

MURRAY STATE UNIVERSITY

DEPARTMENT: Early Childhood and Elementary Education

COURSE PREFIX: ELE COURSE NUMBER: 402

CREDIT HOURS: 3

- I. TITLE:** Teaching Elementary Science
- II. COURSE DESCRIPTION AND PREREQUISITE(S):** An exploration of the content, materials, and methods of teaching science at the elementary level with an emphasis on discovery, inquiry, and STEM integration. Field experiences required. Participation in a 24-hour Friday overnight environmental education experience at LBL required. **Prerequisite:** Admission to Teacher Education. Corequisites: ELE 401 and EDU 404.
- III. COURSE OBJECTIVES:**
Class activities will be centered on the attainment of the course objectives listed below.. Following each objective, and enclosed in parentheses, are numbers that reference the Kentucky Teacher Standards for Preparation and Certification (KTS), Interstate New Teacher Assessment and Support Consortium (InTASC) Standards, and the National Council of Science Teachers standards addressed by that objective. Upon successful completion of this class, students will be able to
- A. prepare appropriate science lessons, identifying process skills, preparing science materials and discrepant events/experiments, and demonstrating integration of effective questioning techniques (KTS 2, 3, 4, 5/InTASC 1, 2, 3, 6, 7, 8/NSTA 4, 5);
 - B. identify and synthesize information from program materials, commercial products, and other available resources (KTS3 1, 2, 3, 8/InTASC 1, 2, 3, 4, 5, 7, 8/NSTA 4, 5);
 - C. demonstrate how to administer/monitor successful, developmentally-appropriate discrepant events and experiments for children in elementary grades (KTS 4/InTASC 1, 2, 3, 4, 5, 7, 8/NSTA 5);
 - D. describe and demonstrate how other subject areas can be integrated with the teaching of science (KTS 1, 4, 7/InTASC 1, 2, 3, 4, 5, 7, 8/NSTA 4, 5);
 - E. demonstrate proficiency with technology for science related purposes (KTS 2, 3, 4, 6/InTASC 1, 2, 3, 5, 6, 7, 8/NSTA 5, 10); and
 - F. demonstrate an awareness of environmental issues, professional self, and an understanding of the rights of individuals and accepted professional behavior (KTS 1, 2, 7, 8/InTASC 1, 2, 3, 4, 5, 7, 8/NSTA 4, 7, 10).

The COE Theme of Educator as Reflective Decision-Maker is addressed in this course by requiring students to reflect on their practicum field experiences, group investigations, and Environmental Education Retreat.

Scientific teaching success is stressed throughout every course activity as students learn how to teach elementary children to be successful scientists through the National Science Teachers Association standards.

EPSBs assessment theme is addressed in this course through the common assignment of creating an age-appropriate 5E lesson to be assessed at the end of the semester, as well as multiple opportunities to demonstrate lesson planning proficiency throughout the semester. Diversity and closing the achievement gap are addressed through direct instruction and lesson planning, demonstrating that students understand how to modify lessons for various students' needs based on their abilities and backgrounds. Literacy/Reading is addressed through the integration of

science into the other content areas, such as reading and writing in order to teach expository writing and reading for information. Technology is addressed through the integration of technology-related applications and tools that enhance science learning.

IV. CONTENT OUTLINE:

- A. Scientific and Engineering Practices
- B. Crosscutting Concepts
- C. Physical Sciences
- D. Life Sciences
- E. Earth and Space Sciences
- F. Engineering, Technology, and Applications of Science
- G. Observations and Inference
- H. Questioning
- I. 5E process
- J. Experiments v. Activities
- K. WebQuests
- L. Argument
- M. APA research
- N. Station Activities
- O. Whole-Class Activities and Discrepant Events
- P. NASA Resources
- Q. Journaling
- R. Science Fairs

V. INSTRUCTIONAL ACTIVITIES:

- A. Group discussions
- B. Question generation
- C. Group hands-on investigations
- D. Lectures and guest speaker
- E. Instructional planning
- F. Practicum teaching
- G. Textbook reading
- H. Computer activities
- I. Reflections and assessments

VI. FIELD, CLINICAL, AND/OR LABORATORY EXPERIENCES:

Students will participate in fifteen hours of field experiences teaching science to elementary children. Failure to complete any aspect of the field experiences will result in an incomplete or failing grade in the course. **To earn a grade in this course, students must successfully complete the required field experiences and record the hours and related components on the LiveText FEM site. Students are also expected to record field experiences in KFETS.**

VII. TEXT(S) AND RESOURCES:

Friedl, A.E. & Koontz, T.Y. (2005). *Teaching Science to Children: An Inquiry Approach*. 6th ed. New York, NY: McGraw-Hill.

VIII. EVALUATION AND GRADING PROCEDURES:

Grades will be awarded for successful performance in course tasks, including but not limited to, examinations, reading responses, and performance tasks. The practicum lesson plan serves as the designated assignment for this course. The items listed below serve as a guide for graded items. These are subject to change at the discretion of the professor.

Evaluation

Grades will be awarded based on performance.

Percentage	Grade
94-100	A
86-93	B
76-85	C
66-75	D
0-65	E

Audit Policy

If you choose to audit this course, you **MUST** complete all of the assignments with the exception of the final examination and attend all class meetings. If either one of these conditions is not met, the instructor will change the audit grade to an E.

IX. ATTENDANCE POLICY:

Students are expected to adhere to the MSU Attendance Policy outlined in the current MSU Bulletin.

