EDUC 422 – TEACHING SECONDARY SCHOOL SCIENCE (FALL 2013)
Tuesdays, 4:00-7:00 p.m.
Room 2241 (Science Methods Room)

Instructor: Leah A. Bricker, Ph.D.
Office: #4047
lbricker@umich.edu
734-647-2975 (office phone)
Office Hours: Fridays; 3:00-4:30 p.m. or by appointment

Practicum Course Instructors:
Ms. Consuelo Morales (cjmorale@umich.edu): Undergraduate students

Mr. Andy Kwok (kwok@umich.edu): MAC students & Woodrow Wilson Fellows

EDUC 422 Apprentice Instructors:
Ms. Sylvie Kademian (smkademi@umich.edu)

Ms. Michelle Reicher (reicher@umich.edu)

CTools: Log onto the CTools site (www.ctools.umich.edu) with your uniqname and password. You will see a tab titled EDUC 422 F13. I will use this site to communicate with you, as well as post all course materials (e.g., weekly reading, handouts, assignments). It is your responsibility to check CTools regularly. Please let me know if you do not have regular Internet access.

COURSE OVERVIEW, OBJECTIVES, AND STANDARDS

“Science is not just a body of knowledge that reflects current understanding of the world; it is also a set of practices used to establish, extend, and refine that knowledge. Both elements—knowledge and practice—are essential.”


“…a major goal for science education should be to provide all students with the background to systematically investigate issues related to their personal and community priorities. They should be able to frame scientific questions pertinent to their interests, conduct investigations and seek out relevant scientific arguments and data, review and apply those arguments to the situation at hand, and communicate their scientific understanding and arguments to others.”

--A Framework for K-12 Science Education (NRC, 2012, p. 278)

COURSE OVERVIEW AND GUIDING QUESTIONS
This course is designed to engage you with current issues, challenges, and opportunities associated with science learning and teaching at the secondary level. Through course activities,
readings, discussions, and assignments, we will explore (1) what it means to teach science in ways that mirror authentic scientific practices, and (2) what it means to teach science in ways that reflect what we currently understand about human learning. In the past, science education emphasized the learning of various discrete scientific facts and de-contextualized scientific content. The field then began to stress “inquiry” as a way to involve students in scientific processes like experimentation and investigation. Because the term “inquiry” is now used to describe so many different types of activity, it has become almost meaningless given that it is difficult to understand exactly what types of activity people envision when they use that term. Recently, the National Research Council released a new report called *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. This report outlines the content that all K-12 students of science should know and it also outlines *specific* practices in which they should engage, such as formulating evidence-based arguments and obtaining, evaluating, and communicating information. From this report, the *Next Generation Science Standards* (NGSS; Achieve, 2013) were drafted. We will examine both documents in detail and use them as grounding texts for our work together this semester.

In the spirit of project-based learning, this course is designed to be a project focused on secondary science teaching. Our guiding question is: **How do we teach science in ways that ensure ALL students have opportunities to learn the core ideas, practices, and crosscutting concepts outlined in state and national standards documents, while leveraging students’ interests and lived experiences?** In order to explore this question both individually and as a group, we will engage in various experiences that provide opportunities for you to design and implement small-scale science learning environments in which instructional strategies and practices are embedded. In an effort to involve multiple perspectives on practice, you will receive feedback from your peers, practicing secondary science teachers, and university science educators.

**The guiding questions for this course are (listed in no particular order):**
1. What do we need to understand and know how to do as secondary science teachers in order to implement the spirit of the Framework and the NGSS in our classrooms?
2. How do we ensure that ALL students have opportunities to learn important scientific ideas and engage in authentic scientific practices?
3. What are various strategies for better understanding who our students are, what experiences they have had, what their interests are, etc. so that we can design better learning environments?
4. What supports are available to us as science teachers so that we are supported in our work of constantly improving our teaching practices and so that we are part of a professional community committed to our continued learning?

