



STA 4183 – Theory of Interest (16758)

Fall 2023

Section: 1A61

MWF 10:40am - 11:30am

Room: Florida Gym 270 (FLG 0270)

Instructor:

David Lindberg

Email: dlindberg@ufl.edu

Office: Griffin-Floyd 116A

Office Hours:

Mon, Wed 2:15pm - 3:45pm

Fri 9:30am - 10:00am

Teaching Assistant:

Mingliang Ma

Email: maminglian@ufl.edu

Office Hours: Zoom (link on Canvas)

Tues, Thurs 1:00pm-2:00pm

Course Webpage on Canvas: <http://elearning.ufl.edu/>

Prerequisite(s)

MAC 2312 or the equivalent

Credit Hours

This is a 3 credit hour class

Course Objectives and Goals

This course aims to develop the candidate's understanding of the fundamental concepts of financial mathematics, and how those concepts are applied in calculating present and accumulated values for various streams of cash flows as a basis for future use in: reserving, valuation, pricing, asset/liability management, investment income, capital budgeting and valuing contingent cash flows. The course is designed to align closely with the syllabus for the Society of Actuaries Financial Mathematics (FM) Exam to prepare students for a career as an actuary.

Required Text(s)

None

Optional Text(s)

1. *Interest Theory - Financial Mathematics and Deterministic Valuation* by J. Francis and C. Ruckman, 2nd edition, ISBN-13: 9780998160412
2. *Mathematical Interest Theory* by L. Vaaler and J. Daniel, 2nd edition, ISBN-13: 9780883857540
3. *The Theory of Interest* by S. Kellison, 3rd edition, ISBN-13: 9780073382449
4. *A Basic Course in the Theory of Interest and Derivatives Markets: A Preparation for Exam FM/2*, by M. Finan, link:
<https://www.pstat.ucsb.edu/sites/secure.lsit.ucsb.edu.stat.d7/files/sitefiles/Resources/Actuary/mainf.pdf>

Calculator(s)

In accordance with the SOA exams, the following models of Texas Instruments calculators are suggested for this course:

- BA-35
- BA II Plus
- BA II Plus Professional
- TI-30Xa
- TI-30X II (IIS solar or IIB battery)
- TI-30XS MultiView (or XB battery)

Any scientific calculator may be used for homework and exams, however it's encouraged to use one of the calculators listed above for this course.

Tentative Schedule of Course Topics

Week(s)	Chapters from Notes	Description
1-2	1	Simple Interest and Discount, Compound Interest and Discount Nominal Interest and Discount
3-5	2	Force of Interest and Discount, Varying Rates of Interest and Discount, Equations of Value, Exam 1 Review
6-7	3	Annuities Immediate and Due, Deferred Annuities Annuities Payable Less Frequently, Annuities Payable More Frequently
8	4	Geometric Annuities, Arithmetic Annuities, Increasing and Decreasing Annuities
9-10	5	Arithmetic Perpetuities, Continuous Annuities, Continuous Varying Annuities, Exam 2 Review
11	6	Loan Payments, Loan Amortization, Balloon and Drop Payments
12	7	Bond Pricing, Bond Amortization, Callable Bonds
13	8	Duration, Convexity, Approximations of Value
14	9	Cash Flow Matching, Immunization, Spot and Forward Rates, Exam 3 Review

Course Assignments

The course assignments will be three (3) exams, ten (10) homework assignments, and ten (10) quizzes. The total maximum possible points is 1,000.

(A) Exams

Three (3) exams will be held in class will be administered tentatively scheduled Friday, September 22, Friday, November 3, and Wednesday, December 6. Exam 1 will cover Chapters 1-2 from the notes, Exam 2 will cover Chapters 3-5 from the notes, Exam 3 will cover Chapters 6-9 from the notes. Each exam will be graded out of 200 points.

Only the 6 financial calculators listed above or a scientific calculator are approved for the exams. It is your responsibility to bring an approved calculator and writing utensil to each exam. One single sided handwritten formula sheet dimensions $8\frac{1}{2}'' \times 11''$ is permitted for the exam.

If a student knows they are unable to take an exam at the scheduled time, they must notify the instructor one week prior to the exam. Each case will be reviewed individually. Valid and detailed documentation is a prerequisite under such extenuating circumstances. A makeup exam may not be guaranteed. In case of an illness, the instructor must be notified by 9:00am on the day of the exam and the student must provide a medical excuse. A grade of zero is the minimum punishment of any type of dishonesty on an exam.

(B) Quizzes

Nine (9) quizzes pertaining to the course material and one (1) syllabus quiz will be given on the eLearning environment. Quizzes will have 4 multiple choice questions covering the material from the previous week. You will have 60 minutes to complete the quiz. It is recommended that you have a reliable internet connection when you start the quiz. Computers and study rooms are available at the UF libraries.

(B1) One Syllabus Quiz, 10 maximum points of the Final Grade

The syllabus quiz tests your knowledge of what is presented in the syllabus. You will have an unlimited number of attempts for this quiz. The purpose of this quiz is to test your knowledge of key pieces of information in the syllabus and make sure you are familiar with the quiz taking features on the eLearning system. 10 points will be added to the Quiz score if you get at least one correct on this quiz.

(B2) Nine Material Based Quizzes, 140 maximum points of the Final Grade

The nine quizzes pertaining to the course material will be released on 12:00am on the date listed and will be due at 11:59pm 2 days after the release date. The release dates and due dates are shown in the table below. The best grade out of two attempts will be the grade for each individual quiz. Each question on the quiz is worth 5 points, which means the highest score on one quiz is 20 points. The highest seven quiz scores will be used to calculate the total quiz score. There will not be any makeup quizzes. All notifications of section coverage will be made at least 3 days prior to the quiz release date.

