

PH/BE 7088 Regression Analysis

I. Course Information:

Title: Regression Analysis

Course #: PH/BE 7088

Credit Hours: 3

Term: Spring 2020

Prerequisites: N/A

II. Instructor Information:

Name: Jun Ying, PhD

Title: Professor

Office Information: Kettering G06

Office: (513) 558-2767

Email: yingj@ucmail.uc.edu

Office Hours: by appointment

Communication Policy: Students are encouraged to contact the instructor anytime via email using the course code or course title in the subject line. A response will typically be given within 24-48 hours except on weekends. Students are advised to resend their emails if there is no response from the instructor after 48 hours.

III. Course Materials

Required Textbook

None.

Recommended Reference Books

Applied Regression Analysis and Other Multivariable Methods, 5th Ed Duxbury, 2014
Kleinbaum, D. G., Kupper, L.L., Nizam, A., and Miller, K.E.

Required Software Package

None.

Recommended Software Package

- SAS (9.4) software package will be used in examples in the class. Students can decide to purchase a license (about \$40 for 6 months) or use the virtual lab for free (after installation of VMWARE and VPN).
- Students can choose using other software such as R or SPSS for their homework assignments and group project.

IV. Course Description:

This course covers the basic ideas of regression analysis including: simple linear regression models, multiple regression models, ANOVA or fixed effect models and mixed effect models, and logistical and generalized linear model. Other topics related to regression analysis such as multicollinearity; residuals, outliers and influential observations; and model selection procedures will also be covered in the class.

V. Student Learning Outcomes:

Upon successful completion of this course, the learner will be able to:
Understand the concept of simple linear regression model and properties of model parameters;
Understand the development of modern statistical models and relationships of these models;
Apply various linear models to address research questions and fit into different data structure;
Utilize statistical software such as SAS procedures in computation and analysis;
Interpret results from specific statistical model;
Integrate analytical skills and knowledges from research questions and statistical hypotheses, to study design, variable definition and data collection, statistical analysis and computation, and interpretation of results through a team project;
Develop collaboration and interprofessional skills through team work.

VI. Course Schedule:

Week	Date	Topic
1	1/13/2020	Introduction to Regression Analysis
2	1/20/2020	Dr. Martin Luther King Jr.'s Birthday, No Class
3	1/27/2020	Simple Linear Model
4	2/3/2020	Simple Linear Model
5	2/10/2020	Multiple Regression Model
6	2/17/2020	Multiple Regression Model
7	2/24/2020	Multiple Regression Model

8	3/2/2020	ANOVA/Fixed Effect Model
9	3/9/2020	ANOVA/Fixed Effect Model
10	3/16/2020	Spring Break, No Class
11	3/23/2020	Mixed Effect Model and Longitudinal Data Analysis
12	3/30/2020	Logistic Regression Model
13	4/6/2020	Logistic Regression Model
14	4/13/2020	Model Assumptions, Diagnostics, Selection, Multicollinearity
15	4/20/2020	Project Presentation
16	4/27/2020	Exam

VII. Instructional Methods (Including Description about Bb):

The course utilizes the Blackboard (Bb) Learning Management System to provide student-centered online learning that will enhance the teaching and learning process. If you are not familiar with these tools, please visit [IT@UC's Knowledge Base for Blackboard](#).

VIII. Course Communication:

University policy requires that the email set up in Blackboard is the primary means of communication. It is advisable that you use your UC email for this purpose and that you check it often. If you choose to change your email in Blackboard to a non-UC email it is your responsibility to ensure you check it frequently.

IX. Course and Grading Policies:

- 1. Course Structure:** The course is designed as an in-person, residential class. Changes to the syllabus, due dates, course requirements or grading requirements will be made as far in advance as possible.
- 2. Academic Integrity:** All students shall comply with the Code of Student Conduct of the University of Cincinnati (UC) http://www.uc.edu/conduct/Academic_Integrity.html. Academic misconduct includes, but is not limited to: acts of cheating, plagiarism, falsification, and misappropriation of credit. The Student Code of Conduct defines behavior expected of all University of Cincinnati students. It is each student's responsibility to know and comply with the University's Student Code of Conduct. Academic misconduct will be zero tolerated in this course. Regardless of the type of assignment, students found responsible for violating the UC Academic Integrity Policy will receive an "F" for the course. All violations will be forwarded to the Office of University Judicial Affairs, Department of Student Life where a university disciplinary file will be created.

