College Document # COAS 019
UCC Document # 26
Date Received 15 oct 2008

CATALOG YEAR 2009-2010
(Please use separate form for each add/change)

COLLEGE/SCHOOL: Arts & Sciences

Current Catalog Page(s) Affected: Add to College of Arts & Sciences (p. 367 after the entry on SOCI 5312)

Course: Add: X Delete: _____

(check all that apply) Change: Number Title SCH

Description: X Prerequisite: X

If new, provide Course Prefix, Number, Title, SCH Value, Description, prerequisite, and lecture/lab hours if applicable. If in current catalog, copy and paste the text and indicate changes in red.

- New Number: SOCI 5322 Advanced Quantitative Methods (same as PSCI 5322)
- SCH: 3

Course Description: An advanced course in the practical application of quantitative research methods in social scientific research. Topics include data management using computer software; bivariate and multivariate statistics, including chi-square, correlation, ordinary-least-squares regression, and limited dependent variable models (logit/probit), with an emphasis on computer applications; and presentation of results from quantitative research.

Prerequisite: SOCI 5321/PSCI 5321(*) with a grade of "B" or better.
(*) May substitute former courses SOCI 5302/PSCI 5301.

Justification: new course due to restructuring of graduate methods requirements in SOCI, PADM, and PSCI; former course was SOCI 5302/PSCI 5301 "Advanced Methods of Social Research"

Program: Add: X Change: _____ Attach new/changed Program of Study description and 4-year plan. If in current catalog, copy and paste the text and indicate changes in red.

Minor: Add: _____Delete: _____ Change: _____ Attach new/changed minor.
If in current catalog, copy and paste the text and indicate changes in red.

Faculty: Add: _____ Delete: _____ Change: _____ Attach new/changed faculty entry.
If in current catalog, copy and paste the text from the and indicate changes in red.
College Introductory Pages: Add information: _____ Change information: _____

Attach new/changed information. If in current catalog, copy and paste the text from the and indicate changes in red.

Approvals: Signature Date

Chair Roberto R. Heredia Digitally signed by Roberto R. Heredia DN: cn=Roberto R. Heredia, o=Texas A&M International University, ou=BASC/ Department, email=rheredia@tamiu.edu, c=US Date: 2008.10.13 11:59:19 -05'00' _____

Department Curriculum Committee

Chair Gilberto Salinas Digitally signed by Gilberto Salinas DN: cn=Gilberto Salinas, email=gsalinas@tamiu.edu, o=TAMIU, ou=Psychology, c=US Date: 2008.10.15 12:52:40 -05'00' _____

Department

Chair James A Norris Digitally signed by James A Norris DN: cn=James A Norris, o=Texas A&M International University, ou=Dept of Social Sciences, email=jnorris@tamiu.edu, c=US Date: 2008.10.22 12:48:54 -05'00' _16 OCT 2008_

College Curriculum Committee

Dean Rex H. Ball Digitally signed by Rex H. Ball DN: cn=Rex H. Ball, o=Texas AM International University, ou=COAS, email=rex.ball@tamiu.edu, c=US Date: 2008.10.22 15:28:17 -05'00' _____

Sociology 5322 – Advanced Quantitative Methods
Syllabus

Title: Advanced Quantitative Methods (same as PSCI 5322)
Duration: 2.5 hours at one-day a week
Room: In a computer lab with SPSS and SAS installed
Consultations: 6 hours a week
Or by appointment

Professor: Marcus Antonius Ynalvez
Office: Canseco 313F; tel. no. 326-2621
Email: mynalvez@tamiu.edu

Course Description:

This is an advanced course in the application of quantitative statistical methods in social scientific research. Topics include data management using widely-used statistical analyses software (Statistical Analysis System 9.2 and Statistical Packages for the Social Sciences 16.0, OPENSTATS, PSPP); bivariate and multivariate statistics, including chi-square, correlation, regression techniques (normal error, logistic, Poisson, and negative binomial), and limited dependent variable models (tobit/probit), with an emphasis on computer-based data analysis; and interpretation and presentation of results.

