I. **COURSE TITLE**: Laboratory in Teaching Science: Middle School

II. **CATALOG DESCRIPTION**: A concentrated laboratory experience for upper division students seeking middle school certification with a teaching field in science. Includes directed and supervised teaching experiences with middle school students in area schools. Prerequisites: EDU 303 and MID 270.

III. **PURPOSE**: To provide directed and supervised teaching experience in partial fulfillment of the requirements for the Murray State University middle school science teacher preparation program. This course is designed to enable the student to understand and facilitate the teaching of science, both in process and in content. It will enable the student to increase and apply skills in planning, development, and implementation of instruction in the middle school grades, and assist in preparation for student teaching.

IV. **COURSE OBJECTIVES**: The behaviors indicated below are understood to be reflective of, but not limited to those behaviors advocated by the Kentucky Education Reform Act guidelines. Following each objective, and enclosed in parentheses, are numbers that reference the Kentucky New Teacher Standards. As a result of participation in this course, students will:

A. Demonstrate awareness of the role of Kentucky’s Core Content for Assessment, Academic Goals and Expectations, and National Science Education Standards in instructional planning for middle school science teaching. [NTS I]

B. Develop instructional goals, learning objectives, and lesson plans for middle school science students. [NTS I]

C. Demonstrate several approaches to teaching middle school science, with an emphasis on inquiry-based/discovery teaching. [NTS II, III]

D. Identify, assess, and interpret middle school student progress in the learning of science content and process skills. [NTS IV]

E. Plan and carry out appropriate interventions designed to help middle school students having difficulty with science content or process skills, including those with special needs. [NTS III, IV, V]
F. Carry out planned science instruction in a middle school classroom under direct supervision. [NTS III, VI]

G. Describe middle school science instructional activities that have a significant environmental science component. [NTS VII, VIII]

H. Review computer-based and traditional instructional materials for suitability in middle school science teaching. [NTS I, II]

I. Demonstrate acceptable professional behavior and knowledge of the rights of individuals in a middle school science setting. [NTS V, VII].

The COE Conceptual Framework and the Theme of the Educator as a Reflective Decision-maker are addressed in this course by urging students to consider the teacher’s role in deciding appropriate lesson plans for their practicum teaching experiences. In addition, students will select appropriate teaching strategies for these “teaching” lessons. Finally, after presenting the lesson, students will reflect and critique their teaching assignments. The goals of the critique are to identify positives, negatives and ways to improve future “teaching” assignments, thus enabling students to become more effective educators in the future.

The Theme of Diversity is explored in this course through the use of accommodations for learners with disabilities who are either mainstreamed or included with regular education students in their practicum assignments. In addition, students will learn and develop teaching strategies enabling them to teach science to all students, regardless of gender, ethnicity, learning styles, or exceptionalities.

Technology is addressed in a variety of ways in this course. Practicum “teaching” lessons must have technology components. Technology examples may be, but are not limited to, the Smart Board, PowerPoint presentations, overhead transparencies, audio tapes, VCR videos, Internet sites, etc. Many lecture handouts and assignments are e-mailed to students via e-mail. The instructor’s website is used to post numerous assignments, the course syllabus, many class handouts, etc.

V. CONTENT OUTLINE:

A. National Science Education Standards
B. KY Goals and Science Academic Expectations
C. KY Science Core Content for Middle Grades
D. Science process skills
E. Planning
   1. Units and lessons
   2. Goals and objectives
F. Approaches to science teaching
G. Assessing and assisting student progress
H. Providing for special needs
I. Clinical and field experiences and requirements
   J. Environmental education awareness
   K. Use of technology

VI. **INSTRUCTIONAL ACTIVITIES:** Group discussions, demonstrations, field experiences, formative and summative evaluations, journaling, lectures, lesson planning, peer review, reading and summarizing articles from professional literature.

VII. **FIELD AND CLINICAL, AND/OR LABORATORY EXPERIENCES:** Students will participate in a minimum of 12 field-based laboratory hours working with middle school science students.

VIII. **RESOURCES:**

   MSU’s Waterfield Library
   NASA Education Resource Center (in basement of Waterfield)
   Library of assigned middle school
   Computer Centers (throughout the campus)
   COE Library/Media Center (Room 341 Alexander Hall)

IX. **GRADING PROCEDURES:**

   **Field Procedure:**

   1. At their assigned middle school, MSU students will participate in a minimum of 12 hours of field experience. Of these **4-6 hours should be actual whole class or small group teaching time.** The other hours should be allocated to observing science teaching methods and to participating in middle school science classroom activities. Participation activities could include performing individualized instruction, working on bulletin boards, helping to construct teacher-made tests, assisting teachers during their science instruction, and similar experiences.

   2. MSU Instructors will expect MSU students to establish and maintain a written daily log of observations, experiences and reflections, and to develop written lesson plans for all teaching experiences. MSU students will also be expected to solicit and respond to feedback from the classroom teachers about their teaching.

