ACCT 7374 Applied Data Analytics in Accounting II

Professor: Ellen Terry

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Textbooks:

- **R for Data Science.** Garret Grolemund and Hadley Wickham. http://r4ds.had.co.nz/
- **An Introduction to Statistical Learning.** Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani. http://www-bcf.usc.edu/~gareth/ISL/
- **SQL Essentials.** Mark Mclloy. IBSN: 9781492345831
- **Bayesian Data Analysis.** Andrew Gelman et. al. ISBN 978-1439840955 *(or http://www.andrewgelman.com/wp-content/uploads/2013/08/bda3_contents.pdf)*
- **R Markdown** https://bookdown.org/yihui/rmarkdown/

Other Materials and Tools:

- Laptop Computer (Bring to Every Class);
- RStudio (available for download: https://www.rstudio.com/);
- Azure Machine Learning

Course Objective: Learn the Fundamentals of Data Analytics: Data Acquisition, Exploration, Transformation, Modeling, Sampling, Description and Inference – using R and SQL.

Learning Goals: The C.T Bauer College of Business and the Department of Accountancy & Taxation have established Learning Goals for each of our programs as part of our accreditation by The Association to Advance Collegiate Schools of Business. Additional information about the learning goals for accounting may be found at http://www.bauer.uh.edu/departments/accy/why-accounting/accounting-learning-goals.php.

This course incorporates the following MSACCY Program Learning Goals: (a) oral communication skills through team and individual solution presentation; (b) written communication skills through team and individual solution development (c) research skills through individual research topics (d) technological skills through solution development using RStudio and SQL, and (e) analytical problem solving skills through solution envisioning and development.

Class Methodology: You will be expected to complete homework assignments prior to class - the knowledge is cumulative and the course is fast paced, so it will be important to stay on track. The course will blend lectures, discussions, and "hands-on" exercises for comprehensive understanding.

Grading/Evaluation: The grade for this course will be determined as follows:

Homework	20%
Mid Term	30%
Projects	20%
Final	30%

0%	**60%**	**70%**	**80%**	**90%** **100%**
F	**D**	**C**	**B**	**A**

Homework will be assigned, and students may be randomly called upon to present their solution. Knowledge and competence will be evaluated during the presentation.

Blackboard: You should use Blackboard Learn to access course material, handouts, files and announcements. Please verify that you are able to logon to the class site as soon as possible do that you do not miss out on any important information. All Assignments will be submitted through Blackboard.

Withdrawals and Incompletes: University policies regarding withdrawal dates and procedures apply. An incomplete designation is given in rare instances when a student doing acceptable work is unable to complete the course due to circumstances beyond the students control.

Academic Honesty: The University of Houston Academic Honesty Policy is strictly enforced by the C.T. Bauer College of Business and the Department of Accountancy & Taxation. No violations of this policy will be tolerated in this course. A discussion of the policy is included in the University of Houston Student Handbook at http://www.uh.edu/dos/hdbk/acad/achonpol.html. Students are expected to be familiar with this policy.

Students with Special Needs: The C. T. Bauer College of Business would like to help students who have disabilities achieve their highest potential. To this end, in order to receive academic accommodations, students must register with the Center for Students with Disabilities (CSD) (telephone 713-743-5400), and present approved accommodation documentation to their instructors in a timely manner.

Cell Phones and Computers: Please be professional and courteous by turning off your cell phones during the class. Computers with Office 2016 will be required at all classes. Messaging during class or exams is not allowed.

Tentative Schedule

Section 1: Machine Learning			
Week 1	Regression Algorithms	ISLR: Ch 3,6,7	
Week 2	Regression Under the Hood: Derivative based solutions, QR Decomposition and Gradient Descent		Homework
Week 3	Classification Algorithms	ISLR: Ch 4	Homework
Week 4	AML, Decision Trees and Clustering, Trees and Clustering, GLMs and GAMs	ISLR: Ch 8	
Week 5	Support Vector Machines and Kernel Transformation	ISLR: Ch 9	Homework
Week 6	Section II: Model Tuning, Resampling and Validation	ISLR: Ch 5	Homework
Week 7	Exam Review		
Week 8	**Mid-Term Exam**		
Section 1: Machine Learning			
Week 9	Bayesian Inference	BDA: Part I	Homework
Week 10	Bayesian Modeling 1		Homework
Week 11	Bayesian Modeling 2	BDA: Part II	Homework
Week 12	Bayesian Transaction Analysis		
Week 13	Exercises Walkthrough		
Finals	**Final**		