EXERCISE AND SPORT PHYSIOLOGY (BS)

Health and Human Enrichment

This major provides a strong science-based curriculum of advanced courses in exercise physiology, exercise testing and prescription, strength and conditioning, and research methodology with an emphasis on the improvement and understanding of human performance. Laboratory activities, research, and clinical applications are components of this program. Majors will be prepared for careers in clinical research settings, strength and conditioning, and the health/fitness industry. The major also provides a strong foundation for future graduate studies in Exercise Science, Physical Therapy, Occupational Therapy, and other allied health related fields. In addition, the program prepares students to challenge select certification examinations such as the American College of Sports Medicine's Certified Exercise Physiologist (EP-C) and the National Strength and Conditioning Association's Certified Strength and Conditioning Specialist (CSCS).

3+2 BS/MS Degree Option
Students interested in graduate study in exercise science who have completed all prerequisite courses at the end of the 3rd year of study can apply to the MS degree program for their 4th year of study. Students who complete all requirements will earn the BS in Exercise & Sport Physiology at the completion of their 4th year and the MS in Applied Exercise Physiology & Human Performance at the completion of their 5th year.

Degree Requirements

Exercise & Sport Physiology

Course	Title	Credits
Major Requirements		
EX 2755	Introduction to Exercise Science	3
EX 3580	Physiology of Exercise	3
EX 3750	Physiology of Exercise Laboratory	1
EX 3860	Exercise Testing and Prescription	3
EX 3865	Exercise Testing and Prescription Laboratory	1
EX 4520	Principles and Theories of Strength and Conditioning	3
EX 4770	Exercise Physiology for Special Populations (WRCO)	3
BI 2110 & BI 2130	Human Anatomy and Physiology I and Human Anatomy and Physiology Laboratory I	4
BI 2120 & BI 2140	Human Anatomy and Physiology II and Human Anatomy and Physiology Laboratory II	4
CH 2335	General Chemistry I (QRCO)	4
CH 2340	General Chemistry II	4
HE 3220	Applied Nutrition for Healthy Living (TECO)	3
MA 2300	Statistics I (QRCO)	3
PE 3570	Kinesiology	3
PE 3720	Motor Learning	3
General Education (https://coursecatalog.plymouth.edu/general-education/)		
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
CTDI (https://coursecatalog.plymouth.edu/general-education/#CTDI)	Creative Thought Direction	3-4
PPDI (https://coursecatalog.plymouth.edu/general-education/#PPDI)	Past and Present Direction	3-4
SSDI (https://coursecatalog.plymouth.edu/general-education/#SSDI)	Self and Society Direction	3-4
Directions (choose from CTDI, PPDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/) [1]		4-8
DICO (https://coursecatalog.plymouth.edu/general-education/#DICO)	Diversity Connection	3-4
GACO (https://coursecatalog.plymouth.edu/general-education/#GACO)	Global Awareness Connection	3-4
INCO (https://coursecatalog.plymouth.edu/general-education/#INCO)	Integration Connection	3-4
WECO (https://coursecatalog.plymouth.edu/general-education/#WECO)	Wellness Connection	3-4
Option Requirements		
Complete one from the following required options		27.5-33.5
BS in Exercise & Sport Physiology		
3+2 BS in EX, MS in Exercise Science and Sport Performance		
3+3 BS in EX, Doctor of Physical Therapy Option		
Total Credits		**120**

[1] Directions should total 16-17 credits because SIDI is waived for BS Exercise and Sport Physiology.

BS in Exercise & Sport Physiology Option

Course	Title	Credits
HE 2500	First Aid and CPR/AED	1.5
EX 4525	Principles and Theories of Strength and Conditioning Laboratory	1
EX 4820	Advanced Exercise Physiology	3
EX 4825	Advanced Exercise Physiology Laboratory	1
EX 4840	Research Methods in Exercise Science (WRCO)	3
Professional Skills - Complete two:		**3**

