

MSNS Program Schedule Summer 2010 Course Descriptions and Times

Summer Sessions are:

Summer 4 May 17 – June 12

Summer 6 June 14 – July 24

Summer Flex-8 June 14 – August 7

ALL MSNS COURSES ARE OFFERED DURING SUMMER 6 UNLESS STATED DIFFERENTLY

SCI 5002 – History of Science for Natural Science Teachers. (3-0-3) (TWR 6:00-8:05 pm) Instructor TBA. This course examines the history of natural science from ancient to modern times, with emphasis on the dynamics of scientific investigation and the personalities and social context that shape initial acceptance or rejection of an idea. Case studies of the resolution of conflicting ideas and competing experiments are studied. The ultimate determination of the validity of any scientific theory is experiment. The conclusive experiments that resolved debates and led to major advances in Biology, Chemistry, Earth Science and Physics are examined.

SCI 5005 – Seminar for Natural Science Teachers (2-0-1) (6:00–8:05 pm M) Instructor: Dr. Andrew Methven. Students will evaluate and present seminars based on the results and analysis of independent research, thesis research or special projects for the M.S. in Natural Sciences program. Attendance required of all M.S. in Natural Sciences degree candidates. Course will be repeated over three summers for a total of 3 semester hours credit.

SCI 5006 – Independent Study for Natural Science Teachers. (Arranged course for 1, 2, or 3 semester hours) Offered Summer 4 and Summer 6 sessions. Selected problems based upon the student's background and interests.

SCI 5007 – Research for Natural Science Teachers. (Arranged course for 1, 2, or 3 semester hours). Original research in science or science teaching conducted in consultation with a thesis advisor. A maximum of 6 semester hours in a combination of SCI 5007 and SCI 5950 may be applied toward the research and thesis component of the M.S. in Natural Sciences degree.

SCI 5950 – Thesis for Natural Science Teachers. (Arranged course for 1, 2, or 3 semester hours). Offered Summer 4 and Summer 6 sessions Thesis based on original research conducted in consultation with a thesis advisor. Intended for thesis option students conducting original research in consultation with a thesis advisor.

BIO 5049 – 001 – Topics in Ecology for Natural Science Teachers – Terrestrial Ecology (2-1-3) (TR 8:00-11:10 am) Instructor TBA. A study of techniques for sampling data and specimens that will illustrate the relationships of plants, animals and physical factors in prairie and forest communities. Emphasis will be on the application to secondary teaching.

BIO 5052 – 001 – Special Topics for Natural Science Teachers – Animal Physiology (2-1-3) (TR 12:30-3:40 pm) Instructor TBA. A study of principles of animal physiology with emphasis on mammalian organ systems. Emphasis will be on the application to secondary teaching.

CHM 5040 - Chemical Analysis for Natural Science Teachers (2-1-3) (MWF 9:45-11:50 am) Instructor TBA. Designed for science teachers to provide practical experience in the design and implementation of laboratory experiments in chemical analysis.

CHM 5080 - Special Topics in Chemistry for Natural Science Teachers – Biochemistry (2-1-3) (MW 3:00-5:05 pm; TR 4:00-5:05 pm) Instructor TBA. Designed to provide science teachers with an understanding of basic concepts in biochemistry. Topics covered include the structure and function of proteins, lipids, carbohydrates and nucleic acids, as well as their role in metabolism and nutrition.

ESC 5035 – Field Methods in Earth Sciences for Natural Science Teachers (2-1-3) (MWF 12:40-2:45 pm) Instructor: Dr. Vince Gutowski. Field investigation of selected physiographic provinces, earth materials, earth resources, geological and geomorphological processes, their origins, environmental significance and importance to human systems.

PHY 5170 – Optics for Natural Science Teachers (2-1-3) (MWF 7:30-9:35 am) Instructor TBA. Principles of optics are developed through the general theories of geometrical, wave and quantum optics. Applications include thin and thick lenses, interferences, diffraction, emission and absorption, spectroscopy, lasers, holography.