Course Syllabus EPPS 6316

Course Information

Course: EPPS 6316 (Fall 2020)

Title: Applied Regression

Meeting Times: Thursday 7:00 – 9:45 pm via MS Teams

Professor Contact Information

Instructor: Michael Tiefelsdorf, Ph.D.

Email: tiefelsdorf@utd.edu

Office Hours: Tuesday 4:00 – 5:30 pm via MS Teams and on appointment.

Communications are preferred by email. Start the subject line with the phrase **REG**. If Dr. Tiefelsdorf is available in MS Team you can also ***try*** to contact him there outside the regular office hours.

Teaching Assistant: Yalin Yang

Email Address: Yalin.Yang@UTDallas.edu

Office Hours: Thursdays 3:00-4:00 pm via MS Teams and by appointment.

Communications are preferred by email. Start the subject line with the phrase **REG**.

Course Modality and Expectations

Instructional Mode	Remote/Virtual Learning
Course Platform	Lecture will be held in MS Teams. Lecture notes will be available in weekly MS Teams channels. UTD's eLearning will be used for quizzes, lab assignments and exams.
Expectations	All particpants must have access to a computer (Windows or Apple, but Chromebooks only with limitations) capable of running R and RStudio. The use of a webcam and microphone during our online sessions is highly encouraged but not required.
Asynchronous Learning Guidelines	Recordings of lectures will be available asychronously in MS Teams several hours after the lecture. Exam & Quizzes: • The final exams will be online and needs to be completed in a fixed period withing a 24 hours window. • Short online quizzes on the assigned reading material will be available in a 12 hours window prior to the scheduled class.

COVID-19 Guidelines and Resources

The information contained in the following link lists the University's COVID-19 resources for students and instructors of record.

Please see http://go.utdallas.edu/syllabus-policies.

Classroom Conduct Requirements Related to COVID-19

UT Dallas requires that all students must wear a face covering that covers the nose and mouth in all university buildings and classrooms. To help protect the health and safety of students, instructors, and the University community, students who choose not to wear a face covering may not attend class in person but may attend a course remotely. Anyone attending class in person without a face covering will be asked to put one on or leave. Instructors may end the class if anyone present refuses to appropriately wear a face covering for the duration of class. Students should also be sure they are at least six feet away from their fellow students and faculty, and seated in a seat that is designated to ensure that distance. Students who either refuse to wear face coverings appropriately or to adhere to other social distancing protocols may face disciplinary action for Student Code of Conduct violations. Students who are unable to comply with the

university policies including wearing a face covering should consult the Comets United webpage for further instructions.

Students who have tested positive for COVID-19 or may have been exposed should not attend class in person and should instead follow required disclosure notifications as posted on the university's website (see "What should I do if I become sick?" webpage)

Class Attendance

The University's attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is expected regardless of modality. ***Students who fail to attend class regularly are inviting scholastic difficulty.*** In some courses, instructors may have special attendance requirements; these should be made known to students during the first week of classes. These attendance requirements will not be used as part of grading (see Class Participation below for grading information).

In-person participation records may be used to assist the University or local public health authorities in performing COVID-19 occurrence monitoring. Please note – in-person attendance requires consistently adhering to University requirements, including wearing a face covering and other public safety requirements related to COVID-19, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Participation

Regular class participation is expected regardless of course modality. ***Students who fail to participate in class regularly are inviting scholastic difficulty.*** A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

NOTE: if the instructor records any part of the course, then the instructor will need to use the following syllabus statement:

The instructor may record meetings of this course. Any recordings will be available to all students registered for this class as they are intended to supplement the classroom experience. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

This course has as official pre-requisites a solid college-level introduction to statistics (such as EPPS 6313 or EPPS 7313.). We will not be using calculus beyond basic derivatives, though the instructor may demonstrate their use to support some statistical arguments. An introduction to matrix algebra and applied calculations will be given.

A general understanding of the use of computers is expected. An introduction of the course software R and its relevant regression-oriented libraries will be provided.

This course will apply some econometric arguments but econometric knowledge is not required.

It is strongly recommended that course participants review their old statistics notes to keep up with this course.

Course Description

The course focuses on the analysis of data with regression techniques. The used data sets were generated from a broad range of human activities. The objective is to build informative models, which allow us to test hypotheses related to the underlying data generating processes. These models cover multiple linear regression and some of its extensions. Both practical data analytics skills and the conceptional comprehension of the underlying statistical methods is taught. The powerful statistical software environment R and its extensions is used to perform informative data analyses.

