

# 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.**

	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 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:**

<b>A (English Language, Communication, Critical Thinking)</b>	
<b>B (Mathematics &amp; Sciences)</b>	
<b>C (Fine Arts, Literature, Languages &amp; Cultures)</b>	
<b>D (Social Perspectives)</b>	
<b>E (Human Psychological and Physiological Perspectives)</b>	
<b>INTERDISCIPLINARY</b>	

**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.]*

"Algorithm Design" by Goodrich and Tamassia, Wiley Higher Education, (2000).

**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 Grzegorzczuk \_\_\_\_\_ 1/8/03 \_\_\_\_\_  
Proposer of Course Date