SCIENCE (SCI)

SCI-119 CONTEMP ISSUES IN SCIENCE & TECH (3 Credits)
An exploration of current issues in physics, science, biology, health and medicine. The course provides an understanding of the scientific method and how to critically evaluate current issues from a scientific perspective.
Prerequisite: None

SCI-201 INTEGRATED SCIENCE ELEM EDU (3 Credits)
A college-level study and application of science concepts contained in the Michigan Grade Level Content Expectations for pre-service elementary teachers. Focus of the course will be on Science Process Skills, Physical Science, Life Science and Earth/Space Science, centering on the integration of these disciplines using inquiry-based learning, labs and field trips. Course fee applied.
Prerequisite: EDU-230

SCI-202 FOUND OF INTEGRATED SCIENCE I (3 Credits)
Teacher candidates will investigate and apply the principles of 3-dimensional science pedagogy to a select subset of science principles focused on PK-3. Using the Michigan Science Standards/NGSS as a foundation for developing skills in science and engineering practices, disciplinary core ideas and crosscutting concepts, students will engage these ideas to figure out how phenomena in the real world integrate in culturally-relevant ways to enable students to build their understanding of how science works and applies to their cultural context. Pedagogical methods will focus on the use of play, observation, and a subset of science and engineering practices to engage students in phenomenological inquiry.
Prerequisite: EDU-220

SCI-212 FOUND OF INTEGRATED SCIENCE II (3 Credits)
Building on the principles of Foundations of Integrated Science (PK-3) teaching candidates will investigate and apply the principles of 3-dimensional science pedagogy using the Michigan Science Standards/NGSS as a foundation for developing skills in science and engineering practices, disciplinary core ideas and crosscutting concepts. Students will engage these ideas to figure out how phenomena in the real world integrate in culturally-relevant ways to enable students to build their understanding of how science works and applies to their cultural context. Pedagogical methods will focus on the use of inquiry-based instruction to engage students in phenomenological inquiry.
Prerequisite: Conditional Status with TE division, SCI-202

SCI-242 MEDICAL TERMINOLOGY (2 Credits)
This course equips members of the health care professions with a working knowledge of medical vocabulary. Emphasis is placed on definitions, spelling, and pronunciation as it relates to the body. The course is designed for students desiring to pursue health-related careers.
Prerequisite: None

SCI-261 ASTRONOMY (4 Credits)
A study of the distinctive qualities of the planets, their moons, the stars, and galaxies through laboratory exercises in observations and calculations. Lecture and lab. This course satisfies the core requirement for Lab Science. Course fee applied.
Prerequisite: Math core requirement

SCI-262 GEOLOGY (4 Credits)
A study of the materials and processes of the earth, leading to a responsible Christian appreciation for it and its use. Explores basic principles through a survey of the history of the ideas about the earth. Applies basic insights of chemistry, biology, physics, and mathematics to the solution of problems such as earthquakes, volcanic eruptions, floods, marine erosion, the nature and distribution of fossil fuels, metals, ground water, and other mineral resources. Studies man-imposed and natural boundaries to characterize geographic regions. Lecture and lab. This course satisfies the core requirement for Lab Science. Course fee applied.
Prerequisite: None

SCI-263 ATMOSPHERE AND WEATHER (2 Credits)
This primarily on-line course is adapted from the American Meteorological Society Online Weather Studies. Students are led through the major aspects of atmospheric composition, weather production and parameters and forecasting models. Does not satisfy lab core requirement.
Prerequisite: None

SCI-311 SCIENCE IN CULTURE (3 Credits)
This course is a rigorous examination (based on a Christian philosophical worldview) of the nature of science and some of the major scientific ideas and issues affecting our culture.
Prerequisite: Lab science (music ed students take SCI-211 - elem ed students take SCI-201), Junior or Senior status required, PHI-211

