

## **Actuarial Finance II (ONLINE)**

CRN: 28937

Spring 2021

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Office Hours: Friday 3:30 – 5:00 pm or by appointment (Virtually via Blackboard Collaborate)

**Course Information:** What this class is about and what we will do

### **COURSE DESCRIPTION**

This course is an introduction to the fundamental concepts and applications of financial mathematics. Topics include bond valuation, bond amortization, interest rate swap, investment yield, investment portfolio, duration, convexity, asset/liability management, and immunization strategies. Students enrolled in FIN 4341 should have successfully completed FIN 430.

### **EXPECTED LEARNING OUTCOMES**

At the end of this course, students will be able to:

- (1) Understand the basic valuation of a standard bond, callable bond, stock, and interest rate swap.
- (2) Perform calculations relating to the dollar-weighted rate of return, time-weighted rate of return, duration (Macaulay and modified), convexity (Macaulay and modified), spot rate, forward rate and yield curve.
- (3) Construct an investment portfolio to:
  - Redington immunize a set of liability cash flows.
  - Fully immunize a set of liability cash flows.
  - Exactly match a set of liability cash flows.
- (4) Develop analytical problem-solving skills to solve complex problems from first principles rather than memorization.

### **LEARNING MODULES**

This course is designed using a modular format—that is, each week is “packaged” as a single module so that all the materials (lecture notes and videos) are in one area for a given week.

### **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:

[100-90] = A    (90, 80] = B    (80-70] = C    (70-60] = D    < 59 = F

### Grade Components:

Exam 1,2,3 and 4 (5%, 12%, 12% and 18% points each)	47%
Quizzes	24%
12 Homework Assignments	24%
VBA Assignments	5%
Total	100%

Exam 1, Exam 2, Exam 3 and Exam 4:

- All exams will be blackboard tests which requires Respondus LockDown Browser. Suspicious behaviors may be reported to the Office of Student Conduct. All exams will be closed-book, and no formula sheet is allowed.
- Weights: the lowest grade of the four exams weighs 5%, the highest 18%, and the other two weigh 12% each.
- Students are required to bring their own calculators (smartphones are not allowed). 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 make-up exams include severe illness, family emergencies, or other unavoidable events, including dangerous weather conditions and car accidents. Exam format for make-up 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.

Quizzes:

Online quizzes will be given regularly in this course. The quizzes will close on the due dates at 11:59 pm. Please don't delay taking quizzes.

## TECHNOLOGY REQUIREMENTS

Course content is delivered via the Internet through the Blackboard learning management system. Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. Google Chrome and Mozilla Firefox are the best browsers for Blackboard; other browsers may cause complications. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

You will need to have access to a computer/laptop, scanner, a webcam, and a microphone. You will need to download or update the following software: Microsoft Office, Adobe Acrobat Reader, Windows Media Player, QuickTime, and Java. Check that your computer hardware and

software are up-to-date and able to access all parts of the course.

If you do not have a word-processing software, you can download Word and other Microsoft Office programs (including Excel, PowerPoint, Outlook and more) for free via UTEP's Microsoft Office Portal. Click the following link for more information about [Microsoft Office 365](#) and follow the instructions.

**IMPORTANT:** If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP [Help Desk](#) as they are trained specifically in assisting with technological needs of students. Please do not contact me for this type of assistance. The Help Desk is much better equipped than I am to assist you!

## COURSE COMMUNICATION

Because this is an online class, we won't see each other in the ways you may be accustomed to: during class time, small group meetings, and office hours. However, there are a number of ways we can keep the communication channels open:

- **Office Hours:** We will not be able to meet on campus, but I will still have office hours for your questions and comments about the course. My office hours will be held on Blackboard Collaborate during the following times.  
Fridays: 3:30 pm – 5:00 pm Mountain Time or by appointment
- **Email:** UTEP e-mail is the best way to contact me. I will make every attempt to respond to your e-mail within 24-48 hours of receipt. When e-mailing me, be sure to email from your UTEP student account and please put the course number in the subject line. In the body of your e-mail, clearly state your question. At the end of your e-mail, be sure to put your first and last name, and your university identification number.
- **Help Board:** If you have a question that you believe other students may also have, please post it in the Help Board of the discussion boards inside of Blackboard. Please respond to other students' questions if you have a helpful response.
- **Announcements:** Check the Blackboard announcements frequently for any updates, deadlines, or other important messages.

## NETIQUETTE

As we know, sometimes communication online can be challenging. It's possible to miscommunicate what we mean or to misunderstand what our classmates mean given the lack of body language and immediate feedback. Therefore, please keep these netiquette (network etiquette) guidelines in mind. Failure to observe them may result in disciplinary action.