PE 2428	Flexibility, Core, and Balance Training	
PE 2640	Burdenko Conditioning	
PE 2831	Resistance Training Techniques	
Psychology Choice - Complete one:		**3-4**
PBH 3210	Social and Behavioral Health Psychology	
CC 3860	Psychological Aspects of Sports	
Capstone Experience - Complete one:		
EX 4830	Applied Research in Exercise Science	4-12
or EX 4880	Exercise & Sport Physiology Internship	
Electives		**19.5-21.5**
Total Credits		**39-50**

3+2 BS in EX, MS in Exercise Science & Sport Performance Option

Course	Title	Credits
3+2 MS in Exercise Science & Sport Performance Requirements		
EX 5210	Advanced Exercise Physiology	3
EX 5220	Advanced Exercise Physiology Laboratory	1
EX 5310	Research Methods in Exercise Science	3
EX 5410	Applied Research in Exercise Science	4
EX 5510	Graduate Seminar in Exercise Science	1
EX 5520	Advanced Exercise Testing & ECG	4
EX 5610	Advanced Strength and Conditioning	4
EX 5710	Advanced Practicum in Exercise Science	3
EX 4525	Principles and Theories of Strength and Conditioning Laboratory	1
HE 2500	First Aid and CPR/AED	1.5
Psychology Choice - Complete one:		
PBH 3210	Social and Behavioral Health Psychology	4
CC 3860	Psychological Aspects of Sports	3
Professional Skills - Complete two:		
PE 2428	Flexibility, Core, and Balance Training	1.5
PE 2640	Burdenko Conditioning	1.5
PE 2831	Resistance Training Techniques	1.5
Electives		**4.5-6.5**
Total Credits		
MS in Exercise Science & Sport Performance (final year)		
EX 5620	Behavioral Intervention Strategies	4
EX 5730	Advanced Topics in Exercise Physiology	4
EX 5840	Exercise Biochemistry & Sports Nutrition	4
EX 5920	Exercise Physiology in Clinical Populations	4
EX 6100	Graduate Internship in Exercise Science	3-6
EX 6200	Graduate Thesis in Exercise Science	3-6
Total Credits		**63.5-71.5**

3+3 BS in EX, Doctor of Physical Therapy Option

Course	Title	Credits
3+3 DPT Option Requirements		
AHS 2200	Pre-Professional Observation Experience	1-2
AHS 3305	Epidemiology and Evidence Based Medicine (GACO,QRCO,WRCO)	4
PH 2110	College Physics I	4
PH 2120	College Physics II	4
Social/Behavioral Science elective		3-4
To satisfy the social/behavioral science elective requirement, take any 3-4 credit course within the following disciplines at the 3000 or 4000 level: PS, SO, PBH, SE		
Upper Level EX Choice - Complete one:		**3**
EX 4520	Principles and Theories of Strength and Conditioning	
EX 4770	Exercise Physiology for Special Populations (WRCO)	
Total Credits		
DPT Year 1 (Summer and Fall semesters) [2]		
PTH 6110	Clinical & Functional Anatomy	4
PTH 6111	Clinical Physiology	3
PTH 6112	Ethics and Value Systems	2
PTH 6115	Patient/Client Management I	2
PTH 6116	Integrated Clinical I	1
PTH 6120	Neuroscience	4
PTH 6121	Musculoskeletal Conditions & Management	3
PTH 6122	Dynamic Systems I: Movement & Adaptation	3
PTH 6124	Clinical Inquiry I: Causality and Inference	3
PTH 6125	Patient/Client Management II	4
PTH 6127	Integrated Clinical II	1
Total Credits		**49-51**

[2] Students who wish to matriculate early into the DPT program, consistent with the 3+3 EX to DPT framework, must earn a minimum grade of B- in all pre-requisite courses (BI 2110, BI 2130, BI 2120, BI 2140, CH 2335, CH 2340, PH 2110, PH 2120, MA 2300, PE 3720, EX 3580, EX 3860, social / behavioral science elective), earn a minimum science GPA of 3.3 (BI 2110, BI 2130, BI 2120, BI 2140, CH 2335, CH 2340, PH 2110, PH 2120, PE 3570, EX 3580), and a minimum overall GPA of 3.5, and complete the PTCAS application requirements during fall of year 3 in the EX program.

