

MATH 4453, Mathematical Interest Theory
Course Information
Spring 2009

Professor: Dr. Lisa Mantini, 410 Math Sciences, email mantini@math.okstate.edu, telephone 744-5777, web page <http://www.math.okstate.edu/~mantini>

Office Hours: MW afternoons TBA and by appointment.

Course Times: TR 2:00 – 3:15 PM in CLB 308.

Course Objectives: The aim of this course is to cover the mathematical theory of interest, including the topics required by actuaries, by others working in the financial industry, and by informed consumers. Topics will include the time value of money and of various investments, interest and discount rates, equations of value and yield rates, annuities, loans, amortization tables, and brief introductions to bonds, stocks, and arbitrage as time permits. Our course will cover most, but likely not all, of the content of the Society of Actuaries/Casualty Actuarial Society's exam on Financial Mathematics, Exam 2 (CAS) or Exam FM (SOA). More information on preparation for the Actuarial exams and on actuarial careers may be obtained at <http://www.beanactuary.org/exams>.

Prerequisites: Math 2153, Calculus II, is the official prerequisite for this course. Some knowledge of economics and/or finance and mathematical maturity (including ability to read and interpret word problems) will be helpful.

Graduate Credit: Graduate students wishing to earn graduate credit should let me know as soon as possible so that we may discuss the requirements for graduate credit.

Required Text/Tools: The text *Mathematical Interest Theory*, by James Daniel and Leslie Vaaler, is required. The *Student Solutions Manual* is optional. The use of a financial calculator is required. I will use the TI BA II Plus financial calculator, for which instructions are included in the text.

Course Requirements: The requirements for this course are as follows:

- Two in-class exams, worth 150 points each and tentatively given on
 - Thursday, February 19;
 - Thursday, April 2.
- Homework, worth about 150 points (approximately 6 assignments worth about 25 points each);
- Final exam, worth 200 points, given on Thursday, May 7, from 2:00 – 3:50 PM.

Homework: Almost every section of the text has corresponding homework exercises, found in the last section of each chapter. All exercises are answered in the back of the text, and odd numbered exercises are answered fully in the Student Solutions Manual. I will provide fully worked solutions for most even-numbered exercises. I will collect

homework only about every other week, but I strongly recommend that you keep up with the problems as we cover each section of the text and ask questions as needed. The assignments I collect will consist of selected problems from the text with possibly extra problems that I may hand out as needed. Please note that I care a great deal about the correct *answers* as well as the correct *methods* being used. Partial credit for incorrect solutions is not guaranteed.

Grading: There are 650 total points available in the course. Preliminary grade cutoffs, which I reserve the right to lower, are as follows:

- 582 points (89.5%) guarantees an A in the course,
- 517 points (79.5%) guarantees a B,
- 452 points (69.5%) guarantees a C.

Makeup exams: Makeup exams will be given **only** for very serious, unavoidable extenuating circumstances, **only** if you notify me as soon as possible after the missed exam.

Drop Policy: The last day to drop the course with a full tuition refund and no grade is Tuesday, January 20. The last day to drop the course with a half tuition refund and a grade of W is Friday, January 23. The last day to drop the course with an automatic grade of W is Friday, April 10.

Special Accommodations: If any member of this class feels that he/she has a disability and needs special accommodations of any nature whatsoever, I will work with you and the Office of Disabled Student Services, 326 Student Union, to provide reasonable accommodations to ensure that you have a fair opportunity to perform in this class. Please advise me of such a disability and the desired accommodations at some point before, during, or immediately after the first class.

Academic Integrity: All members of the Oklahoma State University community are entrusted with academic integrity, which encompasses the fundamental virtues of honesty, trust, respect, fairness, and responsibility. You are expected to demonstrate academic integrity through

- understanding and upholding the University's academic integrity guidelines;
- presenting only your own work for evaluation;
- appropriately citing the words and ideas of others;
- protecting your own work from misuse;
- accepting responsibility for your own actions.

The minimum penalty for a first violation is no credit for that assignment. The minimum penalty for a second violation, even if the first violation occurred in a prior year or in a different course, is the grade of "F!" (F-shriek) on the transcript. Further violations may warrant suspension from the University. Please read the policies at <http://academicintegrity.okstate.edu> very carefully.

Tentative Course Calendar: Here is a tentative calendar of sections to be covered each week and problems assigned from those sections. I will adjust the calendar periodically as needed. The collected homework may consist of some of these problems, supplemented by others that I will distribute at the time. Note that all exercises in the text are answered in the back of the book, and odd-numbered problems are fully answered in the Student Solutions Manual. I will post solutions (from the Student Solutions Manual or my own) on the Desire2Learn site for this course.

Week	Tuesday	Thursday	Problems	Assigned
Jan 13	Intro, 1.1–1.4	1.5–1.6	1.3: 2, 4, 8 1.4: 4, 5, 6	1.5: 2, 6, 8, 10 1.6: 2, 4
Jan 20	1.7–1.8	1.9–1.10	1.7: 4, 6, 7, 8 1.8: 2, 4	1.9: 2, 4, 6 1.10: 2, 4, 6
Jan 27	QA, 1.11–1.14	2.1–2.3, HW1	1.11: 2, 3 1.12: 2, 8, 10	1.14: 4, 5, 6 2.2: 2, 4, 5
Feb 3	2.3–2.4	2.5–2.7	2.3: 4, 6, 10, 12 2.4: 2, 4, 6, 8, 9 2.5: 2	2.6: 1, 3, 4 2.7: 1, 2, 3
Feb 10	QA, 3.2	3.2–3.3, HW2	3.2: 3, 4, 6, 7 3.3: 2, 4, 8, 10	
Feb 17	3.4–3.5, Review	EXAM 1	3.4: 1, 3, 4 3.5: 2, 4, 5	
Feb 24	3.6–3.7	3.8–3.9	3.6: 1, 2, 3 3.7: 1, 2, 4, 7	3.8: 1–5 3.9: 1–6
Mar 3	QA, 3.10	3.12–3.13, HW3	3.10: 1, 3, 7 3.12: 1, 3	3.13: 1, 2
Mar 10	4.2–4.3	4.5–4.7	4.2: 1, 3 4.3: 1, 5 4.5: 1, 2, 3, 4, 5	4.6: 1, 2, 3, 5, 6 4.7: 2, 3
Mar 17	Spring	Break	No Class	
Mar 24	QA, 5.2	5.2–5.3, HW4	5.2: 2, 3, 4 5.3: 1, 2, 5	
Mar 31	5.5, Review	EXAM II	5.5: 1, 2, 4	
Apr 7	6.1–6.3	6.4–6.5	6.2: 1, 2, 3 6.3: 1, 2, 3	6.4: 2, 3 6.5: 1, 3, 4
Apr 14	QA, 6.6	6.9, 7.1, HW5	6.6: 1, 2 6.9: 1, 2	7.1: 2
Apr 21	7.4, 8.1–8.2	8.3, 9.1	7.4: 1, 2, 3, 5 8.2: 1	8.3: 1, 2, 3, 4, 5 9.1: 1, 2
Apr 28	QA, 9.2	Review, HW6	9.2: 1, 2, 5, 6, 7	
May 5		FINAL EXAM	2:00 – 3:50 PM	