

Science Teaching Methods 2 - Teaching of Physical Sciences
CHEM 495/GEOL 495/PHYS 495

Fall 2015

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Text: None

Course description: This course is preparation for teacher licensure in grades 6-12 in one or more of the fields of physical or life science: biology, physics, chemistry, earth science, environmental science, or general science. The course includes examination and analysis of modern curricula, classroom and laboratory organization, lesson planning, multicultural education, teaching science to the exceptional child, reading and the teaching of science, and methods of evaluation.

Course objectives:

1. **SHARE A PHILOSOPHY OF SCIENCE EDUCATION:** The student will discuss their philosophy of education including their views about teaching controversial topics, in a general high school/middle school science class.
2. **INQUIRY:** The student will demonstrate a detailed knowledge of inquiry in the science classroom by (1) constructing lesson plans for several inquiry lessons and (2) performing teaching demonstrations illustrating their mastery of leading an inquiry activity appropriate to a high school or middle school science classroom.
3. **GOALS AND OBJECTIVES:** The student will develop his/her own core subject goals and objectives for a one year long course in the life sciences or physical sciences at the high school/middle school level. In this process, students will become aware of both national and state standards for science education and demonstrate their ability to effectively address these standards in their teaching.
4. **LESSON PLAN DEVELOPMENT:** The student will demonstrate the ability to develop lesson plans that incorporate use of a variety of hand-on/minds-on instructional activities appropriate for the teaching of the life sciences or physical sciences. In this process, students will become aware of both national and state standards for science education and demonstrate their ability to effectively address these standards in their teaching.
5. **DESIGN A UNIT:** The student will develop a syllabus for teaching a typical unit for a high school/middle school course in the life sciences or physical sciences. In addition, the student will construct combined formal and informal assessments as part of the evaluation process for the class. In this process, students will become aware of both national and state standards for science education and demonstrate the ability to effectively address these standards in their teaching.
6. **PRESENT LESSONS:** The student will plan and deliver in an appropriate manner, a series of lessons. The details of which will be discussed during class in the near future.

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, 10 attendance points will be given for each class period that you fully attend and participate in. If you are late or have to leave early, only 5 points will be awarded for the period. If you are absent, 0 points will be awarded for that period. There will be no make-up for lost attendance points.

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.** All unit plan calendars, lesson plans, and teaching demonstration assignments must receive a score of 70% or better to pass the course.

Grading: The grading scale used for the course will be

93-100%:	A
90-92%:	A-
87-89%:	B+
83-86%:	B
80-82%:	B-
77-79%:	C+
70-76%:	C
60-69%:	D
below 60%:	F

Course schedule: (tentative)

Date	Class Topic	Assignments Due	Readings due
Week 1 Aug 27	Course intro, Topic Sequence		
Week 2 Sep 3	Inquiry Readings, Model Inquiry Activities	Content Area Topic Sequencing Assignment Due	Inquiry reading
Week 3 Sep 10	Assessment	Unit plan calendar 1 and NGSS lesson plan 1 due	
Week 4 Sep 17	Argumentation Peer Review	Assessment Assignment	
Week 5 Sep 24	Preconceptions and Misconceptions	Safety survey due Revised Unit plan calendar 1 and NGSS lesson plan 1 due	Misconceptions reading
Week 6 Oct 1	Fire safety, Vernier probes. Activities w/ probes ,	Unit plan calendar 2 and inquiry lesson plan 2	
Week 7 Oct 8	Lesson presentations	Peer review of Lesson Plan 2 Revised Unit plan calendar 2 and inquiry lesson plan 2 due 1 week prior to demo Self-reflection due one week after teaching demo	Readings TBA
Week 8 Oct 15	Lesson presentations		Readings TBA
Week 9 Oct 22	Lesson presentations		Readings TBA
Week 10 Oct 29	Lesson presentations		Readings TBA
Week 11 Nov 5	Lesson presentations		Readings TBA
Week 12 Nov 12	Lesson presentations		Readings TBA
Week 13 Nov 19	Lesson presentations		Readings TBA
Week 14 Nov 26	<i>No class - Thanksgiving</i>		
Week 15 Dec 3	Lesson presentations		Readings TBA
Finals Week Dec 7	Spare		

Accessibility: If you need an accommodation for this class, please contact the Disability Resource Center as soon as possible. The DRC coordinates accommodations for students with disabilities. It is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 (V) or drc@niu.edu.

Also, please contact me privately as soon as possible so we can discuss your accommodations. The sooner you let us know your needs, the sooner we can assist you in achieving your learning goals in this course.

Academic Integrity: As detailed in the current NIU undergraduate catalog: *Good academic work must be based on honesty. The attempt of any student to present as his or her own work that which he or she has not produced is regarded by the faculty and administration as a serious offense. Students are considered to have cheated if they copy the work of another during an examination or turn in a paper or an assignment written, in whole or in part, by someone else. Students are responsible for plagiarism, intentional or not, if they copy material from books, magazines, or other sources without identifying and acknowledging those sources or if they paraphrase ideas from such sources without acknowledging them. Students responsible for, or assisting others in, either cheating or plagiarism on an assignment, quiz, or examination may receive a grade of F for the course involved and may be suspended or dismissed from the university.*

*A faculty member has original jurisdiction over any instances of academic misconduct that occur in a course which the faculty member is teaching. The student shall be given the opportunity to resolve the matter in meetings with the faculty member and the department chair. If the facts of the incident are not disputed by the student, the faculty member may elect to resolve the matter at that level by levying a sanction no greater than an F for that course. The faculty member shall notify the student in writing whenever such action is taken, and the **Office of Community Standards and Student Conduct** shall receive a copy of the Academic Misconduct Incident Report indicating final disposition of the case, which will be placed in the student's judicial file. In all matters where the charge of academic misconduct is disputed by the student or if the faculty member feels a sanction greater than an F in the course is appropriate (such as repeated offenses or flagrant violations), the faculty member shall refer the matter to the Office of Community Standards and Student Conduct making use of the Academic Misconduct Incident Report. Additional sanctions greater than an F in a course can be levied only through the University Judicial System. With regards to finding the student either responsible or not responsible for his or her action, the ruling of the Judicial Hearing Board shall be binding. In cases where there is either a finding of responsibility or an admission of responsibility by the student, any recommendations by the hearing board regarding the course grade are non-binding on the instructor, who remains solely responsible for assigning a course grade, consistent with the policies set forth in the course syllabus.*