→ **NOTE:** Starting in Week 2, I will be video-taping all class sessions. I am doing this for several reasons. First, studying my practice will allow me to make the course better. Second, my colleagues and I are interested in your reactions to and engagement with several of the artifacts and experiences you will encounter in EDUC 422 this semester. These video data will serve as pilot work for future research. If you have any problems with being taped for these purposes, please let me know immediately.
COURSE STANDARDS AND COMPETENCIES
The Domains of Professional Learning standards that this course most targets are the following (see the Program & Policy Handbook for University of Michigan-Ann Arbor Teacher Education Programs):
Domain of Professional Learning 1: Planning, Assessing, and Evaluating
Domain of Professional Learning 2: Knowing and Representing Subject Matters
Domain of Professional Learning 3: Knowing and Engaging Students

In addition, the course will target various competencies outlined in the “Mentor Teacher: Developing Competency in Teaching Practice” document.

COURSE TEXTS AND MATERIALS
   → NOTE: You can download this publication for free at: http://www.nap.edu/catalog.php?record_id=13165


3. The Michigan Department of Education’s Science website: http://www.michigan.gov/mde/0,1607,7-140-28753_38684_28760---,00.html

4. Additional handouts and readings will be posted to CTools throughout the course.

ADDITIONAL USEFUL ONLINE RESOURCES
*We will add to this list as we collaborate and learn together this semester.

   → NOTE: Project 2061 has a suite of tools that might be helpful to you. May are available online at http://www.project2061.org/


National Science Teachers Association: http://www.nsta.org/

The Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, & Technical Subjects: http://www.corestandards.org/the-standards

wide, life-deep. Seattle, WA: The LIFE (Learning in Informal and Formal Environments) Center and the Center for Multicultural Education – University of Washington. You can download this report at: http://education.washington.edu/cme/cenpub.htm#learning

COURSE POLICIES

COURSE EVALUATION
Grades are based on total points earned. No curve is used. The course grading scale is as follows:

<table>
<thead>
<tr>
<th>Percent Range</th>
<th>Corresponding Grade</th>
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<tbody>
<tr>
<td>94% - 100%</td>
<td>A</td>
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<tr>
<td>90% - 93%</td>
<td>A-</td>
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<tr>
<td>88% - 89%</td>
<td>B+</td>
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<tr>
<td>84% - 87%</td>
<td>B</td>
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<tr>
<td>80% - 83%</td>
<td>B-</td>
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<tr>
<td>78% - 79%</td>
<td>C+</td>
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<tr>
<td>74% - 77%</td>
<td>C</td>
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<tr>
<td>70% - 73%</td>
<td>C-</td>
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<tr>
<td>68% - 69%</td>
<td>D+</td>
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<td>64% - 67%</td>
<td>D</td>
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<tr>
<td>60% - 63%</td>
<td>D-</td>
</tr>
<tr>
<td>Below 60%</td>
<td>F</td>
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</tbody>
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NOTE: See “Course Assignments and Projects” for a list of course assignments and the points they are worth.

ADDITIONAL POLICIES AND EXPECTATIONS
NOTE: Not only is it important that we consider the following categories of issues in terms of our secondary science methods course but it is important that we consider these issues as related to middle and high school science classrooms.

1. Academic and Professional Integrity
a. It is expected that all members of this learning community will conduct themselves with integrity related to all aspects of our academic and professional lives. This includes making certain that plagiarism never occurs. If you are unsure about how to correctly attribute ideas, words, work, etc. to others, please ask. Please refer to the following website for specific policies and procedures related to academic and professional integrity (undergraduate and graduate): http://www.soe.umich.edu/file/academic_integrity/

b. Another aspect of professionalism is preparedness. I expect that you will thoughtfully prepare for all course and field-based work.

c. Another aspect of professionalism in a school setting is professional dress. Take your cues from the teachers at your school site regarding dress and ask about what is appropriate. When in doubt, go for the more formal clothing choice. You are an adult in the room--any parent or professional walking into a classroom should be able to identify you as such. Continuous
wearing of unprofessional attire to your school site after being warned may be grounds for not removal from your placement.

