

of the introductory Environmental Perspectives and Careers course, illustrating the diverse nature of the field and options available in environmental careers; the course entitled Environmental Problems and Solutions, which investigates solutions to environmental problems; and the Senior Culminating Experience. Students can major in either an arts and humanities oriented Environmental Studies program or a science oriented Environmental Science program. Recognizing that environmental careers require skills developed in other academic areas, ESS students in environmental studies are required to have a second major. ESS students in environmental science are required to have a minor or a second major in either Biology, Chemistry, Earth Science or Physics. Related internships are strongly recommended.

Major Program Requirements

Bachelor of Arts in Environmental Studies

(30 hours from various departments; requires a second major)

Environmental Studies Core (5-7 hours)

- ESS 125 Environmental Perspectives and Careers (2)
- ESS 325 Environmental Problems and Solutions (2)
- ESS 400 Senior Culminating Experience (1-3)

Environmental Studies Cognate Electives (23-25 hours)

- 3 of the following: EARTH 205, PHIL 304, PSCI 345, or SOC 309 (10-11)
- Career-related electives* (12-16)

Electives must be approved by the ESS chair and the chair in the second major.

Statistics (Mathematics 204 or Psychology 211), Computer Information Systems 106 and related internships are strongly recommended for graduate preparation.

Bachelor of Arts in Environmental Science (30 hours from various departments; 24 hours of cognates; requires a second major)

Environmental Studies Core (5-7 hours)

- ESS 125 Environmental Perspectives and Careers (2)
- ESS 325 Environmental Problems and Solutions (2)
- ESS 400 Senior Culminating Experience (1-3)

Environmental Science Cognate Electives (23-25 hours)

- 1 of the following: EARTH 205, PHIL 304, PSCI 345, or SOC 309 (3-4)
- Career-related electives* (19-22)

*Electives must be approved by the ESS chair and the chair in the second major.

Environmental Science Cognates (24 hours)

- BIOL 103 Plant Biology (4)
- BIOL 104 Animal Biology (4)
- BIOL 217, 218 Principles of Ecology, Laboratory (3,1)
- CHEM 103, 104 General Chemistry I, II (4,4)
- ERTH 101 Physical Geology (4)

Statistics (Mathematics 204 or Psychology 211), Computer Information Systems 106 and related internships are strongly recommended for graduate preparation.

The semesters listed after course descriptions indicate when courses are expected to be offered. Schedules are subject to change; students should confirm semester offerings with the department when planning degree programs.

125. Environmental Perspectives and Careers (2). An investigation of environmental perspectives from a variety of disciplines and their relationship to environmentally related careers. The course will include representatives from many academic departments and off-campus professionals and requires that a four-year curriculum be designed for career preparation. Spring.

325. Environmental Problems and Solutions (2). An investigation of current environmental problems and possible solutions offered from different perspectives. Students will prepare a proposal dealing with a possible solution to an environmental problem. The proposal will reflect the academic interest and perspective of each student (their minor or major) and will serve as preparation for ESS 400. (Prerequisite: 125 and sophomore standing.) Spring.

375. Geographic Information and Positioning Systems (4). Historical perspective of how maps are made and global positions determined and the current means of employing computer and satellite technology using geographic information systems (GIS) and global positioning systems (GPS). Three hours lecture, three hours laboratory per week. (Prerequisites: EARTH 101, MATH 115 and a 200-level Biology or Earth Science course.)

400. Senior Culminating Experience (1-3). Original research writing, performance or show on an environmental issue. A formal presentation of the final product is required. (Prerequisite: 325.) Fall.

Special and Advanced Courses

199. Exploratory Internship (1-3). Does not count toward a departmental major.

299. Experimental Course (1-3).

399. Professional Internship (1-12).

451. Independent Study (1-3). A program of supervised reading, research or work in an area of special interest to the student. (Prerequisite: written departmental permission.)

499. Advanced Experimental Course (1-3).

Exercise Science/Physical Education

The objective of the department of exercise science and physical education is to offer each student an experience that blends academic preparation with practical application. The professional preparation program is designed to broaden students' career opportunities by offering three majors and one minor.

The program is designed to prepare students to teach (K-12), coach, assume appropriate positions in a variety of health/fitness related professions, or to continue in a specialized graduate program.

