STUDENT COURSE SYLLABUS

SCED 441: Teaching Methods in Physics
Fall, 2005
3 semester hours

Prerequisites: Consent of the instructor

Instructor: Dr. Murat Kahveci, Office YD 607
Meeting Time: T: 10-11 a.m. & Th: 1-3 p.m.
Office Hours: Teusdays, 3-4:30 p.m. and by appointment anytime
Daytime Phone: 359-7274
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Course Website

http://mkahveci.com

Please note that this is a hybrid class, part situated at the university, the schools, and the course website. Students are required to log into the website after each class to gather assignments and submission procedures. It is also helpful in this class to check your email account on a regular basis. You will need to register yourself for this class with an active email address, preferably your boun address. Thus, **this syllabus is subject to change**.

Course Overview

SCED 441 is meant to provide opportunities for preservice teachers to think about and reflect on the teaching of secondary school physics. Once that process of thought and reflection becomes commonplace, then opportunities for designing and critiquing physics curriculum will be provided. However, in order to design curricula well, one needs to have a firm grounding in the science education community's current understandings of how we learn, and how best to support that learning. Thus, the intent of this class is not to simply provide a list of lesson plans and activities. Instead, this class should help the student develop a philosophy and approach to teaching science that is informed through current research and understandings of her/his own practice.

Course Goals

The focus of the course is to provide students with an opportunity for:

a. familiarity with current understandings of physics learning and the way in which that learning is impacted by cognitive, social, and cultural factors
b. developing a coherent and informed professional stance toward teaching physics
c. familiarity with planning classroom experiences that can allow for learning in a diverse group of students
d. familiarity with the particular psychological, behavioral, and cultural elements in teaching secondary school physics and use this knowledge to inform all aspects of their evolving science teaching knowledge and skills.

Expectations

In this class we will refine and develop what we know in a social setting, teaching physics in classroom at high school level. Your ideas and those of your fellow students are the basis of the meanings we will make from this class. Thus, this is not a lecture class and information cannot be simply obtained by "getting the notes" from a classmate. Therefore, attendance is expected and you are to be professional in your class participation. Professionalism includes, but is not limited to, such things as excellence in class assignments, constructive class participation, being a positive contributor to group work, taking

advantage of opportunities to broaden personal knowledge and skills, and going beyond the minimum in all your work and interactions.

Required Texts

Redish, E.F. (1996). *Teaching Physics with the Physics Suite*. Available Online at: http://www2.physics.umd.edu/~redish/Book/.

Assessment

All assignments must be submitted on or before the due date. Likewise, all presentations will be conducted on the day they are scheduled. Late work will result in the loss of one grade level per regular school day late. The following is a brief description of the assignments, which will be completed as part of this class. Additional details and evaluation criteria will be provided and discussed during future class meetings.

Participation & Professionalism (20 %)

Class sessions are predominantly interactive with a heavy emphasis upon collaborative efforts. As a consequence, in-class activities for which points are assigned cannot be "made up" outside of class.

Participation- Active participation includes, but is not limited to, attending to seminar/presentation content, communicating and offering suggestions, feedback and/or analysis during discussions. Obviously, if you do not attend class, you cannot participate. For those students who rely upon external incentives to accomplish the participation goals, the following policy is in effect. For the student missing more than 45 minutes of a class, 2% points will be deducted from the total grade for each occurrence. Habitually coming to class more than 10 minutes late will result in a 1% penalty for each occurrence. Missing class will result in a 5 percentage points deducted from the total, but missing more than three class sessions will require that you meet with me to discussed continued enrollment in the class.

Professionalism- A specific, though not inclusive, list of behaviors that addresses professionalism includes: completing assignments in a timely fashion, displaying evolving attitudes toward teaching and learning, developing assignments that are of high quality, demonstrating and openness to suggestions, seeking advice when needed, and sharing ideas with others.

Midterms (40%)

Two midterms will be held during the semester, each of which will weigh 20% of the total score. The details like format of the exam and date will be discussed in class.

Final Project (40%)

There will be no final examination. Instead, a report of your research (i.e. Final Project) developed throughout the semester will be assessed (see Assessment of Work). Throughout the semester, students should keep a reflective journal for the course, a journal that will consists of two main components:

Observations

You will be required to complete 30 hours of observation/teaching/tutoring in high school physics class classrooms. Observations should extend no more than 2 hours per session and the focus of your journal record for these observations will vary across the semester—following areas of interest that are discussed in class. *After each observation session, you will reflect on and write about what you've witnessed* ***and discuss what you've learned*** *that can inform your own teaching.* While each observation should be formally reflected upon, at the end of the semester, you will

indicate which five reflections best demonstrate what your observations have taught you. I will review each, but will focus my reading on the five that you've indicated.

Class notes

Entries for each week will contain

a. notes that detail what occurred in class both in terms of the science presented and the manner in which the presentation was made.

b. personal reflections on each class session outlining how the activities involved in class or the preparation for it have informed, challenged, or modified what your personal beliefs about science teaching and learning.

Note that the journals will be graded on their organization, completeness, and evidence of reflection in terms of how the activities inform and shape your understanding of teaching and learning science. The journals will be graded 3 times during the semester.

Science Interview of Middle school Students

You are to interview two high school students about a particular science topic. The children should represent different ethnicities, academic achievement levels, special education designations or family structures. You will use a variety of interview techniques (i.e., child's drawings, hands-on materials, and counter-suggestion) and create a report about the interview.

Assessment of Work

When completing written assignments, remember that your audience will be colleagues and the instructor from the course. Written work should demonstrate your interests, experiences from your teaching, and ideas from current educational literature. Although you have considerable freedom in your presentation choices, your writing should always be reflective and professional. Reflective and professional writing should include an objective and a constructive discussion of the topic. Try to avoid simply listing events and experiences. That is, attend to the degree to which you are pushing your thinking. By moving beyond simple description of your experiences, your interpretations and attempts to understand issues will likely reach beyond surface discussions.

Written Assignment Performance Standards

Grade Weights for all written assignments are determined using the following criteria:

70%=Content (See rubric below)
20%= Grammar-Ability to communicate, and
10%=On time.

7- Fully achieves the purpose of the task. Insightfully interprets, extends beyond task, raises provocative questions. Demonstrates an in-depth understanding of concepts and content. Communicates effectively and clearly.
6- Accomplishes the purposes of the task; shows a clear understanding of concepts. Communicates effectively.
5- Substantially completes the purpose of the task. Displays understanding of major concepts, even though some less important ideas may be missing. Generally communicates successfully.
4- Purposes of the task are not fully achieved; needs elaboration; some concepts may be ineffectually stated or inappropriate. Assumptions may be flawed. Gaps in conceptual understanding; unclear
3- Important purposes of the task are not achieved; work may need to be redirected.
2-Purposes of the task are not accomplished; little evidence of appropriate reasoning.

Grading

The grading scale used for the determination of final grades will be based on a standard university grading scale. Plus and minus grades will be used in borderline cases only.