Office of the Registrar
FORM 40G REV. 9/06

PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF A GRADUATE COURSE
(500-600 LEVEL)

Print Form

Graduate Council Document No. 08-9c

DEPARTMENT Civil Engineering

EFFECTIVE SESSION ~~Fall 2008~~ Spring 2009

36-07

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

[X]	1. New course with supporting documents (complete proposal form)	[ ]	7. Change in course attributes
[ ]	2. Add existing course offered at another campus	[ ]	8. Change in instructional hours
[ ]	3. Expiration of a course	[ ]	9. Change in course description
[ ]	4. Change in course number	[ ]	10. Change in course requisites
[ ]	5. Change in course title	[ ]	11. Change in semesters offered
[ ]	6. Change in course credit/type	[ ]	12. Transfer from one department to another

PROPOSED:	EXISTING:
Subject Abbreviation CE	Subject Abbreviation
Course Number 615 00	Course Number
Long Title Statistical and Econometric Methods II	
Short Title Stat Econometric II	

Abbreviated title will be entered by the Office of the Registrar if omitted. (22 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[ ] Summer [ ] Fall [X] Spring

CAMPUS(ES) INVOLVED
[ ] Calumet [ ] N. Central
[ ] Cont Ed [ ] Tech Statewide
[ ] Ft. Wayne [X] W. Lafayette
[ ] Indianapolis

CREDIT TYPE
1. Fixed Credit: Cr. Hrs. 3
2. Variable Credit Range: Minimum Cr. Hrs
(Check One) To [ ] Or [ ]
Maximum Cr. Hrs.
3. Equivalent Credit: Yes [ ] No [X]
4. Thesis Credit: Yes [ ] No [X]

COURSE ATTRIBUTES: Check All That Apply

1. Pass/Not Pass Only	[ ]	7. Registration Approval Type	Department [ ] Instructor [ ]
2. Satisfactory/Unsatisfactory Only	[ ]	8. Variable Title	[ ]
3. Repeatable	[ ]	9. Remedial	[ ]
Maximum Repeatable Credit:	[ ]	10. Honors	[ ]
4. Credit by Examination	[ ]	11. Full Time Privilege	[ ]
5. Designator Required	[ ]	12. Off Campus Experience	[ ]
6. Special Fees	[ ]		

Instructional Type	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated	Delivery Method (Asyn. Or Syn.)	Delivery Medium (Audio, Internet, Live, Text-Based, Video)
Lecture	150	1	16	100	syn	Live
~~citation~~						
~~sentation~~						
Laboratory						
Lab Prep						
Studio						
Distance						
Clinic						
Experiential						
Research						
Ind. Study						
Pract/Observ						

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES):

Sem. 2, ~~Class 3~~, Cr. 3
Prerequisite: CE 614 (Statistical and Econometric Methods I), ~~or permission of instructor.~~
Advanced statistical and econometric methods as applied to engineering-related problems – extending the techniques covered in CE 614. ~~(Statistical and Econometric Methods I).~~ Topics include seemingly unrelated regression, three-stage least squares, generalized extreme value models, nested logit models estimated by full information maximum likelihood, random parameters (mixed) logit models, models with fixed and random effects, and zero-inflated count-data models.
Professor Mannering.

Calumet Department Head	Date	Calumet School Dean	Date	Calumet Undergrad Curriculum Committee	Date
Fort Wayne Department Head	Date	Fort Wayne School Dean	Date	Fort Wayne Chancellor	Date
Indianapolis Department Head	Date	Indianapolis School Dean	Date	Undergrad Curriculum Committee	5/28/08 Date
North Central Department Head	Date	North Central Chancellor	Date	APPROVED 11/20/08 Date Approved by Graduate Council	
West Lafayette Department Head MK Bach	04/29/08 Date	West Lafayette College/School Dean	5/8/08 Date	Graduate Council Secretary	12/12/08 Date
Idate Area Committee Convener	11/20/08 Date	Graduate Dean	Date	West Lafayette Registrar	12/24/08 Date

