

MATH 6364: Statistical Methods, Spring 2018

Instructor: Dr. George Yanev; <http://faculty.utrgv.edu/george.yanev/>

Class Times: MW 3:05 – 4:20 pm,

Classrooms: Edinburg - LIBERAL ARTS BUILDING SOUTH 341

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Office: MAGC 3.430,

Office Hours: MW 4:30-5:30 pm

(for the online section please use the email above)

Course Description This is a graduate level statistics course, which goal is to give the students some experience with modeling techniques to be apply in their research; expose them to situations where statistical analysis is useful (and not useful); and most of all give them sufficient understanding to be able to evaluate the statistical part of papers they read. The focus is on the applied side and not on the details of the underlined theory. However, the students will be provided with enough knowledge about how statistical models work and they should be able to evaluate the models in particular situations. Specific topics include simple and multiple linear regression; model checking, selection and diagnostics; time series, logistic regression, and generalized linear models.

During the course, we will pay attention to achieving sustainability – whether economic, environmental, or social. The goals of the statistical analysis include identifying ecological processes and how choices affect the environment; raising awareness of social justice and equity issues and their impact on the global population; distinguishing ethically responsible business practices. Special emphasis will be put on issues and projects related to conservational biology.

Course Pre-requisites Consent of the instructor and departmental approval.

Textbook and Course Materials

Required Textbook.

- B. Abraham and J. Ledolter, "Introduction to Regression Modeling"; Duxbury/Thomson Learning, 2006, ISBN 10: 0-534-42075-3.
- Other readings will be available in Blackboard.

Computer Use. The students are encouraged to use statistical software packages to complete assignments and projects. I highly recommend R (www.r-project.org) but do not discriminate against other packages (SPSS, Minitab, Statistix, etc.). Make the best use of the tools available to you. I cannot accept computer failure as an excuse for late submission of your work.

Course Objectives Upon completing this course, the students will:

- develop mastery of statistical concepts in a modeling setting;
- be able to apply these concepts correctly using statistical software;
- be able to interpret the results of an analysis properly;
- be able to communicate effectively the statistical findings;
- understand the fundamental principles of sustainability in its three aspects: environmental, economic, and social.

- become familiar with quantitative methods for ecological research and conservation; understand how to choose appropriate analyses for different research questions, and the assumptions underlying each model.
- be able to critically evaluate statistics-based material in current research literature, and deal with the limitations of real datasets in the context of conservation science.

Technical Requirements

Computer Hardware. To participate in this online course, you should have easy access to a computer less than 3-years old with high-speed Internet connection via cable modem, LAN or DSL. To ensure you are using a supported browser and have required plug-ins please refer to Supported Browsers, Plugins & Operating Systems for Blackboard Learn from Blackboards resource page.

Student Technical Skills. You are expected to be proficient with the following:

- Using Blackboard
- Using and sending email with attachments
- Creating and submitting files in commonly used word processing program formats
- Copying and pasting
- Downloading and installing software

Blackboard Technical Support

If you need technical assistance at any time during the course or to report a problem with Blackboard you can:

- Email: coltthelp@utrgv.edu
- Visit our COLTT Website: <http://utrgv.edu/online>
- Submit a Ticket: <http://colttapps.utrgv.edu/helpme>

Brownsville Campus

One West University Boulevard

Brownsville, TX 78520

Office: Rustenberg 108

Email: coltthelp@utrgv.edu

Phone: (956) 882-6792

Fax: (956) 882-6751

Edinburg Campus

1201 West University Dr

Edinburg, TX 78539

Office: Education Complex (EDCC) 2.202

Email: coltthelp@utrgv.edu

Phone: (956) 665-5327

Fax: (956) 665-5276

Hours of operation: Monday – Friday, 7:30 a.m. - 6:00 p.m.

Course Organization and Online Tools

Course Structure. This course is organized into **15** weekly modules. Each module contains assigned weekly reading materials. Some weeks may also have a video to highlight important segments of the week's material

To actively participate in this course, you will need to get familiar with the course environment. If you are not familiar with how to navigate this environment as a student or use any of these tools, *please self-enroll and review the orientation provided.*

1. In Blackboard, use the **Course Search** box (located at the bottom of your **My Courses** list in Blackboard)
2. Enter: Student Orientation 2015
3. Press **Go**
4. Click on the **Enroll** button on the right side of the listing and your course will be listed in your Blackboard MyCourses list

Assignments. Unless indicated otherwise in Weekly material, you will submit homework and projects to its respective assignments area. The due dates in Assignments match the due dates in the schedule below. All assignments for this course will be submitted electronically through Blackboard unless otherwise instructed.

Topics Outline / Schedule

Course Outline. The course will cover selected topics from the text as follows.

