Northern Illinois University

College of Liberal Arts and Sciences

Science Teaching Methods 1 - Interdisciplinary Teaching of Science

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Text: No Textbook, Readings provided on Blackboard

Course description: An introduction to the methods and theory of teaching of interdisciplinary science in grades 6-12. The nature and purpose of science and its underlying assumptions, the social and cultural challenges in science teaching, and the potential solutions to these challenges are explored through research, discussion, and reflection. Requirements include using state and national science standards to develop student learning objectives and to design inquiry-based lesson plans, micro-teaching, construction and the use of assessment rubrics, and ongoing development of a professional portfolio.

Course objectives:

1. Students will begin to develop their philosophy of science teaching. In particular, students will be able to describe and demonstrate a variety of teaching methodologies and will be able to incorporate inquiry into the science classroom.
2. Students will be well-versed in safety issues in the science classroom. They will be able to successfully pass a safety course and successfully identify possible safety issues in common science classroom activities.
3. Students will be able to successfully plan a unit plan for a high school science class in their discipline. This will include creating goals and objectives, aligning lessons to science standards, incorporating inquiry-based activities, and designing assessments, both formative and summative.
4. Students will begin to develop their skills as a classroom teacher by performing in-class teaching demonstrations. This will include both a short anticipatory set and a longer teaching demonstration. Students will receive feedback from both the instructors and the other students and will complete a reflection on the experiences.
5. Students will be introduced to and will demonstrate competency in a variety of important topics in teaching. This will include (but is not limited to) academic language, science literacy, cross-cutting concepts, differentiated instruction, collaboration, and response to intervention (RTI).

Expectations: We will set a standard of professional behavior, including attendance, dress, participation, courtesy, and the submission of assignments by the due date are both expected and **required**. Professional demeanor, of the type that we expect in the educational workplace, is required at all times in this course. Please silence your cell phone and other electronic devices during class. If you need to check your phone, please do that during a break outside of the classroom.

Attendance: You are expected to attend every class, arrive to class on time, and remain for the duration. In case of emergency, please notify all instructors in writing (email is fine) with as much advance notice as possible. Failure to notify the instructors in writing of an absence will be regarded as an unexcused absence and **there will be no make-up assignments, quizzes, or tests.**

In addition, for each class missed, you will receive a 5% penalty on your overall course grade. For example, if you miss four classes, there will be a 20% penalty and your maximum possible grade will be 80% (assuming you get perfect scores on all assignments).

Assignments: You will be expected to complete a number of assignments throughout the semester. The assignments have clear deadlines and must be handed in on time and by the start of class. Assignments turned in **within two days of the deadline will receive half credit.** Assignments submitted after two days will not be accepted and a zero will be recorded in the grade book. Successful completion of certain assignments is required to pass the course. **The teacher licensure program is a standards-based program. You MUST show competency in the following standards before progressing in the licensure program. Competency is a grade of C (70%) or better.**

- **Unit Plan**
- **Laboratory Safety Course**

Course Schedule

This schedule is tentative and subject to change.

Date	Class Topics	Assignments Due	Readings Due
Jan 21	Course intro, Teaching Cycle *What are you teaching?* Central Focus, Writing Objectives, Bloom's Taxonomy		
Jan 28	*Why are you teaching this?* Rationale & Context, Standards, Unit & Lesson Plan Format	- Requests for Syllabus Changes - Submit 3 learning objectives and assessment questions	Understanding by Design Reading
Feb 4	*How will you know?:* Purpose and Types of Assessment	- Unit Plan Topic - Central Focus, Objectives, & Assessment Questions for 1st Lesson Plan	
Feb 11	*How do students learn?* Intro to Inquiry: inquiry as engaging students Teaching Strategy Presentations	-Teaching Strategy Presentation -Student Teaching Application Due -Unit Plan Outline	Inquiry Reading 1 Teaching Strategy Reading
Feb 18	Teaching Strategy Presentations	-Teaching Strategy Demo -3 Anticipatory Set ideas -Choose one inquiry activity associated with the unit plan	Inquiry Reading 2
Feb 25	*How do students learn science?* Inquiry in Science: Analyzing Data, Supporting hypotheses, etc *How do you do inquiry science?* Adapting/Creating an Inquiry Activity	-Bring Inquiry activity to class -Unit Plan Calendar Draft	
Mar 3	Questioning Arguing from Evidence Peer review inquiry lesson plan in class	-Draft inquiry lesson plan -Bring 3 copies of draft lesson plan to class	Questioning Reading

Mar 10	Academic Language Part 1: Literacy & Academic Language Part 2: Developing Supports for Academic Language Review Unit Plan Expectations Real World Connections	-Lesson Plan 1 -Unit plan calendar -Academic Language video	
Mar 17	Spring Break		
Mar 24	edTPA Differentiation Mindset/Learning Styles Cross-cutting Concepts Real-world Context	-Academic Language Assignment -Flinn Safety Certificate	Differentiation Reading
Mar 31	Assessment and Rubrics, Peer Review Lesson Plans, Feedback Closure	-Submit Drafts of 2 additional lesson plans -Bring 1 copy of lesson plans to class	Assessment Reading
Apr 7	RTI Differentiation		
Apr 14	Classroom Management	-Complete Unit Plan Due -Submit mini-lesson plan for teaching demo 1 week before	
Apr 21	Teaching Demonstrations	-Classroom management assignment due	
Apr 28	Teaching Demonstrations	-Teaching Reflection due 1 week after Teaching Demo	
May 5	Teaching Demonstrations	-edTPA Prompts for Inquiry Lesson	
May 12	*Finals Week* Student Teacher Panel		

Course Grades

ASSIGNMENTS, POINT VALUES AND DUE DATES

This list is tentative and is subject to change.

Assignment	Point Value	Due Date
Reading Reflections - 4 at 15 pts each	60 pts	
Three objectives and assessment questions	15 pts	1/28
Unit Plan Topic	5 pts	2/4
Central Focus, Objectives, Assessment Ques for Lesson	20 pts	2/4
Unit Plan Outline	20 pts	2/11
Three Anticipatory Set Ideas	10 pts	2/18
Teaching Strategy Presentation	30 pts	2/11 or 2/18
Inquiry Lesson Activity Idea	5 pts	2/25
Anticipatory Set Demonstration	30 pts	2/25 - 4/14
Anticipatory Set Self-Reflection	20 pts	1 week after demo
Complete Inquiry Lesson Plan	50 pts	3/10
Unit Plan Calendar	20 pts	3/10
Academic Language Assignment	30 pts	3/24
Flinn Safety Certificate	30 pts	3/24
Drafts of 2 Lesson Plans	40 pts	3/31
Unit Plan	150 pts	4/14
Teaching Demo Evaluation	50 pts	4/14 - 4/28
Teaching Demo Self-Reflection	20 pts	1 week after demo
Classroom Management Assignment	50 pts	4/21
edTPA Prompts for Inquiry Lesson	30 pts	5/5

Letter Grade	**Percent**
A	90-100
B	80-89
C	70-79
D	60-69
F	below 60