

Instructor: Replace the red bold type in this syllabus with content relevant to your course.



MATH 503 Actuarial Mathematics

COURSE SYLLABUS: Spring 2019

INSTRUCTOR INFORMATION

Instructor: (Name & Title) Dr. Thomas R. Boucher
Office Location: Binnion 310
Office Hours: MW 9-11, TR 4-5
Office Phone: x5947
Office Fax: x5945
University Email Address: Thomas.Boucher@tamuc.edu
Preferred Form of Communication: **email**
Communication Response Time: within 1 business day

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Textbook(s) Required We will not be using a text; my notes will be sufficient. You will need the following materials from <https://www.soa.org/Education/Exam-Req/Syllabus-Study-Materials/edu-updates-exam-p.aspx>

- the sample Exam P questions
- the sample Exam P solutions
- and **also the manuscript 'Risk and Insurance' published by the SOA/CAS**
<http://www.soa.org/files/pdf/P-21-05.pdf>
- Note there are also online sample Exam P questions and practice question videos and solutions at <https://www.soa.org/education/exam-req/edu-exam-p-detail.aspx>

Resources: A sampling of available resources on the internet. Some of these are 'official' sites affiliated with professional actuarial organizations, and others are 'unofficial' sites with no such affiliation:

<http://www.beanactuary.org/> (information)
<http://www.soa.org/> (Society of Actuaries)
<http://www.actuary.org/> (American Academy of Actuaries)
<http://www.casact.org/> (Casualty Actuarial Society)

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<http://www.dwsimpson.com/> (head hunter)

<http://www.actuarialoutpost.com/> (community – discussion, blogs, wiki, jobs)

<http://www.actuary.com/> (community – discussion, blogs, wiki, jobs)

Course Description

A course in business/financial mathematics designed as an introduction to actuarial science and as preparation for the Exam P/1 and Exam FM actuarial exams. Encounters appropriate topics from analysis, linear algebra, probability and statistics, and financial mathematics.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

We will use Microsoft Office (Word, PowerPoint, Excel) and Brightspace so that you will need internet access and a suitable browser. 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 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).

GRADING:

Assigned homework will account for your entire course grade. 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

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Assessments

HW will be assigned weekly and will be similar to the practice problems.

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:

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

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

No late work will be accepted.

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>

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

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

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.

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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.

COURSE OUTLINE / CALENDAR

Topics Covered: The bulk of the course will follow the official January 2017 Syllabus for Exam P posted at <https://www.soa.org/education/exam-req/edu-exam-p-detail.aspx>:

- Basic probability and Bayes' Rule with applications to contingency table analysis and risk assessment
- Discrete and continuous random variables, with applications to arrival times of claims, policy pricing (premiums), survival functions, and claims' threshold exceedances, expected policy payments and pricing
- Risk and insurance: risk, loss, claim payments, net premium, deductibles, benefit limits, coinsurance, aggregate loss, frequency distributions, and severity distributions
- Discrete and continuous random variables with applications to the frequency and severity distributions of policy claims
- Policies with deductibles - expected payments, excess loss, and pricing
- Policies with policy limits –frequency and severity distributions, expected policy payments
- Expectation and variance for sums of random variables with applications to aggregate loss models, the advantages of pooling risk
- Variances and covariances for linear combinations of random variables with applications to the effect of inflation on policy losses and pricing, risk, variability in claims and payments in the absence and presence of deductibles and policy limits, benefits increases, coinsurance
- Functions of random variables with applications to policies with coinsurance, values of investments with varying interest rates, pool extrema
- Sampling distributions of sums of random variables (Central Limit Theorem) with application to aggregate loss
- Joint probability distributions with applications to arrival times of claims, survival functions, frequency and severity distributions
- Conditional expectation and conditional variance with applications to expected excess of premiums over claims, risk assessment, aggregate losses

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