

# NEW COURSE PROPOSAL

**Courses must be submitted by November 2, 2009, for priority catalog review.**

DATE (*Change if modified and redate file with current date*) **APRIL 6, 2010; REV 4.27.10**

PROGRAM AREA(S) **EDUCATION & MATH**

**1. Course Information.** *[Follow accepted catalog format.]*

**Prefix(es)** (Add additional prefixes if cross-listed) **and Course No. EDUC 818 & MATH 818**

**Title:** CSET Mathematics Exam 110 Prep Course **Units: 2**

x Prerequisites Math 208 and 308 or permission of instructor

Corequisites

Consent of Instructor Required for Enrollment

**Catalog Description** (Do not use any symbols): A preparation course for the CSET Mathematics Exam 110. Provides a review of algebraic structures, polynomial equations and inequalities, functions, linear algebra, and number theory. Focuses on relationships between topical areas, and on more complex problem solving. Repeatable up to four units.

**Grading Scheme:**

- A-F Grades
- x Credit/No Credit
- Optional (Student Choice)

**Repeatability:**

- x Repeatable for a maximum of 4 units
- X Total Completions Allowed 2
- Multiple Enrollment in Same Semester

**Course Level Information:**

- Undergraduate
- x Post-Baccalaureate/Credential
- Graduate

**Mode of Instruction/Components** (*Hours per Unit are defaulted.*)

	Units	Hours per Unit	Benchmark Enrollment	Graded Component	CS & HEGIS # (Filled in by the Dean)
Lecture	<input type="checkbox"/>	1	<input type="checkbox"/>	<input type="checkbox"/>	_____
Seminar	<input type="checkbox"/>	1	<input type="checkbox"/>	<input type="checkbox"/>	_____
Laboratory	<input type="checkbox"/>	3	<input type="checkbox"/>	<input type="checkbox"/>	_____
Activity	2	2	25	x	_____
Field Studies	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	_____
Indep Study	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	_____
Other Blank	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	_____

Leave the following hours per week areas blank. The hours per week will be filled out for you.

4 hours activity per week  
 hours blank per week

**2. Course Attributes:**

**General Education Categories:** All courses with GE category notations (including deletions) must be submitted to the GE website: <http://summit.csuci.edu/geapproval>. Upon completion, the GE Committee will forward your documents to the Curriculum Committee for further processing.

**A (English Language, Communication, Critical Thinking)**

- A-1 Oral Communication
- A-2 English Writing
- A-3 Critical Thinking

**B (Mathematics, Sciences & Technology)**

- B-1 Physical Sciences
- B-2 Life Sciences – Biology
- B-3 Mathematics – Mathematics and Applications
- B-4 Computers and Information Technology

**C (Fine Arts, Literature, Languages & Cultures)**

- C-1 Art
- C-2 Literature Courses

C-3a Language  
C-3b Multicultural

**D (Social Perspectives)**

**E (Human Psychological and Physiological Perspectives)**

**UDIGE/INTD Interdisciplinary**

**Meets University Writing Requirement**

**Meets University Language Requirement**

**American Institutions, Title V Section 40404:** Government US Constitution US History  
Refer to website, Exec Order 405, for more information: <http://senate.csuci.edu/comm/curriculum/resources.htm>

**Service Learning Course** (Approval from the Center for Community Engagement must be received before you can request this course attribute).

**3. Justification and Requirements for the Course.** (Make a brief statement to justify the need for the course)

A. Justification: The State of California's Commission on Teacher Credentialing has developed a subject matter credential in math called Foundation Level Math. Addressing the advertised shortages in math and science teaching, this course will help prepare future teachers with the content required for one of the two subject matter exams to meet subject matter competency for this credential. This fulfills the need for an expedited pathway for producing math and science teachers as advocated by the CSU Chancellor's Office.