- Always consider audience. This is a college-level course; therefore, all communication should reflect polite consideration of other's ideas.
- Respect and courtesy must be provided to classmates and to the instructor at all times. No harassment or inappropriate postings will be tolerated.
- When reacting to someone else's message, address the ideas, not the person. Post only what anyone would comfortably state in a face-to-face situation.

- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on in these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space.

## **ATTENDANCE AND PARTICIPATION**

Because this is an online course, attendance is determined by class participation online. Participation is determined by completing all Homework Assignments and Quizzes.

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

I will not drop you from the course. However, if you feel that you are unable to complete the course successfully, please 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.

## **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 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.

## **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.

## **TEST PROCTORING SOFTWARE**

All exams will make use of Respondus Lock Down Browser and Respondus Monitor inside of Blackboard to promote academic integrity. You are encouraged to learn more about how to use these programs prior to the first test.

Please review the following guidelines:

- The assessments will only be available at the times identified on the course calendar.
- You may take the test at any time during the 24-hour window. (You can start any time from midnight am to 11:59 pm.)
- A reliable Internet connection is essential to completing the exam. If you must go to a location to take the exam (such as the library), be sure to follow their health and safety requirements.
- Once the window closes, your answers will be saved, and no changes can be made.
- Respondus Lockdown Browser will require that all internet tabs are closed prior to the start of the test.
- Respondus Monitor requires a webcam and microphone.
- You will be required to show the webcam your student ID prior to the start of the test.
- Your face should be completely visible during the test. Blocking the camera will disable the test.
- No notes or textbook materials are permitted during the test. Respondus Monitor requires you to take a video of your surrounding area (desk, chair, walls, etc.)
- You should not have conversations with other people and/or leave and return to the area during the test.

## **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.

## **COVID-19 PRECAUTIONS**

You must **STAY AT HOME** and **REPORT** if you (1) have been diagnosed with COVID-19, (2) are experiencing COVID-19 symptoms, or (3) have had recent contact with a person who has received a positive coronavirus test. Reports should be made at [screening.utep.edu](https://screening.utep.edu). If you know of anyone who should report any of these three criteria, you should encourage them to report. If the individual cannot report, you can report on their behalf by sending an email to

[COVIDaction@utep.edu](mailto:COVIDaction@utep.edu).

For each day that you attend campus—for any reason—you must complete the questions on the UTEP screening website ([screening.utep.edu](http://screening.utep.edu)) prior to arriving on campus. The website will verify if you are permitted to come to campus. Under no circumstances should anyone come to class when feeling ill or exhibiting any of the known COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, and alternative instruction will be provided. Students are advised to minimize the number of encounters with others to avoid infection.

Wear face coverings when in common areas of campus or when others are present. You must wear a face covering over your nose and mouth at all times in this class. If you choose not to wear a face covering, you may not enter the classroom. If you remove your face covering, you will be asked to put it on or leave the classroom. Students who refuse to wear a face covering and follow preventive COVID-19 guidelines will be dismissed from the class and will be subject to disciplinary action according to Section 1.2.3 *Health and Safety* and Section 1.2.2.5 *Disruptions* in the UTEP Handbook of Operating Procedures.

### **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.

**Tentative Schedule and Outline** (I reserve the right to revise it)

Week	Topic
1	Bond Basics and Pricing (4.1)
2	Premium and Discount (4.2) & Bond Amortization (4.3)
3	Callable Bonds (4.4) & Stocks (4.5)
4	<b>Review &amp; Exam 1 (Feb 11)</b>
5	Spot and Forward Rates (5.1)
6	Interest Rate Swaps (5.2)
7	Determinants of Interest Rates (5.3) & Dollar Weighted Rate of Return (5.4)
8	<b>Review &amp; Exam 2 (March 11)</b>
9	<b>Spring Break (March 15-19)</b>
10	Time Weighted Rate of Return (5.4) & Duration (6.1)
11	Duration (6.1) & Convexity (6.2)
12	Redington and Full Immunization (7.1) & Immunization by Exact Matching (7.2)
13	<b>Review &amp; Exam 3 (April 15)</b> (SOA FM Exam Apr. 8-19, 2021)
14	FM Exam Review 1 (SOA Sample questions Q1-Q67) & VBA introduction (1)
15	FM Exam Review 2 (SOA Sample questions Q68-Q134) & VBA introduction (2)
16	FM Exam Review 3 (SOA Sample questions Q135-Q202) & VBA introduction (3)
17	<b>Final Exam (May 11)</b>