2. Accessibility  
a. If you are registered with the Office for Services for Students with Disabilities, please share your VISA (Verified Individualize Services and Accommodations) form with me at your earliest convenience, so that you and I can work together to ensure the best learning environment for you.

b. If you think you may need an accommodation to complete the requirements of this course, we can work with the Office of Services for Students with Disabilities (SSD) to help us determine appropriate academic accommodations. SSD (734-763-3000; http://ssd.umich.edu) typically recommends accommodations through a Verified Individualized Services and Accommodations (VISA) form. Any information you provide is private and confidential and will be treated as such.

3. Discrimination/Harassment  
No member of this learning community should be subject to discrimination of any kind and/or harassment, as these practices have no place in a just society. Please refer to the following websites for University policies related to discrimination and harassment:
http://urespect.umich.edu/report/what/#Report3
http://www.rackham.umich.edu/policies/discrimination_harassment/

4. Diversity/Social Justice  
It is my intention to facilitate this course in ways that acknowledge and respect all aspects of diversity. This includes respect for ideas and practices related to gender, sexuality, disability, religion, age, socio-economic status, race, ethnicity, and culture. Not only must we have respect for each other relative to diversity but we must also examine how issues of diversity interact with science learning and teaching in secondary science classrooms.

5. Classroom Community  
Our work together relies on honest, open, and respectful dialogue so that all participants feel free to express their views. Disruptive behavior (e.g., inappropriate language, talking over others, harassing others) has no place in our course and will result in the loss of participation points at the very least. Here are a few guidelines to help facilitate our conversations and activities each week:
   a. **There is no such thing as a stupid question.** Please ask any and all questions that you have and remember that by asking your questions, you are allowing us to learn as a community because you are helping to make ideas visible.
   b. **Be respectful of others’ ideas and experiences** even if they are different from your own. We do not have to agree but we do owe it to each other to listen to and consider each other’s points of view. On a related note, please **respect confidentiality** both in the class and outside of it.
   c. **Listen to others** by trying not to interrupt until whoever is talking is finished and by trying not to pass judgment until you have heard and considered what others have said. **Do not assume that silences are unproductive.** Give others time to think, consider, and formulate ideas.
d. **Monitor your participation.** If you are outgoing and tend to dominate conversation, use this course as a chance to practice allowing others a space to participate. If you are less outgoing and tend to let others do the talking, use this course as an opportunity to practice speaking up.

e. **Please either turn cell phones off or to vibrate** before each class session out of respect for our community. On a related note, **use laptops appropriately** (e.g., note taking, presentations). Unless directly related to this course, please **refrain from texting, visiting Facebook, etc.**

Please **turn off all MP3 players.** Failure to comply with acceptable technology use will result in a loss of participation points.

6. **Attendance, Participation, and Communication**

Regular, on-time attendance and thoughtful participation during class discussions and other activities are essential not only to your individual performance but also to the success of the course. We all share responsibility for the learning and teaching in this course and beyond. Because you will not be able to participate in the class community if you are not present, **absences will result in you receiving a lower grade in the course,** except in the case of extreme circumstances (e.g., family emergency, illness, religious observances). I will notify the Teacher Education Office if you have more than two absences.

If you know that you have to miss a class session, **please notify me PRIOR to your absence.** You are responsible for obtaining all materials (including summaries of class activities and discussions) and making up any missed work. **I expect excellent communication** (e.g., notifying me prior to any absence, notifying me about any issues regarding assignments) because excellent communication is part of what it means to be a professional.

→ If you do miss class, I reserve the right to ask you to submit alternative work that relates to the work we accomplished in class.

