Courses must be submitted by October 15, 2010, and finalized by the end of the fall semester to make the next catalog (2011-12) production

DATE (CHANGE DATE EACH TIME REVISED): 10.7.10 REV 11.18.10 REV. 10.01.12; REV 11.27.12; REV 12.11.12; REV 12.19.12

PROGRAM AREA(S) :ECON

Directions: All of sections of this form must be completed for course modifications. Use YELLOWED areas to enter data. All documents are stand alone sources of course information.

1. **Course Information.**
   *[Follow accepted catalog format.] (**Add additional prefixes i f cross-listed**)*

OLD	NEW
Prefix ECON Course# 488 Title **APPLIED MANAGERIAL ECONOMETRICS** Units (4)	Prefix ECON Course# 488 Title **ECONOMETRICS** Units (4)
3 hours lecture per week	3 hours lecture per week
2 hours activity per week	2 hours activity per week
X Prerequisites: ECON 310 or 329; MATH 140 or 150, BIOL 202 or MATH 340 or MATH 342.	X Prerequisites: ECON 310 or 329; MATH 140 or 150; or MATH 202 or 329 or 352.
Consent of Instructor Required for Enrollment	Consent of Instructor Required for Enrollment
Corequisites:	Corequisites:

Catalog Description (Do not use any symbols):
Emphasis on the collection and manipulation of economic data, and the application of econometric methods to business and resource management issues. Development of testable hypotheses, applications of estimation techniques and interpretation of regression results. Use of econometric software applications to estimate statistical relations.

Catalog Description (Do not use any symbols):
Emphasis on the collection and manipulation of economic data, and the application of econometric methods to business and resource management issues. Development of testable hypotheses, applications of estimation techniques and interpretation of regression results. Use of econometric software applications to estimate statistical relations.

OLD:
General Education Categories
Graded
CR/NC
Repeatable for up to ___ units
___ Lab Fee Requested   X A - F
Total Completions
Course Level:
X Undergraduate
___ Post-bac/Credential
___ Graduate
Optional (Student's choice)
Multiple Enrollment in same semester

NEW:
General Education Categories
Graded
CR/NC
Repeatable for up to ___ units
___ Lab Fee Requested   X A - F
Total Completions
Course Level:
X Undergraduate
___ Post-bac/Credential
___ Graduate
Optional (Student's choice)
Multiple Enrollment in same semester

2. **Mode of Instruction (Hours per Unit are defaulted)**   Hegis Code(s)_____

(Provided by the Dean)

Existing

	Units	Hours Per Unit	Benchmark Enrollment	Graded
Lecture	3	1	30	X
Seminar		1		
Lab		3		
Activity	1	2	30	X
Field Studies				
Indep Study				
Other blank				

Proposed

	Units	Hours Per Unit	Benchmark Enrollment	Graded	CS No. (filled out by Dean)
Lecture	3	1	20	X	
Seminar		1			
Lab		3			
Activity	1	2	20	X	
Field Studies					
Indep Study					
Other blank					

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3. Course Attributes:

☐ **General Education Categories**: All courses with GE category notations (including deletions) must be submitted to the GE website: http://summit.csuci.edu/geapproval. Upon completion, the GE Committee will forward your documents to the Curriculum Committee for further processing.

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
  B-4 Computers and Information Technology

C (Fine Arts, Literature, Languages & Cultures)
☐ C-1 Art
  C-2 Literature Courses
  C-3a Language
  C-3b Multicultural
  D (Social Perspectives)
  E (Human Psychological and Physiological Perspectives)
  UDIGE/INTD Interdisciplinary
  Meets University Writing Requirement
  Meets University Language Requirement

☐ **American Institutions, Title V Section 40404**: ☐ Government ☐ US Constitution ☐ US History
Refer to website, Exec Order 405, for more information: http://senate.csuci.edu/comm/curriculum/resources.htm
☐ **Service Learning Course** (Approval from the Center for Community Engagement must be received before you can request this course attribute).

