New Course Request

Indiana University

New to TU

Course # Reserved

Check Appropriate Boxes: Undergraduate credit [ ] Graduate credit [X] Professional credit [ ]

1. School/Division: CLAS

2. Academic Subject Code: MATH

3. Course Number: M574 (must be cleared with University Enrollment Services).

4. Instructor: Z. Guan

5. Course Title: Applied Regression Analysis

Recommended Abbreviation (Optional):

Limited to 32 Characters including spaces

6. First time this course is to be offered (Semester/Year): Fall 2010

7. Credit Hours: Fixed at 3 or Variable from ______ to ______

8. Is this course to be graded S-F (only)? Yes [X] No

9. Is variable title approval being requested? Yes [X] No

10. Course description (not to exceed 50 words) for Bulletin publication: P: MATH-M466 or MATH-M365 or MATH-M261. Least square estimates of parameters; single linear regression; multiple linear regression; hypothesis testing and confidence intervals in linear regression models; testing of models, data analysis and appropriateness of models; optional topics about nonlinear regression, i.e. logistic regression, Poisson regression, and generalized linear regression models.

11. Lecture Contact Hours: Fixed at ___/week or Variable from ______ to ______

12. Non-Lecture Contact Hours: Fixed at ______ or Variable from ______ to ______

13. Estimated enrollment: 20 of which 80 percent are expected to be graduate students.

14. Frequency of scheduling: Fall-every yrs

Will this course be required for majors? [ ] No

15. Justification for new course: See attached

16. Are the necessary reading materials currently available in the appropriate library? Yes

17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.

18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant.

19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by: [Signature] Date 11-11-08

Department/Chairman/Division Director

Dean of Graduate School (when required) Date

Approved by: [Signature] Date 12/12/08

Dean

Chancellor/Vice-President Date

University Enrollment Services Date

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.

UPS 724 University Enrollment Services Final—White; Chancellor/Vice-President—Blue; School/Division—Yellow; Department/Division—Pink; University Enrollment Services Advance—White
NEW COURSE PROPOSAL
MATH-M574 Applied Regression Analysis
By Zhong Guan

School/Division: Indiana University South Bend / Department of Mathematical Sciences.

Course Title: MATH-M574 Applied Regression Analysis (3 Cr) / Graded

First time course is to be offered: Fall 2010

Instructor: Zhong Guan

Textbook:


Software: R/Splus or MiniTab or SAS, or SPSS

Course Description:
MATH M574 Applied Regression Analysis (3 cr.) P: MATH-M466 or MATH-M365 or MATH-M261. Least square estimates of parameters; Single linear regression; Multiple linear regression; Hypothesis testing and confidence intervals in linear regression models; Testing of models, data analysis and appropriateness of models; Optional topics about nonlinear regression such as logistic regression, Poisson regression, and generalized linear regression models.

Lecture Contact Hours: 3 hours per week.

Justification for the course: This course is designed to replace the existing course MATH M565 Analysis of Variance which was joint-listed with E470 and M467. E470 is mainly focused on linear models with application in economics. Since School of Business and Economics has hired a new faculty member who can teach E470, the courses M565 and M467 are only for undergraduate and graduate students of mathematics and computer science majors. We should teach more general statistical theories and techniques to our math majors. However, we already have some courses, e.g. M562, which cover most of the contents of analysis of variance, and we do not have any courses which cover regression analysis which is one of the most important statistical methods. This course will cover most of the important and useful techniques for applied regression analysis.

This course is also important for our students’ future job hunting. Moreover, the proposed course M574 covers the regression analysis part of the VEE (Validation by Educational Experience) course, *Applied Statistical Methods*, which is important to our Actuarial Science Program of the Department of Mathematical Sciences. The second part of this VEE course is covered by MATH M576. By offering these two courses, we will be ready to apply for approval of the VEE-Applied Statistical Methods at IUSB. After approval of these courses, we can also offer the proposed course to our undergraduate students in the Actuarial Science Program.
Complete Course Outline of M574 — Applied Regression Analysis

Part 1 Simple Linear Regression

1. Least square estimates of parameters
2. Single linear regression
3. Hypothesis testing and confidence intervals in linear regression models
4. Testing of models, data analysis and appropriateness of models
5. Simultaneous Inferences and Other Topics in Regression Analysis
6. Matrix Approach to Simple Linear Regression Analysis

Part 2 Multiple Linear Regression

7. Multiple Regression I
8. Multiple Regression II
9. Regression Models for Quantitative and Qualitative Predictors
10. Building the Regression Model I: Model Selection and Validation
11. Building the Regression Model II: Diagnostics
12. Building the Regression Model III: Remedial Measures
13. Autocorrelation in Time Series Data (optional)

Part 3 Nonlinear Regression

14. Introduction to Nonlinear Regression and Neural Networks
15. Logistic Regression, Poisson Regression, and Generalized Linear Models
Instructors:
Dr. Zhong Guan, zguan@iusb.edu, http://mypage.iusb.edu/~zguan
NS 327, Phone: 574-520-4300


Description: MATH M574 Applied Regression Analysis (3 cr.) P: MATH-M466 or MATH-M365 or MATH-M261. Least square estimates of parameters; Single linear regression; Multiple linear regression; Hypothesis testing and confidence intervals in linear regression models; Testing of models, data analysis and appropriateness of models; Optional topics about nonlinear regression such as logistic regression, Poisson regression, and generalized linear regression models.

