869*. Research on Sports for Athletes with Disabilities
Fall or Odd-numbered years. 3(3-0)
R: Graduate students
Performance capabilities of athletes with disabilities with emphasis on areas such as exercise physiology, sport biomechanics, sport psychology, sport sociology, motor development, and motor learning.
QA: HCP 845B

870*. 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

871*. 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.
QA: HCP 845C

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

872*. 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.

872A*. Stress Management Techniques in Athletics
Summer. 3(3-0)
R: Graduate students

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
Supervised 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
Supervised graduate practice 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.

898*. Master's Thesis Research
Fall, Spring. 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.

910*. Current Issues in Mechanical 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.

910*. 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.

910*. 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.

910*. 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.

910*. 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.

915*. Research Practicum in Physical Education and Exercise Science
Fall, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 4 credits.
R: Graduate student
Open only to doctoral students.
Supervised research practicum. Design, execution, analysis, presentation, critique, and revision of research projects.

918*. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 24 credits.
R: Doctoral students

919*. 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

921*. 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. Particle functions, spectroscopic measurements, and thermodynamic applications.
QA: CEM 987 CEM 981 CEM 985

939*. 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

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 258 PHY 257B PHY 257 PHY 257B

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 194 or PHY 194B or PHY 294.
Electricity and magnetism, optical phenomena, interference and diffraction of light, atomic and subatomic topics. Competency based instruction.
QP: PHY 258 OR PHY 257ORPHY 257 OR PHY 257H LBS 267.
QA: PHY 258, PHY 258B PHY 258B PHY 258 PHY 258 PHY 258B PHY 258

183*. Physics for Scientists and Engineers I
Fall, Spring. 4(4-0)
P: MTH 132 or concurrently. R: Not open to students with credit in PHY 183B, PHY 211, PHY 211B.
Mechanics, Newton's laws, momentum, energy conservation laws, rotational motion, oscillation, gravity, wave.
QA: PHY 287 PHY 287B PHY 287H PHY 287 PHY 287

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, gynemorphic motion. This course plus PHY 181B is equal to PHY 183B.
QP: PHY 281.
QA: PHY 287A