Step 2: Math/Science Inquiry-Based Lesson Design

Spring 2015 Course Syllabus

CU Teach Science & Mathematics

http://cuteach.colorado.edu

EDUC 2030-801 **EDUC 2030-802**	**Date/Time: T 11:00-12:15** **Date/Time: R 2:00-3:15**
Instructor: Malinda Zarske Office Location: DLC 176 Office Phone: 303-735-0987 E-mail: malinda.zarske@colorado.edu	Office Hours: Monday 12:00-1:00pm or by appt
Instructor: Kim Bunning Office Location: EDUC 344 Cell Phone: 303-902-6667 E-mail: bunning@colorado.edu	Office Hours: Tuesday 1:00-2:00pm Skype (kimbunning) or by appt

Class Location
Room Number: Education 346

Course Prerequisite(s)
Successful completion of Step 1

Course Requirements
Students must be able to:

- Create online Google Docs
- Check e-mail daily

If assistance is needed to meet these requirements, please see your instructor. Help is available upon request.

Changes to this syllabus may be made to accommodate the specific group of students who are in the course.

Quick Links within the Syllabus

Assignments/Grading Policy

Active participation at all class sessions is required and will greatly enhance your ability to be successful. **You get one absence/personal day without penalty. Absences after that will result in a 2 point deduction per absence. One point will be deducted for each tardy.**	15 points (Minus 2 points for each absence after the first. Minus 1 point for each tardy)
Completion of **Basic Technology Proficiency Assignments** (Part I-IV) – Due by Class time Week 2 At the DP level: [7.3]	5 points
Completion of the **Advanced Technology Proficiency Assignment** -Due by end of Week 4 At the DP level: [7.3]	5 points
Written lesson plans for three lessons on Google Docs. – Green Light due date is 3 days before your lesson date At the DP level: [2.1, 2.2, 3.1, 3.2, 3.3, 3.4, 3.5, 3.8, 4.1, 4.2, 4.4, 5.1, 5.2, 5.3, 6.2, 6.3, 6.4, 6.6, 7.1, 7.3, 7.5, 8.2, 8.4, 8.5]	30 points (10 points/lesson)
Completion of five field experience visits as evidenced by the written reflections in your **Reflection Portfolio** and by presentations in your reflection group. - Due 7 days after each of your five classroom visits At the DP level: [2.1, 2.2, 3.1, 3.2, 3.3, 3.4, 3.5, 3.8, 4.1, 4.2, 4.4, 5.1, 5.2, 5.3, 6.2, 6.3, 6.4, 6.6, 7.1, 7.3, 7.5, 8.2, 8.4, 8.5]	25 points (5 points/reflection)
Write-Up of Course Project – Due Friday, 5/1 completed on Google Docs At the DP level: [2.1, 2.2, 3.1, 3.2, 3.3, 3.4, 3.5, 3.8, 4.1, 4.2, 4.4, 5.1, 5.2, 5.3, 6.2, 6.3, 6.4, 6.6, 7.1, 7.3, 7.5, 8.2, 8.4, 8.5]	20 points
Total	**100**
Grading Scale 90 -- 100%--> A-/A 80 -- 89% --> B-/B/B+ 70 -- 79% --> C-/C/C+ 60 -- 69% --> D-/D/D+ Below 60% --> F	**Note**: If an assignment is turned in late, points may be reduced by 10% for each day late up to a reduction of 50%. After 5 days, work turned in may receive only a maximum of half credit.

Course Schedule

(Note: Classroom Visits are in blue. You are welcome and encouraged to make additional observational visits to the classroom with or without your partner. You will need to arrange these visits with your mentor teacher**)**

Class	Instructor-led Guiding Questions	Lesson Lab	Reflection Group
#1	• How does this course work? • What does an inquiry lesson look like at the middle school level (for math? for science?) • What does planning an inquiry lesson look like?	• Team groupings	• Demonstration Lesson and Planning
#2	• What is life like for middle school students?	• Pre-Assessment on Assessment • Meet your Mentor Teacher Assignment	• Introduction to reflection groups/organizing groups • Middle school students
#3	• How do you gather meaningful info from an observation?	• Observing a classroom: What to look for & why • Meet your Lesson Reviewer	• Share ideas for how to observe and take notes
#4	• How do you gather pre-assessment data?	**Observation 1** • Lesson 1 Objectives • Lesson 1 Exit Tickets	• Artifact sharing: Exit Ticket Questions
#5	• How do you provide clear instructions?	• Use Observation 1 notes to inform Lesson 1 plan • Pack for Lesson 1	• Highlights from Observation: Providing clear instructions & Other CR Norms
#6	• What are some questioning strategies you could use to elicit student thinking?	• Revise Lesson based on feedback • Practice Lesson 1	• Highlights from Observation: Questioning
#7	• What are essential features of inquiry-based learning and teaching? ○ Technology Demonstration lesson	**Teach Lesson 1** • Objectives for Lesson 2	• Reflect on demo lesson

