California State University
SAN MARCOS
SCHOOL OF EDUCATION

Engaging diverse communities through leading and learning for social justice.

www.csusm.edu/soe

Course & Section Nos.	**EDMS 545, Section 1**
Course Title	**Elementary Science education**
Class Roster No.	**22333**
Course Day(s)	**Fridays**
Time	**8:15-3:30**
Course Location	**Farr Elementary School, EUSD**
Semester / Year	**Spring 2017**
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Office Hours	**By Appointment**

WELCOME

Welcome to EDMS 545, all things science. We will work together to learn about the NGSS and create a love of curiosity and wonder about the world for children.

SCHOOL OF EDUCATION MISSION & VISION STATEMENT

(Adopted by SOE Governance Community, January 2013)

Vision

To serve the educational needs of local, regional, and global communities, the School of Education advances innovative practice and leadership by generating, embracing, and promoting equitable and creative solutions.

Mission

The mission of the School of Education community is to collaboratively transform education. We:

- Create community through partnerships
- Promote and foster social justice and educational equity
- Advance innovative, student-centered practices
- Inspire reflective teaching and learning
- Conduct purposeful research
- Serve the School, College, University, and Community

BASIC TENETS OF OUR CONCEPTUAL FRAMEWORK

- Student centered education
- Research and theory specific to the program field inform practice
- Connections and links between coursework and application
- Strong engagement between faculty and candidates
- Co-teaching clinical practice
- Culturally responsive pedagogy and socially just outcomes

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COURSE DESCRIPTION

Elementary Science Education

Focuses on developing an understanding of theory, methodology, and assessment of second language acquisition in integrated and inclusive elementary classrooms. Requires participation in the public schools.

Instructor: This course focuses on developing an understanding of theory, methodology, and assessment of science in integrated and inclusive elementary classrooms. This course is aligned with California's SB 2042 Standards and is designed to provide a comprehensive overview of the objectives, skills, concepts, experiments, materials, and methods necessary to teach science to elementary school children. A series of individual and team activities will provide you with first-hand experiences in these areas. This course focuses on instructional methods, techniques, materials, lesson planning, curriculum development, organization and assessment in science. The integration of curricular areas is addressed. Methods of cross-cultural language and academic development will be integrated into the course.

Course Prerequisites

Admission to the Multiple Subject Credential Program

Course Objectives

By the end of this course, students should be able to:

1. Demonstrate proficiency with inquiry skills of observing, measuring, inferring, classifying, predicting, verifying predictions, hypothesizing, isolating variables, interpreting data, and experimenting.
2. Identify exemplary materials (technology and technology resources, curriculum, science programs, textbooks, equipment, ancillary materials) appropriate for K-8 school children.
3. Demonstrate knowledge and understanding of the California Science Framework, the California Science Content Standards, and the Next Generation Sc
4. Demonstrate an understanding of the physical, Earth and life science concepts included in the K-8 California Science Content Standards and how to design lessons to teach the concepts.
5. Demonstrate an understanding of the Health Education Standards for California Public Schools and their connection/application to science content standard
6. Plan, teach, and videotape a lesson focusing on a discrepant event in science.
7. Apply the Learning Cycle model of instruction as it relates to teaching science in a contemporary manner.
8. Identify simulation tools and demonstrate the use of technology to enhance elementary science teaching and learning.
9. Demonstrate confidence in leading and performing investigations designed to teach science concepts, science process skills, and scientific attitudes.
10. Use authentic methods of assessment to evaluate learning of science concepts and processes.
11. Practice strategies to include all students in science (linguistically and culturally diverse, students with disabilities and other students with special needs).
12. Use reflection as a tool to increase conceptual understanding of science concepts and the ability to improve teaching.

REQUIRED TEXTS, MATERIALS AND/OR ACCOUNTS

Required Texts

- Friedl, A.E. & Koontz, T.Y. (2005). Teaching Science to Children: An Inquiry Approach, 6th Ed. NY: McGraw-Hill. ISBN: 0-07-256395-8

- Next Generation Science Standards (Achieve, 2013).
  Available from: http://www.nextgenscience.org/

- Next Generation Science Standards for California Public Schools, K-12
  http://www.cde.ca.gov/pd/ca/sc/ngssstandards.asp

- Health Education Content Standards for California Public Schools K-12. (2008).Sacramento: California Dept. of Education. Available from:
  http://www.cde.ca.gov/be/st/ss/documents/healthstandmar08.pdf

Cougar Courses

All course articles and videos will available on the Cougar Course

TaskStream Account

You will need to set one up.

