

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 440 Operations Research (3)

Three hours of lecture per week.

Prerequisite Course in statistics

Introduction to applied mathematical methods in management sciences. 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	<u> 3 </u>	<u> 1 </u>	<u> 24 </u>
Seminar	<u> </u>	<u> </u>	<u> </u>
Laboratory	<u> </u>	<u> </u>	<u> </u>
Activity	<u> </u>	<u> </u>	<u> </u>

- 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 majors.

Through this course, students will be able to

- Apply mathematical methods to basic problems of management sciences.
- Use linear programming, parametric programming, large-scale methods and generalized programming techniques.
- Make decisions and solve operational problems in economy using quantitative methods.
- Perform decision and risk analysis
- Use modeling and game theory.
- 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** **YES** **NO**
If Yes, indicate GE category:

A (English Language, Communication, Critical Thinking)	
B (Mathematics & Sciences)	B3
C (Fine Arts, Literature, Languages & Cultures)	
D (Social Perspectives)	D
E (Human Psychological and Physiological Perspectives)	
INTERDISCIPLINARY	X

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.

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.

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 ☒ Spring ☒ Summer ☐

9. New Resources Required.

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

None

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.

Proposer of Course

Date