Quiz	Date Released	Date Due
1	Wednesday, August 30	Friday, September 1
2	Wednesday, September 6	Friday, September 8
3	Wednesday, September 13	Friday, September 15
4	Tuesday, October 3	Thursday, October 5
5	Wednesday, October 11	Friday, October 13
6	Wednesday, October 18	Friday, October 20
7	Wednesday, October 25	Friday, October 27
8	Wednesday, November 15	Friday, November 17
9	Wednesday, November 29	Friday, December 1

(C) Homework

A total of 10 homework assignments will be given throughout the semester, each worth 25 points. Homework assignments will be posted on the e-Learning course page: <http://elearning.ufl.edu/>. The homework due dates are below. It's preferred that homework be turned in during class. However, homework will also be accepted electronically sent to the instructor. The e-mail heading must include the course number (STA4183), the assignment number, and the student's name. If sent electronically, the assignment must be postmarked by 11:30am on the due date, otherwise it will be subject to a late penalty. Any homework assignment received after 11:30am on the due date is subject to a 5 point penalty for each day after the due date.

Homework is assigned to help reinforce the material learned in class—not just to get the right answer and improve your course grade. Homework solutions must show all formulas and steps used and be the sole work of each individual student.

Homework	Date Assigned	Date Due
1	Wednesday, August 30	Wednesday, September 6
2	Wednesday, September 6	Wednesday, September 13
3	Wednesday, September 13	Wednesday, September 20
4	Wednesday, September 27	Wednesday, October 4
5	Wednesday, October 4	Wednesday, October 11
6	Wednesday, October 11	Wednesday, October 18
7	Wednesday, October 18	Wednesday, October 25
8	Wednesday, October 25	Wednesday, November 1
9	Monday, November 13	Monday, November 20
10	Monday, November 27	Monday, December 4

Total Course Points

Assignment	Points
Exam 1	200
Exam 2	200
Exam 3	200
Syllabus Quiz	10
Highest 7 Quiz Scores	140
Homework Assignments	250
Total	1000

Letter Grade Distribution:

Letter	Points
A	900 to 1000
A-	870 to 899
B+	840 to 869
B	800 to 839
B-	770 to 799
C+	740 to 769
C	670 to 739
D	600 to 669
E	599 and below

Actuarial Science Minor

For more information on the actuarial science minor at the University of Florida and the Florida Actuarial Student Society (FASS) see <https://stat.ufl.edu/academics/undergraduate/minor-in-actuarial-science/>. Dr Demetris Athienitis (Office 116B, Griffin-Floyd Hall) is the academic advisor for all undergraduate statistics majors, statistics minors and actuarial science minors. For more information on advising, see <https://stat.ufl.edu/academics/undergraduate/>

General Course Information

This 3 credit hour course is a required class for the actuarial science minor.

COVID-19 (and other infectious diseases)

In response to COVID-19, the following recommendations are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are sick, stay home. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 to be evaluated.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

School Closures

If classes at the University of Florida are canceled, the course will be suspended until the university re-opens. The University will announce this closure on the University of Florida homepage. Any announcements about the course will be posted at the course e-Learning webpage.

Course Policies

Privacy Policies

Student records are confidential. Only information designated “UF directory information” may be released without your written consent. UF views each student as the primary contact for all commu-

nication. If your parents contact me about your grade, attendance or other information that is not “UF directory information”, they will be directed to contact you. More information can be found at <https://catalog.ufl.edu/UGRD/academic-regulations/ferpa-confidentiality-student-records/>

E-mail

E-mail relating to information about the class should be sent to the instructor at dlindberg@ufl.edu or through the course management system. Your message will be answered within one working day, in most cases. However, we ask you to please refer to this syllabus and the course website to try to find the answers for yourself. Questions regarding the material covered should be asked before, during, or after class, at the instructor’s office hours, or at the teaching assistant’s office hours. It is often difficult to answer questions regarding material through e-mail. Questions about quizzes should be sent to the instructor and it should include the quiz number and question number.

Attendance

If you miss class for any reason it is your responsibility to get any notes and information you might have missed from another student. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>. Additionally, please turn your cellular phones off and refrain from eating and excessive talking while in attendance.

Instructor’s Honor Code

We the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

Academic Honesty

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: ‘On my honor, I have neither given nor received unauthorized aid in doing this assignment.’” The Honor Code (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor.

Students with Disabilities

Students who require special accommodations in class or during exams should first register with the Disability Resource Center at 352-392-8565, <https://disability.ufl.edu/> by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation for an exam or quiz. The instructor must be emailed the form at least 2 days before a quiz and at least 7 days before an exam for accommodations to be arranged.

Grading

Grades will be changed only when an error has been made; negotiation is not appropriate. Grades will be posted on the e-Learning course page at <http://elearning.ufl.edu/>. The current UF grading policies for assigning grade points is available at <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Incomplete

Incomplete grades are only assigned when extraordinary circumstances (such as an accident, or extended hospitalization), arising after the date for dropping the course, prevent the student from completing the course requirements. Having a failing grade in the course is not a valid reason for requesting an Incomplete.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://gatorevals.aa.ufl.edu/>. Evaluations are typically open during the few weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://gatorevals.aa.ufl.edu/instructors/instructor-reports/>.

The syllabus is subject to change. You will be notified if there is a change.