   3. At the conclusion of the field experience, the classroom teachers will be asked to evaluate the MSU students with the “Evaluation of Participating Student” form, based upon the new teacher standards.

   4. Obtain a copy of the textbook that is being used by your practicum teacher.
5. If possible, you will “teach” four times during the practicum with the practicum teacher observing three “lessons” and a MSU professor observing one “lesson” for at least thirty (30) minutes. The “lesson plan” observed by the professor will be graded by the course instructor per the guidelines listed in Section IX of this course syllabus along with the assessment instrument you develop for the four lesson unit.

6. Use the textbook (based on what you will be teaching during the practicum experience) for your micro-teaching lesson as well as your practicum “teaching lesson.” The micro-teaching lesson will be graded by the course instructor per the guidelines listed in Section IX of this syllabus. Develop a minimum of four “lessons” based on this textbook. Write an examination that contains multiple choice, matching, short answer, and essay questions that will assess the learning of your students. (The examination may not be administered to the students. This will up to the practicum teacher.)

Flag System:

Student progress throughout the program is continuously assessed. 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 admission 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, or reversal of admitted status.

Grade Distribution:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter quizzes/activities</td>
<td>50</td>
</tr>
<tr>
<td>Environmental Education Retreat or Alternative Assignment</td>
<td>50</td>
</tr>
<tr>
<td>Daily Practicum Logs (6 logs for 12 hours)</td>
<td>30</td>
</tr>
<tr>
<td>Daily Practicum Reflections (6 reflections for 12 hours)</td>
<td>30</td>
</tr>
<tr>
<td>Micro-teaching presentation (Prior to leaving for practicum)</td>
<td></td>
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<tr>
<td>- Oral Presentation</td>
<td>50</td>
</tr>
<tr>
<td>- Written Lesson Plan</td>
<td>25</td>
</tr>
<tr>
<td>Final exam</td>
<td>100</td>
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<tr>
<td>Middle School Teaching Observation</td>
<td></td>
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<tr>
<td>- Oral Presentation</td>
<td>50</td>
</tr>
<tr>
<td>- Written Lesson Plan</td>
<td>25</td>
</tr>
<tr>
<td>- Written Assessment</td>
<td>25</td>
</tr>
<tr>
<td>(E-mailed at least one day prior to teaching the lesson)</td>
<td></td>
</tr>
<tr>
<td>Formative e-Portfolio Artifact and Reflection</td>
<td>30</td>
</tr>
<tr>
<td>(Artifact Requirement: Group Thematic Unit: NTS #VI)</td>
<td></td>
</tr>
<tr>
<td>Cooperative middle science thematic unit plan with assessments</td>
<td>100</td>
</tr>
<tr>
<td>Maximum</td>
<td>565</td>
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</tbody>
</table>
Grading Scale:

- 509 – 565 = A
- 452 – 508 = B
- 396 – 451 = C
- 339 – 395 = D
- 0 – 338 = E

X. ATTENDANCE POLICY:

This course adheres to the policy published in the current MSU Undergraduate Bulletin.

Students **MUST** complete the 12 hours of practicum experience at the participating middle school.

Attendance will be taken and recorded during all MID 372 class sessions.

Class will start on time. You are **expected** to be on time for your practicum hours at your scheduled time at the participating middle school.

Students assume the responsibility for informing the instructor of a tardy arrival. **Three** (3) tardies **will** equal one absence.

Students **MUST** e-mail or telephone the instructor indicating the reason for the absence (preferably before class). In reference to the 12 hours of practicum, students **MUST** e-mail or telephone Dr. Koenecke **AND** their practicum teacher prior to **ANY** practicum absence. Dr. Koenecke, the practicum teacher, and Teacher Education Services **MUST** be consulted before any changes are made in any student’s practicum schedule.

**More than two absences may result in the following consequences:** the final grade may be lowered by one or more letter grades and/or a negative flag may be placed on materials submitted to Teacher Education Services.

XI. ACADEMIC HONESTY POLICY:

This course adheres to the policy published in the current MSU Undergraduate Bulletin.
COOPERATIVE GROUP WORK:

When students are participating in an instructor assigned cooperative learning experience, students in the group will be sharing information and writing the final product together. Therefore, in this specific case, students within the group may exchange work with each other, collaborate together and submit each others work so long as the work submitted is their original work. The group project must adhere to the current MSU Academic Honesty Policy guidelines in this section that applies to work done by people outside their cooperative work team.

PLEASE NOTE:

Faculty reserve the right to invalidate any examination or other evaluative measures if substantial evidence exists that the integrity of the examination has been compromised.

XII. Texts:


National Science Education Standards:

http://www.nap.edu/readingroom/books/nses/html/

KY Core Content for Assessment:

(2) Look at Last Week’s Top 10 Pages – Select Combined Curriculum Document.
(3) Scroll down until you locate the Combined Curriculum Document Table.
(4) Click Middle Level (Grades 6-8) Science in the table.
(5) This will open the 6th Grade, 7th Grade, and 8th Grade Academic Expectations, Program of Studies, and Core Content that you can use for your lesson plans.

