

OHLONE COLLEGE
Ohlone Community College District
OFFICIAL COURSE OUTLINE

I. Description of Course:

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| <p>1. Department/Course: <u>EDUC - 105</u></p> <p>2. Title: <u>Math and Science Future Teacher Seminar</u></p> <p>3. Cross Reference:</p> <p>4. Units: <u>3</u>
Lec Hrs: <u>3</u>
Lab Hrs:
Tot Hrs: <u>54.00</u></p> <p>5. Repeatability: <u>No</u></p> <p>6. Grade Options: Letter Grade, May Petition for Pass/No Pass (GP)</p> <p>12. Catalog Description:
This course is designed to provide students pursuing a career in secondary school math or science teaching with theory and hands-on experience working with children in math and science skills at a local elementary or secondary school. This course includes work with mathematics and science material, assessment, methodology, and the school environment. The course includes 50 hours of on-site field experience, as a service learning component, in a local elementary or secondary school.</p> <p>13. Class Schedule Description:
Seminar/Field Experience for students preparing to be secondary school math or science teachers.</p> <p>14. Counselor Information:
Experience for students preparing to be math/science secondary school teachers. Students gain knowledge and experience relevant to secondary school teaching while learning about how students at the elementary or secondary school level learn about science and math and how these students are preparing for secondary school science and math programs.</p> | <p>7. Degree/Applicability:
Credit, Degree Applicable, Transferable - CSU (T)</p> <p>8. General Education:</p> <p>9. Field Trips: <u>Required</u></p> <p>10. Requisites:
Advisory
MATH 151 Algebra I
English 101 A</p> |
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II. Student Learning Outcomes

The student will:

1. Describe how a teacher establishes and maintains a respectful and inclusive classroom atmosphere where students learn most effectively.
2. Recognize and identify best practices in teaching.
3. Assess if students are learning the material.
4. Assess the diversity of learners in a classroom.
5. Evaluate teaching methods that address the variety of ways that students learn.
6. Demonstrate knowledge of, and ability to work successfully within, an educational setting.

7. Distinguish between learner-centered and teacher-centered curricula and distinguish between classroom approaches that are inquiry-based (hands-on) and those that are informational.
8. Identify professional standards in math and science education.
9. Describe how national and state standards in science and mathematics affect curricular design and testing.
10. Identify the issues of teaching science and mathematics to English language learners.
11. Develop inquiry-based materials for classroom activities. Give examples of how students and teachers use technology in the classroom to enhance teaching and learning of science and mathematics.

III. **Course Outline:**

A. Demonstrate knowledge of and ability to work successfully within an educational setting.

1. Working with children in school settings
 - a. The importance of observation
 - b. Diversity - understanding group and individual differences
 - c. The significance of gender, ethnicity, language skills, and special needs
 - d. Working with individuals and small group tutoring
2. Classroom Responsibilities
 - a. Testing and tracking progress
 - b. Lesson planning using sound practices
 - c. Selection of appropriate materials
 - d. Activities and methodology selection
 - e. Understanding roles and responsibilities of adults in the classroom
 - f. The student's relationship to elementary classroom teacher, principal, parents, aides, and other personnel
3. Classroom management
 - a. Daily schedules and routines and roles of teachers
 - b. The importance of the physical environment
 - c. Student behavior expectations
 - d. Classroom management procedures and discipline strategies

B. Describe current theories in teaching math and science.

1. How children learn

- a. Number sense
- b. Science concepts
- c. Comprehension skills and the development of critical thinking skills
- d. Building a math and science vocabulary

2. The scientific method

- a. Additional approaches
 - i. Students with special needs
 - ii. Second language learners
 - iii. Students with advanced skills

3. Math and science skills acquisition in local districts

- a. Grade level expectations
- b. California Math and Science Framework
- c. NCTM Standards

4. Primary resources - keeping current in the field

C. Describe methodologies proven successful for the teaching of math and science.

1. Inquiry-based approach
2. Informational-based approach
3. Use of technology
4. Early intervention: prevention versus remediation

D. Demonstrate familiarity with materials

(textbooks, manipulatives, laboratory materials, workbooks, others) appropriate for teaching math and science

1. Matching learners to text, e.g. grade
2. Criteria for evaluating materials
3. Resources for selection
4. Choosing/using manipulatives and science laboratory materials

E. Demonstrate the ability to assess, interpret, and track students' progress in math and science

1. Formative and summative tests

- a. Diagnostics
- b. Standardized and in house
- 2. Portfolio assessment
- 3. Tracking
 - a. Teacher
 - b. Student self-monitoring
 - c. On-going assessment to inform instruction
- 4. Reporting
 - a. Children
 - b. Parents
 - c. Site level teachers/administers

F. Field Work

Students are expected to work a minimum of 50 hours (approximately 3 hours per week) during the semester in the elementary school classroom. While the type of work the student will engage in at the elementary school will vary, he/she is expected to observe and assist his/her Mentor Teacher in science, mathematics, and other subjects. Possible activities include helping the Mentor Teacher prepare for instruction or class activities, observing, assisting individual students or small groups, and teaching individuals, small groups, or the whole class. For every field visit, students will log their hours and reflections on the *California Teach* Online Information System portal (details to come).

IV. Course Assignments:

A. Reading Assignments

- 1. Outside readings as assigned from Internet and journals

B. Projects, Activities, and other Assignments

- 1. Teaching demonstration lesson
- 2. On-site Internship in public schools
- 3. Oral reports on classroom experience

C. Writing Assignments

- 1. Written reports on classroom experience

2. Journal article analysis
3. Reflective log on field experiences

V. Methods of Evaluation/Assessment:

- A. Essay on classroom experience
- B. Assignments--Hands on teaching in a classroom
- C. Final essay on overall classroom experience
- D. Problem Solving Exercises in math and science
- E. Research on classroom activities
- F. Evaluation of school site mentor
- G. Field work log
- H. Teaching demonstration on an activity designed for an elementary school

VI. Methods of Instruction:

- A. Lecture
- B. Discussion
- C. Demonstration
- D. Audiovisual
- E. Seminar
- F. Independent Study
- G. Collaborative Learning

VII. Textbooks:

Recommended

1. Lester, Frank and Charles, Randall *Teaching Mathematics through Problem-Solving: PreKindergarten – Grade 6* most recent Edition, NCTM, 2003

Supplemental

VIII. Supplies: