



University of Memphis College of Education

College of Education
The University of Memphis
ICL 7602/8602
Secondary Science Methods

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College of Education Norms

- I take 100% responsibility.**
- I seek equity of voice.**
- I am willing to talk about sensitive issues.**
- I listen for understanding.**
- I appreciate the strengths and contributions of others.**
- I bring positive energy and encouragement to the team.**
- I commit to the mission of the college.**

ICL 7602/8602: Teaching Science in the Secondary School

Course Description: An examination and analysis of modern science teaching strategies in the secondary school; emphasis on information processing and classroom learning strategies. Field experience: 8 hours. (Offered fall semester).

Prerequisites: Admission to the Teacher Education Program

Text:

Trowbridge, L., Bybee, R., & Powell, J. (2004). *Teaching Secondary School Science*. New Jersey: Pearson.

Support of Conceptual Framework:

This course examines and emphasizes learner centered science experiences for the secondary students. It will use research-based approaches that support effective teaching and high achievement in science content and pedagogy. Participants will evaluate research studies and recent trends and issues to aid in the development of culturally responsive and outcome-oriented science learning experiences for diverse learners. It supports the framework's high expectation for all candidates, the vision of leaders prepared for urban and metropolitan schools, and to the commitments of effective practice, diverse communities, and leadership.

Methods of Instruction: Lecture and Laboratory

Key Assessments:

1. Science Content Lesson
2. Inquiry Lesson Plan
3. Science Research Project
4. Science Unit Plan
5. The STS Lesson
6. The Safety Module

Course Objectives:

1. To help students develop skills necessary to successfully teach science at the middle/high school level.
2. To assist students in obtaining a working definition of science, science teaching, and science literacy.
3. To assist students in understanding the relationships among science, technology, and society while experiencing science as a human endeavor.
4. To introduce students to current learning and motivational theories in science education.
5. To help students gain competence in planning, instructing, and evaluating children.
6. To assist students in acquiring instructional resources and materials appropriate for children of varying capabilities and backgrounds.
7. To help students apply process and questioning skills in science instruction; and
8. To integrate science with other curricular areas

9. ICL 8602 students will be expected to demonstrate research skills appropriate to the doctoral level of study

Assignments, Exams, and Grading Criteria:

Assignments and Examination: See attached calendar

Grading Policy: * (revised 9 /04)

A = 90 -100	272 – 322 = A
B = 80 - 89	221 – 271 = B
C = 70 -79	170 – 220 = C
D = 60 - 69	149 – 169 = D
F = Below 60	148 and Below = F

Course Requirements: (Attendance, Participation, etc.)
Attendance Policy

Students are expected to attend and participate in class. Non-attendance will adversely affect your success in the course. The students are responsible for work missed during their absences. Use the "buddy system" and ask classmates to get assignments for you if you must be absent or late. If you are more than 15 minutes late, it will be considered an absent. If you leave 15 or more minutes earlier, it will be considered an absent (You will not earn all of your attendance points).

If you are absent due to illness or school duties as in open house, please bring documentation so that you may keep all of your points.

Americans with Disabilities Act: The University of Memphis does not discriminate on the basis of disability in the recruitment and admission of students, the recruitment and employment of faculty and staff, and the operation of any of its programs and activities, as specified by federal laws and regulations. *The student has the responsibility of informing the course instructor (at the beginning of the course) of any disabling condition, which will require modification to avoid discrimination.* Faculty are required by law to provide "reasonable accommodation" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty at the beginning of the semester and in providing authorized documentation through designated administrative channels.

Written Assignments and Academic Misconduct: All written work submitted must be the student's original work and conform to the guidelines of the *American Psychological Association (APA)* available online and via their publications. This means that any substantive ideas, phrases, sentences, and/or any published ideas must be properly referenced to avoid even the appearance of plagiarism. It is the student's responsibility to know all relevant university policies concerning *plagiarism*. Any documented cases of plagiarism can and will result in dismissal from the course with a failing grade, and may result in other more serious sanctions by the College of Education.

Academic Integrity and Student Conduct:

Expectations for academic integrity and student conduct are described in detail on the website of the Office of Student Judicial and Ethical Affairs (<http://saweb.memphis.edu/judicialaffairs>). Please take a look, in particular, at the sections about "Academic Dishonesty," "Student Code of Conduct and Responsibilities," and "Disruptive Behaviors." I will expect students to be aware of these guidelines and to conduct themselves accordingly.

Health Readiness:

Please be respectful to yourself and your classmates when you are feeling ill. Due to H1N1 outbreaks, please cough properly and wash your hands as needed. If you feel sick with flu like symptoms, please stay at home and visit your physician. Your assignments will be arranged for you to make up if you have a physician's excuse.

ICL 7602



FALL 2009

Grading:	Points
1. Science Content Lesson	26
2. Inquiry Lesson	40
3. Science Research Project	48
4. Safety Module (Mid-Term)	50
5. STS Lesson	38
6. Field Placement Activities	10
7. Integrated Unit	100
8. Attendance and Participation	10



Total Points = 322

**ICL 7602-Teaching Secondary School Science
Fall 2009**

* All chapters are to be read before the assigned week and will be discussed on the assigned class dates.