B. Degree Requirement:

Requirement for the Major/Minor  
Elective for the Major/Minor  
x Free Elective

**Note: Submit Program Modification if this course changes your program.**

**4. Learning Objectives.** (List in numerical order. You may wish to use the following resource in utilizing measurable verbs: <http://senate.csuci.edu/comm/curriculum/resources.htm>)

Upon completion of the course, the student will be able to:

- Show that something is or is not a field or group
- Explain the difference between, and give examples of, ordered and not ordered sets of numbers
- Graph systems of inequalities
- Use and prove the Rational Roots Theorem, Factor Theorem, Conjugate Roots Theorem, Quadratic Formula, and Binomial Theorem
- Explain the relationship between parallel and perpendicular lines
- Find the domain and range of functions, including functions that have been composed
- Use the one-to-one and onto properties of functions
- Find the sum, difference, product, quotient, and composition of functions
- Find the inverse of a function
- Graph and apply polynomials, rational expressions, radicals, and absolute values to problem solving
- Determine if the graph of a rational equation has a slant asymptote and be able to give the equation of the slant asymptote
- Solve, graph, and apply exponential and logarithmic functions/equations
- Add, subtract, and multiply matrices
- Find the determinant of a matrix
- Solve equations involving matrices and determine the solvability of an equation involving matrices.
- Apply the geometric interpretation of vectors
- Apply the basic operations of vectors, including addition, subtraction, scalar multiplication, dot products and cross products
- Prove basic properties of vectors
- Prove basic theorems in number theory by induction
- Explain and apply the Euclidean Algorithm
- Explain and apply the Fundamental Theorem of Arithmetic

**5. Course Content in Outline Form.** [Be as brief as possible, but use as much space as necessary]

- Basic groups, rings and fields
- Basic properties of real and complex numbers
- Graphing systems of inequalities
- Graphs of parallel and perpendicular lines
- Solving polynomial equations – factor theorem, rational roots theorem, conjugate roots theorem, quadratic formula

- Binomial Theorem
- Functions – properties, operations, domain, range
- Exponential functions/equations
- Logarithmic functions/equations
- Matrices – operations, determinants, identity, solving equations, solvability
- Vectors –operations, geometric interpretation, angle between vectors, orthogonal vectors
- Proof by Induction
- Euclidean Algorithm
- Fundamental Theorem of Arithmetic

Does this course content overlap with a course offered in your academic program? **Yes**  **No**

If YES, what course(s) and provide a justification of the overlap.

Does this course content overlap a course offered in another academic area? **Yes**  **No**

If YES, what course(s) and provide a justification of the overlap.

Overlapping courses require Chairs' signatures.

**6. Cross-listed Courses** *(Please note each prefix in item No. 1)*

**A.** List Cross-listed Courses (Signature of Academic Chair(s) of the other academic area(s) is required).  
List each cross-listed prefix for the course: EDUC and MATH

**B.** Program responsible for staffing: EDUC

**7. References.** *[Provide 3 - 5 references]*

See Subject matter standards [http://www.cset.nesinc.com/PDFs/CS\\_mathematics\\_SMR.pdf](http://www.cset.nesinc.com/PDFs/CS_mathematics_SMR.pdf)

**8. Tenure Track Faculty Qualified to Teach This Course.**

Merilyn Buchanan, any math faculty

**9. Requested Effective Date:**

First semester offered: Summer 2010 through Extended Education

**10. New Resources Requested.** **Yes**  **No**

If YES, list the resources needed.

**A.** Computer Needs (data processing, audio visual, broadcasting, other equipment, etc.)  
Access to CI Learn—existing resource

**B.** Library Needs (streaming media, video hosting, databases, exhibit space, etc.)

**C.** Facility/Space/Transportation Needs

**D.** Lab Fee Requested (please refer to Dean's Office for additional processing) **Yes**  **No**

**E.** Other

11. Will this new course alter any degree, credential, certificate, or minor in your program? Yes  No

If, YES attach a program update or program modification form for all programs affected.

Priority deadline for New Minors and Programs: October 5, 2009 of preceding year.

Priority deadline for Course Proposals and Modifications: November 2, 2009, of preceding year.

Last day to submit forms to be considered during the current academic year: April 15<sup>th</sup>.

Jeanne M. Grier & Ivona Grzegorcyk

April 6, 2010

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Proposer of Course (Type in name. Signatures will be collected after Curriculum approval)

Date

# Approval Sheet

**Program/Course:**

If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

Program Chair		
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Signature

Date

Program Chair		
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Signature

Date

Program Chair		
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Signature

Date

General Education Chair		
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Signature

Date

Center for International Affairs Director		
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Signature

Date

Center for Integrative Studies Director		
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Signature

Date

Center for Multicultural Engagement Director		
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Signature

Date

Center for Civic Engagement Director		
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Signature

Date

Curriculum Chair		
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Signature

Date

Dean of Faculty		
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Signature

Date