

## Descriptions—Philosophy of Courses

### 461. **Metaphysics**

Spring, 3(3-0)

R: One Philosophy course at the 300 level or above or two other Philosophy courses.

Basic concepts employed in trying to understand the nature of things. Concepts include universals, particulars, things, kinds, properties, events, persons, change, causality, chance, existence, possibility, necessity, space, and time.

QA: PHL 445

### 462. **Philosophy of Mind**

Fall, 3(3-0)

R: One philosophy course at the 300 level or above or two other Philosophy courses.

Modern theories of the mind, other minds, and the mind's relation to the body. Theories include dualism, behaviorism, criteriology, reductive and eliminative materialism, and functionalism.

QA: PHL 447

### 463. **Introduction to Cognitive Science**

Spring, 3(3-0) Interdepartmental with

Linguistics and Psychology.

P: PHL 462 or PSY 200 or LIN 401 or CPS 440.

Cognitive processing of information by animals, humans, and computers. Relevant issues in philosophy, linguistics, psychology, neurophysiology, and artificial intelligence.

QP: PHL 447 or PSY 300 or LIN 401 or CPS 441

QA: PHL 450

### 474. **Aesthetic Theory and Modernism**

Fall, 4(4-0) Interdepartmental with History of Art, English, Linguistics and Languages,

Music, and Romance Language Courses.

R: Not open to freshmen and sophomores.

Problems, assumptions, and arguments of modern aesthetic theory examined in the context of debates over modernity and modernist artistic practice.

QA: PHL 434

### 480. **Philosophy of Science**

Fall, 4(4-0)

P: PHL 130 or PHL 330 or a 200 level mathematics or statistics course or approval of department.

Structure of scientific theories and explanation. Causation, prediction, induction, confirmation, discovery, and scientific progress.

QP: PHL 337 QA: PHL 480, PHL 481

### 481. **Topics in Science Studies**

Spring, 3(3-0)

P: Three science courses or two philosophy courses or approval of department.

Converging trends in philosophy, history, and sociology of science. Such topics as scientific rationality and objectivity, evolutionary epistemology, continental approaches, or feminist perspectives.

### 484. **Philosophy of Biological Science**

Spring, 3(3-0)

P: Three courses in biological science or two courses in PHL or approval of department.

Philosophical and methodological issues in biology. Topics such as functional explanation, classification, the structure of evolutionary theory, reductionism, observation and measurement, or value-neutrality.

QA: LBS 484

### 485. **Philosophy of Social Science**

Spring, 3(3-0)

P: Three courses in social science or two courses in PHL or approval of department.

Explanations, theories, and concepts in social science. Such topics as historicism; reductionism; rationality and relativism; comparison of logical empiricist, interpretive, and critical theory approaches.

QA: PHL 485

### 487. **Philosophy of Mathematics**

Fall of odd-numbered years, 3(3-0)

P: Three courses in mathematics or PHL 330 or approval of department.

Nature of mathematical truth and knowledge. Theses of logicism, formalism, intuitionism, and conventionalism.

QP: PHL 337

### 488. **Philosophy of Physical Science**

Fall of even-numbered years, 3(3-0)

P: Three courses in physical science or two courses in PHL or approval of department.

Philosophical problems of the physical sciences. Topics from such areas as quantum mechanics, space-time, classical mechanics, or relativity.

### 490. **Independent Study**

Fall, Spring, 1 to 4 credits. A student may earn a maximum of 9 credits in all enrollments for this course.

R: Approval of department.

Supervised special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.

QA: PHL 490

### 491. **Special Topics in Philosophy**

Fall, Spring, 3 to 4 credits. A student may earn a maximum of 9 credits in all enrollments for this course.

R: Approval of department.

Special topics supplementing regular course offerings, proposed by faculty on a group study basis.

QA: PHL 494

### 492. **Seminar for Majors**

Fall, 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.

P: 16 credits in Philosophy. R: Open only to majors in Philosophy or approval of department.

Advanced, variable topic seminar for undergraduate majors. Seminar presentations. Substantial paper.

### 499. **Senior Thesis Research**

Fall, Spring, 3 credits.

R: Approval of department.

Individual research project supervised by a faculty member that demonstrates the student's ability to do independent research and submit or present a major paper.

### 810. **Seminar in the History of Philosophy**

Fall, 2 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course.

R: Open only to graduate students in Philosophy or approval of department.