Prerequisites of the Course:

Student must have taken and passed SOCI/PSCI 5321 with a grade of "B" or better. This course builds on the material covered in SOCI/PSCI 5321.

Learning Objectives:

(1) Students will interpret, present and generate scientifically-based knowledge, and make decisions based on multivariate statistical tools associated with experiments, surveys, non-reactive methods, and secondary data analyses.

(2) Students will apply appropriate and cutting-edge statistical techniques linked to experiments (t-tests, analysis of variance, factorial experiments, and repeated measures analysis of variance) and surveys (correlation and regression techniques examples of which are normal error regression, multiple classification analysis, binary logistic, multinomial logistic, ordered logistics, Poisson, negative binomial, and censored (tobit) regression models) using SPSS, SAS, OPENSTAT, and PSPP.

(3) Students will critically apply, assess, and evaluate advanced quantitative techniques used and published in major sociology/political science scholarly journals, and reports generated by state, federal, and international research organizations (e.g. World Bank, International Monetary Fund, and the United Nations).

Course Expectations and Teaching Philosophy:

Students are expected to attend full lecture and laboratory sessions, and participate proactively in discussions and activities. This is a seminar-type course and will require intense interaction between students and teacher, and include discussion among students. In fact, my role will be more of a moderator, or discussant, than an instructor. In other words, the "flow of information and ideas" in our sessions will surely not be one-way (i.e. top-down nor bottom-up) but multi-way, which is in keeping with the realities of contemporary global society wherein voices and sentiments are increasingly heard from almost every place and identity as a result of new communication and information technologies' ability to alter the temporal and the spatial dimensions of social interaction.

By implication, students should have read the assigned materials, and be prepared for hand-based, computer-based computation, discussion, and interaction. I have always given to the idea that students not only learn from their teachers, but teachers also learn from their students; and this is how things ought to be if we are to arrive at a synthesis and generate new knowledge, rather than simply memorizing concepts and "parroting" maxims and principles. Societies and cultures continually change so that the study of advanced quantitative research methods should inspire students not to be static but dynamic, not to be passive but proactive, far away from simply "being" but always "becoming" better.

Grading and Course Requirements:

Grades will be based on: [1] a well written *ethical scientific social research paper* (to be done individually and to the quality standard that is worthy of submission to a scholarly journal, or in a national and international graduate student paper competition), [2] a group oral critique of a published research article (with the paper version of the MS Power Point presentation to be submitted). This critique must identify, address, comment and make informed recommendations about the strengths and weaknesses of the statistical techniques used in the article being critiqued and evaluated. The article should be chosen from top journals like American Sociological Review, Social Forces, and American Journal of Political Science, [3] the weekly 1-page papers and analyses, and terminal assessment, [4] short quizzes and/or assignments, and [5] oral reports and participation (which alludes to class attendance).

Approximate weights (subject to change) will be: individual scientific research paper 25%, group oral critique 25%, weekly 1-page papers and terminal assessment (50-item multiple choice; equivalent to three 1-pagers) 20%, short quizzes/assignments 15%, and oral reports and participation 15%. The grading scale will be as follows: A = 90.00 – 100.00, B = 80.00 - 89.99, C = 70.00 - 79.99, D = 60.00 - 69.99, F = less than 60.00.

Honoring Academic Excellence:

At the end of the course, the student with the highest numeric grade automatically wins 'The Robert K. Merton In-Class Award for Outstanding Performance in Advanced Quantitative Methods' and will be automatically recommended to compete in a graduate student paper competition at the annual meetings of either the International Sociological Association, American Sociological Association or Southern Sociological Society annual meetings.