Dates	Assignments
9-2	<p>Domain: I- Planning Indicators Standard 7: Planning</p> <p>Introduction Syllabus Assignments Safety Module (Mid Term Assessment)</p>
9-9	<p>Domain: I- Planning Indicators Domain IV - Learning Environments Standard 5: Learning Environment Standard 7: Planning</p> <p>Chapter 1: Becoming a Science Teacher Chapter 2: Beginning Your Instructional Theory</p> <p>Discuss Lesson Plan Examples Discuss Science Content Lesson</p>
9-16	<p>Domain: I- Planning Indicators Domain IV - Learning Environments Standard 5: Learning Environment Standard 7: Planning</p> <p>Chapter 3: Historical Perspectives on Science Education Chapter 4: National Standards and Scientific Literacy</p> <p>Discuss Lesson Plans Discuss Science Unit Science Content Lesson Plan Due</p>
9-23	<p>Domain: II - Teaching Strategies Standard 4: Teaching Strategies</p> <p>Chapter 5: Goals of Science Teaching</p> <p>Discuss Science Unit Discuss Inquiry Lessons</p>
9-30	<p>Domain: II - Teaching Strategies Domain III - Assessment and Evaluations Domain VI – Communications Standard 4: Teaching Strategies Standard 6: Communication Standard 8: Assessment and Evaluation</p> <p>Chapter 6: The Objectives of Science Teaching</p>

	<p>Chapter 7: Designing School Science Curriculum</p> <p>Discuss Safety Module</p> <p>Inquiry Lesson Plan due – (NSTA #3- Inquiry)</p>
10-7	<p>Domain: II - Teaching Strategies Domain III - Assessment and Evaluations Domain VI – Communications Standard 4: Teaching Strategies Standard 6: Communication Standard 8: Assessment and Evaluation</p> <p>Chapter 8: Middle School Science Curriculum Chapter 9: High School Science Curriculum</p> <p>Unit Plan First Draft Due today (NSTA # 6 –Curriculum; NSTA #8 – Assessment)</p>
10-14	<p>Domain: II - Teaching Strategies Standard 4: Teaching Strategies</p> <p>Chapter 10: Science and Other Disciplines: Interdisciplinary Approaches to Curriculum Chapter 11: Inquiry and Conceptual Change</p>
10-21	<p>Domain: II - Teaching Strategies Standard 4: Teaching Strategies</p> <p>Chapter 12: Questioning and Discussion</p> <p>Share Inquiry Lesson Plans – (NSTA # 3- Inquiry)</p>
10-28	<p>Domain: II - Teaching Strategies Domain III - Assessment and Evaluations Domain VI – Communications Standard 4: Teaching Strategies Standard 6: Communication Standard 8: Assessment and Evaluation</p> <p>Chapter 13: Investigation and Problem-Solving Safety Module due (NSTA # 6 –Curriculum; NSTA #8 – Assessment)</p>
11-4	<p>Domain III - Assessment and Evaluations Domain IV - Learning Environment Standard 5: Learning Environment Standard 8: Assessment and Evaluation</p> <p>Chapter14: Demonstration and Laboratory Chapter 15: Models for Effective Science Teaching</p> <p>Discuss Science Research Lessons</p> <p>Unit Plan Second Draft Due today</p>

11-11	<p>Domain: I- Planning Indicators Domain: II - Teaching Strategies Standard 4: Teaching Strategies Standard 7: Planning</p> <p>Chapter 16: Planning for Effective Science Teaching Chapter 17: Assessing Student Learning</p> <p>Science Research Lesson Plan</p>
11-18	<p>Domain IV - Learning Environment Standard 5: Learning Environment</p> <p>Chapter 18: The Psychological Basis for Effective Science Teaching Chapter 19: Individual Differences in Science Classrooms</p> <p>Science Research Lessons Shared-(NSTA # 4 –Issues; NSTA # 7 –Science in the Community)</p>
11-25	<p>Domain I: Planning Indicators Standard 7: Planning</p> <p>Chapter 20: Teaching Science for Gender and Cultural Differences Chapter 21: Controversy in the Classroom</p> <p>STS Lessons-(NSTA # 2 – Nature of Science ; NSTA # 4 –Issues; NSTA # 7 – Science in the Community)</p>
12-2	<p>Domain IV - Learning Environment Standard 5: Learning Environment</p> <p>Chapter 22: Classroom Management and Conflict Resolution Chapter 23: materials for Science Teaching</p> <p>STS Lesson Plans- (NSTA # 2 – Nature of Science; NSTA # 4 –Issues; NSTA # 7 –Science in the Community)</p>
12-9	<p>Domains I-VI Standards: 1-8</p> <p>Chapter 24: Student Teaching and Professional Growth STS Lesson Plans Shared Unit Presentations</p>
12-16	<p>Domains I-VI Standards: 1-8</p> <p>Unit Presentations Final Assessments</p>

*Domains = TN standards

*Standards = NSTA standards