#### **CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS**

# **NEW COURSE PROPOSAL**

#### PROGRAM AREAS \_\_\_\_\_MATH

**1.** Catalog Description of the Course. [Include the course prefix, number, full title, and units. Provide a course narrative including prerequisites and corequisites. If any of the following apply, include in the description: Repeatability (May be repeated to a maximum of \_\_\_\_\_ units); time distribution (Lecture \_\_\_\_\_ hours, laboratory \_\_\_\_\_ hours); non-traditional grading system (Graded CR/NC, ABC/NC). Follow accepted catalog format.]

## MATH 108 MATHEMATICAL THINKING (3)

Three hours of lecture per week.

Prerequisite: A passing score on the Entry Level Mathematics examination or Math 095.

Presents the diversity of mathematics and the spirit, in which it is employed in various situations, including different

problem solving strategies, inductive- deductive reasoning, paradoxes, puzzles and mathematical modeling. The contributions of various cultures and influences of other disciplines to mathematical thinking are studied. GenEd : B3

### 2. Mode of Instruction.

	Units	Hours per Unit	Benchmark Enrollment
Lecture	3	1	24
Seminar			
Laboratory			
Activity			

**3.** Justification and Learning Objectives for the Course. (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) [Use as much space as necessary]

This course is a general education course B3 for non-science majors. It includes Critical Thinking problems from CCCT test for Secondary school teachers.

Through this course, students will be able to

- Discuss structure of language with respect to Critical thinking/Reasoning
- Assess the weighing of evidence as it is basic to the development of logical arguments.
- Recognize the diversity of mathematics
- Analyze the relation between common language and mathematics. In particular, they will be able to use mathematical reasoning to analyze situations in common language and vice-versa.
- Study the influences of other cultures and different disciplines
- Focus on the underlying logic of situations expressed in common language.
- Apply logical thinking to problems from elementary geometry and algebra.
- Recognize common fallacies in thinking.

#### 4. Is this a General Education Course YES

If Yes, indicate GE category:

A (English Language, Communication, Critical Thinking)	
B (Mathematics & Sciences)	B3
C (Fine Arts, Literature, Languages & Cultures)	
D (Social Perspectives)	
E (Human Psychological and Physiological Perspectives)	

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

Structure of language - Critical thinking/Reasoning

Introduction to inductive and deductive reasoning in Mathematics.

Analysis of paradoxes and erroneous arguments in Mathematics (That includes situations from common language that have been modeled mathematically)

Selection of mathematical ideas: Introduction to the rigorous foundations of Euclidean Geometry, Basic Algebra, etc. Problem solving strategies in Geometry, Algebra and Arithmetic.

The contributions of various cultures and influences of other disciplines.

6. **References.** [Provide 3 - 5 references on which this course is based and/or support it.]

\* Logic. A very short introduction, by Graham Priest Oxford University Press (2000)

\* *Thinking Mathematically*, R. Blitzer, Prentice Hall(2000)

\* Mathematical Vistas, P.Hilton, D. Holton, J. Pedersen, Springer (2000)

\* A Mathematics Sampler, Topics for Liberal Arts, W. Berlinghoff, K. Grant, D. Skrien, Ardsley Publishers, (2001)

### 7. List Faculty Qualified to Teach This Course.

All Mathematics Faculty

#### 8. Frequency.

a. Projected semesters to be offered: Fall X\_ Spring X\_ Summer \_\_\_\_\_

### 9. New Resources Required.

a. Computer (data processing), audio visual, broadcasting needs, other equipment

None

b. Library needs

None

c. Facility/space needs

None

### 10. Consultation.

Attach consultation sheet from all program areas, Library, and others (if necessary)

11. If this new course will alter any degree, credential, certificate, or minor in your program, attach a program modification.

Ivona Grzegorczyk	1/8/03
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Proposer of Course

Date