Major thinkers, themes, periods, or movements in the history of philosophy.

QA: PHL 825

### 820. **Seminar in Continental Philosophy**

Fall of even-numbered years, 2 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course.

R: Open only to graduate students in Philosophy or approval of department.

Major figures or themes in 19th and 20th century continental philosophy.

QA: PHL 825, PHL 842, PHL 860

### 830. **Seminar in Logic and the Philosophy of Language**

Fall of odd-numbered years, 2 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course.

R: Open only to graduate students in Philosophy or approval of department.

Selected topic in philosophy of language, philosophical logic, and metatheory.

QA: PHL 837, PHL 870

### 840. **Seminar in Value Theory**

Spring, 2 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course.

R: Open only to graduate students in Philosophy. Approval of department.

Major figures, themes, or periods in ethics or aesthetics. Topics vary.

QA: PHL 830

### 850. **Seminar in Social and Political Philosophy**

Spring of odd-numbered years, 2 to 4

credits. A student may earn a maximum of 10 credits in all enrollments for this course.

R: Open only to graduate students in Philosophy. Approval of department.

Major figures, themes, or periods in social and political philosophy. Topics vary.

QA: PHL 860

### 860. **Seminar in Metaphysics and Epistemology**

Fall, 2 to 4 credits. A student may earn a maximum of 15 credits in all enrollments for this course.

R: Open only to graduate students in Philosophy or approval of department.

Selected topics in metaphysics, epistemology, and philosophy of mind.

QA: PHL 841, PHL 845

### 870. **Seminar in Philosophy of Health Care**

Fall, 2 to 4 credits. A student may earn a maximum of 15 credits in all enrollments for this course.

R: Open only to graduate students in Philosophy or approval of department.

Ethical, political, theoretical, and methodological issues in medicine and health care.

### 880. **Seminar in Philosophy of Science**

Spring, 2 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course.

R: Open only to graduate students in Philosophy. Approval of department.

Selected topics in the philosophy of the special sciences, in the metatheory of science, and in the social studies of science.

QA: PHL 880

### 890. **Independent Study**

Fall, Spring, Summer, 1 to 10 credits. A student may earn a maximum of 20 credits in all enrollments for this course.

R: Approval of department.

Special projects, directed reading, and research arranged by an individual graduate student and a faculty member in areas supplementing regular course offerings.

QA: PHL 890

### 894. **Practicum in Philosophy of Health Care**

Spring, 4 to 6 credits. A student may earn a maximum of 12 credits in all enrollments for this course.

P: PHL 344. R: Open only to doctoral students in Philosophy or approval of department.

Study of ethical and policy issues in hospital and governmental agency settings.

### 899. **Master's Thesis Research**

Fall, Spring, Summer, 1 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.

R: Approval of department.

Directed research leading to a master's thesis in partial fulfillment of Plan A master's degree requirements.

QA: PHL 899

### 999. **Doctoral Dissertation Research**

Fall, Spring, Summer, 1 to 12 credits. A student may earn a maximum of 50 credits in all enrollments for this course.

R: Approval of department.

QA: PHL 999

## PHYSICAL EDUCATION AND EXERCISE SCIENCE PES

### Department of Physical Education and Exercise Science College of Education

#### Instructional Courses

Physical education instructional courses (PES 101-108) are offered every semester to give students an opportunity to become involved in physical activities that will benefit them, not only in attaining physical well-being, but in acquiring a measure of carry-over skill which will promote a healthful way of life through continued participation. The areas of selection are: PES 101 Aquatics, PES 102 Combative Sports, PES 103 Conditioning, PES 104 Dance, PES 105 Gymnastics, PES 106 Individual Sports, PES 107 Racquet Sports, and PES 108 Team Sports.

**101. Aquatics**

Fall, Spring, Summer. 1(0-2)

R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108.

Skill and knowledge development in water-related activities. Separate course sections in activities such as swimming, diving, lifeguarding, water polo, and sailing.

QA: HCP 109

**102. Combative Sports**

Fall, Spring, Summer. 1(0-2)

R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108.

Skill and knowledge development in the art or sport of physical training. Separate course sections in activities such as judo, karate, aikido, and fencing.

**103. Conditioning**

Fall, Spring, Summer. 1(0-2)

R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108.

Knowledge and competency in physical fitness activities that emphasize cardiovascular and muscular training. Separate course sections in activities such as aerobic exercise, power walking, swim conditioning, and weight training.