XIII. PREREQUISITIES: EDU 303 and MID 270.

XIV. ENVIRONMENTAL EDUCATION RETREAT: Students will participate in an environmental retreat the weekend of February 25th & 26th at a cost of approximately $15.00. More information will be provided concerning the retreat. Students who have extenuating circumstances that do not allow them to participate in this activity will have an alternate assignment that will be substituted for this activity.
XV. **FORMATIVE E-PORTFOLIO ARTIFACT & REFLECTION:** Each student will use their thematic group project as an e-portfolio artifact and write a reflection using the performance criteria listed under Standard VI: Collaborates with Colleagues/Parents/Others. The instructor will provide additional instructions and suggestions during the semester as to how to accomplish this course requirement.

XVI. **COOPERATIVE MIDDLE SCHOOL SCIENCE THEMATIC UNIT:** Students will participate in a cooperative middle school science group thematic unit project that pertains to Kentucky Core Content for science that is actually taught in Kentucky Middle Schools. The subject area of the unit will be selected from the following science content areas taught in grades 6 through 8: (1) Physical Science. (2) Earth and Space Science. (3) Life Science.

The instructor will select the number of students in each group and the method to be used to determine the make-up of each group. The unit topic for each group will be a joint effort among the group members and the instructor. However, the instructor will make the final decision as to the selection of the final topic for each group thematic unit. No two groups will have the same content topic area.

It is anticipated that the groups and topics will be determined prior to the students leaving the classroom for their middle school practicum experience. Students will be expected to work on this project during their practicum experience. It is highly recommended that students discuss their thematic unit topics with their middle school practicum teachers. These middle school teachers are excellent sources of information to tap that can be used to help pre-service teachers learn what middle school science teachers are required to teach in Kentucky. Most, if not all middle schools, have curriculum guides. As a part of this assignment, each group **MUST** obtain a copy of a middle school curriculum guide for science. This middle school curriculum guide will be turned in along with the thematic unit. If possible, the curriculum guide will be from the middle school where the practicum takes place. However, any Kentucky middle school science curriculum guide may be used for this assignment.

The thematic unit will be due approximately one week before the final examination. Each group will turn in a “hard” copy and an electronic copy (floppy disk or CD) of the thematic unit. It is anticipated that electronic copies of all the thematic units will be provided to all class members. (The instructor will assume this responsibility and will provide an electronic copy to all class members at the conclusion of the semester.)

In addition to some in-class time, groups are expected to meet outside of class to complete their thematic unit project. Students are encouraged to use e-mail and the telephone as well as meeting together outside of class. The thematic unit is expected to be a joint effort with **all** members of the team participating and being responsible for a **fair** share of the research and writing of the term paper. At the conclusion of the unit, a required evaluation form will be completed by each team member.
A team leader will be selected by the group or the instructor will appoint a team leader. The team leader will coordinate the project and be responsible for seeing that the thematic unit is completed and turned in on time.

The instructor will provide additional instructions, suggestions, etc. during the first weeks of the course so that the teams can start working on the unit early in the semester.

**PLEASE NOTE THAT EACH INDIVIDUAL IN THE SAME COOPERATIVE GROUP WILL BE ASSIGNED THE SAME POINT VALUE AS EVERYONE ELSE IN THAT PARTICULAR GROUP. THEREFORE, EACH GROUP MEMBER MUST CONTRIBUTE HIS/HER FAIR SHARE TO THE THEMATIC UNIT.**

**XVII. A SUGGESTED COURSE OUTLINE/ASSIGNMENTS/TEST SCHEDULES WILL BE PASSED OUT DURING THE FIRST PART OF THE SEMESTER.**

**XVIII.** The above schedule and procedures in this course are subject to change in the event of extenuating circumstances. The instructor fully intends to implement all the portions of this course syllabus. However, the instructor reserves the right to make changes to course activities and assignments as deemed necessary.

**XIX.** **Final Words:** Teaching is serious business and students should approach this course as well as all their courses in a professional manner. The only place I know where success occurs before work is in the dictionary. In this class you are expected to read the textbook before we discuss the material in class. You are expected to complete your projects and assignments on time and in a professional manner.

I’m glad you’re along to share this adventure. I will do my best to model and uphold the principles that are the foundation of professional educators that our consumers demand and expect in the year 2005! If each of us does the work assigned, this class will be enjoyable as well as educational. Let’s have a great class. Good luck and do not hesitate to ask me questions and/or set an appointment to meet with me. Please feel free to call me at my office, or at home before 11:00 p.m., or drop by my office.

Sincerely yours,

William H. Koenecke, Ph.D.
Assistant Professor
Murray State University

January 14, 2005