CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS

NEW COURSE PROPOSAL

DATE OCTOBER 18, 2006
PROGRAM AREA MATH

1. Catalog Description of the Course. *[Follow accepted catalog format.]*

Prefix MATH Course# 301 Title Discrete Mathematics for IT Units (3)
3 hours lecture per week
hours lecture per week
☐ Prerequisites
☐ Corequisites
Description Applications of sets, logic, algebraic systems, combinatorics, graph theory, moduli calculus in information technology. Basic coding, coding errors and Hamming codes and applications.

	Graded	
☐ Gen Ed Categories	☐ CR/NC	☐ Repeatable for up to 9 units
☐ Lab Fee Required	☒ A - F	Total Completions Allowed 3
	☐ Optional (Student's choice)	☐ Multiple Enrollment in same semester

2. Mode of Instruction.

	Units	Hours per Unit	Benchmark Enrollment	Graded Component	CS # (filled in by Dean)
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]*
The course is a required course for Information Technology majors.
This is hands-on application course that doeas not require calculus background.

Through this course, students will be able to

- Apply the principles of Logic to Information technology
- Apply the set theory in various contexts
- Compute the number of ways complicated tasks can be performed
- Incorporate applied problems into graph theoretic framework and using this interpretation to solve them.
- Explain various coding techniques
- Express quantitative ideas in oral and written form.

This course is not designed to satisfy the University Writing or Language requirements.

4. Is this a General Education Course **YES** ☐ **NO** ☒
If Yes, indicate GE category and attach GE Criteria Form:

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) ☐
UD Interdisciplinary ☐

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

- Foundations of Information Technology
- Problem solving in discrete mathematics.
- Logic: Propositions, Predicates, Quantifiers, Boolean operators and various quaries.
- Basic Set Theory and Set Operations.
- Introduction to Mathematical Reasoning: Induction, Recursive Definitions and Algorithms.
- Combinatorics: Counting, the Pigeonhole Principle, Permutations and Combinations, Introduction to Discrete Probability, and complexity of tasks
- Graph Theory: Relations and their Properties, Introduction to Graphs and Trees, Connectivity, Euler and Hamilton Paths, Appllications of Graphs and Trees.
- Codes for Information Technology

Does this course overlap a course offered in your academic program? YES ☐ NO ☒
If YES, what course(s) and provide a justification of the overlap?

Does this course overlap a course offered in another academic area? YES ☐ NO ☒
If YES, what course(s) and provide a justification of the overlap?
Signature of Academic Chair(s) of the other academic area(s) is required on the signature sheet below.

6. Cross-listed Courses (Please fill out separate form for each PREFIX)
List Cross-listed Courses

Signature of Academic Chair(s) of the other academic area(s) is required on the signature sheet below.

Department responsible for staffing: MATH

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

"Discrete Mathematics: Elementary and Beyond", Ch L Hemleben, Laszlo Lovasz, Jozsef Pelikan, K Vesztergombi, Springer 2006.
"Discrete Mathematics and its Applications" ,Kenneth H. Rosen (4th Edition). 1999
"Discrete and Combinatorial Mathematics", Ralph Grimaldi. Pearson Education (5th Edition) 2005

8. List Faculty Qualified to Teach This Course.

Math faculty

9. Frequency.
a. Projected semesters to be offered: Fall ☒ Spring ☒ Summer ☐

10. New Resources Required. YES ☐ NO ☒
If YES, list the resources needed and obtain signatures from the appropriate programs/units on the sheet below.

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

b. Library needs

c. Facility/space needs
classroom

11. Will this new course alter any degree, credential, certificate, or minor in your program? YES ☐ NO ☒
If, YES attach a program modification form for all programs affected.

Ivona Grzegorczyk	October 3,2006
Proposer of Course	Date

Approval Sheet

Program/Course: MATH 301

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Program Chair(s) Date

_____

General Education Chair(s) Date

_____

Curriculum Committee Chair(s) Date

_____

Dean of Faculty Date