

California State University, Los Angeles
Charter College of Education
Division of Curriculum and Instruction
Fall Quarter 2014

EDSE 421M

SPECIAL INSTRUCTIONAL METHODS IN SECONDARY SCHOOL MATHEMATICS

(4 UNITS)

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1. Catalog Description: Instructional strategies and curricular themes in mathematics taught in secondary schools. Analysis and evaluation of current methods and trends in the teaching of mathematics in the urban setting; includes current research, instructional materials, community resources, and media methods.

Prerequisite: Formal admission to single subject teaching credential program and completion of all courses in Blocks One-Two. No prerequisite, no class!

2. Professional Statements:

A. Vision, Mission and Conceptual Framework For Professional Preparation:

The faculty members of the Charter College of Education have adopted the vision of "Promoting an inclusive environment to support caring professional educators for the future, so that all learners achieve their fullest potential" and the mission for the college as " Through the unique opportunities provided by its charter status, the College of Education at California State University, Los Angeles, enables educators to meet high standards and ensure the maximum learning and achievement potential of culturally and linguistically diverse urban learners." In this course, this mission is echoed in the objectives; class discussions; development and presentation of lessons; the use of textbooks; fieldwork observations; and personal evaluation and experience.

The attached diagram provides the conceptual framework for the vision and mission and supports the preparation of professional educators by the members of the CSULA Charter College of Education faculty.

B. Statement of Reasonable Accommodation

The Charter College of Education faculty members fully support the Americans with Disabilities Act (ADA). The members of the faculty will provide reasonable accommodation to any student with a disability who is registered with the Office of Students with Disabilities (OSD) who needs and requests accommodation. The faculty may wish to contact the OSD to verify the presence of a disability and confirm that accommodation is necessary. The OSD will arrange and provide for the accommodation.

Reasonable accommodation may involve allowing a student to use an interpreter, note taker, or reader; accommodation may be needed during class sessions and for administration of examinations.

The intent of the ADA in requiring consideration of reasonable accommodation is not to give a particular student an unfair advantage over other students, but simply to allow a student with disability to have an equal opportunity to be successful.

C. Student Conduct

Student conduct is viewed as a serious matter by the faculty members of the Charter College of Education. The Charter College faculty members assume that all students will conduct themselves as mature citizens of the campus community and will conduct themselves in a manner congruent with university policies and regulations. Inappropriate conduct is subject to discipline as provided for in Title 5, California

Code of Regulations (see student conduct: rights and responsibilities, and student discipline, CSULA General Catalog). Academic honesty is expected of all students in the Charter College, in accordance with University policy. There are established university reporting procedures if a student is suspected of committing an academically dishonest act.

D. Technology

For formal admission to credential, certificate, or Masters Degree programs in the Charter College of Education, each student must:

1. Own or have ample access to a computer (ex. in CSULA computer labs, or at home or work)
2. Have general knowledge of operation and care of a computer, computer hardware/software, and be able to implement some basic troubleshooting techniques (ex. check connections, restart the computer, etc.)
3. Have an email account (available free of charge to all CSULA students)
4. Have a basic understanding of how to use the internet.

Students should anticipate that their use of these skills will be integrated within courses in their programs. Students who fail to meet any of the above expectations are strongly advised to take an introductory computers course before they are formally admitted to the Charter College of Education.

3. Student Outcomes:

Content Standard #1: Demonstrate understanding of how to organize instruction to meet needs of ALL students, with attention to culture, ethnicity, gender, language, and individual learning needs.

Performance Standards:

- 1a. To develop a repertoire of mathematics activities for different topics, students abilities, and cognitive levels.
- 1b. To become familiar with mathematics education journals, organizations, associations, and the latest literature and research on secondary mathematics education.
- 1c. To review and analyze theoretical and practical aspects of student motivation in mathematics classrooms.

Content Standard #2: Demonstrate knowledge of how to use appropriate concrete models and tools in mathematics instruction.

Performance Standards:

- 2a. To explore and apply the elements of effective mathematics instruction in developing activities and lesson plans.
- 2b. To integrate mathematics into other disciplines of secondary curriculum; to incorporate current issues and techniques (calculators, computer, Internet, career education, outdoor mathematics, ethical concerns, etc.) into curriculum.
- 2c. To develop skills in constructing daily, weekly or unit lesson plans; to develop skills in evaluation and testing student knowledge and skills, in classroom management, in bookkeeping, in homework, and in other aspects of a secondary school mathematics class.

