**BSTAT 5325 - 001 – Room 349 Business**

**Advanced Business Statistics Syllabus - Spring, 2018**

**INSTRUCTOR:** Dr. Mark Eakin

**Profile:** <https://www.uta.edu/ra/real/editprofile.php?pid=1018>

**OFFICE:** 525B **OFFICE HOURS**: Tentatively, 4:30 to 5:15 M&W

**PHONE:** 817-272-3529 **E-MAIL**: eakin@uta.edu

**COURSE WEB SITE**: <http://wweb.uta.edu/faculty/eakin/busa5325.html>

**PREREQUISITE:** Math 1316 or Calculus (and preferably Statistics 1)

**Description of Course Content:** Advanced statistical learning for business analytics designed to prepare graduate students to become competent producers and consumers of predictive analytics and statistical information and to use evidenced based managerial decision making in their careers. They should be able to recognize the strengths and weaknesses of applicable techniques and when additional expertise is required. Topics include multiple regression, correlation, logistic regression, discriminant analysis, clustering, and classification and regression trees. It is strongly recommended that students who have no recent courses in statistics take BSTAT 5301 prior to 5325.

**TEXT AND SOFTWARE NEEDED:**

#  (1) Textbook: Business Statistics in Practice: Using Data, Modeling, and Analytics 8th Edition

by Bowerman, O'Connell, and Murphree.

 (2) Course Grading Software: McGraw-Hill Connect

 Note: The UTA bookstore has the required textbook and software bundled, go to [www.uta.edu/bookstore](http://www.uta.edu/bookstore) and follow the links to the textbook for your section of BSTAT 5325.

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 (3) Optional: How We Know What Isn’t So by Thomas Gilovich

**Test Material:**

(1) Basic calculator

(2) 3 Scantrons, number 4521, the large, 8 ½ by 11, blue scantrons

**Learning outcomes for STAT 5325**

1. The student will be able to fit and evaluate simple regression models and make and interpret inferences in this context when appropriate.
2. The student will be able to fit and evaluate multiple regression modes and make and interpret inferences in this context when appropriate.
3. The student will be able to build, interpret, and use multiple regression models using specified variable selection criteria.
4. The student will be able to analyze time series data using the classical decomposition model.
5. The student will be able to forecast using time series models with linear trend and seasonality.
6. The student will be able to distinguish experiments from observational studies and restrict causal inference to experiments.
7. The student will be able to define, identify, design, analyze and interpret completely randomized one-way and factorial designs and randomized block designs..
8. The student will be able to build regression models and make appropriate inferences; analyze and forecast a time series variable; and design and analyze and interpret using appropriate software such as NCSS.
9. The student will be able to apply the above statistical methodologies to business decision making and risk assessment.

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

**BLACKBOARD**: All assignments will be submitted through Blackboard. Grades will be posted on that site also. Blackboard is found at <http://elearn.uta.edu>.

**Purpose of Different Grades**: The purpose of Participation, Exercises and Assignments is to prepare you for exams. The grades on these are low enough to motivate you without damaging your grade if you miss some. If you are unable to do any of these correctly, please get help from me, my graduate teaching assistant, the Statistics Help desk on the first floor or a peer.

**1. Attendance/Participation**: Participation grades motivate you to get involved in the class. These are of two types: Participation Activities and Attendance. Attendance being the minimum requirement of class participation. Each attendance (did you attend or not that day) and activity grade (did you participate in the activity or not) will either be zero or 100.

**2. Exercises**: Exercise grades are used to strengthen your ability to work through a problem. Completely worked out examples of the exercises are available on my web site. Once you feel comfortable working the examples, attempt the exercise. You may work the exercise as many times as you wish in order to get all questions in the exercise correct. The grade will be the percent of questions in the exercise that you get correct.

**3. Assignments**: Assignment grades are used to strengthen your understanding of concepts and procedures by discussions with peers. If you cannot articulate your points, you may have problems with understanding and will need to fix these deficiencies before the exams.

**REQUIRED**

**TEST\*/ASSIGNMENT DATE POINT VALUE FORMAT**

Exam 1 Feb 14 25% Multiple Choice

Assignment 1 Mar 28 5% Typed answer

Exam 2 Apr 4 25% Multiple Choice

Assignment 2 Apr 25 5% Typed answer

Attendance & Participation each day 5%

Homework tba 5% Short Answer

Comprehensive Final Dec\*\* 30% Multiple Choice

**\***Examples of old exams are available on the Course Web Site and in Blackboard

**\*\*** See hyperlink in Tentative Schedule below for times of all final exams.

**GRADES:** A = 90% and above, B = 80% - 89.9999%, C = 70% - 79.9999%, D = 60% - 69.9999%, F = 0% - 59.9999%. *(There will be a penalty of 10% per weekday for late assignments & extra credit.)*

Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels; see “Student Support Services,” below.