Student Learning Objectives/Outcomes

Upon completing this class, students will:

- *Handle, explore and visualize data as well as perform statistical data analysis within the R environment*
- *Understand the underlying concepts of multiple linear regression analysis and some of its extensions*
- *Build informative regression models*
- *Identify and overcome potential model violations*
- *Develop the capability to independently digest quantitative research articles including their use of basic matrix algebra*
- *Use the generalized linear model family to analyze binomial and Poisson distributed endogenous variables.*

Required Textbooks and Materials

[HAM] Hamilton, Lawrence (1992). Regression with Graphics. A second Course in Applied Statistics. Duxbury Press. Key chapters are 1-4, 7 & Appendix 3.

Note: used copies are available for instance at www.amazon.com (< $10); you may want to invest into a ***rush-order***.

Suggested Course Materials

[KAB] Robert I. Kabacoff, 2015. R *in Action. Data Analysis and Graphics in* R. 2nd edition, Manning

This book is available online at UTD's Eugene McDermott Library.

[LAN] Lander, J.P. R *for Everyone. Advanced Analytics and Graphics.* Addison Wesley, 2014.

This book is available online at UTD's Eugene McDermott Library.

[KZ] Kleiber, Christian and Achim Zeilis (2008). *Applied Econometrics with* R. Springer Verlag.

This book is available online at UTD's Eugene McDermott Library.

Software

The ***free open source*** R-environment for the operating systems Windows, Linux and Mac OS X.
More information on the installation R (https://mirrors.nics.utk.edu/cran/) and the development shell RStudio (https://www.rstudio.com/home/) will be provided during the first and second course week.

Assignments & Academic Calendar

Date	Topic	Labs & Quizzes Handed Out
Aug 20	INTRODUCTION INSTALLATION OF R AND RStudio (Handout, LAN02 & 03) GETTING STARTED WITH R I (Handout)	
Aug 27	GETTING STARTED WITH R II (Handout, Lan04, 05 & 06)	
Sep 03	GRAPHICS WITH R (Handout, KAB03 & 19)	*Sample Quiz* & *Lab01*
Sep 10	VARIABLE DISTRIBUTIONS (HAM01) STATISTICAL REVIEW (Handout)	*Quiz01*
Sep 17	BIVARIATE REGRESSION ANALYSIS (HAM02 & Handout)	*Quiz02* & *Lab02*
Sep 24	BASICS OF MULTIPLE REGRESSION I (HAM03 pp 65-81 & Handout)	*Quiz03*
Oct 01	BASICS OF MULTIPLE REGRESSION II (HAM03 pp 82-101 & Handout)	*Quiz04* & *Lab03*
Oct 08	MATRIX ALGEBRA (HAM App03 & Handout)	*Quiz05*
Oct 15	REGRESSION CRITICISM (HAM04 & Handout)	*Quiz06* & *Lab04*
Oct 22	MODELLING HETEROSCEDASTICITY (Handout)	
Oct 29	REGRESSION POJECT	*Lab05*
Nov 05	LOGIT REGRESSION (HAM07 & Handout)	*Quiz07*
Nov 12	GENERALIZED LINEAR MODELS (Handout)	*Lab06*
Nov 19	REVIEW	
TBA	FINAL EXAM	

Grading Policy

Tasks	Points (100 Total)
7 Quizzes. Closed Book.	7 x 2 pts (14 pts)
6 Labs. Course participants usually have two weeks (except Lab06) to complete the lab	Labs 1-4 x 8 pts & Lab05 x 12 pts & Lab06 x 6 pts (50 pts)
Final Exam, cumulative over course material. No applied R work. Open book and notes.	36 pts

Tentative Grading Scale

Rounded Points	Letter Grade
90-100	*A*
85-89	*A-*
80-84	*B+*
75-79	*B*
70-74	*B-*
65-69	*C+*
60-64	*C*
< 60	*F*

Make-up exam/Late assignment policy: A make-up exam will only be given in extenuating circumstances.

Participants will usually have 7 days to complete a lab. A late lab will lead to a deduction of its grade. A late lab can no longer be accepted once its solution has been posted and discussed.

Plagiarism: The university's rules of plagiarism will be strictly enforced. While you are encouraged to discuss the labs with other course participants to enhance your understanding of the course material, the labs must be answered individually by each course participant unless teamwork is explicitly requested by the instructor. The labs prepare you for final exam and train useful conceptional and technical skills.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students.

Please see http://go.utdallas.edu/academic-support-resources.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.