

PHYSICAL EDUCATION AND EXERCISE SCIENCE

- 866*.** *Research on Sports for Athletes with Disabilities*
Fall of odd-numbered years. 3(3-0)
R: Graduate students

Performance capabilities of athletics with disabilities with emphasis 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.
May reenroll for a maximum of 4 credits.
R: Graduate student Approval by instructor

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)
R: Graduate students

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: Graduate students

Research and analytical methodology in physical education and exercise science, 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.
May reenroll for a maximum of 9 credits.
R: Graduate students

Issues, problems, and/or topics in physical education and exercise science.

- 882A*.** *Stress Management Techniques in Athletics*
Summer. 3(3-0)
R: Graduate students

Theoretical bases of psychological stress. Impact of stress on performance. Application of appropriate stress management techniques to athletics. Application of research to working with athletes.

- 890*.** *Independent Study in Physical Education and Exercise Science*
Fall, Spring, Summer. 1 to 6 credits.
May reenroll for a maximum of 6 credits.
R: Graduate students

Independent study of topics in physical education and exercise science.

- 893*.** *Internship in Physical Education and Exercise Science*
Fall, Spring, Summer. 2 to 6 credits.
May reenroll for a maximum of 6 credits.
R: Graduate students

Must complete a total of 4-6 credits to receive a grade.
Internship experience under the guidance and supervision of MSU faculty and internship consultants.

- 894*.** *Field Experiences in Physical Education and Exercise Science*
Fall, Spring, Summer. 1 to 6 credits.
May reenroll for a maximum of 6 credits.
R: Graduate students

Approval by department
Supervised graduate practica and observations in physical education and exercise science in schools and other settings.

- 897*.** *Project in Physical Education and Exercise Science*
Fall, Spring, Summer. 1 to 4 credits.
May reenroll for a maximum of 4 credits.
R: Graduate students

Must complete a total of 4 credits to receive a grade.
Project experience under the guidance and supervision of MSU faculty.

- 899*.** *Master's Thesis Research*
Fall, Spring, Summer. 1 to 6 credits.
May reenroll for a maximum of 6 credits.
P: PES 871 R: Graduate students

Must complete a total of 6 credits to receive a grade

QP: HCP 802

- 910*.** *Current Issues in Exercise Physiology*

Spring. 3(3-0) May reenroll for a maximum of 9 credits.
R: Graduate students

Selected issues in exercise physiology and related fields of study.

- 930*.** *Current Issues in Biomechanical Aspects of Physical Activity*
Spring. 3(3-0) May reenroll for a maximum of 9 credits.
P: PES 830 R: Graduate students

Selected issues of biomechanical analyses of sport and physical activity.

- 940*.** *Current Issues in Psychosocial Aspects of Physical Activity*
Fall. 3(3-0) May reenroll for a maximum of 9 credits.
R: Graduate students

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) May reenroll for a maximum of 9 credits.
R: Graduate students

Selected issues in program design and evaluation with an emphasis on programs of physical activity.

- 960*.** *Current Issues in Motor Behavior*
Spring. 3(3-0) May reenroll for a maximum of 9 credits.
R: Graduate student

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.
May reenroll for a maximum of 6 credits.
R: Doctoral students

Independent study of topics in physical education and exercise science.

- 995*.** *Research Practicum in Physical Education and Exercise Science*
Fall, Spring, Summer. 1 to 4 credits.
May reenroll for a maximum of 4 credits.
R: Open only to doctoral students

Supervised research practicum. Design, execution, analysis, presentation, critique, and revision of research projects.

- 999*.** *Doctoral Dissertation Research*
Fall, Spring, Summer. 0(-) May reenroll for a maximum of 24 credits.
R: Doctoral students

PHYSICAL SCIENCE CEM

- 918*.** *Seminar in Inorganic Chemistry*
Fall, Spring. 1(1-0) May reenroll for a maximum of 3 credits.
R: Graduate students Natural Science

Chemistry
Discussions of recent advances in inorganic chemistry and reports by graduate students on research
QA: CEM 918

- 991*.** *Quantum Chemistry and Statistical Thermodynamics I*
Fall. 3(3-0)

Mathematical background for quantum chemistry and statistical thermodynamics. Principles of quantum chemistry and applications to chemical problems. Partition functions, spectroscopic measurements, and thermodynamic applications
QA: CEM 987 CEM 991 CEM 985

- 998*.** *Seminar in Physical Chemistry*
Fall, Spring. 1(1-0) May reenroll for a maximum of 3 credits.
R: Graduate students Natural science

Chemistry
Discussions of recent advances in physical chemistry and reports by graduate students on research problems
QA: CEM 998

PHYSICS PHY

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

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(-)
P: MTH 132 or concurrently. R: Not open to students with credit in PHY 231 or PHY 231B or PHY 183 or PHY 183B or PHY 193H.
Newton's laws of motion, conservation of angular momentum, energy conservation, thermal physics, waves, and sound. Competency based instruction.
QP: MTH 112 QA: PHY 281 PHY 237B PHY 237 PHY 287 PHY 287B

- 182B*.** *Basic Physics II, CBI*
Fall, Spring, Summer. 3(-)
P: PHY 181B or PHY 183 or PHY 183B or PHY 231 or PHY 231B. R: Not open to students with credit in PHY 232 or PHY 232B or PHY 184 or PHY 184B or PHY 294H.
Electricity and magnetism, optical phenomena, interference and diffraction of light, atomic and subatomic topics. Competency based instruction.
QP: PHY 281 ORPHY 237ORPHY 237B OR PHY 291H LBS 267 QA: PHY 282 PHY 283B PHY 238 PHY 238B PHY 239 PHY 292H

- 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 183B, PHY 231, PHY 231B.
Mechanics, Newton's laws, momentum, energy conservation laws, rotational motion, oscillation, gravity, waves.
QA: PHY 287 PHY 287B PHY 291H PHY 237 PHY 281'

- 183A*.** *Physics I, CBI*
Fall, Spring, Summer. 1(-)
P: PHY 181B. R: Not open to students with credit in PHY 183 or PHY 183B.
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.
QP: PHY 281 QA: PHY 287A