Recommended Course Sequence

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

To complete the bachelor's degree in 4 years, you must successfully complete a minimum of 15 credits each semester or have a plan to make up credits over the course of the 4 years. For example, if you take 14 credits one semester, you need to take 16 credits in another semester. Credits completed must count toward your program requirements (major, option, minor, certificate, general education or free electives).

BS Option

Course	Title	Credits
Year One		
Fall		
EX 2755	Introduction to Exercise Science	3
IS 1115	Tackling a Wicked Problem	4

EN 1400	Composition	4
BI 2110 & BI 2130	Human Anatomy and Physiology I and Human Anatomy and Physiology Laboratory I	4
	Credits	**15**
Spring		
Professional Skills Course		1.5
MA 2300	Statistics I (QRCO)	3
BI 2120 & BI 2140	Human Anatomy and Physiology II and Human Anatomy and Physiology Laboratory II	4
SSDI (https://coursecatalog.plymouth.edu/general-education/#SSDI)	Self and Society Direction	3-4
PPDI (https://coursecatalog.plymou general-education/#PPDI)	Past and Present Direction	3-4
	Credits	**14.5-16.5**
Year Two		
Fall		
PE 3570	Kinesiology	3
CH 2335	General Chemistry I (QRCO)	4
CTDI (https://coursecatalog.plymou general-education/#CTDI)	Creative Thought Direction	3-4
Directions (choose from CTDI, PPDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/)		3-4
Professional Skills Course		1.5
	Credits	**14.5-16.5**
Spring		
EX 3580	Physiology of Exercise	3
EX 3750	Physiology of Exercise Laboratory	1
CH 2340	General Chemistry II	4
HE 2500	First Aid and CPR/AED	1.5
Directions (choose from CTDI, PPDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/)		0-4
WECO (https://coursecatalog.plymouth.edu/general-education/#WECO)	Wellness Connection	3-4
	Credits	**12.5-17.5**
Year Three		
Fall		
PE 3720	Motor Learning	3
EX 3860	Exercise Testing and Prescription	3
EX 3865	Exercise Testing and Prescription Laboratory	1
DICO (https://coursecatalog.plymou general-education/#DICO)	Diversity Connection	3-4
Directions (choose from CTDI, PPDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/)		0-4
HE 3220	Applied Nutrition for Healthy Living (TECO)	3
	Credits	**13-18**
Spring		
EX 4520	Principles and Theories of Strength and Conditioning	3
EX 4525	Principles and Theories of Strength and Conditioning Laboratory	1
EX 4770	Exercise Physiology for Special Populations (WRCO)	3
CC 3860 or PBH 3210	Psychological Aspects of Sports or Social and Behavioral Health Psychology	3-4
GACO (https://coursecatalog.plymou general-education/#GACO)	Global Awareness Connection	3-4
	Credits	**13-15**
Year Four		
Fall		
EX 4820	Advanced Exercise Physiology	3
EX 4825	Advanced Exercise Physiology Laboratory	1
EX 4840	Research Methods in Exercise Science (WRCO)	3
Electives		6-8
INCO (https://coursecatalog.plymou general-education/#INCO)	Integration Connection	3-4
	Credits	**16-19**
Spring		
EX 4830 or EX 4880	Applied Research in Exercise Science or Exercise & Sport Physiology Internship	4
Electives		9-12
	Credits	**13-16**
	Total Credits	**120**

[1] Directions should total 16-17 credits because SIDI is waived for BS Exercise and Sport Physiology.

3+2 Option

Course	Title	Credits
Year One		
Fall		
EX 2755	Introduction to Exercise Science	3
IS 1115	Tackling a Wicked Problem	4
EN 1400	Composition	4
BI 2110 & BI 2130	Human Anatomy and Physiology I and Human Anatomy and Physiology Laboratory I	4
	Credits	**15**
Spring		
Professional Skills Course		1.5

