

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

- 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.
- 895. Research Ethics**
Summer. 1(1-0) Interdepartmental with Teacher Education; Counseling, Educational Psychology and Special Education; and Educational Administration.
R: Open only to graduate students in the Department of Counseling, Educational Psychology and Special Education or Department of Educational Administration or Department of Physical Education and Exercise Science or Department of Teacher Education.
Identifying and resolving ethical problems in research, including issues related to collegial interactions; authorship, publication, and reviewing practices; data management; ownership of data and intellectual property; conflicts of interest; protection of human and animal subjects; and lab safety and compliance.
- 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 degree program.
- 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.
- 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 Osteopathic Manipulative Medicine.
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.

PHYSICAL MEDICINE AND REHABILITATION

PMR

**Department of Physical Medicine and Rehabilitation
College of Osteopathic Medicine**

- 590. Special Problems**
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 24 credits in all enrollments for this course.
Each student works under faculty direction on an experimental, theoretical or applied problem in physical medicine and rehabilitation.

PHYSICS

PHY

**Department of Physics and Astronomy
College of Natural Science**

- 101. Concepts in Physics**
Fall. 1(1-0)
Conceptual foundations of physics emphasizing key experiments.
- 102. Physics Computations I**
Spring. 1(1-0)
P: CPS 101; PHY 183 or PHY 183B or PHY 193H or concurrently.
Use of computer software to solve, analyze and graph equations and data from mechanics.
- 170. Investigations in Physics**
Fall. 3 credits.
R: Approval of department.
Experiments in optics, electronics, sound and mechanics; analysis of data using computers, library research and oral presentations.
- 181B. Basic Physics I, CBI**
Fall, Spring, Summer. 3 credits.
P: MTH 132 or concurrently. R: Not open to students with credit in LBS 164 or PHY 183 or PHY 183B or PHY 193H or PHY 231 or PHY 231B.
Newton's laws of motion, conservation of angular momentum, energy conservation, thermal physics, waves, and sound. Competency based instruction.
- 182B. Basic Physics II, CBI**
Fall, Spring, Summer. 3 credits.
P: LBS 164 or PHY 181B or PHY 183 or PHY 183B or PHY 193H or PHY 231 or PHY 231B. R: Not open to students with credit in LBS 267 or PHY 184 or PHY 184B or PHY 232 or PHY 232B or PHY 294H.
Electricity and magnetism, optical phenomena, interference and diffraction of light, atomic and subatomic topics. Competency based instruction.
- 183. Physics for Scientists and Engineers I**
Fall, Spring. 4(5-0)
P: MTH 132 or concurrently. R: Not open to students with credit in PHY 183 or PHY 183B or PHY 193H or PHY 231 or PHY 231B or LBS 164.
Mechanics, Newton's laws, momentum, energy conservation laws, rotational motion, oscillation, gravity, waves.
- 183A. Physics I, CBI**
Fall, Spring, Summer. 1 credit.
P: PHY 181B. R: Not open to students with credit in PHY 183 or PHY 183B or PHY 231 or PHY 231B or PHY 193H or LBS 164.
Topics from: frames of reference, special relativity, rocket equation, forced oscillations, resonances, fluid motion, numerical solutions, moments of inertia, gyroscopic motion. This course plus PHY 181B is equal to PHY 183B.
- 183B. Physics for Scientists and Engineers I, CBI**
Fall, Spring, Summer. 4 credits.
P: MTH 132 or concurrently. R: Not open to students with credit in PHY 231 or PHY 183 or PHY 231B or PHY 193H or PHY 181B or LBS 164.
Mechanics, Newton's laws, momentum, energy conservation laws, rotational motion, oscillation, gravity, waves. Competency based instruction.
- 184. Physics for Scientists and Engineers II**
Fall, Spring. 4(5-0)
P: PHY 181B or PHY 183 or PHY 183B or PHY 193H or LBS 164; MTH 133 or concurrently. R: Not open to students with credit in LBS 267 or PHY 182B or PHY 184B or PHY 232 or PHY 232B or PHY 294H.
Electricity and magnetism, electromagnetic waves, light and optics, interference and diffraction.