3. **Disability:** Students with disabilities who need academic accommodations or other specialized services while attending the University of Cincinnati will receive reasonable accommodations to meet their individual needs as well as advocacy assistance on disability-related issues. Students requiring special accommodation must register with the Disability Services Office. [UC's Disability Services Office](#).
4. **Counseling Services, Clifton Campus:** Students have access to counseling and mental health care through the University Health Services (UHS), which can provide both psychotherapy and psychiatric services. In addition, Counseling and Psychological Services (CAPS) can provide professional counseling upon request; students may receive five free counseling sessions through CAPS without insurance. Students are encouraged to seek assistance for anxiety, depression, trauma/assault, adjustment to college life, interpersonal/relational difficulty, sexuality, family conflict, grief and loss, disordered eating and body image, alcohol and substance abuse, anger management, identity development and issues related to diversity, concerns associated with sexual orientation and spirituality concerns, as well as any other issue of concerns. After hours, students may call UHS at 513-556-2564 or CAPS Cares at 513-556-0648. For urgent physician consultation after-hours students may call 513-584-7777.
5. **Title IX:** Title IX is a federal civil rights law that prohibits discrimination on the basis of your actual or perceived sex, gender, gender identity, gender expression, or sexual orientation. Title IX also covers sexual violence, dating or domestic violence, and stalking. If you disclose a Title IX issue to me, I am required forward that information to the Title IX Office. They will follow up with you about how the University can take steps to address the impact on you and the community and make you aware of your rights and resources. Their priority is to make sure you are safe and successful here. You are not required to talk with the Title IX Office. If you would like to make a report of sex or gender-based discrimination, harassment or violence, or if you would like to know more about your rights and resources on campus, you can consult [UC's webpage for Title IX](#) or contact the office at 556-3349.
6. **Attendance and Participation Policy:**
 - a. Attendance will be checked each time through a sign-in sheet;
 - b. Missing one class will be deducted 5 points from the final score (100 points in total);
 - c. Attending the class 90 minutes later will be considered missing the entire class;
 - d. Missing 3 classes in total will receive an "F" automatically if without approval from the instructor or an "I" (incomplete) if pre-approved by the instructor.
 - e. All assignments are required to submit to the Blackboard. Late submission of an assignment will receive 0 point unless it is pre-approved by the instructor.
7. **Criteria for letter grades:**
Your course grade will be based upon your performance in the following categories:

Homework	35%
Team Project Submission	15%
Team Project Presentation	15%
Team Member Evaluation	5%
Class Participation	10%
Final Exam	20%
Total	100%

X. Homework, Project and Final Exam:

Homework:

Each assignment will be due in 1 week or later. Homework will be assigned through the Blackboard (BB). Later submission will be penalized.

Project:

Students are assigned into multidisciplinary or interprofessional teams based upon your training and backgrounds. Each team will either be provided a data set along with the description of the data and variables, or choose its own dataset after review and approval from the instructor. The team members will collaborate and work together to develop research and analytical plans, conduct analyses and computation, explain and present results in the class.

Final Exam:

Final exam will be open sources, including books, notes, and software but is required to complete within duration time (such as 30 minutes).

HWK	Posted Date	Due Date
HWK0 (practice only, no grade)	1/13/2020	1/23/2020
HWK1	1/27/2020	2/10/2020
HWK2	2/10/2020	2/24/2020
HWK3	2/24/2020	3/9/2020
HWK4	3/2/2020	3/23/2020
HWK5	3/23/2020	4/6/2020
HWK6	3/30/2020	4/13/2020
Group Project	3/9/2020	4/20/2020