#8	• What did we learn about our students in Lesson 1 that can help us plan Lesson 2?	**Observation 2** • Analyze student work from Lesson 1 and Exit Ticket data to inform Lesson 2 • Pack for Lesson 2	• Artifact Sharing: Results of Exit Tickets & Student Work from Lesson 1
#9	• How does talking with colleagues about our teaching support our teaching practice?	• Revise Lesson based on feedback and Observation 2 • Practice Lesson 2	
#10	• What are examples of technology used in inquiry lessons? ○ Demo lesson	**Teach Lesson 2** • Objectives for Lesson 3	• Reflect on demo lesson • Sharing ideas for using educational technology
Spring Break	Spring Break	Spring Break	Spring Break
#11	• What did we learn about our students in Lesson 2 that can help us plan Lesson 3?	• Analyzing student work from Lesson 2 to inform Lesson 3 • Pack for Lesson 3	• Reflect on Lesson 2
#12	• How does talking with colleagues about our teaching support our teaching practice?	• Revise Lesson based on feedback • Practice Lesson 3	• Reflect on Lesson 2
#13	• What has it been like in middle school classrooms?	**Teach Lesson 3**	• Reflect on teaching in middle schools • Preparation for Final RG activity synthesizing teaching experience/ finding common themes within RG (tying it to Using Assessment to Inform Instruction)
#14	• What did we learn about our students' understanding based on our post-assessment?	• Analyzing student work from the end-of-unit assessment • Materials Inventory	• Final RG activity
#15	• What did we learn about	• Post-Assessment on	• Final RG activity

	how assessment can inform instruction?	Assessment	

Course Description/Overview

This course will provide students with:

- an opportunity to explore teaching math/science as a career
- early field experiences in middle school math/science teaching
- an introduction to the theory and practice that is necessary to design and deliver excellent instruction

To obtain first-hand experience with planning and implementing inquiry-based curriculum, students will design inquiry-based math/science lessons based on the Grade Level Expectations, Evidence Outcomes, and 21st Century Skills and Readiness Competencies of the Colorado Academic Standards. Students will teach math/science lessons in middle school classrooms in the Boulder Valley School District, St. Vrain Valley School District, Adams 50, Mapleton Public Schools, Adams12 or in Jeffco Public Schools. Students will attend one hour and fifteen minutes (1.25 hours) of class on campus each week, where they will learn to design and deliver excellent math/science lessons. Students, working in teams, will conduct one observation, present three lessons and administer a pre-assessment exercise in a sixth, seventh or eighth grade classroom during the semester. These classrooms are selected both for the diversity of the student body and for the quality of the classroom teacher. Each pair of students will have a mentor teacher who will work with them to improve their teaching abilities as the semester progresses. The mentor teacher will remain in the classroom at all times and provide immediate feedback on the quality of the instruction.

Course Objectives

Students will ...	***Evidence of Student Learning and Engagement:***
demonstrate math/science/science content knowledge in the design and teaching of middle school lessons aligned with district curriculum.	● one paragraph in each of three lesson plans that provides background information on the concepts presented, including relevant district, state, or national standards ● content accuracy throughout each lesson plan ● written feedback by the mentor teacher and/or master teacher following observations of student teaching
utilize exemplary sources of inquiry-based math/science lessons.	● participation in demonstrations of model lessons selected from exemplary sources ● sources cited in each lesson plan
identify the unique attributes of adolescent students and implement teaching strategies that are effective in the middle school environment.	● participation in a class discussion that addresses the unique attributes of adolescents ● one paragraph in each of the lesson plans that indicates why the instructional strategies are effective for adolescents ● written feedback on draft lesson plans by master teacher prior to student teaching ● written feedback by the mentor and master teacher following observations of student teaching
design and teach inquiry-based lessons using the 5E Instructional Model.	● three inquiry-based lesson plans ● written feedback on draft lesson plans by master