Major Program Requirements

Bachelor of Arts in Exercise Science

(34 hours of Exercise Science and 19 hours of cognates)

Exercise Science Core (34 hours)

- ESPE 133 American Red Cross Water Safety Instructor (1)
- ESPE 201 Red Cross First Aid and Emergency Care (2)
- ESPE 115 Care and Prevention of Athletic Injuries (3)
- ESPE 225 Anatomy (3)
- ESPE 230 Motor Learning and Development (3)
- ESPE 250 Human Physiology (3)
- ESPE 300 Kinesiology (3)
- ESPE 309 Theory and Practice (1)
- ESPE 311 Exercise Physiology (4)
- ESPE 336 Exercise Testing and Prescription (2)
- ESPE 339 Strength and Conditioning (2)
- ESPE 350 Measurement and Evaluation (2)
- ESPE 399 Internship (3)
- ESPE 404 Senior Seminar (2)

Exercise Science Cognates (19 hours)

- BIOL 104 or 101 Animal Biology or Biology & Soc (4)
- BIOL 209 Human Nutrition (3)
- MATH 115 Pre-Calculus Mathematics (4)
- CHEM 103, 104 College Chemistry I, II (4, 4)

Areas of Concentration within Exercise Science Major (optional)

An exercise science major may elect one of the following areas of concentration.

- I. Pre-Physical Therapy. For students interested in pursuing a graduate degree, the following courses are recommended: Biology 455; Computer Information Systems 106; Mathematics 135; Mathematics 204 or Psychology 211; Physics 101, 102; Psychology 100. Also recommended: English 201, English 301; Philosophy 344. Students should consult the catalogs of schools in which they are interested for specific admissions requirements.
- II. Corporate fitness: The basic exercise science major plus the following: Business Administration 230, 241, 242.

Bachelor of Science in Athletic Training

Certified athletic trainers are health care professionals who specialize in preventing, recognizing, managing and rehabilitating injuries that result from physical activity. As part of a complete health care team, the certified athletic trainer works under the direction of a licensed physician and in cooperation with other health care professionals, athletics administrators, coaches and parents.

Students who want to become certified athletic trainers must earn a degree from an accredited athletic training curriculum. Accredited programs include formal instruction in areas such as injury/illness prevention, first aid and emergency care, as-

essment of injury/illness, human anatomy and physiology, therapeutic modalities, and nutrition. Classroom learning is enhanced through clinical education experiences.

To become certified athletic trainers, students must pass a comprehensive test administered by the Board of Certification. Once certified, they must meet ongoing continuing education requirements in order to remain certified <www.nata.org>.

Retention Criteria:

Sophomore Retention: After freshman year, students must apply to be formally reviewed for retention in the athletic training major. Because there are specific accreditation standards regarding maximum enrollment, retention in the athletic training major is competitive, and will be based on students' performance in the following areas:

- Minimum cumulative GPA of 2.75
- Minimum GPA in major courses 3.00
- Completion of the following courses with a grade of C- or better: ESPE 140, ESPE 201, ESPE 100, ESPE 115, and ESPE 142, BIOL 101 or 104
- Interview with athletic training faculty/staff
Prior to enrolling in sophomore level athletic training clinical coursework (ESPE 241,242) students must have the following on file:
- Signed technical standards
Proof of current CPR for the professional rescuer (or equivalent), and first aid certifications
- Proof of a current health history, immunization review (including Hepatitis B vaccine), and physical examination (performed by an MD, DP, NP, or PA) that verifies a student is able to meet the physical and psychological rigors of the program.
- Proof of annual OSHA training

Junior and Senior Retention: Student performance will be evaluated each semester, and retention will be based on the following criteria:

- Minimum cumulative GPA of 2.75
- Minimum GPA in major courses 3.00
- Completion of athletic training core coursework with a grade of C- or better

Prior to enrolling in junior and senior level athletic training clinical coursework (ESPE 341,342,441) students must have the following updates on file:

- Proof of current CPR for the professional rescuer (or equivalent), and first aid certifications
- Proof of annual OSHA training

Probation

Students who do not meet minimum retention criteria will be placed on probation, and will have one year to rectify the deficiency. If deficiencies are not corrected within the one year period, the student will be dismissed from the athletic training major.

Transfer Students

Information regarding Adrian College's transfer policies can be found in the Academic Catalog, under the Admissions section. Students wishing to transfer into the athletic training major will be held to the sophomore retention standards listed

above. Transfer acceptance is contingent on space availability, and performance level in the stated criteria.

