University of California – Riverside
Graduate School of Education
Fall 2018
EDUC 004 Looking in Classrooms: Science/Mathematics Emphasis
3 units
Mondays 5:10p – 7:00p
Surge 170
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EDUC 004 Looking in Classrooms: Science/Mathematics Emphasis

COURSE OVERVIEW

CATALOG COURSE DESCRIPTION

Lecture, 2 hours; field, 3 hours. Prerequisite(s): EDUC 003; admission to the California Teach program; consent of instructor. Involves observation in classrooms in local schools identified as having exemplary programs in mathematics and science. Students record and interpret their observations and compare them to published studies of classrooms. Designed for lower-division students who plan to teach mathematics or science in the public schools. Credit is awarded for only one of EDUC 002 or EDUC 004.

> **Course Pre-requisites:** *Education 003*

COURSE OBJECTIVES
1. Through observation and direct participation in real classrooms, students gain insights into the practical considerations of daily instruction in public secondary schools.
2. A major focus will be to understand the interactions between teachers and students and how those interactions impact conceptual and/or procedural learning.
3. Through reflective consideration of their critical observations and technical readings, students form deeper understandings of the strategies which help develop conceptual understanding in science, technology, engineering and mathematics.
4. By developing a working relationship with classroom teachers, students will develop a more complete understanding of teaching science/math courses in a public secondary classroom from a teacher's perspective
5. Students will observe, detail, and critique a math or science lesson focusing on three criteria from the course.

LEARNING OUTCOMES

1. Gain experience identifying effective science and math teaching practices.
2. Become familiar with CA State science and math standards (NGSS/CCSS) and how it is used for lesson development and student assessment
3. Compare and interpret classroom interactions/activities to published findings of classrooms.
4. Deepen their understanding about critical education issues that affects math and science instruction

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UCR-GSOE POLICIES

STUDENTS WITH DISABILITIES POLICY
If you have a disability or believe you may have a disability, you can arrange for accommodations by contacting Services for Students with Disabilities (SSD) at 951-827-4538 (voice) or specserv@ucr.edu (email). Students needing academic accommodations are required to register with SSD and provide required disability-related documentation. If you have approved accommodation(s), you are advised to notify your instructor privately.

ATTENDANCE POLICY
GSOE takes seriously the need for students to attend and actively participate in classes; class absences and lack of participation undermine the learning process. Students who miss more than 20% of the course meeting are strongly urged to withdraw from the course. Instructors may also fail such students, except in the case of documented serious illness or immediate family emergency. Missing portions of classes, through persistent late arrival or early departure, can count toward the "more than 20% of class time."

ACADEMIC HONESTY POLICY
Students are expected to conduct themselves and their work in a manner consistent with UCR's policy on academic integrity. Academic misconduct includes, but is non limited to, cheating, fabrication and plagiarism (e.g., using another's work or ideas without giving credit- intentionally or unintentionally). Submitting your own work more than once (e.g. for this class and another class, without both instructors' knowledge and permission) is also a form of academic dishonesty and will result in an F. If you are at all unsure of what constitutes plagiarism or other forms of academic dishonesty, consult the UCR website for more information: http://conduct.ucr.edu. Please familiarize yourself with UCR's policies and procedures regarding academic integrity, published in full in the General Catalog at http://catalog.ucr.edu.

WRITING POLICY
The Graduate School of Education believes that all students should exit its program with strong writing skills. As such, the quality of written composition as well as content will be factored into grades on students' papers for all education classes.

COURSE POLICIES

ELECTRONIC COMMUNICATION POLICY
As a default, I will be sending class emails to your UCR email, as it is also the email UCR staff will use when sending you important emails. Plus, it will help get you into the habit of using a more professional email for school and for potential future work. When sending me an email, please include your last name, followed by the course number, and followed by the purpose of the email in the subject heading (Example: Safie – ENV102 – Question about Final Exam). Keep in mind that I will respond within 24 hours during the week and within 48 hours on the weekend unless the email is sent during my office hours, at which time you will get an almost immediate response.

BEHAVIOR/CONDUCT
- Please arrive to class on time.
- UCR is a smoke-free campus. Smoking is not allowed on campus.
- No cell phones in class. Please step outside to make or receive a call.
- Please be considerate and attentive during presentations and discussions. Do not text, draw or use your computer during presentations and discussions. Exceptions include the use of electronic devices for note-taking.
- Please be respectful of others while setting up desk space. Do not create an obstacle course with all your belongings. Cooperating with one another is the best way to make the most of limited space.
- Please properly dispose of all trash. We are *all* responsible for the maintenance of our campus and classrooms.
- Please use appropriate language when sharing thoughts and opinions. We all have our own views, but the goal is to create an environment that encourages dialogue and personal growth.