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| **Tentative Course Schedule** |  |
| **Date** | **Links to Class Notes (ctrl-click link)**  | **Corresponding sections of textbook** |
| 17-Jan | [Review of Statistics 1](http://wweb.uta.edu/faculty/eakin/busa5325/ReviewStatisticsI.doc) | Ch. 8 Sec 1,2,4 and Ch.9 Sec 1, 3 |
| 24-Jan | Review continued |  |
| 31-Jan | [One Factor Analysis of Variance](http://wweb.uta.edu/faculty/eakin/busa5325/One-way%20anova.doc)  | Ch 11 Sec 1, 2 |
| 7-Feb | [Contingency Table Test](http://wweb.uta.edu/faculty/eakin/busa5325/contable.doc) | Ch 12 Sec 2 |
| 14-Feb | **Exam 1** |  |
| 21-Feb | [Linear Regression](http://wweb.uta.edu/faculty/eakin/busa5325/regressionNotes.doc)  | Ch 13 Sec 1-5, 6 Ch 14 Sec 1-6 |
| 28-Feb | Regression continued |  |
| 7-Mar | Regression continued |  |
| 21-Mar | [Regression Diagnostics and Model Building](http://wweb.uta.edu/faculty/eakin/busa5325/modelbuild.doc) | Ch 14 sec 10, 11 |
| 28-Mar | In class workday for Assignment 1 |  |
| 4-Apr | **Exam 2** |  |
| 11-Apr | [Dummy Variables](http://wweb.uta.edu/faculty/eakin/busa5325/mlrnotes2.doc) | Ch 14 Sec 8 |
| 18-Apr | [Randomized Block and Two Factor Analysis of Variance](http://wweb.uta.edu/faculty/eakin/busa5325/rbn2fnotes.doc) | Ch 11 sec 3, 4 |
| 25-Apr | In class workday for Assignment 2 |  |
| 2-May | [Time Series Analysis & Review](http://wweb.uta.edu/faculty/eakin/busa5325/time%20series%20analysis.doc) | Ch 15 Sec 1-4 |
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| **May 5-12** | [UTA's Final Exam Schedule Spring, 2018](https://www.uta.edu/records/_downloads/finals/finalexamscheduleFALL2017.doc.pdf)  |  |

**TESTS:** There will be three closed-book exams. One single, two-sided study sheet (8 1/2 by 11 inches) will be allowed for each exam. You may include anything on the study sheet. If bad weather prevents a class from being held, then the schedule will be moved down a class day.

You must bring a Scantron 4521 to each exam. These are the large full-page, blue scantrons not the small half-page ones.

 Once exam starts you may not leave the room and return to continue your exam. If you have a medical condition that requires you to leave, I will need medical documentation for this condition or a letter from the Office for Students with Disabilities. You will either take the exam in the Adaptive Resource Center or if it is a one-exam problem, I will use your final exam grade to replace the exam grade where you had to leave.

**MAKE-UP EXAMS:** Your grade on the final will be used to replace any one grade for those who have missed an exam due to illness, required travel associated with your job, or death in the immediate family. Any requests for this missed-grade replacement must be accompanied by written documentation: doctor's excuse, letter by your superior on company letterhead, etc. Lack of time to prepare for an exam or too many exams on one day will not be considered as sufficient reasons for a make-up. The final can serve as a make-up for only one exam.

**GROUPS:** The class will be divided into groups of size 4 or 5. I will place students in groups so that the mix of statistics and computer knowledge is basically the same in each group.

**CLASS EXPECTATIONS**

1. Be courteous. Refrain from activities in class that would disrupt the concentration of others.
2. Attend all class meetings promptly. Ask questions during lecture if you do not understand something.
3. Read a chapter before the corresponding lecture.
4. Do the assigned homework problems immediately following coverage of the corresponding material in class. Ask questions as needed during office hours or tutorials.
5. Remain in class until dismissed or until class time expires unless with permission.
6. If you encounter or envisage problems, visit or call your instructor for help and counseling well before a test or final exam.
7. The instructor has the right to make changes to the syllabus as necessary. Students have the responsibility to note these changes.

**Expectations for Out-of-Class Study:** Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 9 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

**ATTENDANCE AND DROP POLICY:** At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students’ academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, [insert your attendance policy and/or expectations, e.g. “I will take attendance sporadically” or “I have established the following attendance policy: …”] However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients “begin attendance in a course.” UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients..

Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aao/fao/>).

A student dropping a course after the Census Date but on or before the appropriate final drop date will receive a grade of "W" ***only*** if at the time of dropping, the student is passing the course (has a grade of A, B, C, or D); otherwise an F will be received.

**PARTICIPATION**

Part of your grade will be class participation. Points will be deducted for activities such as surfing the web, reading the newspaper, email etc. that are conducted during class time. You will be given times in class to discuss recently covered material with the people around you. If you are talking too much outside of those times, I will warn you once and if it occurs again you will lose class participation points.

