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 429 OPERATIONS RESEARCH (3)
   Three hours of lecture per week.
   Prerequisite: Math 340, or Math 352 or equivalent
   Introduction to applied mathematical methods in management sciences. Topics include: linear programming, managerial optimization methods, duality and equilibrium theorems, the simplex method, development of tools and methods required to make decisions and to solve operational problems in economy, decision and risk analysis, modeling and game theory. Topics of parametric programming, large-scale methods, generalized programming.

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]*

   The course is an elective for Mathematics and Bussiness majors.

   Through this course, students will be able to
   - Explain the philosophical basis for ethical decision making
   - Apply the principles of philosophy, logic and communications to determine appropriate responses to ethical dilemmas
   - Evaluate the costs and benefits of alternative forms of public policy related to responding to various models of modern society and its organizations
   - Apply mathematical methods to basic problems of management sciences related to various models of modern society and its organizations
   - Apply linear programming, parametric programming, large-scale methods and generalized programming techniques.
   - Make decisions using operational models related to modern society ans its organizations by using quantitative methods.
   - Perform decision and risk analysis
   - Apply mathematical modeling and game theory to decision making in modern society and business organizations.
   - Present concepts and techniques of Operations Research 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**
   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]*

   Introduction to applied mathematical methods in management sciences.
   Principles of philosophy, logic and communications and ethical parameters in modern organizations
   Evaluation of the costs and benefits of alternative forms of public policy related to responding to various models of modern society and its organizations
   Linear programming, managerial optimization methods, duality and equilibrium theorems, the simplex method
   Development of tools and methods required to make decisions in to modern society ans its organizations
   Decision and risk analysis
   Modeling and game theory
   Topics of parametric programming, large-scale methods, generalized programming.

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

Operations Research, 3rd Ed, Wayne L. Winston (1997), Duxbury Press; ISBN: 0534520200
Introduction to Operations Research, 6th ed., F. S. Hillier, G. J. Lieberman (1995), McGraw-Hill ASIN: 0078414474 ;
Introduction to Statistical Quality Control, 4th ed., by D. C. Montgomery, (2000), Wiley & Sons; ISBN: 0471316482 ;

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

      No additional needs.

   b. Library needs

      None

   c. Facility/space needs

       None

10. **Consultation.**
    Attach consultation sheet from all program areas, Library, and others (if necessary)

Mathematics and Business programs

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

NEWCRSFR 9/30/02