Prerequisite: M466 or M365 or M261

Assignments: About ten homework (30%) will be assigned from the textbook. There will be two midterm exams(30%), two projects(20%), and one final exam(20%). All exams are closed-book. Students are encouraged to discuss homework assignments with their classmates and the instructor. No late homework will be accepted. No makeup exams will be given except for extraordinary and extenuating circumstances. Only one exam may be made up within one week of the scheduled exam.

Course grading:
Pluses and Minuses will be used at the high and low end of each range
100% - 90  A+, A, or A-
89% - 80  B+, B, or B-
79% - 70  C+, C, or C-
69% - 60  D+, D, or D-
59% - 0  F

Disabilities: If you have disabilities and need assistance, special arrangements can be made to accommodate most needs. Contact the Director of Disabled Student Services (Administration Building, Room 149, telephone number 574-520-4832), as soon as possible to work out the details. Once the director has provided you with a letter attesting to your needs for modifications, bring the letter to me. www.iusb.edu/~sbdss/services.shtml

Religious Accommodation Statement and Academic Honesty Statement are given at http://www.iusb.edu/~sbmath/pdf/statements.pdf
Tentative Schedule:

Part 1. Simple Linear Regression (about 3 weeks)

1. Least square estimates of parameters
2. Single linear regression
3. Hypothesis testing and confidence intervals in linear regression models
4. Testing of models, data analysis and appropriateness of models
5. Simultaneous Inferences and Other Topics in Regression Analysis
6. Matrix Approach to Simple Linear Regression Analysis

Part 2. Multiple Linear Regression (about 7 weeks)

7. Multiple Regression I
8. Multiple Regression II
9. Regression Models for Quantitative and Qualitative Predictors
10. Building the Regression Model I: Model Selection and Validation
11. Building the Regression Model II: Diagnostics
12. Building the Regression Model III: Remedial Measures
13. Autocorrelation in Time Series Data (optional)

Part 3. Nonlinear Regression (about 5 weeks)

14. Introduction to Nonlinear Regression and Neural Networks
15. Logistic Regression, Poisson Regression, and Generalized Linear Models
In closely reviewing the IUPUI remonstrance, I noted that you are proposing to offer MATH 574. We reserved MATH-M 574. There should thus be no conflict between these two courses. If this is not correct, then please note that Dr. Song's objection would still stand.

I apologize for the alarm—I'm new at reviewing remonstrances and still getting used to reading these forms. IU's master course list can be a bit overwhelming at times given all the possibilities. And some remonstrance lists only indicate the department and course number and you have to actually go to the bulletin for that campus in order to find the subject codes (Spanish at IUB, for example is under HISP).

Becky Torstrick
Associate Dean

From: Song, Yu
Sent: Wednesday, December 17, 2008 1:38 PM
To: boukai@math.iupui.edu
Cc: jwatt@math.iupui.edu; sklimek@math.iupui.edu; Young, Beth Jean; Torstrick, Rebecca L; McIntosh, Johnny L
Subject: Math M574 - Remonstrance

From: Yu Song, Chair, IUSB Mathematical Sciences

TO: Ben Zion Boukai, Chair, IUPUI Mathematical Sciences

CC: ejmoody@iupui.edu
    Slawomir Klimek, Graduate Director, IUPUI Mathematical Sciences
    Jeffrey X. Watt, Associate Chair, IUPUI Mathematical Sciences
    John L. McIntosh, IUSB Associate Vice Chancellor for Academic Affairs
    Rebecca L Torstrick, IUSB Associate Dean, College Liberal Arts and Sciences

Dear Dr. Boukai,

We would like to file an objection on your new course proposal "Math M574 Mathematical Physics I" posted on http://www.iupui.edu/~crsremo/grad.html

We have no objection to the course itself, rather the number of the course. We reserved the course number M574 earlier this year (please see the email at the end of this email, and attached file for detail).

Our new course proposal for Math M574 has been approved by our college curriculum committee and the Dean's office. I hope that the issue can be resolved by simply finding a new number for your new course.

Thank you, and I am sorry that our first contact is for a little problem like this.

Best holiday wishes,
Good Morning, Linda:

I reserved MATH-M 574 for you today. Thanks! Mai

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