	teacher prior to student teaching ● written feedback by the mentor and master teacher following observations of student teaching
plan for and implement safe classroom practices.	● safety issues addressed in each lesson plan ● written feedback on draft lesson plans by master teacher prior to student teaching ● written feedback by the mentor and master teachers following observations of student teaching
discuss strategies for achieving instructional equity.	● participation in class discussion of strategies for achieving instructional equity ● participation in class activities modeling strategies for achieving instructional equity
use probing questions to elicit feedback on students' acquisition of knowledge.	● participation in class discussions on questioning strategies ● extensive examples of possible questions and expected responses listed in each lesson plan ● written feedback on draft lesson plans by master teacher prior to student teaching ● written feedback by the mentor and master teachers following observations of student teaching
use pre- and end-of-unit-assessments aligned to performance objectives to evaluate student learning, to provide instructive feedback to middle school students, and as a basis for revising lesson plans.	● analysis of pre- and end-of-unit-assessment results to evaluate student learning ● written feedback on assessments by master teacher prior to student teaching ● written feedback by the mentor and master teachers following observations of student teaching ● use of pre- and end-of-unit-assessment results to reflect upon lesson plan
provide instructive feedback to peers.	● written feedback provided to peers who present lessons during class ● active participation and written feedback provided to peers during Reflection Groups
reflect on teaching experiences to revise lesson plans.	● written reflections following student teaching experiences ● active participation and written feedback provided to peers during Reflection Groups ● final project
assess commitment to pursue teaching	● survey indicating intention to pursue teaching as a career path

Expectations

1. **Participation**: About 15% of your grade is based on active participation at all class sessions in their entirety. You will be working in teams to prepare lessons for your field placement. Missing or being late to class means you

will miss the opportunity to work with your teaching partner to prepare your lessons. Please contact your Lesson Reviewer and your teaching partner prior to missing any class.

   a. The semester will begin with every student being given 15 points for participation/attendance. Every student is allowed ONE absence/personal day without penalty. **Two points will be deducted for each absence after the first absence. One point will be deducted for each tardy.**

2. **Background Check**: You'll be working with minors in K-12 schools. We work with the partner school districts to follow their procedures for conducting background checks of all individuals who volunteer in their schools. In the first week of class, prior to your going out to schools, we will use the Colorado Sex Offender Registry to verify you are not a registered sex offender and report to the local school district when we have completed this background check. It is now common in many school districts to require all volunteers to go through this, or a similar, screening process. Screenings are one way districts ensure children's safety.

   If you are enrolled in a CU Teacher Licensure Program, and/or have taken Step 1 prior to Fall 2012, your fingerprints are on file, and the background screening is complete.

3. **Technology Proficiency:** You will be required to be computer literate when you teach, so we will require you to demonstrate some basic productivity skills in this course. Early in the semester, you will be given both a Basic and Advanced Technology Proficiency assignment to support your ongoing learning. Additionally, we will incorporate math and science instructional technology tools into our class time together. As you progress through the program you will acquire more advanced skills and learn more about how to integrate technology into instruction.
4. **Late Assignments:** If an assignment is turned in late, points may be reduced by 10% for each day late up to a reduction of 50%. After 5 days, work turned in may receive only a maximum of half credit.
5. **Reflection Groups (RG):** Students will reflect on their field experiences during our class meetings in small reflection groups. These will include discussion of your written reflections, artifacts you collect from your field placement, and other topics related to teaching.
6. **Lesson Labs:** Teams will write three lesson plans for your middle school class field placement. These lesson plan assignments will be discussed thoroughly in class.
7. **Pre and End-of-Unit Assessments**: Students will design a pre-assessment task and an end-of-unit assessment task to assess the learning of the students in the middle school classroom. Students will analyze the learning as demonstrated on the assessments. Finally, students will reflect upon lesson effectiveness and propose next steps.

Field Experience

1. You and a teaching partner will teach **three** inquiry-based math/science lessons in a local middle school. You will make **two** observational visits to the same classroom. Many students have expressed that they would have liked to make more visits during the semester. If you would like to do this, you are welcome to schedule more visits with your mentor teacher. You do not need to make the visits with your partner. Additional visits are NOT required.
2. Teams will write their lesson plans using Google Docs. This web-based, collaborative tool will allow your team members, instructors, and Mentor Teacher to both view and edit your lesson plans online.
3. You will observe your mentor teacher's class twice during the semester.
4. For security reasons, all schools require that you sign in at the front office of the school each day that you visit. Be sure to wear your name badge that identifies you as a *CU Teach* student.

