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. Topics 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. Topics include dualism, behaviorism, cognition, reductionism, 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 454

480. Philosophy of Science
Fall. 4(4-0)
P: PHL 100 or PHL 300 or a 200-level mathematics or statistics course or approval of department.
Structure of scientific theories and explanations. Causation, prediction, induction, confirmation, discovery, and scientific progress.
QP: PHL 377 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.
QA: LBS 484

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 scientific rationality and objectivity, evolutionary epistemology, continental approaches, or feminist perspectives.
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 empiricism, interpretivism, and critical theory approaches.
QA: PHL 486

487. Philosophy of Mathematics
Fall of odd-numbered years. 3(3-0)
P: Three courses in mathematics or PHL 300 or approval of department.
Nature of mathematical truth and knowledge. Themes 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 such as quantum mechanics, space-time, classical mechanics, and 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.
R: 16 credits in Philosophy.
R: Open only to majors in Philosophy or approval of department.
Advanced, variable topic seminar for undergraduate majors. Some presentations. Substantial paper.

499. Senior Thesis Research
Fall, Spring. 3 credits.
R: Approval of department.
Individual research project supervised by a faculty member demonstrating 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 and themes in 19th and 20th century continental philosophy.
QA: PHL 825, PHL 842, PHL 860

825. 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 topics in philosophy of language, philosophical logic, and metalanguage.
QA: PHL 857, 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 850

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 metaphysics of science, and in the social studies of science.
QA: PHL 880

900. Independent Study
Fall, Spring, Summer. 1 to 10 credits.
A student may earn a maximum of 30 credits in all enrollments for this course.
R: Approval of department.
Selected topics in the philosophy of the special sciences, in the metaphysics of science, and in the social studies of science.

999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 12 credits.
A student may earn a maximum of 90 credits in all enrollments for this course.
R: Approval of department.

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 skills which will promote a healthful way of life through continued participation. The areas of selection are: PES 101 Aquatics, PES 102 Competitive Sports, PES 103 Conditioning, PES 104 Dance, PES 105 Gymnastics, PES 106 Individual Sports, PES 107 Racquet Sports, and PES 108 Team Sports.
101. Aquaculture and Exercise Science
Fall, Spring, Summer. 1(0-2)
R: A student may earn a maximum of 8 credits in all enrollments for this course (all activities or the same activities at different 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, tap, 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 165

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 129

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. Sub-disciplines and professions. Historical perspectives.
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)
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. Assumptions, 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)
QA: HCP 260

300A. Coaching Baseball
Fall, 2(1-2)
QA: HCP 349

300B. Coaching Sports for Athletes with Disabilities
Spring of odd-numbered years. 2(2-0)
Interdepartmental with Park and Recreation Recreation.

300C. Coaching Soccer
Spring, 2(1-2)

300D. Coaching Basketball
Fall. 2(2-0)
QA: HCP 350, HCP 571

300E. Coaching Football
Spring, 2(2-0)

300K. Coaching Track and Field
Fall. 2(2-0)
QA: HCP 358

310. Physiological Bases of Physical Activity
Fall, Spring. 3(3-0)
QA: PES 240, PES 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.
QA: HCP 120 QA: HCP 316

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Descriptions—Physical Education and Exercise Science

Of Courses

320. Athletic Training
Fall, Summer, 3(3-0)

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(3-2)
P: PES 216, PES 217, PHY 231.
Biomechanical analysis of human movement based upon musculoskeletal structure and function. Mechanical principles.

QP: ANT 218 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 263

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 psychological issues related to coaching competitive sports. Applications to athletes of different ages and abilities.

QA: HCP 490

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 programs.

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 320, HCP 405

421. Advanced Athletic Training
Spring, 3(3-0)

QP: HCP 506 QA: HCP 406

422. Advanced Rehabilitation of Athletic Injuries
Spring, 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 280 or PES 460. R: Not open to freshmen and sophomores. Not open to students with credit in TE 491.

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 290 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 492.

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, rules, 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 gymnasiums, 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 progression 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 120 or PES 260. Students must apply one term in advance of enrollment.

Application of concepts related to physical growth and motor development. 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 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 310 or concurrently. Techniques in evaluation of physiological capacity and in exercise prescription for various populations.

QA: HCP 820, HCP 826

812. Cardiovascular, Respiratory, and Metabolic Responses to Exercise
Spring, odd-numbered years, 3(3-0)
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, even-numbered years, 3(3-0)
Acute and chronic effects of exercise on nervous, muscular, and endocrine system functions. Role of these systems in limiting exercise performance.

QA: HCP 260
862. Motor Skill Learning
Spring of even-numbered years. 3(0-6)
P: PES 860.
QA: HCP 819

865. Curriculum and Instruction in Adapted Physical Education
Fall of even-numbered years. 3(0-6)
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 athletes 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 coaching sports for persons with disabilities.
QA: HCP 846C

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 892

882. Topics in Physical Education and Exercise Science (MTY)
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.

889. 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 study.

899. Master's Thesis Research
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 9 credits in all enrollments for this course.
P: PES 871.
QP: HCP 892

900. 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.

905. Research Practicum in Physical Education and Exercise Science
Fall, Spring, Winter. 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

Department of Physics
College of Natural Science

170. Investigations in Physics
Fall, Winter. 3(0-6)
R: Approval of department.
Experiments in optics, electronics, sound and mechanics, analysis of data using computers, library research and oral presentations.