

## **FIN 4340 Actuarial Finance**

CRN: 17486

Fall 2022

Class Hours: Monday/Wednesday 3:00 – 4:20 pm (BUSN 321)

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Office Hours: Monday/Wednesday 4:30 - 5:30 pm or by appointment

### **COURSE DESCRIPTION**

This course provides an introduction to actuarial cash flow models. Simple, compound, rate of discount, and effective interest functions are analyzed. These functions are used in the calculation of present value and future values of various types of annuities, loans, and more complex cash flow streams.

Students enrolled in FIN 4340 should have successfully completed FIN 3310.

### **EXPECTED LEARNING OUTCOMES**

- Understand and be able to perform calculations relating to the present value, current value, and accumulated value.
- Describe different annuities and their cash flows.
- Understand the time value of money among different types of annuities as well as more complex cash flow streams.
- Understand key concepts concerning loans and how to perform related calculations.
- Teach actuarial cash flow models, which constitute the theoretical foundation of actuarial science.
- Develop analytical problem-solving skills to solve complex problems from first principles rather than memorization.

### **HOMEWORK ASSIGNMENT SOFTWARE**

Coaching Actuaries is an online software that allows students to submit homework assignments and check their work online. Access to Coaching Actuaries is required for this course.

### **GRADING AND HOMEWORK ASSIGNMENTS**

### Grade Distribution:

A	B	C	D	F
90-100	80-89.99	70-79.99	60-69.99	0-59

Course grade will be weighted as follows:

Exam 1,2,3 and Final (20% points each)	80%
Homework	12%
In-Class Quizzes	8%
Total	100%

**All exams will be closed-book, and no formula sheet is allowed (and on all SOA exams as well!).** Students who miss an exam without a valid reason will receive a zero on that exam. Make-up exams will be allowed only with pre-approval of the instructor or with an acceptable, documented reason. Acceptable reasons for makeup exams include severe illness, family emergencies or other unavoidable events including dangerous weather conditions and car accidents. Exam format for makeup exams may be different from the original exam.

Homework Assignments: The homework assignments aim to help you understand the theories covered in the class and to prepare you for the exams. You are allowed and encouraged to collaborate on these problems, although every student must submit their own answers. **Late homework is not accepted.** Please complete your assignments well in advance.

### TECHNOLOGY REQUIREMENTS

#### Blackboard

I will use Blackboard to post important announcements and upload course materials. I expect you to check Blackboard daily. Make sure you receive Blackboard announcement emails in your inbox.

#### Calculator

Only calculators that are approved by the Society of Actuaries for use on Exam FM will be allowed to be used on exams in this class. I recommend Texas Instruments BA II Plus. I will use Texas Instruments BA II Plus in class and explain how to work various problems with it. Make sure that you bring your calculator to every class. Other calculators are approved: BA-35, BA II Plus Professional, TI-30Xa, TI-30X II (IIS solar or IIB battery), TI-30XS MultiView (or XB battery).

#### Class E-Mail

Each student is required to have the e-mail account that is associated with the *Blackboard system* up to date. Any class requirements sent in the e-mail messages through the Blackboard are considered delivered. You should check that e-mail account regularly.

## **ATTENDANCE AND PARTICIPATION**

Although there is no attendance point for this class, students are strongly encouraged to attend every class and participate in classroom discussions. Students who attend class regularly perform substantially better in the exams than those who do not.

## **EXCUSED ABSENCES AND/OR COURSE DROP POLICY**

A student may officially withdraw from this class with an automatic W at any time **BEFORE October 28**. I will not drop you from the course. However, if you feel that you are unable to complete the course successfully, please let me know and then contact the Registrar's Office to initiate the drop process. If you do not, you are at risk of receiving an "F" for the course.

## **MAKE-UP WORK**

Make-up work will be given *only* in the case of a *documented* emergency. Note that make-up work may be in a different format than the original work, may require more intensive preparation, and may be graded with penalty points. It is therefore important to reach out to me—in advance if at all possible—and explain with proper documentation why you missed a given course requirement. Once a deadline has been established for make-up work, no further extensions or exceptions will be granted.