COURSE LEARNING OUTCOMES

The course objectives, assignments, and assessments have been aligned with the CTC standards for the Multiple Subject Credential. This course is designed to help teachers seeking a California teaching credential to develop the skills, knowledge, and attitudes necessary to assist schools and districts in implementing effective programs for all students. The successful candidate will be able to merge theory and practice in order to realize a comprehensive and extensive educational program for all students.

Authorization to Teach English Learners

This credential program has been specifically designed to prepare teachers for the diversity of languages often encountered in California public school classrooms. The authorization to teach English learners is met through the infusion of content and experiences within the credential program, as well as additional coursework. Candidates successfully completing this program receive a credential with authorization to teach English learners. *(Approved by CCTC in SB 2042 Program Standards, August 02)*

Teacher Performance Expectation (TPE) Competencies

The course objectives, assignments, and assessments have been aligned with the CTC standards for Multiple Subject Credential. This course is designed to help teachers seeking a California teaching credential to develop the skills, knowledge, and attitudes necessary to assist schools and district in implementing effective programs for all students. The successful candidate will be able to merge theory and practice in order to realize a comprehensive and extensive educational program for all students. You will be required to formally address the following TPEs in this course:

TPE Primary Emphases in EDMS 545:

- TPE 1a-Subject Specific Pedagogical Skills for MS Teaching Assignments (Science)
- TPE 5-Student Engagement

TPE Secondary Emphases in EDMS 545:

- TPE 4-Making Content Accessible
- TPE 7-Teaching English Learners

- TPE 9-Instructional Planning
- TPE 14-Educational Technology in Teaching and Learning

Teacher Performance Assessment

Beginning July 1, 2008 all California credential candidates must successfully complete a state-approved Teacher Performance Assessment (TPA), as part of the credential program of preparation. During the 2015-16 academic year the CSUSM credential programs will use either the CalTPA (California Teacher Performance Assessment) or the edTPA (Educative Teacher Performance Assessment).

edTPA

Beginning in fall 2015, for newly entering initial candidates, the CSUSM assessment system is the edTPA. To assist with your successful completion of the edTPA, a capstone class is part of your curriculum. In this class edTPA related questions and logistical concerns are addressed. Additional support materials are available on the edTPA website: http://www.edtpa.com/PageView.aspx?f=GEN_Candidates.html

Additionally, to support your success in your credential program and with TPA, SOE classes use common pedagogical language, lesson plans (lesson designs), and unit plans (unit designs).

Expected Dispositions for the Education Profession

Education is a profession that has, at its core, certain dispositional attributes that must be acquired and developed. Teaching and working with learners of all ages requires not only specific content knowledge and pedagogical skills, but positive attitudes about multiple dimensions of the profession. The School of Education has identified six dispositions that must be evident in teacher candidates: social justice and equity, collaboration, critical thinking, professional ethics, reflective teaching and learning, and life-long learning. These dispositions have observable actions that will be assessed throughout the preparation program. For each dispositional element, there are three levels of performance - *unacceptable*, *initial target*, and *advanced target*. The description and rubric for the three levels of performance offer measurable behaviors and examples.

The assessment is designed to provide candidates with ongoing feedback for their growth in professional dispositions and includes a self-assessment by the candidate. The dispositions and rubric are presented, explained and assessed in one or more designated courses in each program as well as in clinical practice. Based upon assessment feedback candidates will compose a reflection that becomes part of the candidate's Teaching Performance Expectation portfolio. Candidates are expected to meet the level of *initial target* during the program.