7. **Late Work, Extension Requests, and Revisions**

**LATE WORK:** Unless I state otherwise, all assignments are due on the dates listed in the syllabus. Again, unless I state otherwise, you will be expected to post assignments on CTools using the appropriate file name and format on the day the assignment is due.

**EXTENSIONS:** I will only accept late work in the event of special circumstances (e.g., family emergency, illness). If you need an extension because of one of the aforementioned circumstances, please talk with me in person or contact me via email or phone to discuss assignment extensions. **Make sure you contact me prior to any given due date.**

**REVISIONS:** You may revise and resubmit assignments that you submitted on time (this policy does not apply to late work unless I have granted you an extension). You have one week from the time you received feedback to revise and resubmit. You must make a clear case that you utilized my feedback when creating your revisions (e.g., you must summarize what revisions you made based on feedback).

8. **Format for Assignments & Assignment Submission Guidelines**

Unless I note otherwise, all assignments must be typed. **Please double-space your work and use 12 point Times New Roman font.** As with all assignments, I expect you to attend closely and carefully to spelling, grammar, and other conventions. When referencing course or other
textual materials, please follow the American Psychological Association style guidelines (APA – 6th edition). *You can access the APA style manual through University of Michigan’s libraries or online at [http://www.apastyle.org](http://www.apastyle.org). Purdue University also has a very helpful online APA guide: [http://owl.english.purdue.edu/owl/resource/560/01/]

**COURSE ASSIGNMENTS AND PROJECTS**

NOTE: More information (i.e., detailed assignments with rubrics when applicable) will be posted on CTools in a timely fashion.

1. **Course Participation** – up to 40 points possible – earned throughout the course
As noted above, you are expected to participate in all aspects of this course. This will take many different forms throughout the semester. For example, I might ask you to bring questions to class, post to a CTools discussion forum, design an activity that relates to the readings, find various web sites, etc. You are expected to come to class having already done the readings, and any related activities, and being ready to participate.

2. **Science Notebook** – up to 30 points possible; earned throughout the course (e.g., spot checks and more formal assessments)
Research has documented that roughly 50-60% of a scientist’s work includes reading and writing (see Tenopir & King, 2004). Many of my scientist colleagues are required to keep a written notebook detailing their procedures, results, questions, equipment, etc. – checked by their principal investigator (i.e., their boss), and used constantly as a living artifact in their labs to help the lab collectively better understand the work taking place. Science notebooks have become increasingly more common in K-12 science education as well, as a way to mimic authentic scientific practice, but also as a learning and organizational tool for students. In order to examine the affordances and challenges of using science notebooks in your teaching, you will keep a science notebook this semester.

3. **Analysis of Students, School, & Community** – 30 points; due September 24
I will argue throughout the semester that you can be expert at various professional teaching practices but that is still no guarantee that every one of your students will learn what you would like for him/her to learn. Knowing who your students are, what is important to them, what they have experienced, what they are interested in, etc. matters with respect to their science learning. In this assignment, you will get a better sense of who your students are and what they want you to know about their school and their community(ies). You will then use this information throughout the semester when you design lesson plans, practice teaching exercises, and the like.

4. **Engaging National Science Teachers Association Web Seminars** – 30 points; due October 22
To help science teachers at all levels learn more about the practices outlined in the Framework and in the NGSS, the National Science Teachers Association (NSTA) produced a series of web seminars focused on the eight scientific practices with which students should have experience. Science educators who have a plethora of experience using and researching these various practices designed and presented these web seminars. You will select three of these science-practice seminars to watch. After you watch the three that you have chosen, you will write a short reflection about which seminars you chose and why. In addition, you will be responsible
for engaging your students in elements of the practices you chose through your lesson planning, practice teaching exercises, and the like.