Required Textbooks:

1. Applied Linear Statistical Models (4^{th} Ed) by John Neter, Michael H. Kutner, Christopher J. Nachtsheim, and William Wasserman; WCB McGraw-Hill 1996 (ISBN 0-256-11736-5)
2. Regression Models for Categorical and Limited Dependent Variables by J. Scott Long; SAGE Publications 1997(ISBN 0-8039-7374-8)

Reminder: To succeed in this class, students **should attend all lectures**, keep up with understanding assigned readings, and get their questions answered as they arise. This is a skill-builder course so that the more you immerse yourself into it the greater the returns. As a final reminder, this course gives extremely high premium on (1) hard work, (2) teamwork, and (3) academic honesty. *Lastly, the contents of this course is typically well represented and covered in comprehensive examinations so that my being demanding and my being strict with you should not be construed as "torturing" or "making it hard for you," but these are to be seen as attempts to maximize your likelihood of passing the comprehensive examination and most importantly becoming competent professionals of the social sciences.*

College of Arts and Sciences – Guidelines

Classroom Behavior

The College of Arts and Sciences encourages classroom discussion and academic debate as an essential intellectual activity. It is essential that students learn to express and defend their beliefs, but it is also essential that they learn to listen and respond respectfully to others whose beliefs they may not share. The College will always tolerate diverse, unorthodox, and unpopular points of view, but it will not tolerate condescending or insulting remarks. When students verbally abuse or ridicule and intimidate others whose views they do not agree with, they subvert the free exchange of ideas that should characterize a university classroom. If their actions are deemed by the professor to be disruptive, they will be subject to appropriate disciplinary action, which may include being involuntarily withdrawn from the class.

Copyright Restrictions

The Copyright Act of 1976 grants to copyright owners the exclusive right to reproduce their works and distribute copies of their work. Works that receive copyright protection include published works such as a textbook. Copying a textbook without permission from the owner of the copyright may constitute copyright infringement. Civil and criminal penalties may be assessed for copyright infringement. Civil penalties include damages up to $100,000; criminal penalties include a fine up to $250,000 and imprisonment.

Copyright laws do allow students and professors to make photocopies of copyrighted materials under strict conditions. You may not copy most, much less all, of a work, but you may copy a limited portion of a work, such an article from a journal or a chapter from a book. These copies must be for your own personal academic use or, in the case of a professor, for personal, limited classroom use. In general, the extent of your copying should not suggest that the purpose or the effect of your copying is to avoid paying for the materials. And, of course, you may not sell these copies for a profit. Thus, students who copy textbooks to avoid buying them or professors who provide photocopies of textbooks to enable students to save money are both violating the law.

Plagiarism and Cheating

Plagiarism is the presentation of someone else's work as one's own. Recently, the Internet has complicated the picture. Getting something from the Internet and presenting it as one's own is still plagiarism. Copying another student's paper or a portion of the paper - is usually called "copying". Neither plagiarism nor copying will be tolerated. Should a faculty member discover that a student has committed plagiarism; the students will receive a grade of 'F' in that course and the matter will be referred to the Executive Director of Student Life for possible disciplinary action.

Students with Disabilities

Texas A&M International University seeks to provide reasonable accommodations for all qualified persons with disabilities. This University will adhere to all applicable federal, state, and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal education opportunity. It is the student's responsibility to register with the Director of Student Counseling and to contact the faculty member in a timely fashion to arrange for suitable accommodations.

Incomplete Grade Assignments

Incompletes are discouraged and are assigned only under extenuating circumstances. In fairness to those students who complete the course as scheduled, under no circumstances will an Incomplete ("I") be changed to an "A" unless the student has experienced a death in the immediate family or has a written medical excuse from a physician.

Independent Study Courses

Independent Study (IS) courses are offered only under exceptional circumstances. Required courses intended to build academic skills may not be taken as IS (e.g., clinical supervision and internships). No student will take more than one IS course per semester. Moreover, IS courses are limited to seniors and graduate students. Summer IS course must continue through both summer sessions.