SCHEDULE/COURSE OUTLINE

Date	Topic	Assignment (if any)	Due Date
Session 1 1/27	The Nature of Science NGSS Standards exploration CCCs/DCIs Presentation sign ups Assignment Explanations and placement Discrepant event	Purchase text Have access to NGSS	
Session 2 2/3	Inquiry SEPs (Simple Machines) Ch. Experiences Presentation Example	Watch Video (CC) Read Article (CC) Ch. Experiences Presentation Example	2/3
Session 3 2/10	CCCs/ Design Thinking Design Process Ch. Experiences Presentation	Review NGSS standards Ch. Experiences Presentation	2/10
Session 4 2/17	Essential Qs/Assessment Science Notebooks Talk Moves Ch. Experiences Presentation	Read Article (CC) Ch. Experiences Presentation	2/17
Session 5 2/24	Learning Cycle/Lesson Panning Model Lesson Ch. Experiences Presentation	Ch. Experiences Presentation	2/24
Session 6 3/3	PBL Genius Hour Project Work Time Ch. Experiences Presentation	Read Article Ch. Experiences Presentation	3/3
Session 7 3/10	Technology Computer Science Coding Maker Spaces Ch. Experiences Presentation	Read Chapter 3 NGSS integrated Unit due Ch. Experiences Presentation	3/10
Session 8 3/17	Invention Convention Health Discussion Ch. Experiences Presentation	Read chapter 20 & 21 Invention Convention Project Ch. Experiences Presentation	3/17

COURSE REQUIREMENTS AND GRADED COURSE COMPONENTS

Course Assignments

Participation and Attendance 50pts

Students will engage in active learning each class session, and will be expected to actively participate. Things I consider when looking at participation:

- Do you participate in class discussions productively, sharing your knowledge and understandings?
- Do you interact productively with your peers, taking on a variety of roles (leader, follower, etc.)?
- Do you contribute appropriately to group work—do you "do your share"?
- Are you able to accept others' opinions?
- Are you supportive of others' ideas?
- Do you support your peers during their presentations?
- Can you monitor and adjust your participation to allow for others' ideas as well as your own to be heard?

NGSS Unit 25pts

Part 1 Group Chapter Presentations (Due throughout course)

- Throughout the course, groups will present their chosen chapter and accompanying activities along with NGSS integration. This should be a 45 minute presentation with an activity(ies), real world connections and accompanying presentation along the lines of a Pecha Kucha, thinglink, etc. (**http://www.pechakucha.org**) See Cougar Course assignment folder.

Part 2 NGSS Unit (3/10)

- The spirit of the assignment is to develop and teach a particular kind of a science inquiry lesson that teaches both science process skills and science content using the learning cycle instructional model.
- You will work in groups to create and lead a science lesson based on the Learning Cycle Model of Instruction. Use the NGSS, activities from the textbook, Internet sites or other science resources. See Cougar Courses assignment folder.

Science Night 10pts

You will participate in a science night and plan a STEM or discrepant event for the evening. You may use ideas form your Chapter presentations or any STEM events you research.

Invention Convention 15 pts

Invention is a creative outgrowth of process science. Fostering the development of important science skills is
an ongoing challenge. Students should be given opportunities to solve problems, think, creatively, experiment, and work with data throughout the school year. The Invention Convention is an event that gives students an opportunity to demonstrate these skills independently as they invent a new product or process.

The Invention Convention can be a classroom, school, or district-wide science event. This science event is designed to encourage students to apply basic science skills in a creative and productive manner.

You are encouraged to identify a need or to solve a problem by following the same steps and procedures that an inventor would follow in patenting an invention. Once a need or a problem has be identified, students are directed to use problem-solving and creative-thinking skills to invent a product or process that would fill the need or overcome the problem. Communication and research skills are also greatly enhanced throughout the invention procedure. In this assignment, you and a

group of peers will collaboratively engage in the invention process to learn how to guide your own students' inventive skills. Please access the complete assignment guidelines on the Moodle course site.

Grading Standards

Participation and Attendance	50 points
Group Chapter Presentations	10 points
Discrepant event/STEM Science Night	10 points
Integrated NGSS Unit	15 points
Invention Convention	15 points

90-100 A
80-89 B
77-79 C+ (Passing)
73-76 C
70-72 C-

Final Exam Statement

There is no final exam but rather integrated projects.