**104. Dance**

Fall, Spring, Summer. 1(0-2)

R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108.

Skill and knowledge development in dance activities. Separate course sections in dance styles such as ballet, modern, jazz, Latin, and social.

QA: HCP 211, HCP 111

**105. Gymnastics**

Fall, Spring, Summer. 1(0-2)

R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108.

Skill and knowledge development in gymnastics. Separate sections in activities such as apparatus, tumbling, and floor exercise.

QA: HCP 110

**106. Individual Sports**

Fall, Spring, Summer. 1(0-2)

R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108.

Skill and knowledge development in individual sports. Separate course sections in activities such as bowling, golf, skating, self defense, and track and field.

QA: HCP 104, HCP 105

**107. Racquet Sports**

Fall, Spring, Summer. 1(0-2)

R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108.

Skill and knowledge development in racquet sports. Separate course sections in sports such as badminton, racquetball, and tennis.

QA: HCP 106, HCP 107

**108. Team Sports**

Fall, Spring, Summer. 1(0-2)

R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108.

Skill and knowledge development in team sports. Separate course sections in sports such as basketball, ice hockey, lacrosse, soccer, softball, and volleyball.

QA: HCP 108

**120. Personal Health**

Fall, Spring, Summer. 3(3-0)

Physical, mental, emotional, social, and spiritual domains of health. Alternative health values and behaviors. Developing healthy lifestyles.

QA: HCP 120

**121. The Healthy Lifestyle**

Fall, Spring, Summer. 3(2-2)

Cardiovascular risk factors, lifestyle habits, and aerobic capacities and their relationship to optimal health and longevity. Individual physical activity required as part of the course.

QA: HCP 270

**125. First Aid and Personal Safety**

Fall, Spring, Summer. 3(3-0)

Knowledge and application of first aid concepts relating to respiratory and cardiopulmonary disorders, shock, wounds, burns, fractures, drug poisoning, childbirth, litigation. Preventing trauma by recognizing and avoiding safety hazards.

QA: HCP 125

**170. Foundations of Physical Education and Exercise Science**

Fall, Spring. 2(2-0)

Physical education and exercise science as a disciplinary major. Subdisciplines and professions. Historical perspectives.

QA: HCP 135

**171. Athletics in Higher Education**

Fall. 1(1-0)

Philosophy and organization of athletics. Athletics and academic achievement. Ethical issues, legal issues, social conduct, eligibility, athlete's rights and responsibilities. Coaches' responsibilities and institutional obligations.

QA: HCP 130

**201. Water Safety Instruction**

Fall, Spring. 2(1-2)

Knowledge and skills necessary to plan and conduct American Red Cross water safety courses. Current lifesaving certification is assumed.

QA: HCP 345

**202. Aerobic Exercise Instruction**

Fall, Spring. 3(2-3)

Theory and practice for aerobic exercise leaders. Functional effects of physical activity. Safe exercise techniques. Modifications and precautions for special populations. Choreography practice. Health and exercise screening. Legal issues.

QA: HCP 470

**203. Self-Defense Instruction**

Spring of odd-numbered years. 2(1-2)

Knowledge, skills, strategies, tactics, and experience necessary to teach personal defense skills. Assaultive process and situation assessment. Prevention, de-escalation, confrontation skills, and self defense. Competence in self defense assumed.

QP: HCP 106A

**216. Applied Human Anatomy**

Fall. 3(3-0)

R: Not open to freshmen. Open only to students in Physical Education and Exercise Science.

Structural anatomy of the human body. Interrelationships of structure, function, and human movement.

QA: ANT 216

**217. Applied Human Anatomy Laboratory**

Spring. 1(0-3)

P: PES 216. R: Not open to freshmen. Open only to students in Physical Education and Exercise Science. Major bones, muscles, nerves, vessels, and organs of the human body. Articulations, muscle origins, muscle insertions, and prime moving actions.

QA: ANT 216

**250. Measurement in Physical Education and Exercise Science**

Fall, Spring. 3(3-0)

Methods and materials for measurement and evaluation. Motor skills, physical fitness, knowledge, and attitudes associated with physical activity.

QA: HCP 240

**260. Physical Growth and Motor Behavior**

Fall, Spring. 3(3-0)

R: Not open to freshmen. Physical growth and biological maturity as related to motor performance and skill learning. Sequential progressions of fundamental motor skills. Physical fitness of children and youth. Motor abilities. Stages of skill acquisition.