OFFICE OF THE REGISTRAR

12/24/08

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DEPARTMENT Civil Engineering

EFFECTIVE SESSION Fall 2008

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5. Designator Required [ ]
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MK Bank 04/29/08
5/28/08
5/28/08

OFFICE OF THE REGISTRAR

To: Purdue University Graduate Council

From: Faculty Member: Fred Mannering

Department: Civil Engineering

Campus: West Lafayette

Date: April 28, 2008

For Reviewer's comments only
Select One
Reviewer:
Comments:

Subject: Proposal for New Graduate Course-Documents Supporting Registrar's Form 40

Contact information if questions arise

Name: Becky Hull

Phone Number : 62379

E-mail: bhull@purdue.edu

Course Number: CE 615

Campus Address: CIVL 1147

Course Title: Statistical Econometric Methods II

A. Justification for the Course

☒ Explain how this course relates to other courses offered in the department or other departments and how this course fulfills a recognized need.

☒ This course is intended primarily for students Choose one: from within this department

B. Level of the course:

☒ Justify request for graduate course level by indicating anticipated enrollments of undergraduate and graduate students.

Anticipated Undergraduate Student Enrollment: None

Anticipated Graduate Student Enrollment: 100%

C. Prerequisites: (If none, please explain reasons for absence)

☒ CE 614 (Statistical and Econometric Methods I) or permission of instructor.

D. Course Instructor:

☒ Instructor's Name Fred Mannering

E1. Course Outline:

☒ (An outline of topics to be covered and an indication of the relative emphasis or time devoted to each topic is necessary. If laboratory or field experience is involved, the nature of this component should be explained as well).

E2. ☒ Method of Evaluation or Assessment:

See attached

F. Reading List:

☒ A reading list or bibliography should be limited to material the students will be required to read in order to successfully complete the course. It should not be a compilation of general reference material.

Engineering Faculty Document 36-07
September 17, 2007

MEMORANDUM

TO: The Engineering Faculty

FROM: The Faculty of the School of Civil Engineering

RE: New Graduate Level Course CE 615

The faculty of the School of Civil Engineering has approved the following new course. This action is now submitted to the Engineering Faculty for a recommendation for approval.

CE 615 **Statistical and Econometric Methods II**

Sem. 2, Class 3, Cr. 3

Prerequisite: CE 614 (Statistical and Econometric Methods I) or permission of instructor.

Advanced statistical and econometric methods as applied to engineering-related problems – extending the techniques covered in CE 614 (Statistical and Econometric Methods I). Topics include Seemingly Unrelated Regression, three-stage least squares, generalized extreme value models, nested logit models estimated by full information maximum likelihood, random parameters (mixed) logit models, models with fixed and random effects, and zero-inflated count-data models.

Reason: To provide students with the knowledge on advanced econometric methods to be used for their M. S. and PhD research in all areas of engineering. This course has been taught twice as CE697M.

M. Katherine Banks, Head
School of Civil Engineering

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE ENGINEERING
CURRICULUM COMMITTEE

ECC Minutes #22

Date 4-9-08

Chairman ECC Michael Jabbour

Supporting documentation

1. **Justification:** CE 614 (Statistical and Econometric Methods I) provides the basic background for students with regard to a wide variety of statistical and econometric methods. This course solidifies and extends the concepts in CE 614 by providing students model-estimation experience with more technically advanced methods.

2. **Level:** Graduate Level

3. **Prerequisites:** CE 614 (Statistical and Econometric Methods I) or permission of instructor.

4. **Instructor:** Fred Mannering

5. **Course objectives:** The objective of this course is to solidify students' understanding of the material taught in CE 614 (Statistical and Econometric Methods I) and to extend students' knowledge with the presentation of new model estimation techniques not covered in that course. Specifically, the course undertakes a detailed assessment of simultaneous equations models (seemingly unrelated regressions and three-stage least squares), generalized extreme value models (nested logit models estimated by full information maximum likelihood), mixed logit models (to account for variations in parameters across the sample population), models with fixed and random effects, zero-inflated count data models, and selectivity models (discrete/continuous frameworks).

