of instructor.

ESC 210. Exercise Testing and Prescription

3 credits

This course examines the evaluation of fitness levels and the components of fitness applicable to the development of exercise programs. Exposure to exercise prescription is also included in this course. (Required course fee) (*Fa, Sp*) Prerequisites: BIO 130 or consent of instructor.

ESC 302. Exercise in Health and Disease

3 credits

This course examines and applies the principles of exercise prescription for normal and special cases. Development of exercise strategies for the apparently healthy, elderly, obese, hypertensive, and cardiac patients are discussed. In addition, exercise considerations for diabetes, asthma, arthritis, osteoporosis and pregnancy are explored. (*Sp*) Prerequisites: ESC 210 or consent of instructor.

ESC 303. Nutrition Assessment and Prescription

3 credits

This course is designed to give the student knowledge and tools to assess the current diet and exercise habits of an athlete. Students will be able to use the assessment results to prescribe an eating plan. (*Wn*) Prerequisites: ESC 201.

EXERCISE SCIENCE

ESC 304. Nutrition and Fitness for Special Populations 3 credits
The objective of this course is to apply the principles of sports nutrition to improve the health and functionality of special populations, including athletes with eating disorders. (*Su I*) Prerequisites: ESC 210 and ESC 303.

ESC 305. Supplements for Sport Performance 2 credits
The goal of this course is to provide the student with information on both safe and harmful supplementation for athletes. Specifically, the students will understand the proposed mechanism of action of a supplement, learn to evaluate the claim of effectiveness and evaluate its potential as an ergogenic aid. (*Wn*)

ESC 315. Exercise Science Practicum I 1 credit
This course provides students with an opportunity to observe and apply skills learned in exercise science and recreational management programs under the direction and supervision of the Exercise Science faculty. (Required course fee) (*Fa, Sp*) Prerequisites: ESC 210 for exercise science students, junior standing, current Professional Rescuer CPR & First Aid certification. (Course Fee Required) (Grading is on an S/U basis.)

ESC 324. Exercise Science Laboratory 2 credits
This course further develops knowledge, skills, and abilities that exercise professionals need to possess in order to function competently in commercial, corporate, and clinical health and fitness settings. (Required course fee) (*Sp*) Prerequisites: HSC 303, HSC 322.

ESC 391. Strength and Conditioning for Sport 2 credits
This course presents advanced strength training and conditioning theory and practice. Designed primarily for students that may be involved in strength and conditioning for athletes at any age, the course explores periodization models and their utilization, mastery and analysis of explosive lifts, plyometric programming, speed and agility drills and programming, facility design, and ergogenic aids. (Required course fee) (*Wn*) Prerequisites: HSC 303, HSC 322, HSC 110 or permission from instructor.

ESC 407. Facility Operation 3 credits
This course is designed to bridge the gap between business administration theory and practical application in the fitness and recreation fields. Information provided in this course prepares students for their internship and first professional work experiences. (*Fa, Sp*) Prerequisites: Junior or Senior status (Exercise Science and Recreation Management majors) or permission from instructor.

ESC 435. Exercise Science Practicum II 1 credit
This course provides students with an opportunity to develop practical, hands-on skills and experiences in exercise science and recreation management under the direction and supervision of the Exercise Science faculty. (Required course fee) (*Fa, Sp*) Prerequisites: ESC 315, current Professional Rescuer CPR and First Aid certification. (Course Fee Required) (Grading is on an S/U basis.)

ESC 480. Capstone: Internship in Exercise Science **2 or 12 credits**

This course is an opportunity for students to apply theories and concepts to actual work experiences under the direction of the capstone advisor and the site supervisor. The purpose of the internship is to provide opportunities to improve skills, reach goals, and adapt to the world of work. (*Fa, Sp, Su*) Prerequisites: Senior standing, major requirements completed, current Professional Rescuer CPR and First Aid certification, and approval of the instructor. (Course Fee Required for 2 Credit Option)

See Health Sciences in the Carroll University Catalog for descriptions of Health Sciences (HSC) courses in the Exercise Science Program curriculum.

Exercise Science Four-Year Curriculum Model

Class Standing	Fall Semester	Spring Semester
Freshman	CCS	Writing Seminar
	BIO 130 (or CHE)	BIO 140 (or CHE)
	HSC 103	HSC 110
	GE1 (F,P,H,S) or	GE1 (F,P,H,S)
	MAT (101, 130)	GE1 (F,P,H,S) or MAT (101, 130)
	<u>16</u>	<u>17</u>
Sophomore	CHE 101	CHE 102
	HSC 101	CSC 107
	HSC 105	HSC 120
	MAT 112	ESC 210
	GE1 (F,P,H,S)	PHY 101
	Elective	
	<u>18</u>	<u>17</u>
Junior	HSC 303	ESC 302
	HSC 322	ESC 324
	CHE 208	ESC 315
	Elective	GE2 (F,P,H,S)
		Elective
	Elective	
	<u>15</u>	<u>18</u>
Senior	ESC 407 - elective	ESC 480
	ESC 435	GPC
	PED 421	
	CCE	
	Elective	
	<u>14</u>	<u>14</u>

= 129 credits

EXERCISE SCIENCE

Exercise Science (Pre-Physical Therapy) Four-Year Curriculum Model

(Pre-physical therapy students can find the necessary requirements for the Physical Therapy Program in the admissions section of the catalog)

Class Standing	Fall Semester	Spring Semester
Freshman	Cultural Seminar 4	Writing Seminar 4
	BIO 130 (or CHE) 4	BIO 140 (or CHE) 4
	GE1 (F,P,H,S) 4	HSC 110 1
	GE1 (F,P,H,S) or 4	PHY 101 4
	Math (101, 130) 4	GE1 (F,P,H,S) 4
	<u>16</u>	<u>17</u>
Sophomore	CHE 101 4	CHE 102 4
	HSC 101 1	ESC 210 3
	HSC 103 4	CSC 107 2
	HSC 105 1	MAT 112 4
	PHY 102 4	GE2 (F,P,H,S) 4
	GE1 (F,P,H,S) 4	
	<u>18</u>	<u>17</u>
Junior	HSC 402 4	HSC 403 4
	CHE 208 3	ESC 302 3
	ESC 315 1	ESC 435 1
	PED 421 4	Elective 4
	Elective 4	CCE 2
	<u>16</u>	<u>14</u>
Senior	PTH 400 4	PTH 401 4
	PTH 404 4	PTH 405 4
	PTH 406 4	PTH 414 4
	PTH 407 4	PTH 416 4
	<u>16</u>	<u>16</u>

= 130 credits