



MA361 & MA362: FINANCIAL MATHEMATICS I AND II
SPRING 2021

INSTRUCTOR: Irina Pogrebivsky, FSA

CLASS	TIME
MA361.1	MW 8:30AM – 10:10AM
MA362.1	TTR 8:30AM – 10:10AM
ZOOM LINK:	https://arcadia.zoom.us/j/95804201381

OFFICE HOURS: By Appointment
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OVERVIEW

MA361: Financial Mathematics I along with MA362: Financial Mathematics II are designed to prepare students for the Financial Mathematics exam jointly administered by the Society of Actuaries (Exam FM) and the Casualty Actuarial Society (Exam 2). The Financial Mathematics exam is a three-hour exam that consists of 35 multiple-choice questions and is administered as a computer-based test. **This course is designed to prepare you for the current syllabus published for the April 2021 sitting. This syllabus will apply for the June 2021 sitting as well.**

SOA Syllabus: [April 2021 Syllabus with Learning Objectives/Outcomes and Readings](#)

The Financial Mathematics Exam assumes a basic knowledge of calculus and an introductory knowledge of probability. Prerequisite: MA202.

CLASS MEETING

We will meet via Zoom every day. You must have your **audio and video on** during class. Prior to each class meeting, you will be expected to read assigned material on your own. During class, we will spend half of the class reviewing the material you have read and half of the class doing practice problems to reinforce the material.

CANVAS SPRING 2021.MA361.1 COURSE

Zoom links, class recordings, assignments, and announcements will be posted on MA361.1 Canvas Course. We will not use MA362.1 Canvas.

REQUIRED TEXTS:

We will use the SOA suggested textbook source to learn the concepts covered on the exam. Concepts will be reinforced by doing problems from the ASM Study manual as well as Sample Questions and Solutions published by the SOA.

Mathematics of Investment and Credit (Fifth, Sixth or Seventh Edition)

Author - Samuel A. Broverman, Ph.D, ASA
Published by ACTEX Publications.

ASM Study Manual for Exam FM, 13th or 14th Edition with StudyPlus+

Authors – Cherry/Shaban/Fried
Published by Actex Publications

[Study Note 1: Using Duration and Convexity \(Sections 1-4\)](#)

Using Macaulay duration to approximate the effect of interest rate changes on present values. Sections 1-4 are required reading.
Available on SOA website. Click on title above to access the study note.

[Study Note 2: Interest Rate Swaps](#)

A study note on interest rate swaps. The entire note is required reading.
Available on SOA website. Click on title above to access the study note.

[Study Note 3: Determinants of Interest Rates](#)

A study note on the determinants of interest rates. The entire note is required reading.
Available on SOA website. Click on title above to access the study note.

REQUIRED CALCULATOR(S)

Texas Instruments: BA II Plus or
Texas Instruments: BA II Plus Professional Edition
[Review of Calculator Functions](#)

CLASS RULES

- Please place your cell phones on silent or vibrate at the beginning of class.
- Please bring a calculator to every class. **Cell phones, iPads or any other electronic device (other than what's listed above) are not permitted to be used as calculators.**
- You are expected to attend each class (via Zoom) and take notes; this will only help you in mastering this challenging subject material. You are also expected to do problems on your own other than what has been assigned. On average, students are expected to dedicate **at least 300 hours of study time** for the FM exam.
- Each member of the class is expected to abide by the University's standards for academic integrity. Violation of this code in the form of cheating on examinations or the like will not be tolerated and will result in a failing grade in the course.

GRADES

The course grade is based on quiz/examination performance, assignments, class attendance and participation.

Quizzes 70%

Final Exam 25%

Homework / Problem Sets 5%

Grade Rubric:

Percentage	Grade
90+	A
80-89	A-
75-79	B+
70-74	B
65-69	B-
60-64	C+
55-59	C
50-54	C-
<50	D

- There will be 8 quizzes given throughout the semester covering material on each objective of the Exam FM syllabus. The score on your lowest quiz will be discarded. The remaining seven quizzes will each be worth 10% of your final grade.
- The final exam is cumulative and will mirror the FM exam. **Missing the Final Exam will result in an automatic grade of 'F' for the course.**
- Assignments are designed to help you understand basic concepts and to practice their applications. Assignments will be posted weekly on Canvas.
- Class participation and attendance are critical. If you are on the borderline between one grade and the next, then your participation in class will be used to determine whether or not you have put forth the effort and motivation to earn the higher grade. I encourage you to frequently ask questions to insure you have a thorough understanding of the material.

DISABILITY DISCLOSURE STATEMENT

ARCADIA UNIVERSITY PROVIDES REASONABLE ACCOMMODATIONS FOR STUDENTS WITH DOCUMENTED DISABILITIES. IF YOU REQUIRE ACCOMMODATIONS OR OTHER ACADEMIC SUPPORTS DUE TO A PHYSICAL, PSYCHOLOGICAL, PSYCHIATRIC OR LEARNING DISABILITY, YOU SHOULD CONTACT DISABILITY SUPPORT SERVICES AT 215-572-4033.

COURSE OUTLINE

Learning Objective in FM Syllabus	Broverman Text	Date
A. Time Value of Money (10-15%)	Chapter 1: Interest Rate Measurement	1/25/21 - 2/4/21
	<i>Quiz 1: Objective A</i>	2/8/21
B. Annuities/Cash Flows with payments that are not contingent (15-20%)	Chapter 2: Valuation of Annuities	2/9/21- 2/18/21
	<i>Quiz 2: Objective B</i>	2/22/21
C. Loans (15-20%)	Chapter 3: Loan Repayments	2/23/21 - 2/25/21
	<i>Quiz 3: Objective C</i>	3/1/21
D. Bonds (15-20%)	Chapter 4: Bond Valuation	3/2/21 - 3/11/21
	<i>Quiz 4: Objective D</i>	3/15/21
	Spring Break	3/16/21 - 3/18/21
E. General Cash Flows and Portfolios (10-15%)	Chapter 5: Measuring Rate of Return on an Investment	3/22/21 - 3/25/21
	<i>Quiz 5: Objective E (Rate of return)</i>	3/29/21
	Section 9.1: The Dividend Discount Model (DDM) of Stock Valuation	3/30/21 - 3/31/21
	Chapter 6: Term Structure of Interest Rates	4/1/21 - 4/5/21
G. Interest Rate Swaps (0-10%)	Study Note 2: Interest Rate Swaps	4/6/21 4/8/21
	<i>Quiz 6: Objective E and G (DDM, Term Structure, Interest Rate Swaps)</i>	4/12/21
F. Immunization (10-15%)	Chapter 7: Cashflow Duration and Immunization	4/13/21- 4/21/21
	Study Note 1: Using Convexity and Duration	4/22/21 -
	<i>Quiz 7: Objective F</i>	4/26/21
H. Determinants of Interest Rates (0-10%)	Study Note 3: Determinants of Interest Rates	4/27/21 - 4/29/21
	<i>Quiz 8: Objective H</i>	5/3/21
Practice		5/4/21 - 5/6/21
<i>Final Exam</i>		TBD