Content Standard #3: Demonstrate understanding of how learning theories relate to teaching mathematics to students.

Performance Standards:

- 3a. To review and analyze the theoretical and utility of cognitive approaches in learning and instruction of mathematics.
- 3b. To review, analyze, and practice models of teaching mathematics; to review and discuss the debate in "algorithm" versus "process" models of teaching mathematics.
- 3c. To develop a theoretical, cognitive, and practical understanding and appreciation for critical thinking of students and their scientific/analytical approach to life; to

develop critical skills in scientific research and investigation for instruction of mathematics; to appreciate and teach the inseparable role of mathematics in science and research.

3d. To review and analyze the problems of teaching secondary mathematics in the inner-city schools; to develop skills and activities to improve and motivate student learning; to develop multicultural mathematics and ethnomathematics activities; to review the gaps in the field of mathematics and develop ideas in encouraging females and other underrepresented groups to study mathematics and pursue careers in these fields.

3e. To review a brief history of mathematics and mathematics education.

3f. To be familiar with the NCTM standards.

3g. To be familiar with the CCSS in mathematics.

4. Assessment Procedures and Rubrics:

I. Attendance/Participation (TPE #'s 3, 4, 5, 6c, 7, 8, 9, 10, 11, 12, 13)

Active participation in discussions and activities depends on your attendance in class. Excessive absences, tardiness, and/or early departures will affect your participation grade.

(10 points: Whenever you are present and stay for the **entire** class, you earn 1 point. Coming late to class means half-a-point deduction; leaving early means half-a-point deduction. **Any kind of absence is considered an absence.**)

II. Article Report (TPE #'s 1B, 4, 5, 6c, 7, 8, 9, 10, 11, 12, 13)

Read an online article or an article from *Mathematics Teaching in Middle School* or *Mathematics Teacher*. The report must have **four sections only:** a summary, critique, the article's application to your teaching, and the source of the article.

(10 points: The grade is based on your ability to discuss and present clearly the idea/s brought about by the article.)

III. Fieldwork Observation (TPE #'s 3, 8, 9, 10, 11, 12, 13)

It is essential to observe 2 one-hour teaching and classroom management in your subject area. For each observation, a report must be submitted with the following information: **date of observation; name, address, and telephone number of the school; name of the principal; name of the teacher, room #, grade level, subject and topic of the lesson; and a critique and evaluation of the teacher, the classroom environment, the students, the delivery of the lesson, etc.; and general comments and feedback.**

(10 points [5 points per report]: Your grade is based on your ability to point out the important elements of the issue, your ability to critically reflect, and your ability to take any information and apply it directly to the classroom. Also, focus on whether the lesson is aligned with the CCSS standards, and whether the lesson and the teacher provide practice exercises and applications.)

IV. Lesson Plan (TPE #'s 1B, 3, 4, 5, 6c, 7, 8, 9, 10, 11)

As a group, you are required to develop a lesson plan that is designed for one class period. Your lesson plan should include the topic, grade level, CCSS Standards, objective(s), materials, procedures, independent practice, rubrics and assessment, guide for differentiated instruction, and comments. This lesson plan should be no more than two pages.

(15 points: Your grade is based on adherence to the reminders above.)

V. A Packet of Activities (TPE #'s 1B, 4, 5, 6c)

Compile a total of 5 mathematics activities appropriate for the middle and secondary schools. Each activity has to be word-processed and should not be more than a page in length. The format for each activity is as follows:

- A. Title or Topic
- B. Concepts to be learned in the activity
- C. CCSS Standard(s)
- D. Materials
- E. Procedure (a brief summary of what you and the students will do.)

Your compilation must have the following: 1 activity for each of the following: basic mathematics, algebra, geometry, problem solving (maybe puzzles or games), and statistics/probability. The submissions of the whole class will be put in a compendium.

(15 points: Your grade is based on the quality of activities that you will submit. Remember the importance of inclusion of all students. In choosing these activities, make sure that they are aligned with the CA standards, must have provisions for multiple approaches finding the solution(s), and must have exercises for practicing skills.)

VI. Reaction Paper (TPE #'s 3, 4, 5, 6c, 7, 8, 9, 10, 11, 12, 13)

Read The new Common Core State Standards Initiative (CCSSI). You are asked to read relevant parts directly related to your area of focus. Reflect upon the demands the profession and what you anticipate to do to be effective in addressing those demands. Be honest with your comments and keep your comments centered on the subject of the reading content. The report should be at least two pages in length.