Student Responsibility For Dropping a Course

"It is the responsibility of the STUDENT to drop the course before the drop date. Members of the Faculty are not responsible for dropping students who suspend class attendance".

Final Examination

Final Examination is comprehensive and is given on the date, time, and location specified by the University.

Student E-mail Address

All students must obtain a TAMIU e-mail address

Make up Work

Except for quizzes and assignments, you will be allowed to make up missed work only with my approval (granted for hospitalization, death with immediate family, doctor's orders or employer's excuse provided on work stationary) and provided you have the necessary and sufficient documentation.

Generic 15-week Program of Instruction

Week 1
- Review of basic statistical concepts
- Measures of central tendency and measures of dispersion
- Frequency distribution tables
- Introduce SPSS 16.0 and SAS 9.2

Week 2
- Introduce data management in SAS 9.2 and SPSS 16.0 and how to do recodes and data transformation
- Probability distributions: Gaussian (general/standard) and Studentized (t-distribution)
- Single and Two-Population Hypothesis testing (means and proportions)
- Z-test and the t-tests and confidence intervals

Week 3
- Probability distribution: The Fisher's (F) distribution
- One way Analysis of Variance
- Post-hoc hypothesis testing
- Introduce PROC ANOVA, PROC GLM

Week 4
- Two-way analysis of variance (completely randomized designs, randomized complete block)
- Testing for Main effect and interaction effects
- Hands-on with PROC ANOVA, PROC GLM (also in SPSS 16.0)

Week 5
- Multi-way analysis of variance (factorial and repeated measures ANOVA)
- ANOVA with trend analysis
- Introducing orthogonal contrasts in ANOVA
- Hands-on with PROC ANOVA and PROC GLM (also in SPSS 16.0)

Week 6
- Normal Error Regression Models (also ordinary least squares regression with one independent variable)
- Introduce SAS 9.2 PROC REG, PROC GLM and PROC GENMOD; Introduce SPSS 16.0 equivalent

Week 7
- Normal Error Regression Models (multiple independent variables)
- Introduce dummy/indicator variables
- Introduce quadratic terms
- Introduce interaction terms
- Computer hands-on with SAS 9.2 and SPSS 16.0

Week 8
- Normal Error Regression Models (multiple independent variables)
- Testing for normality assumption
- Testing for homoscedasticity (equally variances)
- Testing for multicollinearity
- Testing for linearity
- Computer hands-on with SAS 9.2 and SPSS 16.0

Week 9
- Binary/multinomial logistic regression models
- Sketch of maximum likelihood estimation

- Introduce likelihood ratio test and the concept of statistical deviance
- Computer hands-on with SAS 9.2 and SPSS 16.0

Week 10

- Binary/multinomial logistic regression models…continued
- Hypothesis testing and goodness of fit
- Introducing SAS 9.2 and SPSS 16.0 modules for binary/multinomial logistic regression (PROC GENMOD and Generalized Linear Models)

Week 11

- Ordered Logistic Regression Models
- Introducing SAS 9.2 and SPSS 16.0 modules for ordered logistic regression (PROC GENMOD and Generalized Linear Models)

Week 11

- Regression models for count data
- Poisson Regression Models
- Introducing SAS 9.2 and SPSS 16.0 modules for Poisson regression (PROC GENMOD and Generalized Linear Models)

Week 12

- Regression model for count data with positive skew
- Limitations of the Poisson regression model (Problem of "over dispersion")
- Negative Binomial Regression Models
- Introducing SAS 9.2 and SPSS 16.0 modules for negative binomial regression (PROC GENMOD and Generalized Linear Models)

Week 13

- Limited outcomes models (Truncated and Censored distribution)
- The problem of censoring and the tobit model
- Introduce SAS 9.2 facility for tobit models

Week 14

- Group Oral Presentation with External Reviewers and submission of Group MS Power point presentation/submission of research papers

Week 15

- Comprehensive Final Written Exams