1. Review of basic statistics.
2. Simple linear regression: estimation, testing, and confidence intervals.
3. Multiple linear regression: estimation, testing, and confidence intervals.
4. Variance-stabilizing transformations.
5. All possible regressions. Criteria for model selection.
6. Time series models. Estimation and forecasting.
7. The effect of ignoring the correlation.
8. Logistic regression model. Interpretation and estimation of the parameters.
9. Poisson regression. Interpretation and estimation of the parameters.
10. Over-dispersion and other models.

Academic Calendar

Jan. 16 (Tues.) Spring classes begin
Jan 19 (Fri.) Last day to add a class or register for Spring classes
Jan. 22 (Mon.) Last day to withdraw (drop all classes) and receive an 80% refund
Jan. 29 (Mon.) Last day to withdraw (drop all classes) and receive a 70% refund
Feb. 5 (Mon.) Last day to withdraw (drop all classes) and receive a 50% refund
Jan. 31 (Wed.) Census Day (last day to drop without it appearing on the transcript)
Feb. 12 (Mon.) Last day to withdraw (drop all classes) and receive a 25% refund
Mar. 12 – Mar. 17 (Mon. – Sat.) Spring Break. No classes
Mar. 30 – Mar. 31 (Fri. – Sat.) Easter Holiday. No classes.
April 12 (Thurs.) Last day to drop a class (grade of DR) or withdraw (grade of W)
May 3 (Thurs.) Study Day. No classes.
May 4 – 10 (Fri. – Thurs.) Final Exams

Grading Policy

It will be aggregate score of four HW assignments, worth 10% each, and two projects, worth 30% each.

Late Work Policy. Be sure to pay close attention to deadlines – there will be no make-up assignments or late work accepted without a serious and compelling reason and instructor approval.

Viewing Grades in Blackboard. Grades you receive for graded activities will be posted to the Blackboard Grade Book. I will update the online grades each time a grading session has been complete – typically 2 days following the completion of an activity.

STUDENTS WITH DISABILITIES:

Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services (SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services. **Brownsville Campus:** Student Accessibility

Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

MANDATORY COURSE EVALUATION PERIOD:

Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (<http://my.utrgv.edu>); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available:

Spring 2018 Module 1	February 14 – February 20
Spring 2018 Module 2	April 11 – April 17
Spring 2018 (full semester)	April 11 – May 2

ATTENDANCE:

Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV's attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

SCHOLASTIC INTEGRITY:

As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE:

In accordance with UT System regulations, your instructor is a "Responsible Employee" for reporting purposes under Title IX regulations and so must report any instance, occurring during a student's time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a

learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct and discrimination.

COURSE DROPS:

According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

STUDENT SERVICES:

Students who demonstrate financial need have a variety of options when it comes to paying for college costs, such as scholarships, grants, loans and work-study. Students should visit the Students Services Center (U Central) for additional information. U Central is located in BMAIN 1.100 (Brownsville) or ESSBL 1.145 (Edinburg) or can be reached by email (ucentral@utrgv.edu) or telephone: (888) 882-4026. In addition to financial aid, U Central can assist students with registration and admissions.

Students seeking academic help in their studies can use university resources in addition to an instructor’s office hours. University Resources include the Learning Center, Writing Center, Advising Center and Career Center. The centers provide services such as tutoring, writing help, critical thinking, study skills, degree planning, and student employment. Locations are:

- Learning center: BSTUN 2.10 (Brownsville) or ELCTR 100 (Edinburg)
- Writing center: BLIBR 3.206 (Brownsville) or ESTAC 3.119 (Edinburg)
- Advising center: BMAIN 1.400 (Brownsville) or ESWKH 101 (Edinburg)
- Career center: BCRTZ 129 (Brownsville) or ESSBL 2.101 (Edinburg)

TENTATIVE CALENDAR

Date	Class Work	Date	Class Work	Date	Class Work	Date	Class Work
01/17	Introduction Review	02/19	Chapter 4	03/21	Chapter 6	04/23	Chapter 11
01/22	Chapter 1	02/21	Chapter 4	03/26	Chapter 6	04/25	Chapter 11
01/24	Chapter 1	02/26	Chapter 4	03/28	Chapter 6	04/30	Chapter 12
01/29	Chapter 2	02/28	Chapter 4	04/02	Chapter 7	05/02	Chapter 12
01/31	Chapter 2	03/05	Chapter 5 Project 1 due	04/04	Chapter 7	05/03	Study Day
02/05	Chapter 2	03/07	Chapter 5	04/09	Chapter 8		
02/07	Chapter 2	03/12	Spring Break	04/11	Chapter 8	05/04-10	Project II due
02/12	Chapter 2	03/14	Spring Break	04/16	Chapter 11		
02/14	Chapter 3	03/19	Chapter 5	04/18	Chapter 11		