## **ALTERNATIVE MEANS OF SUBMITTING WORK IN CASE OF TECHNICAL ISSUES**

I strongly suggest that you submit your work with plenty of time to spare in the event that you have a technical issue with the course website, network, and/or your computer. I also suggest you save all your work (answers to discussion points, quizzes, exams, and essays) in a separate Word document as a back-up. This way, you will have evidence that you completed the work and will not lose credit. If you are experiencing difficulties submitting your work through the course website, please contact the UTEP Help Desk. You can email me your back-up document as a last resort.

## **INCOMPLETE GRADE POLICY**

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

## **ACCOMMODATIONS POLICY**

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities

in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services](#) (CASS). Contact the Center for Accommodations and Support Services at 915-747-5148, or email them at [cass@utep.edu](mailto:cass@utep.edu), or apply for accommodations online via the [CASS portal](#).

## **SCHOLASTIC INTEGRITY**

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the [Office of Student Conduct and Conflict Resolution \(OSCCR\)](#) for possible disciplinary action. To learn more, please visit [HOOP: Student Conduct and Discipline](#).

## **COPYRIGHT STATEMENT FOR COURSE MATERIALS**

All materials used in this course are protected by copyright law. The course materials are only for the use of students currently enrolled in this course and only for the purpose of this course. They may not be further disseminated.

### **Course Resources:**

UTEP provides a variety of student services and support:

#### Technology Resources

- [Help Desk](#): Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.

#### Academic Resources

- [UTEP Library](#): Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.

- [University Writing Center \(UWC\)](#): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.
- [Math Tutoring Center \(MaRCS\)](#): Ask a tutor for help and explore other available math resources.
- [History Tutoring Center \(HTC\)](#): Receive assistance with writing history papers, get help from a tutor and explore other history resources.
- [RefWorks](#): A bibliographic citation tool; check out the RefWorks tutorial and Fact Sheet and Quick-Start Guide.

#### Individual Resources

- [Military Student Success Center](#): Assists personnel in any branch of service to reach their educational goals.
- [Center for Accommodations and Support Services](#): Assists students with ADA-related accommodations for coursework, housing, and internships.
- [Counseling and Psychological Services](#): Provides a variety of counseling services including individual, couples, and group sessions as well as career and disability assessments.

## Weekly Calendar (Subject to Change)

Week	Date	Topic
1	8/22	Introduction
	8/24	1.1 Interest Rate Definitions (1)
2	8/29	1.1 Interest Rate Definitions (2)
	8/31	1.2 Force of interest rate
3	9/5	Labor Day
	9/7	1.3 All-In-One Relationship Formula 1.4 Two Exceptions (Simple Interest and Variable FOI)
4	9/12	1.5 Time Value of Money Unknown Time, Interest rate, and Unknown Payment (1)
	9/14	1.5 Time Value of Money Unknown Time, Interest rate, and Unknown Payment (2)
5	9/19	Review 1
	9/21	<b>Exam 1 (1.1-1.4)</b>
6	9/26	2.1 Level Annuities (1)
	9/28	2.1 Level Annuities (2)
7	10/3	2.1 Level Annuities (3)
	10/5	2.2 Non-Level Annuities: Geometric (1)
8	10/10	2.2 Non-Level Annuities: Geometric (2)
	10/12	2.3 Non-Level Annuities: Arithmetic (1)
9	10/17	Review 2
	10/19	<b>Exam 2 (1.5, 2.1 &amp; 2.2)</b>
10	10/24	2.3 Non-Level Annuities: Arithmetic (2)
	10/26	2.4 More General Annuities and Annuity Tricks (1)
11	10/31	2.4 More General Annuities and Annuity Tricks (2)
	11/2	2.5 Yield Rate and Reinvestment Questions (1)
12	11/7	2.5 Yield Rate and Reinvestment Questions (2)
	11/9	3.1 Loan Amortization (1)
13	11/14	Review 3
	11/16	<b>Exam 3 (2.3, 2.4 &amp; 2.5)</b>
14	11/21	3.1 Loan Amortization (2)
	11/23	Thanksgiving
15	11/28	3.2 More General Loan Payments
	11/30	Review 4
16	12/5	<b>Exam 4: Monday, December 6 1:00 pm – 3:45 pm (3.1-3.2)</b>