MATH 403.002: INTRODUCTION TO MATHEMATICAL STATISTICS
Spring 2020

CONTACT INFORMATION:

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DESCRIPTION and POLICIES:

1. Class Schedule: TR 11:00a-12:15p, BINB329. Please join **office hours** conveniently scheduled around your class meetings for all questions.

2. Textbook: The following free resources will be used in this course.
   Open Introduction Statistics by David M Diez, Mine Cetinkaya-Rundel, and Christopher D Barr, 4th edition, (978-1943450077). A free online version of the fourth edition is available at the OpenIntro website. You may also purchase a print copy at the same address.
   simpleR: Using R for Introductory Statistics by Verzani, J., a free online text available at the CRAN, the Comprehensive R Archive Network website.

3. Website & Internet: A Brightspace **course website** is created for the course which may be accessed from student myLeo accounts. All files and documents, lecture notes and outlines that the instructor shares with the class will be posted in the course website. All material posted or shared at the course website is **copyrighted** ©. You are allowed to retain one copy of each file for your personal use, but the files should not be distributed in any form without instructor's written consent.

4. Course Description: A calculus based course in classical statistical inference. Topics covered may include estimation, hypothesis testing, linear regression and ANOVA, nonparametric methods and other topics as time allows. **Prerequisites:** Math 2414 or Math 192.

5. Software and Tools: The **R software** is required for the course. It will be used extensively for manipulating data and carrying out computations in classroom discussions as well as homework exercises and projects. R is a free software environment for statistical computing and graphics that may be **downloaded** at the CRAN website. We will also use the free R Studio platform that integrates R software, and is available for downloading at the website.

6. TESTS & PROJECTS: There will be **two tests/projects** (100 points each) and a **comprehensive final** (200 points). Each test will consists **two parts**: a written part, and a take home part. The take-home projects will be worked using **R Studio**, and turned in electronically as an R notebook into the corresponding Submission Folder. Late work is not accepted. **No make-up** test will be given without an official, written, university accepted excuse. The student must contact the instructor the next working day and present the documented excuse to make up a test.

7. HOMEWORK: Homework will be assigned in **every class** meeting on a regular basis. Selected assignments and problems will be graded only, but all homework problems should be worked out. The assignments will be turned in **electronically** (in form of an R notebook) by due dates into the Submission Folder for that week at the course website. Student name and homework number should be printed at the top of each notebook. You may work in groups unless otherwise instructed, however the paper you turn in must be your own work. **Late homework** is not accepted. **Attendance** may be used instead of assignments for the homework score. Homework and/or attendance is worth **50 points** of the total semester grade.

8. TENTATIVE COURSE OUTLINE: We cover **all or certain parts of these topics** from the textbook as time permits.

> Chapter 0: Introduction to R (Week 1)
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> Chapter 1: Introduction to data (Week 2)
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> Chapter 2: Probability (Weeks 3, 4, 5)
>
> Chapter 3: Distributions of random variables (Weeks 5, 6, 7)
>
> Chapter 4: Foundations for inference (Weeks 7, 8, 9)
>
> Chapter 5: Inference for numerical data (Weeks 9, 10, 11)
>
> Chapter 6: Inference for categorical data (Weeks 11, 12, 13)
>
> Chapter 7: Introduction to linear regression (Weeks 13, 14)
>
> Chapter 8: Multiple and logistic regression(Weeks 14, 15)

9. LEARNING OUTCOMES: Students who complete this course successfully will
a) learn the **terminology** of statistical inference, discrete and continuous random variables, sampling, hypothesis testing, and regression;
b) learn the **methods** used in solving problems in these topics;
c) learn the **applications** of the methods to practical real world problems.

10. GRADING SCALE: All scores will be added and a **letter grade** will be assigned according to the following table.

    A   406 - 450 pts
    B   361 - 405 pts
    C   316 - 360 pts
    D   271 - 315 pts
    F   0 - 270 pts

11. TENTATIVE EXAM SCHEDULE:

Test 1	100 pts	Thursday February 20, 2020	in class
Test 2	100 pts	Thursday April 9, 2020	in class
Final	200 pts	Tuesday May 5, 2020	10:30a-12:30p

12. MISCELLANEOUS: Your enrollment in this course indicates that **you agree to observe** all the conditions and regulations of this syllabus and the Student Handbook. The test and homework scores may be filed to be used anonymously for educational research.

    It is the **student's responsibility** to secure the software licenses and other resources (such as a personal computer with proper operating system to run the software, broadband internet access, etc.) to be able to complete and communicate all assignments, tests and projects to the instructor as required. The access information to Library resources, and **Help Desk** for technical support are available through the myLeo website. You should contact Wolfram Mathematica **technical support line** listed on their website for all installation, licensing, and other technical questions.

    Policies pertaining to scholastic dishonesty are identical to TAMU-Commerce regulations given in the **Student Handbook**, available online at the university website (click here). All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment (See Student's Guide Handbook, Policies and Procedures, Conduct). Disruptive behavior (including use of electronic devices in classroom) and scholastic dishonesty in any form will not be tolerated.

    Campus Concealed Carry 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 policy (click here) at the university website, and/or consult your event organizer. 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 911.

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, Email: `StudentDisabilityServices@tamuc.edu`, or Fax: (903) 468-8148.

Nondiscrimination notice: Texas A&M–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.

Any **possible changes** to be made in this syllabus by the instructor during the semester will be announced by email.