5. Practice Teaching Experiences – 50 points each; 150 points total; Due Oct. 8, Oct. 29, & Nov. 19
So that you can gain experience with different types of science teaching models, you will participate in three experiences over the course of the semester. In each case, we will model what the experience looks like in class (and we will discuss its affordances and challenges). Next, you will rehearse the experience in disciplinary groups and make any necessary revisions. Then, you will implement the experience in your field placement classroom, and lastly, you will reflect on the experience. The three types of experiences are:

- **Performing a Demonstration of an Aspect of a Core Phenomenon**
  - This will be an example of how to revise existing materials.
  - This will include a reading students have to do, and appropriate scaffolds for helping them to engage the reading.
  - This will include active use of appropriate questioning techniques.
  - This will include an assessment component.

- **Running a Laboratory Experience for Students**
  - This will include a literacy component, various practices from the Framework/NGSS, and science safety considerations.
  - This will include an assessment component.

- **Creating and Implementing an Engaging Presentation**
  - This will be an example of how to revise existing materials.
  - This will include a handout for students to utilize during the presentation and beyond (e.g., for homework).
  - This will include an assessment component.

6. Lesson Planning (including the final course project) – 120 points total; Due Dec. 13
You will participate in extended lesson planning activities over the course of the semester, which will help you think about issues related to planning, revision of existing materials, sequencing of instruction, assessment, etc. In addition, you will participate in a final course project:

- In collaboration with your mentor teacher, you will create a two-week unit, and you will be responsible for teaching two days of that unit (and creating “sub plans” for your mentor teacher for the other days of the unit).
  * You will rehearse aspects of your two-day teach in class in order to get feedback on your plans so that you can revise before teaching students.
  * You will conduct your two-day teach, and collect related “data.”
  * You will reflect on your two-day teach, including what you would change and why.
COURSE SCHEDULE*

I reserve the right to revise this schedule.

<table>
<thead>
<tr>
<th>Week 1: September 3, 2013</th>
<th>Introduction to Science Learning and Teaching</th>
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<tbody>
<tr>
<td></td>
<td>We will begin to form our community by starting to grapple with the guiding questions of the course.</td>
</tr>
</tbody>
</table>

ASSIGNMENTS (TO FINISH BEFORE THE NEXT CLASS):

1. Read the syllabus in detail and record any questions you have.
2. Review the list of NSTA “Preparing for NGSS” web seminars. Select the three web seminars you will watch and be prepared to document your choices.
3. Purchase a notebook that you can use as your “science notebook” for the rest of this course.

<table>
<thead>
<tr>
<th>Week 2: September 10, 2013</th>
<th>A Vision for Science Education &amp; Science Notebooks</th>
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<tbody>
<tr>
<td></td>
<td>ASSIGNED READINGS TO BE COMPLETED BEFORE THIS CLASS</td>
</tr>
<tr>
<td></td>
<td>1. Read Chapter 2 from <em>A Framework for K-12 Science Education: Practices, Crosscutting Concepts, &amp; Core Ideas</em> (see the link for this publication under the “course texts” section of the syllabus).</td>
</tr>
<tr>
<td></td>
<td>2. Read Chapter 13 from <em>Science for All Americans</em>. Find this online: <a href="http://www.project2061.org/publications/sfaa/online/sfaatoc.htm">http://www.project2061.org/publications/sfaa/online/sfaatoc.htm</a></td>
</tr>
<tr>
<td></td>
<td>3. Read Chapter 1 (Introduction) from “Teaching Science with Interactive Notebooks (written by Kellie Marcarelli, 2010). This is posted in the Readings section of the CTools site.</td>
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</table>

OPTIONAL READING

1. Enhancing Learning with Science Notebooks (from NSTA Reports). This is posted in the Readings section of the CTools site.