Athletic Training Core (51 hours)

- ESPE 115 Care and Prevention of Athletic Injuries (3)
- ESPE 140 Athletic Training Clinical Observation (1)
- ESPE 142 Orthopedic Taping and Wrapping (1)
- ESPE 201 Red Cross First Aid and Emergency Care (2)
- ESPE 215 Orthopedic Assessment I (3)
- ESPE 216 Orthopedic Assessment II (3)
- ESPE 220 Therapeutic Modalities (3)
- ESPE 225 Anatomy (3)
- ESPE 241 Athletic Training Clinical Skills I (2)
- ESPE 242 Athletic Training Clinical Skills II (2)
- ESPE 250 Human Physiology (3)
- ESPE 300 Kinesiology (3)
- ESPE 311 Exercise Physiology (4)
- ESPE 315 General Medical Conditions (3)
- ESPE 320 Therapeutic Exercise (3)
- ESPE 336 Exercise Testing and Prescription (2)
- ESPE 339 Theory & Appl. of Strength & Cond. (2)
- ESPE 341 Athletic Training Clinical Skills III (2)
- ESPE 342 Athletic Training Clinical Skills IV (2)
- ESPE 401 Athletic Training Administration (2)
- ESPE 441 Athletic Training Clinical Skills V (2)

Athletic Training Cognates (16 hours)

- PSYC 100 General Psychology (3)
- BIOL 101/104 Biology & Society or Animal Biology (4)
- PSYC 206 Health Psychology (3)
- BIOL 209 Human Nutrition (3)
- PHIL 344 or 304 Biomedical Ethics or Ethics (3)

Bachelor of Arts in Physical Education

(37 hours of Exercise Science)

Physical Education (37 hours)

- ESPE 133 American Red Cross Water Safety Instructor (1)
- ESPE 201 Red Cross First Aid and Emergency Care (2)
- ESPE 203 History and Principles of HPESR (3)
- ESPE 218 Rhythmic Activities (1)
- ESPE 222 Instructional Methods in Physical Education (2)
- ESPE 225 Anatomy (3)
- ESPE 230 Motor Learning and Development (3)
- ESPE 236 Sports Technique I (2)
- ESPE 237 Sports Technique II (2)
- ESPE 238 Sports Technique III (2)
- ESPE 250 Human Physiology (3)
- ESPE 302 Organization of Intramurals (2)
- ESPE 309 Theory and Practice (1)
- ESPE 311 Exercise Physiology (4)
- ESPE 333 Adapted Physical Education (3)
- ESPE 402 Admin. of Physical Educ. and Sports (3)

Bachelor of Arts with Teacher Certification in Physical Education.

See the Teacher Education section of the catalog.

Minor and Associate Program Requirements

The department also offers a minor and an Associate of Arts degree in physical education. A student minoring or pursuing an

Associate of Arts degree in physical education must complete a total of 33 semester hours, including: ESPE 133, 201, 203, 218, 222, 230, 236, 237, 238, 250, 333, 350, and 402; and Psychology 216.

The semesters listed after course descriptions indicate when courses are expected to be offered. Schedules are subject to change; students should confirm semester offerings with the department when planning degree programs.

General Exercise Science Courses

100. Principles of Fitness (FITNESS DEVELOPMENT) (2). The basic principles of fitness, with emphasis on development of a wellness concept. Various physical assessments are used to determine a student's levels of fitness and individual programs are explored for the purpose of establishing a lifetime positive attitude toward activity. Includes classroom and laboratory experience. Required of all students, recommended for out-of-season athletes. Fall, spring.

101. Physical Education Activities (1). The fundamental skills and techniques of various activities which students may select. May be repeated once with different activities. Additional fees for equestrian classes will apply. Fall, spring.

109. American Red Cross Lifeguard Training (1). Development of the skill and knowledge required in a swimming emergency. Upon satisfactory completion, students earn American Red Cross certification. (An additional fee is charged by the American Red Cross.) Fall.

115. Care and Prevention of Athletic Injuries (3). Classroom and laboratory experience involving the major phases of athletic injuries, with special emphasis on the initial steps of injury evaluation. Students are provided with practical experiences in injury prevention and evaluation techniques. (Prerequisites: ESPE 100 or concurrent, ESPE 201 or concurrent, BIOL 101 or 104 or concurrent, Athletic Training major, Physical Education major, Exercise Science major.)

133. American Red Cross Water Safety Instructor's Course (1). Methods for planning, conducting and evaluating swimming and water safety courses. (Prerequisite: ARC Lifeguard Training Course. (An additional fee is charged by the American Red Cross.) Spring.
Professional Preparation Courses

140. Athletic Training Clinical Observation (1). Observation in athletic training procedures. The student gains knowledge and experiences in basic athletic training procedures and policies.

142. Orthopedic Taping and Wrapping (1). Laboratory experience to review and test the clinical skills related to palpation, taping, wrapping, and orthosis fabrication. Prerequisites: BIOL 101 or 104 or concurrent, ESPE 140 or concurrent, ESPE 115 or concurrent, ESPE 100 or concurrent, ESPE 201 or concurrent, Athletic Training Major.