4. Justification and Requirements for the Course. *[Make a brief statement to justify the need for the course]*

OLD	NEW
This course is required for the BA in Economics, the Resource Management Emphasis in the Environmental Science and Resource Management Program and is an upper division elective for the minor in Economics. The purpose of this course is to provide an introduction to the applied quantitative and analytical skills necessary to decision-makers in many contexts including the private and public sectors. Emphasis is placed on learning-by-doing: students develop fundamental econometric skills through the use of empirical data and statistical software which augments lecture-based instruction. The use of econometric techniques draws a critical link between theoretical models and empirical application	This course is required for the BA in Economics, the Resource Management Emphasis in the Environmental Science and Resource Management Program and is an upper division elective for the minor in Economics. The purpose of this course is to provide an introduction to the applied quantitative and analytical skills necessary to decision-makers in many contexts including the private and public sectors. Emphasis is placed on learning-by-doing: students develop fundamental econometric skills through the use of empirical data and statistical software which augments lecture-based instruction. The use of econometric techniques draws a critical link between theoretical models and empirical application

X Requirement for the Major/Minor
☐ Elective for the Major/Minor
  Free Elective
	X Requirement for the Major/Minor
	☐ Elective for the Major/Minor
	  Free Elective

Submit Program Modification if this course changes your program.

5. Student Learning Outcomes. (List in numerical order.   You may wish to visit resource information at the following website: http://senate.csuci.edu/comm/curriculum/resources.htm)

Upon completion of the course, the student will be able to:

OLD
1. Collect appropriate data for various types of analyses.
2. Manage and prepare data for empirical analysis.
3. Formulate testable hypotheses on the basis of economic or management theory.
4. Employ econometric techniques to test hypotheses.

Upon completion of the course, the student will be able to:*

NEW
1. Collect appropriate data for various types of analyses. (3)
2. Manage and prepare data for empirical analysis. (3)
3. Formulate testable hypotheses on the basis of economic or management theory. (1,4)

5. Perform and interpret the results of multiple linear regression.
6. Detect and correct basic problems in regression analysis.
7. Generate forecasts from econometric results.

4. Apply econometric techniques to test hypotheses. (4)
5. Perform and interpret the results of multiple linear regression. (4)
6. Detect and correct basic problems in regression analysis. (4)
7. Generate forecasts from econometric results. (3,4)
*Program Learning Goals: 1) Apply economic analysis to evaluate everyday decisions and policy proposals. 2) Propose viable solutions to practical problems in economics. 3) Use empirical evidence to support an economic argument. 4) Conduct statistical analyses of data, and interpret statistical results. 5) Communicate effectively in written, spoken and graphical form about economic issues.

6. Course Content in Outline Form. (Be as brief as possible, but use as much space as necessary)

OLD

Introductory Concepts
Turning data into information: the purpose of empirical work
What is econometrics?: specialized techniques for economic data
Scope of applicability: management decisions related to business, natural resources and government

Working with Data
Data sources and reliability
Manipulation with spreadsheets, databases
Basic statistical programming: infilling, merging, sorting
Knowing the data: means, measures of dispersion, and correlation

Estimators and Estimates
Unbiasedness and efficiency
The concept of Least Squares

Applied Linear Regression
Key assumptions
Technique and interpretation: coefficients, measures of significance, goodness of fit
Hypothesis testing: single and joint hypotheses
Forecasting and simulation

Violations of the Key Assumptions: Detection and Correction
Non-linearities in economic data and log-linear conversions
Heteroskedasticity
Multicollinearity

Qualitative Explanatory Variables
Interpretation of categorical data
Developing meaningful interaction variables

Qualitative Dependent Variables
Logistic regression techniques
Interpretation of regression estimates as categorical probabilities
Polychotomous and ordered categorical dependent variables

Basic Time Series and Panel Analysis
Autoregressive Moving Average models
Fixed and random effects

Empirical Applications
Business: demand estimation, cost estimation, elasticity
Resource Management: resource depletion, pollution abatement, resource valuation, policy impact, I/O
Other potential applications

NEW

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Empirical Applications
Business: demand estimation, cost estimation, elasticity
Resource Management: resource depletion, pollution abatement, resource valuation, policy impact, I/O
Other potential applications

Does this course content overlap with a course offered in your academic program? Yes ▮   **No** X
 If YES, what course(s) and provide a justification of the overlap. ▮

Does this course content overlap a course offered in another academic area? Yes ▮   **No** X
 If YES, what course(s) and provide a justification of the overlap. ▮

 Overlapping courses require Chairs' signatures.