LATE PAPERS/ASSIGNMENTS

Late assignments will not be accepted unless accompanied by an acceptable excuse and written documentation. Examples of acceptable excuses are:

- Illness with a doctor's note
- Having to care for an ill loved one
- Having a death in the family
- Being involved in a car accident

Communication is key to your success. If something happens, please let me know and we can work through your options for success in the course.

GRADING SCALE

Assignments are due on the dates noted in the syllabus. Barring extraordinary circumstances, late assignments will not be accepted. Each assignment will contribute to the overall grade in the class according to the weight assigned by category.

A+	97 -100%	C+	77-79%
A	93-96%	C	73-76%
A-	90-92%	C-	70-72%
B+	87-89%	D+	67-69%
B	83-86%	D	63-66%
B-	80-82%	D-	60-62%
F: 59% or below **OR** failure to complete fieldwork hours or submit verification **OR** failure to participate in classes as outlined in the syllabus.			

A = Excellent
In class and homework assignments go beyond the ideas presented in class both in skill and creativity. Each assignment is an excellent example of the criteria defined with little to no errors that detract from the overall assignment, and they integrate material from the class with external material exceptionally well.

B = Very Good
In class and homework assignments are successful at representing the ideas presented in class both in skill and creativity. Each assignment sufficiently meets the criteria defined with little to no errors that detract from the overall assignment, but are limited in the degree to which they integrate material from the class with external material.

C = Average
In-class and homework assignments are on-time, complete and adequate in skill and creativity. Each assignment is an average example with minor grammatical and composition errors that may detract from the overall assignment, but on a limited basis. Furthermore, the assignment does not fully integrate all material from the entire class, and does not integrate external material.

D = Below Average and May Require a Repeat
In class and homework assignments are incomplete and/or late and show lack of understanding and coherence. Assignments demonstrate only a basic understanding of the ideas presented. Many errors in grammar and composition make it difficult to comprehend the overall assignment. Assignment does not attempt to integrate material from the course as a whole and does not integrate external material.

F = Failing
In class and homework assignments do not meet minimum requirements for a D. Little if any effort expended on an assignment. Assignments were late or missing. Student had too many unexcused absences.

COURSE GRADING REQUIREMENTS

1. **Fieldwork and Log (25% and required to receive credit):** All fieldwork hours must be completed in order to receive credit for the course. 30 hours (including 20 hours of observation in an assigned field placement, regular education classroom and 10 hours of video observation throughout the course). Your recorded field hours will be verified against records maintained by your assigned mentor teacher and instructor. ***A student must complete field hours in the assigned classroom in order to receive a grade above C-.***

2. **Weekly Journal Entries (25%):** The overarching theme of the course is *Exploring the Science/Math Classroom of the 21st Century*. While we find ourselves in a time of unprecedented change in education, every educational situation is embedded in a school and community culture with its own unique history and traditions. Two or three short questions based on topics covered during lecture each week will be posted on iLearn. You will be required to respond to them with brief essays or short answers, usually a paragraph or two. The intention is to develop your critical observation skills in a classroom environment. These assignments are a crucial element in your development as a reflective educational scholar. Journal entries are a way for you to develop your understanding of the current state of education, according to your observations, while comparing and contrasting this with your developing philosophy and your understanding of educational research as related to Science/Math education. Like any learner, your understanding will evolve over time. A record of your thoughts and observations will help you recognize and guide your own development as a professional educator.

3. **Class Participation (20% and required to receive credit):** Each class will include lecture, writing and discussion components. Your full participation will ensure you gain the skills and knowledge necessary to complete the assignments. Missing two or more classes during a quarter or habitually showing up late or leaving early may lead to receiving a failing grade for the course and will impact your participation grade.

4. **Final Exam (30%):** The final exam for the course will be a Lesson Critique presented during the last meeting. The written and presentation format will be described in class.

5. **Extra Credit (up to 3%):** There are two options for extra credit. Option A is to teach a lesson or small group in your observation classroom. Work with your mentor teacher and submit a lesson along with a reflection on what was taught, in what capacity, and be sure to address at least 3 criteria discussed throughout the course (such as classroom management, technology, etc.). Option B is to critique a lesson you've observed of your mentor teacher. Discuss some of what you observed including at least 3 criteria discussed in class. Be sure to address what you think was successful, and what you might have done differently. Both options are to be written with the intent to connect course readings and discussions to what is being done in the classroom. You may ONLY choose one of these options.

COURSE SCHEDULE/ TIMELINE

Meeting 1 (October 1, 2018) – Introductions

IN CLASS: Introductions, logistics and administration details, expectations. Class discussion, participation on best/worst.