- 201.** Red Cross First Aid and Emergency Care (2). Development of knowledge, skills and personal judgment in first aid, CPR, airway obstruction and rescue breathing. Upon satisfactory completion, students earn American Red Cross certification in First Aid, Adult, Child, and Infant CPR. (An additional fee is charged by the American Red Cross.) Open to freshmen. Fall, spring.
- 203.** History and Principles of Physical Education, Sport and Recreation (3). Relationships among physical education, sport and recreation through history, including principles, objectives and programs. Various philosophies are explored as a basis for developing a personal philosophy relating to each area. Fall.
- 215.** Orthopedic Assessment I (3). Classroom and laboratory experience will cover intermediate level orthopedic evaluation techniques. Course content will include reviewing basic injury evaluation skills, with emphasis on posture and range of motion evaluation, along with the practice and assessment of special tests. (Prerequisites: BIOL 101 or 104, ESPE 115, 142, 225 or concurrent, Athletic Training major.)
- 216.** Orthopedic Assessment II (3). Classroom and laboratory experience will cover advanced level orthopedic evaluation techniques. Course content will include reviewing basic injury evaluation skills, with emphasis on advanced special tests and neurological evaluation. (Prerequisites: ESPE 215, 225, 250 or concurrent, Athletic Training major.)
- 218.** Rhythmic Activities (1). The development of rhythmic movement principles taught in the elementary and secondary schools. Designed for elementary and secondary teachers. Open to freshmen. Fall.
- 220.** Therapeutic Modalities (3). This course explores the theory behind, and the principles of use of therapeutic modalities. Proper application techniques including indications, contraindications, and safe operating procedures will be covered. Students will gain practical experience in a laboratory setting. (Prerequisites: ESPE 115, BIOL 101 or 104, ESPE 225 or concurrent, Athletic Training major.)
- 222.** Instructional Methods in Physical Education (2). Planning for instruction in physical education with emphasis on activities appropriate for all elementary students. Designed to assist physical education majors and minors present lessons, develop unit plans, observe various teaching styles and address assessment techniques. Fall.
- 225.** Anatomy (3). An introduction to gross anatomical structure. Designed for exercise science/physical education majors and students in related fields of interest. Fall.
- 230.** Motor Learning and Development (3). Examination of motor skill acquisition and application to skill performance. Factors influencing motor learning such as growth and development, neural mechanisms, and optimal teaching strategies are explored. Fall.
- 236.** Sports Technique I (2). Individual techniques and teaching methods in soccer and track and field. Open to freshmen. Spring.
- 237.** Sports Technique II (2). Teaching and officiating methods and techniques for use in tennis, badminton and volleyball. Open to freshmen. Fall.
- 238.** Sports Technique III (2). Teaching and officiating methods and techniques for use in team and individual sports. Open to freshmen. Spring.
- 241.** Athletic Training Clinical Skills I (2). Laboratory and practical experience to review and test the clinical skills taught during the first year of the athletic training program. Clinical skill development experiences are provided in the athletic training facility, at intercollegiate events, or at an off-campus clinical site. (Prerequisites: ESPE 115, 140, 142, Athletic Training major.)
- 242.** Athletic Training Clinical Skills II (2). Laboratory and practical experience to review and test the clinical skills taught during the first and second year of the athletic training program. Clinical skill development experiences are provided in the athletic training facility, at intercollegiate events, or at an off campus clinical site. (Prerequisites: ESPE 215, 220, 225, 241, Athletic Training major.)
- 250.** Human Physiology (3). Introduction to physiological mechanisms which govern systemic organ function. Designed for exercise science/physical education majors and related fields of interest. Spring.
- 300.** Kinesiology (3). The theory and practical application of basic facts, laws, principles and concepts of biomechanical movement, with attention given to the physiological and anatomical study of muscles. (Prerequisite: ESPE 225, 250.)
- 301.** Basketball Theory (2). Materials, organization and methods of coaching basketball at the middle and senior high school levels. Emphasis is on fundamental principles for successful teaching and coaching. Fall.
- 302.** Organization of Intramurals (2). The organization of a comprehensive intramural program, with major emphasis on philosophy, objectives, rules and policies, scheduling, reporting and promotional techniques. Fall.
- 309.** Theory and Practice (1). Practical application of methods and techniques of teaching physical education activities. Students teach in the required exercise science physical education program. (Prerequisite: Permission of instructor.) Fall, spring.
- 311.** Exercise Physiology (4). A theoretical and practical examination of how the body responds and adapts to exercise. Laboratory work is designed to familiarize students with equipment for measuring physiological function during exercise. (Prerequisite: ESPE 250 or permission of instructor.) Fall.