6. **Course Outline:**

Weeks	Topics
1	Course introduction
2	Seemingly unrelated regressions (Text chapter 5)
3	Analysis of temporal stability with likelihood ratio and Chow tests (Text pages 109-110 and 282)
4	Three-stage least squares (Text chapter 5)
5	Zero-inflated count models (Text chapter 10)
6	Paper critiques
7	Paper critiques
8	Fixed and random effects models, random effects ordered probit model (Text chapter 6, pages 157-160)
9	Nested logit models with full information maximum likelihood (Text chapter 11)
10	Mixed logit models (Text chapter 11)
11	Discrete/continuous models (Text chapter 11)
12	Research presentations
13	Project discussions and issues
14	Recent econometric applications I
15	Recent econometric applications II
16	Final Exam

7. **Text:** Washington, S., M. Karlaftis, and F. Mannering (2003) Statistical and econometric methods for transportation data analysis, Chapman & Hall/CRC, Boca Raton, FL, 425 pages.

8. The course has been previously taught 2 times as CE697M with the following enrollments and student ratings:

Course	Semester	Number of Students	Core 1 (course) question[a]	Core 2 (instructor) question[a]
CE 697M	F06	8	4.8	4.9
CE 697M	S07	9	4.9	4.9

[a] All students were asked to rate the courses below on a scale of 1-5 [1 = very poor, 2 = poor, 3 = fair, 4 = good, 5 = excellent]. The two university core questions are; Core 1, Overall I would rate this course as:, Core 2, Overall I would rate this instructor as:. Median scores for these questions are presented in the table.

9. The course website with all assignments, datasets, etc. can be accessed at the following: http://bridge.ecn.purdue.edu/~flm/697M.htm

10. The most recent course syllabus is appended on the following pages.

CE 697M
Statistical and Econometric Methods II

The objective of this course is to solidify students' understanding of the material taught in CE697N (Statistical and Econometric Methods I) and to extend students' knowledge with the presentation of new model estimation techniques not covered in CE697N. Specifically, we will undertake detailed assessment of simultaneous equations models (seemingly unrelated regressions and three-stage least squares), generalized extreme value models (nested logit models estimated by full information maximum likelihood), mixed logit models (to account for variations in parameters across the sample population), models with fixed and random effects, zero-inflated count data models, and selectivity models (discrete/continuous frameworks).

Time and location:

Spring semester, Thursdays 5:30-8:30, in room CIVL 1129

Website:

http://bridge.ecn.purdue.edu/~flm/697M.htm

Course requirements:

- Empirical assignments. All involve data analysis with existing databases. Students will present a short presentation of findings after each assignment.
- Research critique. During the semester, each student will be asked to critique a methodological paper in their field of interest and present to the class.
- Students will complete a research paper using the methods covered in the course.

Grade distribution:

Empirical assignments (30%), Research paper (30%), Final exam (40%)

Prerequisites:

CE697N (Statistical and Econometric Methods I) or permission from instructor.

Required materials:

Text: Washington, S., M. Karlaftis, and F. Mannering (2003) Statistical and econometric methods for transportation data analysis, Chapman & Hall/CRC, Boca Raton, FL, 425 pages.

Course contents

Week 1	Course introduction
Week 2	Seemingly unrelated regressions (Text chapter 5)
Week 3	Analysis of temporal stability with likelihood ratio and Chow tests (Text pages 109-110 and 282)
Week 4	Three-stage least squares (Text chapter 5)
Week 5	Zero-inflated count models (Text chapter 10)
Week 6	Paper critiques
Week 7	Paper critiques
Week 8	Fixed and random effects models, random effects ordered probit model (Text chapter 6, pages 157-160)
Week 9	Nested logit models with full information maximum likelihood (Text chapter 11)
Week 10	Mixed logit models (Text chapter 11)
Week 11	Discrete/continuous models (Text chapter 11)
Week 12	Research presentations
Week 13	Project discussions and issues
Week 14	Recent econometric applications I
Week 15	Recent econometric applications II
Week 16	Final Exam