QA: HCP 260

**300A. Coaching Baseball**

Fall. 2(1-2)

R: Not open to freshmen. Techniques for coaching baseball. Rules, strategies, and training. Development and evaluation of player skills. Planning, conducting, and evaluating practices.

QA: HCP 349

**300B. Coaching Sports for Athletes with Disabilities**

Spring of odd-numbered years. 2(2-0)

Interdepartmental with Park and Recreation Resources. Rules, strategies, and training. Developing and evaluating player skills. Planning, conducting, and evaluating sport practices. Health and safety concerns.

**300C. Coaching Soccer**

Spring. 2(1-2)

R: Not open to freshmen. Techniques for coaching soccer. Developing and evaluating player and team skills. Planning, conducting and evaluating practices and games. Rules, drills, strategies and training.

**300D. Coaching Basketball**

Fall. 2(1-2)

R: Not open to freshmen. Techniques and strategies for coaching basketball. Rules, drills, and training. Development and evaluation of individual and team skills. Planning, conducting, and evaluating practices and games.

QA: HCP 350, HCP 371

**300E. Coaching Football**

Spring. 2(2-0)

R: Not open to freshmen. Techniques and strategies for coaching football. Rules, drills, and training. Development and evaluation of individual and team skills. Planning, conducting, and evaluating practices and games.

QA: HCP 352, HCP 372

**300K. Coaching Track and Field**

Fall. 2(1-2)

R: Not open to freshmen. Techniques and strategies for coaching track and field. Rules, drills, and training. Development and evaluation of participant skills. Planning, conducting, and evaluating practices and meets.

QA: HCP 358

**310. Physiological Bases of Physical Activity**

Fall, Spring. 3(3-0)

P: PSL 250, CEM 141, PES 216, PES 217. R: Open only to Physical Education and Exercise Science majors.

Acute and chronic effects of exercise on various body systems. Principles of training, exercise prescription, and the role of physical activity in health and disease.

QP: PSL 240, PSL 241, ANT 216 QA: HCP 246

**316. Community Health Problems**

Spring. 2(2-0)

P: PES 120. Community health problems and needs. Special attention to various health organizations working toward the solution of these problems.

Temporary approval effective from Fall Semester 1992 through Spring Semester 1993.

