

MA 2212 – Theory of Interest 2

Professor: Barry Posterro, office Stratton Hall 105D, posterro@wpi.edu

Lectures: Stratton Hall 308 MTRF 10AM

Book: Mathematics of Investment and Credit **Sixth Edition**, SOA study notes for exam FM

Calculator: **BAII Plus or BAII Plus Professional**

Office Hours: will be announced on Monday each week; appointments can also be made

Email: posterro@wpi.edu please include the term “MA2212” in your subject heading

Material to Cover

The goal of this course is to make you proficient with concepts and calculations regarding the time value of money and fixed income investments, assuming knowledge of MA2211 already. Our goal is to build understanding and speed. Some of this material presented in this course is covered on actuarial exam FM, but there are other topics that will be covered as well which appear on CFA exams and more advanced SOA/CAS exams.

Lecture

Attendance is the most important part of this class. It is assumed you are at all lectures. Given there is no conference for this course, we will try to spend some lectures as problem-working sessions.

Self-Study

The ability to learn directly from the text is an important part of being able to prepare for actuarial exams. As such, there are topics that I will assign you to read in the book on your own and give you suggested problems to work to check your understanding. These topics will also appear on quizzes and exams at the same level of difficulty as the practice problems. After they have appeared on exams, we can discuss them in class, but the goal is that you'll be able to learn this material on your own.

Book and Calculator

It is assumed you have the correct textbook. Older editions are not acceptable. Homework is primarily assigned from the textbook and your submission must align with the textbook required for the class. The calculator required for the class is the only calculator permitted on the quizzes, tests, and final. Class exams are written assuming you can utilize the calculator efficiently.

Tentative Topics (in no particular order):

calculator review

review modified duration and convexity

Effective duration and convexity

CIR model, Vasicek model, binomial interest rate trees

Bonds with embedded options

Valuing embedded option bonds with binomial trees

Option adjusted spreads

cash flow matching, Redington immunization, full immunization

Determinants of Interest Rates (SOA study note)

Spot rates, forward rates

Interest Rate Swaps (SOA study note)

Asset Swaps

Currency trading

Currency Swaps

Asset backed securities

Mortgage backed securities

Tranches and prepayment risk

Interest rate options (caps and floors)

bond portfolio management and indexing

Credit ratings and bonds

Credit derivatives

Grading

3 tests: each worth 20%

1 Final: 40%

Homework is assigned daily and must be turned in the following day. Homework is not graded, but any homework not passed in will result in a 1 point deduction from your final grade. Homework need not be perfect, but effort must be demonstrated.

A = 90% of all total points

B = 80% of all total points

C = 70% of all total points

You are responsible for tracking your projected grade if that is of concern to you.

Students with Disabilities

Students with classroom or testing needs are encouraged to contact the campus resource disabilityservices@wpi.edu or visit them in person at Daniels 124 or 137 or phone x-4908

See them as early as possible in the term should you require any special accommodations.

Academic Honesty:

The academic honesty policy is at: <http://www.wpi.edu/Pubs/Policies/Honesty/Students/>

You are encouraged to work to together to improve your understanding of material but all submitted work must represent your own understanding of the problem. You may be asked at any time, without notice, to reproduce submitted material on demand.