(15 points: Your grade is based on the openness, veracity and directness of your paper. Be clear, succinct and direct to the point.)

VII. Attend a Linked Learning Presentation. A reaction discussion will take place in class from which a reaction paper to the content of the presentation will be generated and submitted.

VIII. Final Examination (TPE #'s 3, 4, 5, 6c, 7, 8, 9, 10, 11, 12, 13)

Every student enrolled in this course is required to complete the final examination in order to receive a grade. **Absolutely no one is exempted from the final examination.**

Questions will require short paragraph answers that address all class discussions, textbook and other readings, your knowledge of the CCSS for Mathematics and Framework, your personal experience working with secondary school students, and your competency and knowledge in teaching mathematics in a secondary school setting.

(15 points: Your grade is based on the points earned based on the competency of content and pedagogical understanding demonstrated in the responses to the questions of the final examination.)

IX. General Reminders:

Read assigned materials completely **before** coming to class. This good practice makes participation more active and discussion more worthwhile.

Plagiarism is a serious offense, which will not be tolerated at all times. Every step will be taken to assure that this malpractice is dealt with accordingly. Always remember to give credit to the source. If a particular lesson plan was taken from the Internet, provide the URL. If the exact words will be used as part of the text, always italicize these words and give proper references.

In writing reports, pay particular attention to the mechanics of writing (grammar, sentence structure, spelling, punctuation, paragraphing, and organization of thoughts) in addition to the content. **Remember that an important prerequisite of teaching is the ability to communicate ideas clearly and appropriately. If there is any specific format asked, make sure that the format is followed!**

Also, all submissions must be **punctual!** All late submissions will have a 10% deduction per week from the raw score.

5. Grading Procedures:

Rubric for assessing assignments

	A- to A	B- to B+	D to C+	Unacceptable
Attendance				
Present	9 - 10 classes	7 - 8 classes	5 - 6 classes	<5 classes
Tardiness/leaving early	Never or once	2 - 3 times	4 - 5 times	> 5 times
Reaction Paper				
Good description of standards, appropriate critique, clear analysis and discussion, reflections on results, implications to teaching, posted on WebCT	All criteria	4 criteria	3 criteria	<3 criteria
Article Report				
Summary, appropriate critique of the article, clear analysis, discussion, and implications to teaching, cited source, posted on WebCT	All criteria	4 criteria	3 criteria	<3 criteria
Fieldwork Observations				
2 lessons, well-documented with specific examples and evidence, cover page summary with appropriate & insightful comments, reflections related to class discussions, implications to own teaching	All criteria	4 criteria	3 criteria	<3 criteria
Packet of Activities				
Outline is followed, total of 5 submissions, appropriate grade level, good	All criteria	4 criteria	3 criteria	<3 criteria

	A- to A	B- to B+	D to C+	Unacceptable
selections, alignment with CA standards				
Lesson Plan				
Appropriate & clear objectives, standards, use of models and technology, input and procedures, differentiated instruction, rubric, each group member's name and contribution stated clearly, posted on WebCT, cited resources appropriately	All criteria	7 - 8 criteria	5 - 6 criteria	<5 criteria
Final Examination				
Appropriate, specific elementary school examples, clear explanation, justification, accurate content, good pedagogy	All criteria	4 criteria	3 criteria	<3 criteria

Attendance and Participation	10 pts. _____
Article Report	15 pts. _____
Fieldwork Observations	10 pts. _____
Lesson Plan	
Linked Learning Reaction Paper	
10 pts.	
Packet of Activities	15 pts. _____
Reaction Paper	15 pts. _____
Final Examination	15 pts. _____
TOTAL:	100 pts. _____

A :95-100 pts.	B+: 87-89 pts.	C+: 78-79 pts.	D: 60-69 pts.
A-:90-94 pts.	B : 83-86 pts.	C : 73-77 pts	F: ≤ 59 pts.
	B-: 80-82 pts.	C-: 70-72 pts.	

6. Required Textbook:

Brahier, Daniel (2000). Teaching Secondary and Middle School Mathematics. Boston, MA: Allyn and Bacon.

Recommended:

Sobel, Max and Maletsky, Evan. (1999). Teaching Mathematics A Sourcebook of Aids, Activities, and Strategies (Third Edition). Allyn and Bacon.