315. General Medical Conditions (3). Classroom and laboratory experience will explore general medical, dermatological and pharmacological considerations for the athlete. Students will gain practical experience in evaluation and treatment of such conditions. (Prerequisites: ESPE 216, 225, 250, Athletic Training major.)

316. Physical Education for the Classroom Teacher (3). Combined theory and applied technique, providing elementary teachers with general knowledge of specific physical education objectives and principles. Students teach their peers lessons in self-testing activities, games, rhythms and movement exploration. Fall.

320. Therapeutic Exercise (3). A lecture and laboratory class studying the components of therapeutic exercise. Emphasis is placed on the rehabilitation of athletic injuries, and return to sport considerations. (Prerequisites: ESPE 216, 300 or concurrent, 315, Athletic Training major.)

321. Football Theory (2). A brief history of the origin of football and its evolution into the modern game, including playing rules. Students complete a coaching booklet addressing such aspects as offense, defense, kicking game, scouting, game strategy and practice organization. Fall.

333. Adapted Physical Education (3). A theoretical and practical approach to physical education for the physically and mentally disabled student. The use of rhythms and other tools as they relate to developmental patterns of movement including lifetime sports skills will be part of various laboratory experiences. Spring.

336. Exercise Testing and Prescription (2). A course designed to cover principles of exercise testing and prescription in healthy and diseased populations. Exercise testing methodologies taught in this course are based on guidelines developed by the American College of Sports Medicine. (Prerequisite: ESPE 311.) Spring.

339. Theory and Application of Strength and Conditioning (2). Theory and practice in development and administration of comprehensive strength and conditioning programs with special emphasis placed on athletes. (Prerequisites: ESPE 219, 225 and 250) Fall.

341. Athletic Training Clinical Skills III (2). Laboratory and practical experience to review and test the clinical skills taught during the second year of the athletic training program. Clinical skill development experiences are provided in the athletic training facility, at intercollegiate events, or at an off campus clinical site. (Prerequisites: ESPE 216, 242, 250, Athletic Training major.)

342. Athletic Training Clinical Skills IV (2). Laboratory and practical experience to review and test the clinical skills taught during the second and third year of the athletic training program. Clinical skill development experiences are provided in the athletic training facility, at intercollegiate events, or at an off campus clinical site. (Prerequisites: ESPE 315, 341, Athletic Training major.)

350. Measurement and Evaluation in Physical Education and Exercise Science (2). Statistical methods and assessment techniques applied to physical education and exercise science. Criteria for selecting tests, statistical techniques, and tools for assessing fitness, skills and attitudes will be examined. (Prerequisite: ESPE 250 or 311) Spring.

401. Athletic Training Administration (2). Organizing and administering an athletic training program and facility, with emphasis on program management, human resources, budget planning, facility design, record keeping, liability, and legal considerations. (Prerequisites: Athletic Training major, senior standing.)

402. Administration of Physical Education and Sport (3). Organizing and administering a physical education or sport program, with emphasis on legal considerations, public relations, personnel, program, facilities, equipment and financial management. Spring.

404. Senior Seminar (2). The use of statistical tools and methods needed for research in Exercise Science/Physical Education. The student is required to make a formal presentation as a culminating senior experience. (Prerequisite: senior standing.) Fall.

405. Athletic Training Exam Prep (1). A preparation course for athletic training majors wishing to sit for the Board of Certification Exam. (Prerequisites: Athletic Training major, senior standing.)

441. Athletic Training Skills V (2). Laboratory and practical experience to review and test the clinical skills taught during the second and third year of the athletic training program. Clinical skill development experiences are provided in the athletic training facility, at intercollegiate events, or at an off-campus clinical site. (Prerequisites: ESPE 300, 320, 336, 339 or concurrent, BIOL 209, Athletic Training major.)

Special and Advanced Courses

199. Exploratory Internship (1-3). Does not count toward a departmental major.

299. Experimental Course (1-3).

399. Professional Internship (1-12).

451. Independent Study (1-3). A program of supervised reading, research or work in an area of special interest to the student. (Prerequisite: written departmental permission.)

499. Advanced Experimental Course (1-3).

History

Knowledge of history has long been recognized as a significant part of a liberal arts education. The study of history is most often associated with careers in education, law and public service, but the communication and critical thinking skills learned through historical study are essential in a great variety