ASSIGNMENTS (TO FINISH BEFORE THE NEXT CLASS):

1. Finish setting up your science notebook if you were not able to finish in class.
2. Plan your ideas for activities for the Analysis of Students, School, & Community assignment (see the Assignment section of the CTools site for the assignment guidelines and rubric). Talk with your mentor teacher about this assignment, including a plan for when you will conduct your activities. **You will workshop your activity(ies) ideas in class next week so make sure to bring to class whatever we will need to try out your activity.**
ASSIGNED READINGS TO BE COMPLETED BEFORE THIS CLASS
1. Read Chapter 3 in the Framework (Scientific and Engineering Practices)

ASSIGNMENTS (TO FINISH BEFORE THE NEXT CLASS):
1. Finalize your Analysis of Students, School, & Community assignment activity(ies) based on the feedback you received in class on September 17. In addition, implement your activity in your field placement class this week. **Your assignment (reflection) is due in class on September 24 (next week).**
2. If you haven’t already, you should begin to watch the NSTA web seminars (scientific practices) that you indicated were of interest to you. **Your reflections will be due on October 22.**
Michigan Department of Education’s website: http://www.michigan.gov/mde/0,4615,7-140-38924_41644_42814---00.html
2. Read through the applicable NGSS standards (relative to your disciplinary area): http://www.nextgenscience.org/search-standards-dci
3. Read the Introduction and the applicable Common Core State Standards (English Language Arts) – Science and Technical Subjects: http://www.corestandards.org/ELA-Literacy

ASSIGNMENTS (TO FINISH BEFORE THE NEXT CLASS):
1. Remember to conduct your demonstration this week! **Your demonstration-related reflection is due next week (October 8).**
2. Continue to watch the NSTA web seminars (scientific practices) that you indicated were of interest to you. **Your reflections will be due on October 22.**
3. Begin a discussion with your mentor teacher about your two-day teach (part of your final course project). When will that happen? What topic and core idea(s) within that topic will you tackle, and as part of what unit? What scientific/engineering practice(s) do you want students to practice?

**ASSIGNED READINGS TO BE COMPLETED BEFORE THIS CLASS**
2. Read the following position statements from the National Science Teachers Association (NSTA) (http://www.nsta.org/about/positions.aspx#list)
   a. Animals: Responsible Use of Live Animals and Dissection in the Science Classroom
   b. Inquiry
   c. Laboratory Investigations in Science Education

**OPTIONAL READING**

**ASSIGNMENTS (TO FINISH BEFORE THE NEXT CLASS):**
1. Finish watching the NSTA web seminars (scientific practices) that you indicated were of interest to you. **Your reflections will be due on October 22.**
2. Be prepared to rehearse and workshop your laboratory experience on October 22. Talk with your mentor teacher about when you will be able to practice your laboratory in your field placement class (after your in-class rehearsal/workshop on October 22). **Your reflections are due on October 29.**
Week 7: October 15, 2013  
No Class: Fall Study Break

ASSIGNMENTS (TO FINISH BEFORE THE NEXT CLASS):
1. Finish watching the NSTA web seminars (scientific practices) that you indicated were of interest to you. **Your reflections will be due next week (October 22).**
2. Be prepared to rehearse and workshop your laboratory experience on October 22. Talk with your mentor teacher about when you will be able to practice your laboratory in your field placement class (after your in-class rehearsals/workshop on October 22). **Your reflections are due on October 29.**
3. Complete the readings for next week.

Week 8: October 22, 2013  
Science & Literacy Connections (compliment to EDUC 402)

ASSIGNED READINGS TO BE COMPLETED BEFORE THIS CLASS

OPTIONAL READING (These will be uploaded to CTools)
3. The Summer 2013 volume/issue (80/5) of NSTA’s *The Science Teacher*. The entire issue is devoted to discourse and argumentation.

ASSIGNMENTS (TO FINISH BEFORE THE NEXT CLASS):
1. Remember to conduct your laboratory experience this week! **Your laboratory-related reflection is due next week (October 29).**
2. Make sure your science notebook is in order. **I will conduct a notebook check next week (October 29).**
3. Remember that we will meet at the University of Michigan’s Museum of Natural History at 4:00 p.m. next week!
Week 9: October 29, 2013

“Informal” Science Education

Remember that we are meeting at the U-M’s Museum of Natural History for the first hour (or so) of class this week!