California Department of Education. (1999). Mathematics Framework for California Public Schools Kindergarten Through Twelve. California Department of Education.

National Council of teachers of Mathematics (2000). Principles and Standards for School Mathematics. Reston, VA: NCTM Publications.

NOTE: Additional reading materials to supplement the textbooks may be introduced to the class. The students will bear the responsibility for the incurred costs in acquiring these materials.

7. Sources of Information:

http://www.cde.ca.gov	http://www.nctm.org
http://www.mathforum.org/	http://www.maa.org
http://www.ams.org	http://www.pbs.org

8. Course Schedule of Meetings:

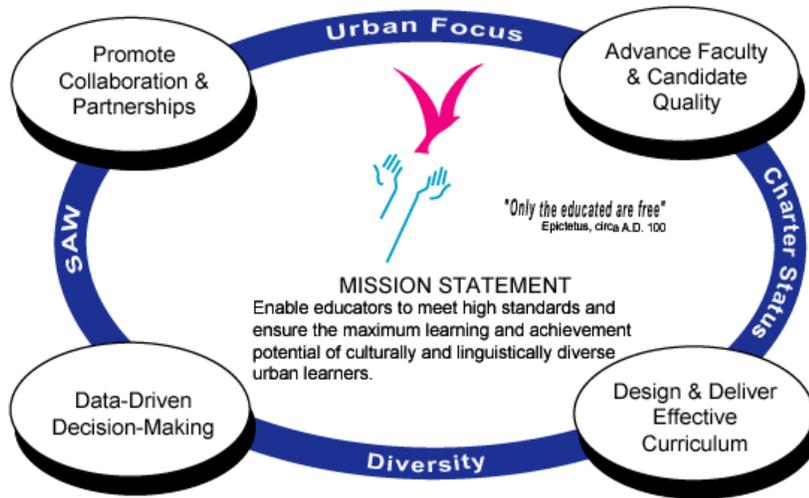
Meeting 1	09/22/04	Introduction/Overview; Discussion of Course Requirements
Meeting 2	09/29/04	Functions
Meeting 3	10/07/04	Functions
Meeting 4	10/14/04	Number and Quantity
Meeting 5	10/21/04	Number and Quantity
Meeting 6	10/28/04	Algebra
Meeting 7	11/04/04	Algebra
Meeting 8	11/11/04	Statistics and Probability
Meeting 9	11/18/04	Statistics and Probability
Meeting 10	12/02/04	Final Review
Meeting 11	12/09/04	Final Examination

Note: Please allow some flexibility since the schedule might change.

**Charter College of Education
Conceptual Framework**

VISION

Promoting an inclusive environment to support caring professional educators for the future, so that all learners achieve their fullest potential.



CORE VALUES / DISPOSITIONS

- Equity
- Cultural, ability and linguistic diversity
- Inclusiveness
- Inquiry and reflection
- Lifelong learning
- Technology integration
- Collaboration and community participation
- Democratic participation
- Accountability for learner outcomes

<u>Teacher Performance Expectations (TPE)</u>	<u>Technology Standards</u>
<p>DOMAIN 1. Subject Matter Comprehensible 1B) Mathematics</p> <p>DOMAIN 2. Assessing Student Learning 2) Monitoring Student Learning 3) Interpretation and Use of Assessments</p> <p>DOMAIN 3. Engaging and Supporting Students 4) Making Content Accessible 5) Student Engagement 6C) Development Appropriate Teaching Gr. 9-12 7) Teaching English Learners</p> <p>DOMAIN 4. Planning Instruction and Designing Learning 8) Learning About Students 9) Instructional Planning</p> <p>DOMAIN 5. Crating and Maintaining Effective Environments 10) Instructional Time 11) Social Environment</p> <p>DOMAIN 6. Developing as a Professional 12) Professional, Legal and Ethical Obligations 13) Professional Growth</p>	<p>3) Appropriate use of computer-based technology in teaching/learning</p> <p>6) Interacts with other using email</p> <p>7) Familiar with variety of computer-based collaborative tools</p> <p>11) Assess authenticity, reliability, and bias of date gathered</p> <p>12) Identify student learning styles and determine appropriate technology</p> <p>13) Considers content and selects best technology support resources</p> <p>14) Create effective learning environments using computer-based technology</p> <p>15) Analyze best practices and research on use of technology</p> <p>16) Knowledge of copyright issues</p>

