BIOL 410 - Principles and Methods of Teaching Biology

UNC-Baccalaureate Education in Science and Teaching (UNC-BEST)

Fall 2017

Instructor: Jennifer Coble
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Phone: 919-210-5161 (cell). Please feel free to text or call before 9:00 pm. I do not check e-mail frequently on evenings or weekends so if you have a pressing question at these times, please send via text.
Office hours: My office is 110 Wilson Hall and I am typically available Tuesday and Thursday from 2:00-4:00pm, but please ask me in class or make an appointment as I do schedule meetings with other students at this time.

COURSE DESCRIPTION:

This course will help you develop the knowledge and skills needed to implement student-centered science instruction. First, we will explore why we teach science to all students and how our science education experiences impact our view of what good science teaching is. Next, we will examine multiple views on how students come to understand science, the teaching strategies research has identified as most effective and how these strategies can be implemented within the contexts of current high school classrooms. In addition to learning how to teach biology to a diverse group of students, we will reconstruct our knowledge of biology to make it more contextual and conceptual. Finally, we will explore what it is like to be a science teacher and what type of science teacher each of you would like to be. To demonstrate your ability to design student-centered instruction you will design biology lessons and make manipulative models that will serve as resources for your peers, UNC-BEST alumni and our science teacher partners. To help us meet the above goals, there is also a fieldwork component of the course, which will provide you the opportunity to volunteer in a local high school science classroom each week.

DRIVING QUESTIONS

At the end of the course, you should be able to answer the following driving questions:

- Why do you want to be science teacher?
- Why do we teach science?
- What science should be school science?
- What are the big ideas of biology?
- What is good science teaching?
- What are the implications of traditional science teaching practices?
- How do students learn science?
- What is student-centered science instruction and what does it look like?
- How can we implement student-centered science in current school contexts?
- How can we assess student understandings of science?
- How do you plan a series of lessons to support deep understanding?
- What are the realities of being a high school science teacher?

ATTENDANCE POLICY

Attendance in this class is essential as all classes include activities you can only benefit from by being present and involved. I am aware, however, that life and pathogens happen. Therefore, I allow one class absence without penalty. Know that you are still required to submit assignments due that day unless you contact me before the assignment is due to get approval for an extension. Please e-mail me when you know you will be absent so I can let you know how you can meet class goals. Missing more than one class and failing to demonstrate you have achieved the learning goals for missed classes will result in a reduction of your grade.

PARTICIPATION POLICY

To reap the full benefits of this course everyone must fully participate in class activities and discussions. Many classes will involve you working in pairs or groups where your learning and the learning of your group members relies on your careful participation in the task at hand and sharing your ideas with your group. To reward you for your consistent hard work, effort and focus, participation in class activities counts for 20% of your final grade. I pay close attention and take notes on participation during each class. To earn all participation points, please be on time for class, come prepared to discuss and apply readings, think deeply about the challenges posed during class and volunteer to share your ideas. Please do not talk about non-class related topics or engage in other activities during class. Finally, please do not mistake my laid back personality for being laid back about my expectations for your participation in class. I work hard to make classes engaging and expect the same hard work from students.

COURSE ASSIGNMENTS

You will have assignments due each class session or each week and all assignments will be posted on Sakai. Since assignments often build on your ideas, questions and needs, I do not have predetermined list of assignments and due dates. Most assignments will be given at the end of class and will be due by the next class. Some assignments will challenge you to think deeply about an issue, question or real world context and its implications for science teaching. Other assignments will challenge you to design an instructional strategy and/or a model to support learning for a particular biology topic. I expect you are working on out of class readings/assignments for approximately 2-3 hours per class session, which is the standard all UNC instructors are expected to follow. For many assignments at the beginning of the semester, I will use the following rubric to provide feedback on your efforts.

Exemplary (2 pts)	Proficient (1 pt)	Poor (0 pt)
Product clearly answers the driving questions, demonstrates deep thought, makes insightful personal connections with topic and includes at least two thoughtful questions for further discussion.	Product answers the driving question or prompt, demonstrates significant thought and includes at least two questions for further discussion.	Product only partially answers driving question or prompt and and/or questions are superficial/missing.