MA 2300	Statistics I (QRCO)	3
BI 2120 & BI 2140	Human Anatomy and Physiology II and Human Anatomy and Physiology Laboratory II	4
SSDI (https://coursecatalog.plymouth.edu/general-education/#SSDI)	Self and Society Direction	3-4
PPDI (https://coursecatalog.plymou general-education/#PPDI)	Past and Present Direction	3-4
	Credits	**14.5-16.5**
Year Two		
Fall		
PE 3570	Kinesiology	3
CH 2335	General Chemistry I (QRCO)	4
CTDI (https://coursecatalog.plymou general-education/#CTDI)	Creative Thought Direction	3-4
Directions (choose from CTDI, PPDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/)		3-4
Professional Skills Course		1.5
	Credits	**14.5-16.5**
Spring		
EX 3580	Physiology of Exercise	3
EX 3750	Physiology of Exercise Laboratory	1
CH 2340	General Chemistry II	4
HE 2500	First Aid and CPR/AED	1.5
Directions (choose from CTDI, PPDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/)		0-4
WECO (https://coursecatalog.plymouth.edu/general-education/#WECO)	Wellness Connection	3-4
	Credits	**12.5-17.5**
Year Three		
Fall		
PE 3720	Motor Learning	3
EX 3860	Exercise Testing and Prescription	3
EX 3865	Exercise Testing and Prescription Laboratory	1
DICO (https://coursecatalog.plymou general-education/#DICO)	Diversity Connection	3-4
Directions (choose from CTDI, PPDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/)		0-4
HE 3220	Applied Nutrition for Healthy Living (TECO)	3
	Credits	**13-18**
Spring		
EX 4520	Principles and Theories of Strength and Conditioning	3
EX 4525	Principles and Theories of Strength and Conditioning Laboratory	1
EX 4770	Exercise Physiology for Special Populations (WRCO)	3
CC 3860 or PBH 3210	Psychological Aspects of Sports or Social and Behavioral Health Psychology	3-4
GACO (https://coursecatalog.plymou general-education/#GACO)	Global Awareness Connection	3-4
	Credits	**13-15**
Year Four		
Fall		
EX 5210	Advanced Exercise Physiology	3
EX 5220	Advanced Exercise Physiology Laboratory	1
EX 4840	Research Methods in Exercise Science (WRCO)	3
EX 5500	Graduate Seminar in Exercise Science	3
EX 5610	Advanced Strength and Conditioning	4
INCO (https://coursecatalog.plymouth.edu/general-education/#INCO)	Integration Connection	3-4
	Credits	**17-18**
Spring		
EX 5410	Applied Research in Exercise Science	4
EX 5220	Advanced Exercise Physiology Laboratory	1
EX 5730	Advanced Topics in Exercise Physiology	4
EX 5700	Advanced Practicum in Exercise Science I	4
	Credits	**13**
	Total Credits	**120**

Learning Outcomes

Upon completion of this major, exercise and sport physiology students will possess the necessary knowledge, skills, and abilities to:

- Explain the acute and chronic effects of resistance and aerobic exercise on metabolism and the cardiorespiratory and neuromuscular systems.
- Describe the pathophysiology and risk factors associated with exercise and disease.
- Demonstrate the ability to administer and interpret health appraisals, fitness, and clinical exercise testing for healthy, athletic, and special populations.
- Design and monitor exercise prescriptions for healthy, athletic, and special populations.
- Critically interpret current literature in exercise physiology.
- Demonstrate proficiency in performing laboratory and field-testing techniques in clinical exercise physiology and strength and conditioning.
- Demonstrate knowledge of and show ability to carry out the research process in a collaborative environment.
- Apply theoretical knowledge acquired in the classroom to practical experiences in clinical and/or applied settings.
- Demonstrate proficiency in performing laboratory techniques and subsequent analysis of data commonly used in a Human Performance Laboratory.

- Demonstrate knowledge of and show ability to carry out the research process in a collaborative environment.

Career Pathways

Exercise and Sport Physiology prepares you for careers in the fitness industry, strength and conditioning field, human performance laboratory research, clinical exercise physiology, and others, such as the pharmaceutical industry. The degree prepares you for future graduate studies in Exercise Science and is designed to allow you the flexibility to complete prerequisites that may be required for professional post-baccalaureate programs such as Physical Therapy, Occupational Therapy, Doctor of Chiropractic, etc.