7. **Cross-listed Courses (Please note each prefix in item No. 1)**
   A. **List cross-listed courses (Signature of Academic Chair(s) of the other academic area(s) is required).**
   B. **List each cross-listed prefix for the course:** ▮
   C. **Program responsible for staffing:** ▮

8. **References.** *[Provide 3-5 references]*

    OLD

Bateman, Ian, Andrew Lovett and Julii Brainard. *Applied Environmental Economics*. Cambridge. 2003.
Berndt, Ernst. *The Practice of Econometrics: Classic and Contemporary*. Addisson Wesley. 1996.
Gujarati, Damodar. *Basic Econometrics 4th Edition*. McGraw-Hill. 2003.
Manly, Bryan F.J. *Statistics for Environmental Science and Management*. CRC Press. 2000.
Wooldridge, J.M. *Introductory Econometrics: A Modern Approach*. South-Western College Publishing. 2003.

    NEW

Dougherty, Christopher. *Introduction to Econometrics*. Oxford University Press. 2011.
Greene, William. *Econometric Analysis 7th ed*. Prentice Hall. 2011.
Gujarati, Damodar. *Econometrics*. Palgrace Macmillan. 2011.

9. **Tenure Track Faculty qualified to teach this course.**
Dr. Claudio Paiva
Dr. Paul Rivera
Dr. Jared Barton

10. **Requested Effective Date or First Semester offered:** ▮

11. **New Resource Requested: Yes** ▮   **No** ▮
    If YES, list the resources needed.

    A. **Computer Needs (data processing, audio visual, broadcasting, other equipment, etc.)**
       ▮

    B. **Library Needs (streaming media, video hosting, databases, exhibit space, etc.)**
       ▮

    C. **Facility/Space/Transportation Needs:**
       ▮

    D. **Lab Fee Requested: Yes** ▮   **No** ▮   **(Refer to the Dean's Office for additional processing)**
    E. **Other.** ▮

12. **Indicate Changes and Justification for Each.** *[Check all that apply and follow with justification. Be as brief as possible but, use as much space as necessary.]*

▮	Course title	▮	Course Content
▮	Prefix/suffix	▮	Course Learning Outcomes
▮	Course number		References
▮	Units		GE
▮	Staffing formula and enrollment limits	X	Other Justification and Additional Faculty
X	Prerequisites/Corequisites	▮	Reactivate Course
▮	Catalog description		
X	Mode of Instruction		

    Justification:

1. MATH 340 and 342 have changed to MATH 329 & 352.
2. Added new Tenure Track Faculty.

13. Will this course modification alter any degree, credential, certificate, or minor in your program? Yes   **No** X

If, YES attach a program update or program modification form for all programs affected.
Priority deadline for New Minors and Programs: October 4, 2010 of preceding year.
Priority deadline for Course Proposals and Modifications: October 15, 2010.
Last day to submit forms to be considered during the current academic year: April 15th.

William Cordeiro
_____   _____
Proposer(s) of Course Modification   Date
Type in name. Signatures will be collected after Curriculum approval.

Approval Sheet

Course:

If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

Program Chair		
	Signature	Date

Program Chair		
	Signature	Date

Program Chair		
	Signature	Date

General Education Chair		
	Signature	Date

Center for Intl Affairs Director		
	Signature	Date

Center for Integrative Studies Director		
	Signature	Date

Center for Multicultural Engagement Director		
	Signature	Date

Center for Civic Engagement and Service Learning Director		
	Signature	Date

Curriculum Chair		
	Signature	Date

Dean of Faculty		
	Signature	Date