

# Bemidji State University

## SCI 3450: Science Methods For Grades 5-8

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: \*.\*

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

Strategies for implementation of the Minnesota Graduation Standards in the areas of Science and Inquiry for grades 5-8. Strategies include laboratory activities, discussions, the development of classroom activities, and the adaptation of these strategies for use in the elementary and high school science classroom. Prerequisite: Senior status or consent of instructor.

**B. COURSE EFFECTIVE DATES:** 03/05/2001 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Sequence of Lessons & Instructional Strategies
2. Safety Equipment in the Classroom, Field, & Laboratory Settings
3. National Safety Guidelines
4. Elementary & Middle School Safety Kit
5. Strategies for Eliciting Students' Alternative Ideas
6. Assessment Plans

#### **D. LEARNING OUTCOMES (General)**

1. describe the similarities and differences between the goals and processes of scientific inquiry and the goals and processes of technological design.
2. design a modification or use of a system to meet certain needs or criteria in either chemistry, earth and space science, biology, or physics.
3. develop a broad-based knowledge of teaching science that integrates knowledge of science with knowledge of pedagogy, students, learning environments, and professional development.
4. develop a list of materials needed in an elementary science safety kit.
5. explain and predict the possible unexpected benefits and the negative side effects and unintended consequences of a given technological advance.
6. explain how the availability of new technology influenced the development of scientific knowledge in a given contemporary or historical context and how the development of new scientific knowledge led to technological advances in a given contemporary or historical context.
7. explain why the contributions of individuals from different scientific disciplines and of technology were necessary for the success of a given contemporary or historical scientific investigation.
8. implement safe procedures during supervised science learning experiences in the public schools.
9. justify and defend, using knowledge of student learning, research in science education, and national science education standards, a given instructional model or curriculum.
10. plan a coordinated sequence of lessons and instructional strategies that support the development of students' understanding and nurture a community of science learners including appropriate inquiry into authentic questions generated from students' experiences; strategies for eliciting students' alternative ideas; strategies to help students' understanding of scientific concepts and theories; and strategies to help students use their scientific knowledge to describe real-world objects, systems, or events.
11. plan assessments to monitor and evaluate learning of science concepts and methods of scientific inquiry.

#### **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

None

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

#### **G. SPECIAL INFORMATION**

None noted