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 354 ANALYSIS OF ALGORITHMS (3)**

Three hours of lectures per week
Prerequisites: MATH 300 and some computer programming experience.
Computer-oriented study of seminumerical and non-numerical algorithms. Topics include: sorting, tree searching, generation of combinatorial structures, algorithm proof techniques, best algorithms, programming complexity, and string matching.

2. **Mode of Instruction.**

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<th>Units</th>
<th>Hours per Unit</th>
<th>Benchmark Enrollment</th>
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<tr>
<td>Lecture</td>
<td>3</td>
<td>1</td>
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<td>Seminar</td>
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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 open to any student interested in designing computer algorithms. The course is an elective for Mathematics majors and required for Computer Science majors.

Through this course, students will be able to

- Construct seminumerical and non-numerical algorithms
- Implement algorithms on computers
- Use sorting, tree searching and combinatorial structures
- Demonstrate algorithm proof techniques
- Analyze programming complexity
- Express concepts and techniques of the theory of algorithms 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** No
   If Yes, indicate GE category:
   - A (English Language, Communication, Critical Thinking)
   - B (Mathematics & Sciences)
   - C (Fine Arts, Literature, Languages & Cultures)
   - D (Social Perspectives)
   - E (Human Psychological and Physiological Perspectives)
   - INTERDISCIPLINARY
5. **Course Content in Outline Form.** *Be as brief as possible, but use as much space as necessary*

   Computer oriented study of seminumerical and non-numerical algorithms
   Sorting, tree searching
   Generation of combinatorial structures
   Algorithm proof techniques
   Best algorithms
   Programming complexity
   String matching.

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


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

   All Mathematics and Computer Science 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

      Computer Lab

   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 ________________________________

    Proposer of Course                      Date