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
3 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.

Gen Ed
CR/NC
Repeatable for up to 9 units

Lab Fee Required
Optional (Student’s choice)

A - F Total Completions Allowed 3

Repeatable for up to 9 units

2. Mode of Instruction.

<table>
<thead>
<tr>
<th>Component</th>
<th>Units</th>
<th>Hours per Unit</th>
<th>Benchmark Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>3</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Seminar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 does 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 ☐
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 queries.
- Basic Set Theory and Set Operations.
- 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, Applications 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.*


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
Proposer of Course

October 3, 2006
Date
<table>
<thead>
<tr>
<th>Role</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Chair(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Education Chair(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum Committee Chair(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dean of Faculty</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>