**EXTRA CREDIT:** There will be five one-point extra credit multiple choice questions on each exam that will come from the material in the optional text “How We Know What Isn’t So” by Thomas Gilovich; chapters 1-3 will be covered in Exam 1, chapters 4&5 for Exam 2, and 6&7 for the Final.

**Homework:** Exercises are in the class notes. After the review of Stat 1, you will be expected to post your attempt at the answers on Blackboard. The exercises are due one week after finishing the chapter. Your answers do not need to be correct but for credit you must show that you attempted the work.

**ASSIGNMENTS:** Assignments will need to be done using a computer spreadsheet package. The College of Business has several PC labs with NCSS software for student use. Hours of operation will be announced when available. The results should be summarized and typed in a technical paper format.

 Three assignments will be done as a group. Twenty percent of the group Assignment grade will be based on participation. Each group member will sign a contract specifying each member’s contribution. After submitting all three assignments, each member will grade the others on how well they met their responsibilities. These assignments will be based upon the textbook, lecture material and examples provided by the instructor.

Assignments will be submitted using Blackboard. The submitted assignments will be automatically checked for plagiarism and collusion using Blackboard’s SafeAssignment protocol.

**Student Support Services**:UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at <http://www.uta.edu/universitycollege/resources/index.php>.

University Tutorial & Supplemental Instruction (Ransom Hall 205): UTSI offers a variety of academic support services for undergraduate students, including: 60 minute one-on-one tutoring sessions, Start Strong Freshman tutoring program, and Supplemental Instruction. Office hours are Monday-Friday 8:00am-5:00pm. For more information visit www.uta.edu/utsi or call 817-272-2617

Counseling and Psychological Services, (CAPS) [www.uta.edu/caps/](http://www.uta.edu/caps/) or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

**Academic Integrity:** Students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

*I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

*I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System Regents’ Rule 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>.

**Disability Accommodations:** UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including The Americans with Disabilities Act (ADA), The Americans with Disabilities Amendments Act (ADAAA), and Section 504 of the Rehabilitation Act. All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a letter certified by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting: The Office for Students with Disabilities, (OSD) [www.uta.edu/disability](http://www.uta.edu/disability) or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability).

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Counseling and Psychological Services (CAPS) [www.uta.edu/caps/](http://www.uta.edu/caps/) or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

**Absences Based on Religious Beliefs:** A student who misses an examination, work assignment, or other Assignment due to the observance of a religious holy day will be given the opportunity to complete the work missed within 15 days following the due date of the assignment, test, or other Assignment missed. To be eligible for such a make-up, the student must notify me in writing of classes scheduled on dates he or she will be absent to observe a religious holy day. Notification must be made within the first 15 (fifteen) class days through either a written correspondence, personal delivered, acknowledged and dated by me or written correspondence sent certified mail, return receipt requested to me. Failure to follow the rules provided above within the time frames listed will result in the absence being considered unexcused.

**TUITION**:

Students who have not paid by the census date and are dropped for non-payment cannot receive a grade for the course in any circumstances. Therefore, a student dropped for non-payment who continues to attend the course will not receive a grade for the course. Emergency loans are available to help students pay tuition and fees. Students can apply for emergency loans by going to the Emergency Tuition Loan Distribution Center at E.H. Hereford University Center (near the southwest entrance).

**Campus Carry:** Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory” shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

**Final Review Week:** A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**GRADE GRIEVANCES:** Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current graduate catalog. For undergraduate courses, see <http://wweb.uta.edu/catalog/content/general/academic_regulations.aspx#19>; for graduate courses, see <http://grad.pci.uta.edu/about/catalog/current/general/regulations/#gradegrievances>

**Non-Discrimination Policy:** The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit[*uta.edu/eos*](http://www.uta.edu/hr/eos/index.php)

**Title IX:** The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated.*For information regarding Title IX, visit* [www.uta.edu/titleIX](http://www.uta.edu/titleIX) or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or [jmhood@uta.edu](file:///C%3A%5CUsers%5Ceakin%5CAppData%5CLocal%5CMicrosoft%5CWindows%5CTemporary%20Internet%20Files%5CContent.Outlook%5Cprevious%20semesters%5Cfall16%5Cjmhood%40uta.edu).

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

Room 349: <http://www.uta.edu/campus-ops/ehs/fire/Evac_Maps_All/Evac_B/Evac_B_349A.pdf>

Room 339: <http://www.uta.edu/campus-ops/ehs/fire/Evac_Maps_All/Evac_B/Evac_B_339S.pdf>

**THE INSTRUCTOR RESERVES THE RIGHT TO MAKE CHANGES TO THE SYLLABUS AS NECESSARY; IT IS THE STUDENT’S RESPONSIBILITY TO BE AWARE OF THESE CHANGES.**

**Emergency Phone Numbers** In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911.