



SACRAMENTO  
STATE

# Course Change Proposal Form A



<b>Academic Group (College):</b> <b>NSM</b>	<b>Academic Organization (Department):</b> <b>Mathematics</b>	<b>Date:</b> <b>4/10/08</b>
<b>Type of Course Proposal:</b> New <input checked="" type="checkbox"/> Change <input type="checkbox"/> Deletion <input type="checkbox"/>	<b>Department Chair:</b> <b>Roger Leezer</b>	<b>Submitted by:</b> <b>Gary Shannon</b>
<b>Does this course fulfill a requirement for single-subject or multiple subject credential students? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>	<b>For Catalog Copy: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b> <b>CCE (Extension): Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>	<b>Semester Effective:</b> Fall <input type="checkbox"/> Spring <input checked="" type="checkbox"/> , 2009

<b>This course replaces experimental course Subject Area (prefix) and Catalog Nbr (course number):</b>	<b>Math 196H</b>
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**Change from:**

<b>Subject Area (prefix) &amp; Catalog Nbr (course no.):</b>	<b>Title:</b>	<b>Units:</b>
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**Change to:**

<b>Subject Area (prefix) &amp; Catalog Nbr (course no.):</b> <b>Math 107C</b>	<b>Title:</b> <b>Elementary Mathematics and the Learning Process</b>	<b>Units:</b> <b>3</b>
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**JUSTIFICATION:**

This course is one of the two integrated studies courses for a BA in Liberal Studies. Each Liberal Studies major is required to take an integrated studies course, and only one such course is presently offered (although this course has been offered twice on an experimental basis).

**NEW COURSE DESCRIPTION:** (Not to exceed 80 words, and language should conform to catalog copy. See <http://www.csus.edu/acaf/univmanual/crspsl.htm>- Guidelines for Catalog Course Description)

Students will build on their understanding of material of Math 17, 107A/B by deepening their understanding of the concepts taught in these courses. This will be done by examining these concepts in relationship to theories of learning and development. Students will examine mathematical concepts related to K-8 with respect to the treatment of reasoning, communication, and the perspective of Cognitive and Social Constructivism; and throughout the course will consider the questions of "What is mathematics?" and "How is mathematics learned?"

**Note:**

**Prerequisite: Math 17, Math 107A/B, and CHDV 30 or 35**  
**Enforced at Registration: Yes  No**

**Corequisite:**  
**Enforced at Registration: Yes  No**

**CAN (California Articulation Number):**

**Graded: Letter  Credit/No Credit**       **Instructor Approval Required? Yes  No**

**Course Classification (e.g., lecture, lab, seminar, discussion):**  
**C2 (Lecture)**      **Title for CMS (not more than 30 characters):**  
**Elem Math & Learning Process**

**Cross Listed? Yes  No**       **If yes, do they meet together and fulfill the same requirement, and what is the other course.**

**How Many Times Can This Course be Taken for Credit?   1**  
**Can the course be taken for Credit more than once during the same term? Yes  No**

**FOR NEW COURSE PROPOSALS OR SUBSTANTIVE CHANGES ONLY:**

**Description of the Expected Learning Outcomes:** Describe outcomes using the following format: "Students will be able to: 1), 2), etc."  
See the example at <http://www.csus.edu/acaf/example.htm>

**Students will be able to:**

- 1) Explain the relationship between developmental perspective and learning/instructing children in mathematics
- 2) Explain the mathematical and developmental ideas related to the existence of 1-1 correspondence between some finite sets and some infinite sets
- 3) Demonstrate an understanding of numbers, radix fractions, and operations in specific bases and in a general base,  $b$ ; and how this is related to a child's learning of numbers and operations in base 10.
- 4) Develop an understanding of why various mathematical algorithms work, and explore why this understanding is important to pedagogy
- 5) Construct formulas for the perimeter, area, and volume of common geometric objects using both traditional and nontraditional approaches, and explain how the process of constructing these formulas is related to learning practices.
- 6) Examine geometric ideas using van Hiele's model, and show how this model can be used for instruction from a developmental perspective.

\*\*Attach a list of the required/recommended course readings and activities [Note: it is understood that these are updated and modified as needed by the instructor(s).] This attachment should be forwarded only to your Dean's office, not Academic Affairs.

**Assessment Strategies:** A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above:

**Regular homework and readings, exams, group presentations, paper**

**For whom is this course being developed?**

Majors in the Dept \_\_\_ Majors of other Depts X Minors in the Dept \_\_\_ General Education \_\_\_ Other \_\_\_

Is this course required in a degree program (major, minor, graduate degree, certificate)? Yes \_\_\_ No X

If yes, identify program(s):

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer facilities, faculty, etc.)? Yes \_\_\_ No X

If yes, attach a description of resources needed and verify that resources are available.

Indicate which department or programs will be affected by the proposed course (if any). Liberal Studies

*The Department Chair's signature below indicates that affected programs have been sent a copy of this proposal form.*

**Approvals:** If proposed change, new course or deletion is approved, sign and date below. If not approved, forward without signing to the next reviewing authority, and attach an explanatory memorandum to the original copy.

**Signatures:**

	Date
Department Chair: <i> Elaine E. Wray</i>	5/8/08
College Dean or Associate Dean: <i> Samuel J. Jeffers</i>	5/9/08
CPSP (for school personnel courses ONLY)	
Associate Vice President and Dean for Academic Programs	

Distribution: Academic Affairs (original), Department Chair and College Dean. Dean's office to send original after approval to Academic Affairs, at mail zip 6016. An electronic copy must also be sent.

## **Required/Recommended Readings:**

Knowing and Teaching Elementary Mathematics, by Liping Ma

The Construction Zone: Working for Cognitive Change in School (Newman, Griffin, & Cole)

Symbolizing and Communicating in Mathematics Classrooms (Cobb, Yackel, & McClain)

Topics for additional readings will include the following:

Implications of Piaget's ideas for teaching and learning mathematics

Vygotsky's "Zone of Proximal Development" and the social construction of knowledge

The conceptual change approach to mathematics learning and teaching

Mathematics as a Cultural Practice