5. Your mentor teacher will provide your team with feedback after each lesson taught. This feedback will be available to you after your mentor teacher completes the online form. Your mentor teacher will also write a final evaluation of your progress, which will be completed online and filed in the *CU Teach* office.
6. If you reschedule a lesson, you must inform your Lesson Reviewer in writing.
7. Complete a written reflection discussing each classroom visit after each lesson you teach or observe.
8. If an emergency arises and you have to miss your scheduled teaching day, notify your partner, your mentor teacher and your instructor as soon as you know. Your partner should teach the lesson alone if necessary. **Do not miss your teaching assignment due to a transportation problem. Seek help:**
    - **Julie Andrew 720-260-0290**
    - **Kim Bunning 303-902-6667**
    - **Jeff Writer 720-544-1680**
    - **Taxi (Boulder Yellow Cab) 303-777-7777**

9. Dress appropriately and professionally when going to schools. Follow the teacher dress code. The dress code can be found on here
10. Report immediately to the instructor and/or appropriate team members any problems you have, including the need for additional supplies.
11. **Role of Practicum in Course Grade**
    Full participation in practicum is a course expectation. Successful completion of EDUC 2030 is dependent upon successful completion of your practicum experience; in other words, if you don't pass practicum, you won't pass this course. Successful completion of practicum involves **full attendance each visit** (or making up any missed hours/days), **acceptable evaluations by your practicum teachers**, and **competent performance on field-based assignments** from this course. This course has **5-10** required hours of practicum.

The Role of Performance Based Standards for Colorado Teachers

The Performance-Based Standards for Colorado Teachers are available on line at http://www.cde.state.co.us/cdeprof/download/pdf/li_perfbasedstandards.pdf. These "serve as standards for the licensing of all teacher education candidates in Colorado and reflect the knowledge and skills required of beginning teachers." This syllabus is marked throughout with bracketed standards to give teacher education candidates clear indicators of their professional responsibilities. The brackets indicate when teacher education candidates are "developing and practicing" [DP] a standard as well as the standards they must "satisfy" [S] in this class.

When a standard is met at the **Developing/Practicing** level **[DP]** that means you will have opportunities to **develop** an understanding of the standard's knowledge base and to **develop/practice**, with assistance, your abilities to apply the element in a field setting/university classroom and to evaluate the success of your teaching performance.

When a standard is **satisfied [S]** that means you have demonstrated proficiency on this standard. To demonstrate proficiency you must demonstrate a substantial knowledge and understanding of the standard element, the ability to apply the element in a field setting, and the ability to assess student learning and evaluate your teaching performance.

Each of the assignments in the syllabus must be completed successfully in order to insure that you have achieved proficiency on the various Performance Standards for Colorado Teachers that are attached to each assignment. You will not pass this class unless all standards designated below at the "satisfying" level have been met.

Accommodations, Behavior, Integrity, Discrimination/Harassment

Classroom Behavior Policy: Students and faculty each have responsibility for maintaining an appropriate learning environment. Students who fail to adhere to such behavioral standards may be subject to discipline. Faculty has the professional responsibility to treat all students with understanding, dignity and respect, to guide classroom discussion and to set reasonable limits on the manner in which they and their students express opinions. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender variance, and nationalities. See polices:
Student Classroom and Course-Related Behavior
Student Code Conduct

Disabilities: If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities (303-492-8671, N200 Center for Community, http://www.colorado.edu/disabilityservices).

Honor Code: All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at <http://www.colorado.edu/policies/student-honor-code-policy>.

Observance of Religious Holidays and Absences from Classes or Examinations: Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled examinations, assignments, or required attendance. In this class, I will make every effort to accommodate all students who have such conflicts with scheduled examinations, assignments, or attending class, provided students notify me well in advance of the scheduled conflict.

Discrimination and Harassment
The University of Colorado Boulder (CU-Boulder) is committed to maintaining a positive learning, working, and living environment. CU-Boulder will not tolerate acts of discrimination or harassment based upon Protected Classes or related retaliation against or by any employee or student. For purposes of this CU-Boulder policy, "Protected Classes" refers to race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Individuals who believe they have been discriminated against should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Student Conduct (OSC) at 303-492-5550. Information about the ODH, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at http://hr.colorado.edu/dh/

Mandated Reporters

Mandated reporters are individuals who are obligated by law to report suspected cases of child abuse and neglect. Mandated reporter laws are designed to catch child abuse in its early stages, so that children do not suffer long-term damage. Any person who has contact with children in a professional capacity or who is in a position of trust is a mandated reporter.

Participants in the CU Boulder's School of Education programs are placed in a position of trust among young students and are therefore considered mandated reporters.

For additional information, please consult the following resources:

- BVSD (Boulder Valley Public Schools) training video, one page handout, and report form http://www.bvsd.org/security/childabuse/Pages/default.aspx
- CDE (Colorado Department of Education) handbook, *Preventing & Reporting Child Abuse & Neglect: Guidance for School Personnel* http://www.cde.state.co.us/cdeprevention/download/pdf/child_abuse_manual_2002.pdf

For More Information on CU Teach...

http://cuteach.colorado.edu