ISA 291
APPLIED REGRESSION ANALYSIS
FALL 2022

Applied Regression Analysis : 11:40AM-1:00PM TuTh, FSB, 0038 (Section C)
4:25PM-5:45PM TuTh, FSB, 0038 (Section D)

Instructor	Email	Office Hours
Özge Sürer, Ph.D.	surero@miamioh.edu	Tue/Thu 1:15PM-3:15PM, FSB 2017

Description: Multiple regression as related to analysis of business problems. Includes useful regression models, statistical inference (intervals and hypothesis tests) in regression, model building, regression assumptions, remedies for violations of assumptions.

Textbook & Course Materials
- A Second Course in Statistics: Regression Analysis, 7-th Edition by Mendenhall and Sincich, ISBN-10 0-321-69169-5.
- Lecture notes. These are available for download from the course site. Please check the Canvas site frequently.

Computing:
We will be using the statistical software package R. R is open source (and of course free) and the most popular programming language in statistics community. It is available for free download at the link.

Objectives: At the completion of this course, students will be able to:
- Apply regression-based predictive modeling techniques in business. The modeling techniques discussed include
    - Simple linear regression
    - Multiple linear regression
    - Multiple regression with qualitative predictors
    - Multiple regression with interaction terms
    - Polynomial regression
    - Multiple regression applied to trend and seasonal modeling
- Evaluate the strengths and limitations of regression models by
    - Validating model assumptions
    - Remedying certain departures from model assumptions

  - Testing for model significance
  - Testing for significance of model coefficients
  - Using measures of comparative fit
- Use variable selection methods to build statistically sound and practically useful models.
- Properly frame business problems in a regression modeling context. This includes:
  - Translating a business problem into a predictive modeling context.
  - Fitting and validating models while balancing both practical business guidelines and statistical soundness of the analysis.
  - Accurately and clearly interpreting the results of models to a business audience.

Academic Integrity: Academic Integrity is at the heart of the mission and values of Miami University and is an expectation of all students. Maintaining academic integrity is a reflection of your character and a means to ensuring that you are achieving the outcomes of this course and that your grades accurately reflect your learning and understanding of the course material.

Cutting corners or cheating in this class will result in cheating yourself out of learning. This class is a foundational course in the major. If you do not understand the concepts learned in this class, you will struggle in your future classes and in your future job.

Cheating now may lead to a future of cheating and other unethical behavior to cover up the fact that you did not learn what you were supposed to learn. Try your best, ask questions, and be ethical. Don't be a cheater!

Academic integrity is a partnership between me, as the instructor, and you, as the student. My role, as instructor of this course, is to facilitate learning and to provide you with clear guidelines and feedback to help you maintain your academic integrity. Your role in this course is to take responsibility for your learning and to complete all assignments in an honest manner and to ask for clarification from me if you are unsure of how to do so.

Any suspected instances of academic dishonesty will be handled under Miami University's Academic Integrity policy found at this link. Note that lack of knowledge or understanding of the appropriate academic conduct is not an excuse for committing academic dishonesty.

Regarding Student Use of Course Materials: All course materials, including library reserves, are for teaching purposes for this course during this term only. You may NOT reproduce these materials to distribute outside of class. Lectures and course materials, including presentations, outlines, tests, and similar materials are protected by copyright even if there is no copyright notice on the material. You may take notes and make copies of course materials for your own use. You may NOT reproduce or distribute these materials publicly, without the instructors

express written consent.

Diversity & Inclusion: Everyone in this class has different life experiences and perspectives, and all are valid. As the instructor, I will do my best to behave maturely and respectfully in all our class-related engagements, and I expect students to do the same. We are all expected to adhere to Miami standards of appropriate conduct for class discussion and all class assignments in and out of the classroom. If you feel that I or anyone in this class has acted inappropriately, please come to me so that we may discuss your experience. If you do not feel comfortable coming to me with your concerns, I encourage you to speak with someone in the Office of Institutional Diversity & Inclusion (link). My goal is to work with all of you to create an inclusive educational environment in which different experiences and perspectives enhance learning rather than distract us from it.

Work and Grading

	Portion	Info
Quiz	10%	Random
Data Analysis Exercise	10%	submission on CANVAS
Homework	10%	submission on CANVAS
Midterm 1	15%	Sept 15th Class FSB, 0038
Midterm 2	15%	Oct 20th Class FSB, 0038
Midterm 3	15%	Nov 15th Class FSB, 0038
Final	25%	Thu, Dec 8th 3-5PM

Tentative Schedule: See Schedule.pdf on CANVAS. The timeline is subject to change at the discretion of the instructor.

Quizzes: Quizzes will be given randomly in class (except two quizzes). During quizzes, students will use the material deemed acceptable during the class period. Collaboration on quizzes will be allowed with explicit permission. No makeup quizzes will be given.

Homework: There are five homework assignments. Homework must consist of the submitter's own knowledge and understanding. No late homework will be accepted.

Data Analysis Exercise: There are three data analysis exercises. Students can work in pairs. No late exercise assignment will be accepted.

Exams: During the midterms and the final exam, students will only use a calculator that does not have internet abilities. No other materials are acceptable. No collaboration is allowed on examinations. All exams are comprehensive.

Grading Scale: The grading scale is predetermined so as to eliminate competition with other students, and to ensure that you always know your grade in the class. Your grade is based upon your performance only.

Numerical range	Grade
97.5–100	A+
92.50–97.49	A
89.50–92.49	A-
87.50–89.49	B +
82.50–87.49	B
79.50–82.49	B -
77.50–79.49	C +
72.50–77.49	C
69.50–72.49	C -
67.50–69.49	D+
62.50–67.49	D
59.50–62.49	D-