Biology Lesson Plans

Demonstrating the ability to develop student-centered and inquiry-based lesson plans and assessments is the main goal for this course and a requirement for a North Carolina teaching license. Over the course of the semester, you will design lesson plans, science education resources and assessments for topics within the North Carolina high school biology curriculum. In particular, this semester will engage each of you in designing models in Makerspace to support interactive learning. The curriculum products you design will be shared with your classmates, UNC-BEST alumni and other high school science teachers. A detailed description of each assignment will be available on Sakai.

Final Exam

The final exam will be held on Friday, December 8th at 12:00pm and will allow you to demonstrate your knowledge of and ability to design student centered instruction.

FIELDWORK

This semester, you will be serving as a TA in a local high school biology classroom. The expectation is for you to observe and support a high school science classroom for one 90-minute block class period or two 45-minute class periods each week. At the beginning of the semester, you will let me know your availability and I will arrange a fieldwork placement that meets your schedule, travel requirements and school preference. Your first fieldwork visits will likely start the week of September 11th. During your fieldwork visits, you will observe the teacher and student interactions, analyze lessons, work one-on-one with students and even implement a portion of a lesson if you choose. For every two fieldwork visits, you will write and share a reflection where you will connect your fieldwork experiences to the topics we are in the course.

GRADING POLICY

The grading policy for this class is unique as the main products will be shared with fellow UNC-BEST students/alum and other practicing teachers. Since high school students deserve exemplary lessons, the only products that will earn credit are those that are exemplary. Any lesson products that do not earn exemplary ratings will be recorded as incomplete and returned for revision with feedback on revisions needed to earn an exemplary rating. While revisions will be requested for nearly every lesson product you submit, submitting assignments that do not meet expectations due to lack of effort will result in a reduced grade even after needed revisions have been made.

Students that meet the following criteria will earn an A in the course:

- Submit assignments on time (unless an extension is granted) that consistently meet and exceed expectations.
- Participate fully in all class tasks and discussions and regularly contribute thoughtful ideas.
- Have one or fewer absences and arrive to class on time.

Students that meet the following criteria will earn a B in the course:

- Submit 1-2 assignments that do not meet criteria due to lack of effort but meet exemplary ratings with revisions.
- Participate fully in all class tasks or discussions and regularly contribute thoughtful ideas.
- Miss more than one class or are late to class mare than once.

Students that meet the following criteria will earn a C in the course:

- Submit 2-3 assignments that do not meet criteria or are late, but meet exemplary ratings with revisions.
- Partially participate in class discussions and/or engage in off-topic discussions.
- Miss more than two classes or are late to more than two classes.

Students that meet the following criteria will earn a IN in the course

- Failure to revise assignments to meet exemplary ratings.

GRADE CONTRIBUTIONS

Assignment Category	Percentage of total grade
Biology Lesson Plan and Models	40%
Participation and contribution to class discussions and activities	20%
Science Education Prompts	20%
Fieldwork Reflections	10%
Final Exam	10%

Disability Services Information

If you have a medical condition/disability that may require reasonable accommodation to ensure equal access to this course, please contact the Department of Disability Services at 919.962.8300, on the internet at http://disabilityservices.unc.edu/eligibility or via email at disabilityservices@unc.edu

Honor Code Information

The University of North Carolina at Chapel Hill has had a student-administered honor system and judicial system for over 100 years. The system is the responsibility of students and is regulated and governed by them, but faculty share the responsibility. If you have questions about your responsibility under the honor code, please bring them to your instructor or consult with the office of the Dean of Students or the Instrument of Student Judicial Governance. If you require further information on the definition of plagiarism, authorized vs. unauthorized collaboration, unauthorized materials, consequences of violations, or additional information on the Honor Code at UNC, please visit http://honor.unc.edu.

The University's Policy on Prohibited Harassment and Discrimination

(http://www.unc.edu/campus/policies/harassanddiscrim.pdf) prohibits discrimination or harassment on the basis of an individual's race, color, gender, national original, age, religion, creed, disability, veteran's status, sexual orientation, gender identity or gender expression. Appendix B of this Policy provides specific information for students who believe that they have been discriminated against or harassed on the basis of one or more of these protected classifications. Students who want additional information regarding the University's process for investigating allegations of discrimination or harassment should contact the Equal Opportunity /ADA Office for assistance at 919.966.3576 or via email at equalopportunity@unc.edu or to:

Equal Opportunity/ADA Office
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