



MATH 502 01S Mathematical Statistics II

COURSE SYLLABUS: Spring 2020

INSTRUCTOR INFORMATION

Instructor: Dr. Thomas R. Boucher
Office Location: Binnion 310
Office Hours: MW 10-12, TR 3:30-4:30, or by appointment
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Preferred Form of Communication: **email**
Communication Response Time: within 1 business day

COURSE INFORMATION

Textbook(s) Required:

- Casella, C., and Berger, R (2002). *Statistical Inference*, 2nd Edition. Brooks/Cole Cengage Learning.
- Verzani, J., "simpleR: Using R for Introductory Statistics". Available FREE at <http://cran.r-project.org/doc/contrib/Verzani-SimpleR.pdf>
- [My MATH 401 notes](#)
- [More](#)

Software: R, latest version is 3.6.2 (Dark and Stormy Night), though what we do should be version independent. If you want to work at home using your own computer:

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.

D2L: All handouts will be posted on the D2L course 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 may have to

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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).

Topics covered: We will cover most if not all of Chapters 6-10. For details, see Class Schedule.

COURSE DESCRIPTION

Point estimation, maximum likelihood estimators, interval estimators, tests of hypotheses. Prerequisite: MATH 501 Mathematical Statistics I.

STUDENT LEARNING OUTCOMES

- Convergence concepts in probability theory.
- Principles of data reduction.
- Point estimation.
- Interval estimation.
- Hypothesis testing.
- Asymptotic evaluations of tests, point and interval estimates.

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

Components of the grade:

- **HW: 30%**
- **EXAMS: 3 @ 15% each**
- **FINAL EXAM: 25%**

Disputed grades will only be changed if graded assignments are produced which indicate the recorded grade is erroneous.

Exams: There are 3 exams and a cumulative final. There will be no makeup exams.

Exam schedule:

- **Exams --- TBA**
- **Final --- TBA**

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Homework: will be assigned in class and is due as indicated, unless announced otherwise.

COURSE OUTLINE / CALENDAR

Tentative Class Schedule:

(section numbers are in Casella and Berger)

Week	Topics
1	5.1/5.2 - Statistics, random samples, likelihood function, data summary
2	7.1/7.2.1/7.2.2 – Point Estimation: methods of finding estimators: method of moments, maximum likelihood
3	7.2.2 – MLE multiparameter and invariance 7.3.1/7.3.2 – Evaluating estimators: UMVUE
4	7.3.2 – Evaluating estimators: Cramer-Rao lower bound 5.3/5.5 – Sampling Distributions: Sampling from Normal distribution, Central Limit theorem
5	9.1 – Confidence intervals/interval estimation Exam #1
6	9.2.2 – Finding confidence intervals: pivots 9.3.1 – Evaluating interval estimators
7	8.1/8.3.1/8.3.4 – Hypothesis testing
8	8.2.1 – Likelihood ratio tests 6.2.1 - Sufficient statistics
9	Spring Break
10	8.3.2 – Most powerful tests and sufficient statistics 8.3.2 – Most powerful tests and monotone likelihood ratio
11	Exam #2
12	7.2.3 – Bayes estimators 7.3.1/7.3.4 – Decision theory: evaluating Bayes estimators
13	7.3.1/7.3.4 – Decision theory: evaluating Bayes estimators 8.2.2/8.3.5 – Bayesian hypothesis testing
14	8.2.2/8.3.5 – Bayesian hypothesis testing 9.2.4 – Bayesian intervals
15	10.1.1/10.1.2 - Consistency and efficiency of point estimates 10.3 – Asymptotic distribution of likelihood ratio tests
16	Exam #3
17	Finals

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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

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

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.

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>

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COURSE AND UNIVERSITY PROCEDURES/POLICIES

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

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

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

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:

<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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