

SYLLABUS FOR STAT 382
THEORY OF INTEREST AND FINANCIAL DERIVATIVES
FALL 2013

Stat 382 Theory of Interest

Fall 2013

TuTh 3:30pm - 4:45pm

Room: Reavis Hall 210

Credit hours: 4

Instructor: Lei (Larry) Hua

Office: DuSable 361A

Office Hours: TuTh 1:30pm - 3:30pm, or by appt.

Email: hua@math.niu.edu

GA: Mahmoud Shehadeh

Email: shehadeh@math.niu.edu

Recitation: M 6:00-6:50pm

Room: DuSable 254

Office Hour: to be announced

1. Required textbook

- Leslie Jane Federer Vaaler and James W. Daniel (2009). *Mathematical Interest Theory*, 2nd edition, Mathematical Association of America.

2. Other resources

- The Blackboard (<https://webcourses.niu.edu/>) will be used to make announcements and post supplementary materials.
- Syllabus, study materials, and other important information of the FM exam can be found in the following website:
<http://www.beanactuary.org/exams/preliminary/?fa=financial-math-exam>

3. Approved calculators

- The following calculators are the approved ones for SOA exams: 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).
- You are expected to use one of these calculators for assignments, quizzes and exams; no any other calculators are allowed in the midterm and final exams.

4. Exams / quizzes / assignments

- The following is the schedule for the exams. The schedule cannot be changed, and alternate exam times will not be offered, so please resolve any conflicts now! Make-up exams will not be given. If there is a serious health problem that prevents you from taking an exam or if there is a death in the immediate family, contact the instructor as soon as possible. The topics to be covered in the midterms will be announced in advance. The final exam will cover the topics of the whole course.

Item	Date	Room
Midterm #1	Oct 1 (in class)	RH 210
Midterm #2	Nov 12 (in class)	RH 210
Final	Dec 10 (4:00pm -5:50pm)	RH 210

- There usually will be a quiz during the last 15 minutes of each recitation session, and all quizzes will be graded and the two worst marks of the quizzes will not be used for calculating the final grade.
- There will be about 8 assignments. You are encouraged to study in groups for the assignments, but each student should submit his or her own homework and cannot copy others'.
- All exams and quizzes will be closed book tests. You are expected to do self-evaluation through solving problems in assignments and quizzes. Some questions for assignments and quizzes *will* also appear in the exams with slight modifications.

5. Course philosophy

- The lectures aim at motivating and explaining key concepts of the learning objectives that are listed in the syllabus of recent professional actuarial exams: SOA FM and CAS Exam 2. However, only understanding the concepts and being able to solve problems without a time frame is not sufficient for achieving success in this course. You are expected to do lots of practice problems after class, and to be able to solve problems *accurately* and *quickly*, which is also critical for your future success in actual professional actuarial exams.

6. Intended learning outcomes

- Essential skills for solving problems of professional actuarial exams (SOA FM and CAS Exam 2)
- Preparedness for follow-up actuarial courses (STAT 485/486, etc.)

7. Student assessment

- There are 1000 possible points distributed as follows:

Item	% of final grade	Points
Assignments	10	100
Quizzes	10	100
Midterm #1	20	200
Midterm #2	20	200
Final	40	400
Total	100	1000

- The following scale gives the lowest grade you can earn:

[900, 1000]	A	[700, 750)	B-	[0, 600)	F
[850, 900)	A-	[650, 700)	C+		
[800, 850)	B+	[620, 650)	C		
[750, 800)	B	[600, 620)	D		

8. Recitation

- There will be a 50-mins recitation session held by GA each week. During the first 35 minutes, the GA will review and answer questions. A quiz is then given in the last 15 minutes of the recitation. Though not specified in the course catalog, the recitation is REQUIRED for all the students.

9. Proposed Course Schedule

Number of lectures (75 mins each)	Chapters
4	Overview + Ch1 – The growth of money
1	Ch 2.2, 2.3 – Equations of value
4	Ch 3 – Annuities certain
4	Ch 4 – Annuities with different payment structures
3	Ch 5 – Loan payment
3	Ch 6 – Bonds
5	Ch 2.4, 2.5, 2.6, 2.7 and Ch 7.1, 8.3, 9 – Stock and financial markets, and interest rate sensitivity
2	Supplementary materials – Financial derivatives
26	Total

10. Course Regulation

- Please read carefully the Academic Integrity, Attendance Policies and Accessibility Statements at http://www.niu.edu/stat/courses/pdfs/Accessibility_Statement.pdf. Your full compliance with the updated policies in this document is required in this class.
- The instructor reserves the right to amend the syllabus at any time. Changes, if any, will be announced in the class or in the Blackboard.