READ FOR NEXT TIME:
- How to read the Common Core Standards (pgs 2-8)
- Purzer, Ş., Moore, T. J., Baker, D., & Berland, L. Supporting the Implementation of NGSS through Research. *Purzer, Ş., Moore, TJ, Baker, D., & Berland, L. Supporting the Implementation of NGSS through Research.(NRST)*

DUE FOR NEXT TIME:
- Journal question on State Standards Video

Meeting 2 (October 8, 2018) – Math and Science Content Standards

IN CLASS: Practices sorting; what do these practices look like in the classroom? Video discussion

READ FOR NEXT TIME:
- Simonsen, B., Fairbanks, S., Briesch, A., Myers, D., & Sugai, G. (2008). Evidence-based practices in classroom management: Considerations for research to practice. *Education and treatment of children*, 351-380.

DUE FOR NEXT TIME:
- Journal question on Math and Science Practices

Meeting 3 (October 15, 2018) – Classroom Management in the Math and Science Classroom (classroom procedures, student behavior, environment to support learning, physical space)

IN CLASS: Discuss Simonsen article; Video on Techniques; Scenario Discussion; Observation Connections

READ FOR NEXT TIME:
- Tomlinson, C. A. (2014). *The differentiated classroom: Responding to the needs of all learners*. Ascd. Chapter 1 - Understanding Differentiation in Order to Lead: Aiming for Fidelity to a Model (pp. 12-24).
- Parsons, S. A., Dodman, S. L., & Burrowbridge, S. C. (2013). Broadening the view of differentiated instruction. *Phi Delta Kappan*, *95*(1), 38-42.
- Mathematics: Strategies for Teaching Limited English Proficient (LEP) Students A Supplemental Resource to the K-12 Mathematics Standards of Learning Enhanced Scope and Sequence
- ELLs and Mathematics

DUE FOR NEXT TIME:
- Journal question on Classroom Management Techniques

Meeting 4 (October 22, 2018) - Differentiated instruction/Instructional strategies for all Students in the Math and Science Classroom

IN CLASS: Class Discussion on articles; Video on Classroom use; Observation Connections

READ FOR NEXT TIME:
- Rosenshine, B. (2012). Principles of Instruction: Research-Based Strategies That All Teachers Should Know. *American educator*, *36*(1), 12.
- Fisher, D., & Frey, N. (2015). *Checking for understanding: Formative assessment techniques for your classroom*. ASCD, Chapter 2.

DUE FOR NEXT TIME:
- Journal question on Differentiated Instruction

Meeting 5 (October 29, 2018) – Monitoring Student Progress in the Math and Science Classroom

IN CLASS: Class discussion on readings; Reflection on videos on CFU strategies for math and science; Observation Connections

READ FOR NEXT TIME:
- Tanner, K. D. (2013). Structure matters: twenty-one teaching strategies to promote student engagement and cultivate classroom equity. *CBE—Life Sciences Education*, *12*(3), 322-331.
- Engaged Instruction: Thriving Classrooms in the Age of the Common Core. Chapter 3 – Student Engagement pp. 35-56.

DUE FOR NEXT TIME:
- Journal question on informal CFU

Meeting 6 (November 5, 2018) – Student Engagement Strategies

IN CLASS: Discuss readings; Videos on Engagement and non-engagement; Observation Connections

READ FOR NEXT TIME:
- Gillies, R. M. (2011). Promoting thinking, problem-solving and reasoning during small group discussions. *Teachers and Teaching: theory and practice*, *17*(1), 73-89.
- Gillies, R. M., & Boyle, M. (2010). Teachers' reflections on cooperative learning: Issues of implementation. *Teaching and teacher Education*, *26*(4), 933-940.

DUE FOR NEXT TIME:
- Journal question on student engagement

Meeting 7 (November 19, 2018) – Cooperative Group Work

IN CLASS: Discussion of articles; cooperative group activity; Observation Connections
READ FOR NEXT TIME:

- Judson, E. (2006). How teachers integrate technology and their beliefs about learning: Is there a connection? *Journal of Technology and Teacher Education*, *14*(3), 581-597.
- Niess, M. L. (2005). Preparing teachers to teach science and mathematics with technology: Developing a technology pedagogical content knowledge. Teaching and Teacher Education, 21(5), 509-523.

DUE FOR NEXT TIME:
- Journal question on group work

Meeting 8 (November 26, 2018) – Technology

IN CLASS: What is effective technology in the classroom? Technology scenarios and discussion, Observation connections

READ FOR NEXT TIME:
- Dixson, D. D., & Worrell, F. C. (2016). Formative and summative assessment in the classroom. *Theory into practice*, *55*(2), 153-159.
- Stiggins, R. J. (2004). *Classroom assessment for student learning: Doing it right, using it well*. Assessment Training Institute.

DUE FOR NEXT TIME:
- Journal question on technology use in the classroom

Meeting 9 (December 3, 2018) – Assessment for Learning versus Assessment of Learning

IN CLASS: Scenario discussion; Observation Connections
DUE DURING FINALS WEEK: Lesson Observation Critique. Details TBD