SCI-345 GLOBAL HEALTH & EPIDEMIOLOGY (3 Credits)
This course explores the complex determinants of health and is designed to help students use their understanding of these determinants to develop strategies to improve the health of communities and populations. The course introduces students to the history, philosophy and ethics of epidemiology, and emphasizes the application of epidemiology (description, association and causality) to community health policy and practice. The student will analyze how policies and programs impact health outcomes within the current urban and global health care settings.
Prerequisite: None

SCI-346 PHARMACOLOGY (3 Credits)
This course is designed to teach the student principles of pharmacology, including mathematics and calculations, rules and regulations governing medications, medication administration and safety issues. Medications specific to various diseases and disorders will be studied, emphasizing desired effects, side effects, and contraindications.
Prerequisite: BIO-151, 241 & 242

SCI-361 EVOLUTION & ORIGINS (3 Credits)
A scientific investigation of the feasibility of various origin theories with special emphasis on the creation vs. evolution debate. Explores the difference between origins science and operation science and analyzes the conflict in the Christian scientific community as well as the population at large.
Prerequisite: BIO-111 or 4 credits from SCI, BIO, CHM, PHY

SCI-380 INTERNSHIP (1-6 Credits)
This course provides an opportunity to work in a supervised biological setting (e.g., DNR, nature center, public health agency). The experience must include opportunities to apply the theories and concepts learned in the discipline or to enhance biological science research skills.
Prerequisite: Junior or Senior status required

SCI-400 CAPSTONE SEMINAR: INTEGRATED SCIENCE (2 Credits)
This course is designed to serve as the culminating course of science content for the integrated science major and minor, just prior to the directed teaching semester. Using the major themes motif, each subject will be explored for the common and varied approaches to understanding its physical, biological and earth/space science content and interconnections. Philosophical underpinnings and ethical considerations will be stressed for each theme along with its outworking. Students will be responsible for developing their own set of alternative solutions for each problem encountered, discovering strategies for communicating integrated content in their classroom and devising techniques to stimulate their students to join the quest.
Prerequisite: Junior or Senior status required

SCI-423 NEUROSCIENCE (3 Credits)
A special topics course which introduces workings of the brain and aspects of personality dealing with these at the level of the nerve cells and brain structures. Learned topics include: Perception, cognition, intelligence, the basis of emotional states, personality disorders and questions of guilt; progressive and degenerate diseases of the mind; nerve impulses and the synapses to understanding drug abuse and addictions; neural pathologies like speech disorders, attention deficit hyperactive disorder and the epilepsies; sensations, reflexes and movement control; brain waves, sleeping and arousal, awareness, consciousness and the soul, along with investigating the neural brain of gender differences.
Prerequisite: BIO-151, BIO-241 or PSY-441

SCI-465 SECONDARY SCIENCE METHODS (3 Credits)
This course focuses on specific knowledge, skills, and attitudes that are demonstrated by effective science teachers in secondary schools. Students will learn to design, organize, present, and evaluate the learning of science subject matter utilizing various instructional models and methods of teaching science.
Prerequisite: Acceptance into teacher ed program

SCI-470 READINGS IN SCIENCE (1-3 Credits)
Prerequisite: None

SCI-480 ADVANCED TOPICS (1-4 Credits)
Prerequisite: None

SCI-490 INDEPENDENT STUDY (1-3 Credits)
Prerequisite: None

SCI-495 SENIOR RESEARCH PROJECT (1 Credit)
The senior research project is independently conducted research under the guidance of a science faculty mentor and is taken as a summer credit before taking the senior research seminar (SCI-496) or in the spring after the senior research seminar.
Prerequisite: Senior status required

SCI-496 SENIOR RESEARCH SEMINAR (1 Credit)
The senior research seminar is designed to help students develop the skills necessary to complete their senior research project (SCI-495). Seminars will focus on literature review, scientific writing, use of statistics in writing, creating tables and figures, review-editing of manuscripts and posters and presentations. Course fee applied.
Prerequisite: None