ASSIGNED READINGS TO BE COMPLETED BEFORE THIS CLASS


2. Bricker, L.A., & Bell, P. (in review). “I want to be an engineer”: A framing and positioning analysis of youth STEM learning and expertise development in and out of school. (You will find this article in the Reading section of the course’s CTools site.)

ASSIGNMENTS (TO FINISH BEFORE THE NEXT CLASS):

1. Make certain that you have scheduled your two-day teach, and that you and your mentor teacher are clear about the topic (and core ideas within that topic) that you will target. If you haven’t yet done so, you MUST communicate that information to me by next week’s class at the latest.

Week 10: November 5, 2013

Engaging Presentations

ASSIGNED READINGS TO BE COMPLETED BEFORE THIS CLASS

1. Read “20 Ways to Make a Lecture More Participatory” (this piece is written for college professors but it is certainly applicable to the high school level): [http://isites.harvard.edu/fs/html/icb.topic58474/TFTlectures.html](http://isites.harvard.edu/fs/html/icb.topic58474/TFTlectures.html)

2. (Other reading TBD)

ASSIGNMENTS (TO FINISH BEFORE THE NEXT CLASS):

1. Be prepared to rehearse and workshop your engaging presentation next week in class (November 12). Talk with your mentor teacher about when you will be able to practice your engaging presentation in your field placement class (after your in-class rehearsal/workshop next week). Your reflections are due on November 19.

2. Begin to plan your final course project. Be prepared to sign up for a rehearsal/workshop time next week in class. Remember that final project materials (including reflections) are due no later than Friday, December 13 – 5:00 p.m.

Week 11: November 12, 2013

Homework and Other Out-of-Class Assignments

ASSIGNED READINGS TO BE COMPLETED BEFORE THIS CLASS

1. Read Eric Brunsell and Martin Horejsi’s “Flipping Your Classroom” (2011; from The Science Teacher) (This article will be uploaded to the Readings section of the course’s...
2. Reading “Thinking about Homework” at http://nstacommunities.org/blog/2012/03/15/thinking-about-homework/
3. (Other reading TBD)

ASSIGNMENTS (TO FINISH BEFORE THE NEXT CLASS):
1. Remember to conduct your engaging presentation this week! Your engaging presentation-related reflection is due next week (November 19).
2. Continue to plan your final course project. Remember that final project materials (including reflections) are due no later than Friday, December 13 – 5:00 p.m.

Week 12: November 19, 2013     Project-Based Learning (PBL)

ASSIGNED READINGS TO BE COMPLETED BEFORE THIS CLASS
1. Read Edutopia’s “Top Ten Tips for Assessing Project-Based Learning.” (This reading will be uploaded to the Readings section on the course’s CTools site.)
2. Read the information about PBL from the Buck Institute for Education: http://www.bie.org/about/what_is_pbl

ASSIGNMENTS:
1. Continue to plan (or implement) your final course project. Remember that final project materials (including reflections) are due no later than Friday, December 13 – 5:00 p.m.

Week 13: November 26, 2013 Special Topics: What do you want to know/learn more about?

ASSIGNED READINGS TO BE COMPLETED BEFORE THIS CLASS
TBD

ASSIGNMENTS:
1. Implement your final course project. Remember that final project materials (including reflections) are due no later than Friday, December 13 – 5:00 p.m.

Week 14: December 3, 2013 Special Topics: What do you want to know/learn more about?

ASSIGNED READINGS TO BE COMPLETED BEFORE THIS CLASS
TBD
ASSIGNMENTS:
1. Implement your final course project. Remember that final project materials (including reflections) are due no later than Friday, December 13 – 5:00 p.m.

Week 15: December 10, 2012   The Future of Science Education

ASSIGNED READINGS TO BE COMPLETED BEFORE THIS CLASS
TBD

ASSIGNMENTS:
1. Final course projects are due no later than Dec. 13 at 5:00 p.m.