** Students must complete 15 hours of field experience.*

Students are expected to attend **ALL** class meetings and field experiences. Daily attendance will be taken. Three tardy arrivals will constitute one unexcused absence. Tardy is defined as one second or more late from the class start time. Beginning with the third absence, each absence will constitute a 5 percentage point drop in the student's grade. Students missing class for any reason should notify Dr. King in advance, preferably by e-mail. **Students assume responsibility for asking classmates about assignments or information they missed while absent.**

The field experiences carry an extra responsibility for students to act professionally. **Any field experience absences must be completed before the end of the semester.**

Occasionally, there will be in-class assignments that will be taken up and assessed for credit. These can **ONLY** be made up if the student presents Dr. King with a medical excuse provided by a doctor or a note from a supervisory individual if it is a school-related function.

X. ACADEMIC HONESTY POLICY:

Murray State University takes seriously its moral and educational obligation to maintain high standards of academic honesty and ethical behavior. Instructors are expected to evaluate students' academic achievements accurately, as well as ascertain that work submitted by students

is authentic and the result of their own efforts, and consistent with established academic standards. Students are obligated to respect and abide by the basic standards of personal and professional integrity.

Violations of Academic Honesty include:

Cheating - Intentionally using or attempting to use unauthorized information such as books, notes, study aids, or other electronic, online, or digital devices in any academic exercise; as well as unauthorized communication of information by any means to or from others during any academic exercise.

Fabrication and Falsification - Intentional alteration or invention of any information or citation in an academic exercise. Falsification involves changing information whereas fabrication involves inventing or counterfeiting information.

Multiple Submission - The submission of substantial portions of the same academic work, including oral reports, for credit more than once without authorization from the instructor.

Plagiarism - Intentionally or knowingly representing the words, ideas, creative work, or data of someone else as one's own in any academic exercise, without due and proper acknowledgement.

Instructors should outline their expectations that may go beyond the scope of this policy at the beginning of each course and identify such expectations and restrictions in the course syllabus. When an instructor receives evidence, either directly or indirectly, of academic dishonesty, he or she should investigate the instance. The faculty member should then take appropriate disciplinary action.

Disciplinary action may include, but is not limited to the following:

- 1) Requiring the student(s) to repeat the exercise or do additional related exercise(s).
- 2) Lowering the grade or failing the student(s) on the particular exercise(s) involved.
- 3) Lowering the grade or failing the student(s) in the course.

If the disciplinary action results in the awarding of a grade of E in the course, the student(s) may not drop the course.

Faculty reserve the right to invalidate any exercise or other evaluative measures if substantial evidence exists that the integrity of the exercise has been compromised. Faculty also reserve the right to document in the course syllabi further academic honesty policy elements related to the individual disciplines.

A student may appeal the decision of the faculty member with the department chair in writing within five working days. Note: If, at any point in this process, the student alleges that actions have taken place that may be in violation of the Murray State University Non-Discrimination Statement, this process must be suspended and the matter be directed to the Office of Institutional Diversity, Equity and Access. Any appeal will be forwarded to the appropriate university committee as determined by the Provost.

XI. NON-DISCRIMINATION POLICY STATEMENT:

XII. Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. In particular and without limiting the preceding and pursuant to and consistent with the requirements of Title VI of the

Civil Rights Act of 1964 and its regulations 34 CFR 100 et seq.; Section 504 of the Rehabilitation Act of 1973 and its regulations 34 CFR 104; Title IX of the Education Amendments of 1972, 20 USC 1681 et seq., and its regulations 34 CFR 106 et seq; and the Age Discrimination Act of 1975 and its regulations 34 CFR 110, Murray State University does not discriminate on the basis of race, color, national origin, sex, handicap, or age in its educational programs and activities. This non-discrimination in education programs and activities extends to employment and admissions and to recruitment, financial aid, academic programs, student services, athletics, and housing. Murray State is required by Title IX and 34 CFR part 106 not to discriminate on the basis of sex and the prohibition against sex discrimination specifically includes a prohibition of sexual harassment and sexual violence. For more information, contact the Executive Director of Institutional Diversity, Equity, and Access/ Murray State University Title IX Coordinator, Murray State University, 103 Wells Hall, Murray, KY 42071 Telephone: (270) 809-3155 Fax: (270) 809-6887; TDD: (270) 809-3361; Email: msu.titleix@murraystate.edu

XIII. FLAG SYSTEM/CONTINUOUS ASSESSMENT:

Student progress is continuously assessed throughout the teacher preparation program. Appropriate professional characteristics and dispositions, in addition to academic achievement, are assessed. Positive and negative flags are submitted by faculty to Teacher Education Services and then presented to admissions committees. Negative flags are carefully reviewed to make a determination as to whether a student should be denied admission OR if a professional development plan will be designed for the student's progress towards program completion.

NEGATIVE FLAGS MAY BE GROUNDS FOR DENIAL OF ADMISSION TO TEACHER EDUCATION AND/OR STUDENT TEACHING.

NOTE: Instructor reserves the right to make any changes to course activities and assignments as deemed necessary during the semester.

The instructor of this course recognizes that in today's world cell phones, blackberries, laptop computers, pagers, and other electronic devices are a familiar and many times needed form of communication for students. It is the policy of this instructor that **any of the above mentioned devices shall not be allowed in class and/or labs without the prior consent of the course instructor.** This shall include verbal calling, incoming calls, e-mail, text message, and use of cell phone calculator on tests and quizzes. **All electronic devices must be powered off and out of the sight and use (i.e. kept in a bag or purse).** Should any of these devices be visible, ring, or other form of unauthorized usage which is interruptive to the class or lab, the student may be asked to leave class and not return for that class/lab period. Upon prior consent of the instructor a student may obtain permission to use any of these devices in case of emergency or in family critical situations.

** All students must dress appropriately as per Teacher Education Services guidelines during field experiences!*