



# MATH 403 61E Introduction to Mathematical Statistics

COURSE SYLLABUS: Fall 2021

## INSTRUCTOR INFORMATION

Instructor: Mr. Roberto Colson  
Office Location: Schwartz 330  
Office Hours: TBA  
Office Phone: (979) 209-7291  
University Email Address: [robert.colson@blinn.edu](mailto:robert.colson@blinn.edu)  
Preferred Form of Communication: **email**  
Communication Response Time: within 1 business day

## COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Textbook(s) Required:

- My Course Notes, available on Brightspace
- Verzani, J., "simpleR: Using R for Introductory Statistics". Available FREE at <http://cran.r-project.org/doc/contrib/Verzani-SimpleR.pdf>

Software Required: R, latest version is 4.0.2 (Taking Off Again), though what we do should be version independent. R is a FREE and state of the art statistical computing environment. It is available for download at <http://www.r-project.org/>. There are R builds for Windows, Mac, and Linux/Unix operating systems. Instruction will be given for use in Windows but the builds for other OS's are very similar.

## Course Description

Classical probability theory; discrete and continuous random variables; distribution functions; expectation; law of large numbers; central limit other; applications; random sampling; estimation of parameters; hypothesis testing; and other topics as time allows.

*The syllabus/schedule are subject to change.*

## **Student Learning Outcomes**

1. Use basic probability theory to solve problems and model data-generating processes.
2. Demonstrate understanding of the ideas behind random sampling, statistical inference, and estimation.
3. Choose the statistical techniques appropriate for a data set.
4. Use R to perform basic data munging, summary, and analysis.

## **COURSE REQUIREMENTS**

### **Minimal Technical Skills Needed**

The course notes and data files will be available for download on Brightspace. Video lectures will be posted on YouTube and linked to on Brightspace. All handouts and grades will be posted on the site. I will try where possible to post .pdf files rather than, or in addition to, Office documents. You will need the Adobe Reader (<http://www.adobe.com/>) which is another free download. However, Mac users will have to access Office documents occasionally. There are packages available that enable Mac users to work with Office documents (Office for Mac and OpenOffice come to mind).

### **Instructional Methods**

Video lecture. Homework will be assigned as indicated. There will be 3 exams and a Final Exam.

## **GRADING**

Final grades in this course will be based on the following scale:

- A = 90%-100%
- B = 80%-89%
- C = 70%-79%
- D = 60%-69%
- F = 59% or Below

### **Assessments**

- Homework: 10%
- Projects: 10%
- EXAMS: 3 @ 20% each = 60%
- FINAL: 20%

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## COURSE OUTLINE / CALENDAR

Week	Topics
1	Intro+Chapter 1 – Probabilities, sample spaces and events, axioms of probability
2	Chapter 1 –probabilities using combinatorics: permutations and combinations
3	Chapter 2 - Conditional probability, independence, Law of Total Probability, Bayes' Theorem
4	Chapter 3 – Discrete random variables, probability mass functions, cumulative distributions, expectation and variance
5	Chapter 3 – Discrete random variables: Binomial and Poisson distributions <b>Exam #1</b>
6	Chapter 4 – Continuous random variables, densities, cumulative distributions, expectation and variance
7	Chapter 4 – Uniform and Exponential distributions, Normal distributions, 68-95-99.7 rule, standardizing and Z-scores
8	Chapter 7 – Graphical summaries of data Chapter 8 – Numeric summaries of data
9	Chapter 9 - Estimation and sampling distributions
10	Chapter 10 – Confidence intervals for means and proportions <b>Exam #2</b>
11	Chapter 11 – Hypothesis tests for means and proportions
12	Chapter 12 – Hypothesis Tests for Two Proportions
13	Chapter 13 – Hypothesis Tests for Two Means
14	Chapter 13 – Hypothesis Tests for Two Means
15	<b>Exam #3</b> , review for final
16	<b>Final Exam: TBA</b>

## TECHNOLOGY REQUIREMENTS

### LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

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LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

[https://documentation.brightspace.com/EN/brightspace/requirements/all/browser\\_support.htm](https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm)

YouSeeU Virtual Classroom Requirements:

<https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements>

## **ACCESS AND NAVIGATION**

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or [helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu).

**Note:** Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

## **COMMUNICATION AND SUPPORT**

If you have any questions or are having difficulties with the course material, please contact your Instructor.

### **Technical Support**

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

### **Interaction with Instructor Statement**

Graded exams and quizzes will be returned within a week, usually less.

## **COURSE AND UNIVERSITY PROCEDURES/POLICIES**

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## **Syllabus Change Policy**

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

## **University Specific Procedures**

### **Student Conduct**

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](#).

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum:

<https://www.britannica.com/topic/netiquette>

### **TAMUC Attendance**

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

### **Academic Integrity**

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

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## **Students with Disabilities-- ADA Statement**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

### **Office of Student Disability Resources and Services**

Texas A&M University-Commerce

Gee Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: [studentdisabilityservices@tamuc.edu](mailto:studentdisabilityservices@tamuc.edu)

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

### **Students' Mental Health**

The Counseling Center at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit [www.tamuc.edu/counsel](http://www.tamuc.edu/counsel)

### **Nondiscrimination Notice**

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

### **Campus Concealed Carry Statement**

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:

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<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

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