

Worcester Polytechnic Institute
 Department of Mathematical Sciences
 Lecturer: Stephan Sturm

Fall 2012 - B Term

MA 3211

Theory of Interest

Syllabus

1. Contact & office hours:

Stephan Sturm

Stratton Hall 202C

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(508) 831-59 21

users.wpi.edu/~ssturm/

Mon, 11:00 a.m. - 12:00 noon

Wed, 01:00 p.m. - 03:00 p.m.

Thu, 11:00 a.m. - 12:00 noon

and upon request per email

2. Lecture:

Mon, Tue, Wed, Thu, 10:00-10:50 a.m., Stratton Hall 308

3. Textbook:

Samuel A. Broverman, *Mathematics of Investment and Credit*. Actex Publications.
 Winsted, ⁵2010. ISBN 978-1-56698-767-7

4. Calculators:

Candidates may use at SOA/CAS examinations ONLY the battery or solar-powered Texas Instruments calculators from this list:

- 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)

Therefore one of these calculators will be recommended for class; the instructor will use BA II Plus Professional.

5. Course description

As per course catalog: “An introduction to actuarial mathematics is provided for those who may be interested in the actuarial profession. Topics usually included are: measurement of interest, including accumulated and present value factors; annuities certain; amortization schedules and sinking funds; and bonds. Recommended background: MA 1024 and the ability to write computer programs.”

The course is thought to prepare for part I of the “Financial Mathematics” exams of SOA (Society of Actuaries) and CAS (Casualty Actuarial Society). More information about the exam can be found on

<http://beanactuary.org/exams/preliminary/exams/syllabi/2012-12-exam-fm.pdf>

6. Preliminary course outline:

Topic 1: Time Value of Money [Chapter 1]

Topic 2: Annuities with payments that are not contingent [Chapter 2]

Topic 3: Loans [Chapter 3]

Topic 4: Bonds [Chapter 4]

Topic 5: General Cash Flows and Portfolios [Chapter 5-8]

Topic 6: Immunization [Chapter 7] (tentative)

7. **Homework:** There will be one homework problem set and one WeBWorK assignment per week. Both will be given out on Thursday, the WeBWorK will be due on Tuesday noon, the problem set the following Thursday in class. The problem sets will be posted on

<https://my.wpi.edu/>,

WeBWorK on

<https://webwork.wpi.edu/webwork2/MA3211B12/>.

Guidelines:

- Late submission policy: Up to two extensions of the deadline will be granted as long as they are requested per email at least 24 hours in advance. All other late homework (when submitted before the corrected homeworks of the other students are returned) will be graded with a reduction by 50% of the points.
- The homework submission has not only to contain the result, but carefully developed calculations and proofs that can actually be followed by a reader.
- Whereas the discussion of homework problems in (small) groups is not only okay but encouraged, the final write-up has to be done individually. Any copying of homework is a violation of the academic honesty policy (see 10.) and will be treated as such.

8. **Exams:** Midterm and final exam consist both of a 50 minute written exam. Both exams will be closed books, a calculator from the above list (see 5.) will be allowed.

Midterm exam

Thursday, November 15, 10:00 a.m.
Stratton Hall 309

Final Exam

Thursday, December 13, 10:00 a.m.
Stratton Hall 309

9. **Grading:** The total score will be composed from the individual scores by using the following weighting:

- 20% Problem sets — lowest result will be dropped
- 15% WeBWorK
- 25% Midterm exam
- 40% Final exam

The achievement of the following total score will be sufficient for the stated letter grades:

- A 85%
- B 75%
- C 60%

10. **Students with disabilities:** Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the Disability Services Office (DSO) as soon as possible to ensure that such accommodations are implemented in a timely fashion. The DSO is located in the Student Development and Counseling Center and the phone number is 508-831-4908, e-mail dso@wpi.edu.

If you are eligible for course adaptations or accommodations because of a disability (whether or not you choose to use these accommodations), or if you have medical information that we should know about please make an appointment with Prof. Sturm immediately.

11. **Academic honesty:** Each student is expected to familiarize him/herself with WPI's Academic Honesty policies which can be found at <http://www.wpi.edu/offices/policies/honesty>.

All acts of fabrication, plagiarism, cheating, and facilitation will be prosecuted according to the university's policy. If you are ever unsure as to whether your intended actions are considered academically honest or not, please see Prof. Sturm.