QP: HCP 120 QA: HCP 316

**Descriptions—Physical Education and Exercise Science  
of  
Courses**

- 320. Athletic Training**  
Fall, Summer. 3(3-0)  
P: PES 125, PES 216, PES 217, PES 310 or concurrently. R: Not open to freshmen.  
Athletic injury recognition, prevention, evaluation, management, care, counseling, and rehabilitation. Organization and administration.  
QP: HCP 125, ANT 216 QA: HCP 306
- 328. School Health Problems**  
Spring. 2(2-0)  
P: PES 120.  
Health problems of school-age children. Special attention to school health services and healthful school living.  
Temporary approval effective from Fall Semester 1992 through Spring Semester 1993.  
QP: HCP 120 QA: HCP 328
- 330. Structural and Mechanical Analysis of Physical Activity**  
Fall, Spring. 3(2-2)  
P: PES 216, PES 217, PHY 231.  
Biomechanical analysis of human movement based upon musculoskeletal structure and function. Mechanical principles.  
QP: ANT 216 QA: HCP 252, HCP 253
- 340. Psychological Bases of Physical Activity**  
Fall, Spring. 3(3-0)  
P: PES 260 or concurrently.  
Psychological factors affecting motor skill acquisition and performance. Psychological skills which enhance sport performance. Applications of learning theory.  
QA: HCP 261
- 400. Principles of Coaching I**  
Fall. 4(4-0)  
R: Not open to freshmen or sophomores. Not open to majors in the Department of Physical Education and Exercise Science.  
Basic principles of anatomy, biomechanics, and physiology for coaching competitive sports. Applications to athletes of different ages and abilities.  
QA: HCP 246, HCP 252, HCP 253
- 401. Principles of Coaching II**  
Spring. 4(4-0)  
R: Not open to freshmen or sophomores. Not open to majors in the Department of Physical Education and Exercise Science.  
Sociological, administrative, philosophical, legal, ethical, and chemical health issues related to coaching competitive sports. Applications to athletes of different ages and abilities.  
QA: HCP 480
- 405. School Health Programs**  
Fall. 2(2-0)  
P: PES 120. R: Not open to freshmen and sophomores. Not open to students with credit in PES 420.  
Coordination of school health with other school programs, outside agencies, and the community. Policies governing the administration of staff, facilities, and program.  
Temporary approval effective from Fall Semester 1992 through Spring Semester 1993.  
QP: HCP 120 QA: HCP 405
- 407. Safety Education**  
Fall. 2(2-0)  
P: PES 120.  
Safety problems in home, school, and community. Safety programs in elementary, junior, and senior high schools.  
Temporary approval effective from Fall Semester 1992 through Spring Semester 1993.  
QP: HCP 120 QA: HCP 407
- 420. School Health Education**  
Fall. 3(3-0)  
P: PES 120. R: Not open to freshmen and sophomores.  
Organization and administration of a comprehensive school health education program. Interaction of school health services, healthful environment, and health instruction in the development of a healthy lifestyle.  
QP: HCP 120 QA: HCP 328, HCP 405
- 421. Advanced Athletic Training**  
Spring. 3(3-0)  
P: PES 320, PES 330 or concurrently. R: Not open to freshmen and sophomores.  
Advanced knowledge and skills of athletic health care. Current issues of rehabilitation, organization and administration, therapeutic modalities, and injury evaluation.  
QP: HCP 306 QA: HCP 406
- 422. Advanced Rehabilitation of Athletic Injuries**  
Spring of even-numbered years. 3(3-0)  
P: PES 421. R: Not open to freshmen and sophomores.  
Rehabilitation and therapeutic modalities used to manage athletic injuries. Anatomical and neurophysiological bases of techniques. Indications and contraindications of rehabilitation protocols.  
QP: HCP 406
- 445. Sociocultural Analysis of Physical Activity**  
Fall, Spring. 3(3-0)  
R: Open only to seniors or graduate students.  
Sociocultural context of and social practices in sport and physical activity.  
QA: HCP 310
- 450. Design and Evaluation of Physical Activity Programs**  
Fall, Spring. 3(3-0)  
R: Open only to seniors and graduate students.  
Development and evaluation of programs in physical education and exercise science.  
QA: HCP 415
- 451. Physical Education in Preschools and Elementary Schools**  
Fall. 3(1-5)  
P: PES 260 or PES 460. R: Not open to freshmen and sophomores. Not open to students with credit in TE 401.  
Methods of instruction for teaching physical activities to preschool and elementary school children. Development of teaching sequences. Clinical experience in teaching children and peers.  