School of Education/Course Attendance Policy

Due to the dynamic and interactive nature of courses in the School of Education, all candidates (course participants) are expected to attend all classes and participate actively. At a minimum, candidates (course participants) must attend more than 80% of class time, or s/he may not receive a passing grade for the course at the discretion of the instructor. Individual instructors may adopt more stringent attendance requirements. Should the candidate (course participants) have extenuating circumstances, s/he should contact the instructor as soon as possible. *(Adopted by the COE Governance Community, December, 1997).*

Policy on Late/Missed Work

I expect as postgraduate students that you complete all work at a high level as the assignments directly pertain to your future career. Assignments turned in up to a week late lose five points. Assignments turned in by end of eight weeks lose 10 points. Assignments turned in after eight weeks are finished lose fifteen points.

GENERAL CONSIDERATIONS

CSUSM Academic Honesty Policy

Students will be expected to adhere to standards of academic honesty and integrity, as outlined in the Student Academic Honesty Policy. All assignments must be original work, clear and error-free. All ideas/material that are borrowed from other sources must have appropriate references to the original sources. Any quoted material should give credit to the source and be punctuated accordingly.

Academic Honesty and Integrity: Students are responsible for honest completion and representation of their work. Your course catalog details the ethical standards and penalties for infractions. There will be zero tolerance for infractions. If you believe there has been an infraction by someone in the class, please bring it to the instructor's attention. The instructor reserves the right to discipline any student for academic dishonesty, in accordance with the general rules and regulations of the university. Disciplinary action may include the lowering of grades and/or the assignment of a failing grade for an exam, assignment, or the class as a whole.

Incidents of Academic Dishonesty will be reported to the Dean of Students. Sanctions at the University level may include suspension or expulsion from the University.

Refer to the full Academic Honesty Policy at:
http://www.csusm.edu/policies/active/documents/Academic_Honesty_Policy.html

Plagiarism

As an educator, it is expected that each candidate (course participant) will do his/her own work, and contribute equally to group projects and processes. Plagiarism or cheating is unacceptable under any circumstances. If you are in doubt about whether your work is paraphrased or plagiarized see the Plagiarism Prevention for Students website http://library.csusm.edu/plagiarism/index.html. If there are questions about academic honesty, please consult the University catalog.

Students with Disabilities Requiring Reasonable Accommodations

Students with disabilities who require reasonable accommodations must be approved for services by providing appropriate and recent documentation to the Office of Disabled Student Services (DSS). This office is located in Craven Hall 4300, and can be contacted by phone at (760) 750-4905, or TTY (760) 750-4909. Students authorized by DSS to receive reasonable accommodations should meet with their instructor during office hours or, in order to ensure confidentiality, in a more private setting.

Credit Hour Policy Statement

Per the University Credit Hour Policy: Students are expected to spend a minimum of two hours outside of the classroom each week for each unit of credit engaged in learning. For this course with three weekly hours of instruction, you should plan on spending an additional six hours engaged in study, review, and planning.

All University Writing Requirement

In keeping with the All-University Writing Requirement, all courses must have a writing component of at least 2,500 words (approximately 10 pages), which will be administered in a variety of ways in this course including lesson plans, assessment assignments, course text reading responses and concept maps, reflections on authentic teaching experiences with elementary children, and forum discussions.

Course Format

This course is offered in a traditional face-to-face format over an eight-week cycle.

Electronic Communication Protocol

Electronic correspondence is a part of your professional interactions. If you need to contact the instructor, e-mail is often the easiest way to do so. It is my intention to respond to all received e-mails in a timely manner. Please be reminded that e-mail and on-line discussions are a very specific form of communication, with their own nuances and etiquette. For instance, electronic messages sent in all upper case (or lower case) letters, major typos, or slang, often communicate more than the sender originally intended. With that said, please be mindful of all e-mail and on-line discussion messages you send to your colleagues, to faculty members in the School of Education, or to persons within the greater educational community. All electronic messages should be crafted with professionalism and care.

Things to consider:

- Would I say in person what this electronic message specifically says?
- How could this message be misconstrued?
- Does this message represent my highest self?
- Am I sending this electronic message to avoid a face-to-face conversation?

In addition, if there is ever a concern with an electronic message sent to you, please talk with the author in person in order to correct any confusion.