QP: HCP 440 or HCP 260 QA: HCP 441, HCP 442
- 452. Physical Education in Middle and High Schools**  
Spring. 3(2-3)  
P: PES 106, PES 107, PES 108, PES 340. R: Open only to seniors and graduate students. Not open to students with credit in TE 402.  
Methods of instruction for teaching physical activities to middle and high school students. Development of teaching sequences. Clinical experience in teaching students and peers.  
QP: HCP 260 or HCP 440 QA: TE 330
- 453. Administration of Intramural Sports Programs**  
Spring. 2(2-0)  
R: Not open to freshmen and sophomores.  
Organization and administration of intramural programs in educational settings. Philosophy, values, planning, scheduling, competitive units, classification systems, budgeting, facilities, officiating, clubs, issues, and trends.  
QA: HCP 418
- 454. Facility Planning and Construction**  
Spring. 3(3-0)  
R: Not open to freshmen or sophomores.  
Planning of athletic and physical education facilities such as gymnasia, ice rinks, swimming pools, and outdoor areas. Space utilization standards and guidelines. Selection of materials and equipment.  
QA: HCP 404
- 460. Developmental Bases of Motor Skills**  
Fall, Spring, Summer. 2(2-0)  
R: Open only to majors in the College of Education and College of Human Ecology. Not open to students in Physical Education and Exercise Science. Not open to students with credit in PES 260.  
Influence of physical growth and biological maturation on motor skill development. Sequential progressions of fundamental motor skills. Gross motor dysfunction and health-related fitness of children. Techniques of helping children to acquire skills.  
QA: HCP 440
- 461. Developmental Bases of Motor Skills Laboratory**  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.  
P: PES 460 or PES 260. R: Students must apply one term in advance of enrollment.  
Application of concepts related to physical growth and motor development. Practice in planning and teaching fundamental motor skills. Methods of evaluating teaching.  
QA: HCP 440
- 465. Physical Activity for Special Populations**  
Fall, Spring. 3(2-2)  
R: Not open to freshmen or sophomores.  
Methods and materials for teaching physical activity in school and community settings for persons with disabilities and youths at risk.  
QA: HCP 452
- 466. Practicum in Adapted Physical Activity**  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.  
R: Approval of department.  
Supervised teaching of physical activities and/or coaching sports to persons with disabilities and youths at risk.  
QA: HCP 453
- 470. Proseminar in Physical Education and Exercise Science**  
Fall, Spring. 3(3-0)  
R: Open only to seniors and graduate students.  
Philosophical perspectives in physical education, sport, and exercise science.  
QA: HCP 425
- 490. Independent Study**  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.  
R: Approval of department.  
Supervised individual or group study in various fields of emphasis in physical education and exercise science.  
QA: HCP 424
- 494. Fieldwork**  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.  
R: Approval of department.  
Supervised practice in teaching physical education activities, coaching sports, administering sports programs, or conducting research or service activities in physical education and exercise science.  
QA: HCP 390, HCP 403
- 810. Physiology of Physical Activity**  
Fall. 3(3-0)  
Acute and chronic effects of exercise on the various body systems. Program design. Issues in exercise physiology.
- 811. Physiological Evaluation and Exercise Prescription**  
Fall. 2(0-4)  
P: PES 810 or concurrently.  
Techniques in evaluation of physiological capacity and in exercise prescription for various populations.  
QA: HCP 823, HCP 826
- 812. Cardiovascular, Respiratory, and Metabolic Responses to Exercise**  
Spring of odd-numbered years. 3(3-0)  
P: PES 810.  
Acute and chronic effects of exercise on cardiovascular, respiratory, and metabolic system functions. Role of these systems in limiting exercise performance.  
QA: HCP 824
- 813. Neuromuscular and Endocrine Responses to Exercise**  
Spring of even-numbered years. 3(3-0)  
P: PES 810.  
Acute and chronic effects of exercise on nervous, muscular, and endocrine system functions. Role of these systems in limiting exercise performance.  
QA: HCP 825

- 830. Biomechanical Analysis of Physical Activity**  
Fall. 3(2-2) Interdepartmental with Biomechanics.  
Kinematic analysis of mechanical and anatomical characteristics in physical activity and sport skills.  
QA: HCP 853
- 831. Advanced Biomechanics of Physical Activity**  
Spring of odd-numbered years. 3(3-0)  
Interdepartmental with Biomechanics.  
P: PES 830.  
Three-dimensional analyses of human motion in sport activities. Emphasis on maturation level, performance level, and the causes and prevention of injuries.  
QP: HCP 853 QA: HCP 854
- 840. Psychosocial Aspects of Physical Activity**  
Fall. 3(3-0)  
Social psychology of sport and physical activity.  
QA: HCP 835, HCP 836
- 845. Sociocultural Practices in Sport**  
Spring of even-numbered years. 3(3-0)  
Critical, conflict, and feminist theories on dominant ideologies and social practices in sport.
- 851. Curriculum and Instruction in Physical Activity Programs**  
Spring of odd-numbered years. 3(3-0)  
P: PES 450.  
Curriculum theory and models in physical education and exercise science. Interaction of curriculum and instructional decision making in physical education and exercise science.  
QA: HCP 863, HCP 867
- 852. Evaluation of Physical Activity Programs**  
Spring of even-numbered years. 3(3-0)  
P: PES 450.  
Skills and knowledge necessary to design, implement, analyze, interpret, and report program evaluations in physical education and exercise science.  
QA: HCP 864
- 853. Athletic Administration in Higher Education**  
Spring. 3(3-0)  
Administrative theory, structure, and budget. Facilities, equipment, and marketing. Legal, medical, and safety aspects.  
QA: HCP 860
- 860. Growth and Motor Behavior**  
Fall. 3(3-0)  
Developmental skill sequences and behavior across the lifespan. Correlates of growth, maturation, and motor behavior. Individual and gender differences.  
QA: HCP 816, HCP 817
- 861. Growth, Maturation, and Physical Activity**  
Spring of odd-numbered years. 3(3-0)  
P: PES 860.  
Physical growth, biological maturation, and motor performance. Development of tissues and organs. Development of motor components. Influences of gender and age on growth and performance. Methods of assessment.  
QA: HCP 816, HCP 817
- 862. Motor Skill Learning**  
Spring of even-numbered years. 3(3-0)  
P: PES 860.  
Learning and performance theory applied to gross motor skills. Conditions influencing skill acquisition. Emphasis on neuropsychological and human performance models.  
QA: HCP 819
- 865. Curriculum and Instruction in Adapted Physical Education**  
Fall of even-numbered years. 3(3-0)  
Design of curricula and implementation of instruction in physical education for students with disabilities.  
QA: HCP 845A
- 866. Research on Sports for Athletes with Disabilities**  
Fall of odd-numbered years. 3(3-0)  
Performance capabilities of athletics with disabilities. Research on areas such as exercise physiology, sport biomechanics, sport psychology, sport sociology, motor development, and motor learning.  
QA: HCP 845B
- 867. Practicum in Adapted Physical Activity**  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.  
C: PES 865 or PES 866 or concurrently. R: Approval of department.  
Supervised practice in teaching physical activities and/or coaching sports for persons with disabilities.  
QA: HCP 845C
- 870. Physical Activity and Well-Being**  
Fall. 3(3-0)  
Relationship of physical activity to human well-being. Influence of growth, biological maturity, aging, body composition, nutrition, training, and rest on health and performance.
- 871. Research Methods in Physical Education and Exercise Science**  
Spring. 3(3-0)  
R: Open only to graduate students in Physical Education and Exercise Science.  
Research and analytical methodology including survey, qualitative, historical, philosophical, descriptive, meta-analytical, creative, and experimental methods.  
QA: HCP 802
- 882. Topics in Physical Education and Exercise Science (MTC)**  
Fall, Spring, Summer. 2 to 3 credits. A student may earn a maximum of 9 credits in all enrollments for this course.  
Selected topics in areas such as physiology of exercise, biomechanics, motor behavior, psychosocial aspects of activity, program design and evaluation, and athletic training.
- 890. Independent Study in Physical Education and Exercise Science**  
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.  
R: Open only to master's students. Approval of department.  
Individual study in an area of physical education and exercise science under faculty supervision.
- 893. Internship in Physical Education and Exercise Science**  
Fall, Spring, Summer. 2 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.  
R: Open only to graduate students in Physical Education and Exercise Science.  
Supervised internship in sports medicine, athletic administration, coaching, or education agencies. Capstone experience option in master's degree program.
- 894. Field Experiences in Physical Education and Exercise Science**  
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.  
R: Approval of department.  
Supervised graduate practicum in schools or other settings.
- 897. Project in Physical Education and Exercise Science**  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.  
R: Open only to graduate students in Physical Education and Exercise Science.  
Project experience under the guidance and supervision of MSU faculty. Development of products such as technical reports, instructional media, or curriculum materials to address an educationally significant problem. Capstone experience option in master's
- 899. Master's Thesis Research**  
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.  
P: PES 871.  
QP: HCP 802
- 910. Current Issues in Exercise Physiology**  
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.  
P: PES 810.  
Selected issues in exercise physiology and related fields of study.
- 930. Current Issues in Biomechanical Aspects of Physical Activity**  
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.  
Interdepartmental with Biomechanics.  
P: PES 830.  
Selected issues of biomechanical analyses of sport and physical activity.
- 940. Current Issues in Psychosocial Aspects of Physical Activity**  
Fall. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.  
Selected issues in the psychology and sociology of sport and physical activity.
- 950. Current Issues in the Design and Evaluation of Physical Activity Programs**  
Fall. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.  
Selected issues in the design and evaluation of physical activity programs.
- 960. Current Issues in Motor Behavior**  
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.  
P: PES 860.  
Selected issues in motor development, motor learning, adapted physical education, and related fields of study.
- 990. Independent Study in Physical Education and Exercise Science**  
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.  
R: Open only to doctoral students. Approval of department.  
Individual study in an area of physical education and exercise science under faculty supervision.
- 995. Research Practicum in Physical Education and Exercise Science**  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.  
R: Open only to doctoral students in College of Education. Approval of department.  
Supervised research practicum. Design, execution, analysis, presentation, critique, and revision of research projects.
- 999. Doctoral Dissertation Research**  
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 36 credits in all enrollments for this course.  
R: Open only to doctoral students.

**PHYSICS**

**PHY**

**Department of Physics  
College of Natural Science**

**170. Investigations in Physics**  
Fall. 3(0-6)

R: Approval of department.  
Experiments in optics, electronics, sound and mechanics; analysis of data using computers, library research and oral presentations.