

**UNIVERSITY OF PENNSYLVANIA**  
 Professors Jeremy Tobacman, Jialan Wang, and Greg Nini  
 The Wharton School  
*Spring 2014 Draft Syllabus (v 10/20/2013)*

## **BEPP 305/805: Risk Management**

The recent financial crisis and subsequent recession provide ample evidence that failure to properly manage risk can result in disaster. Individuals and firms confront risk in nearly all decisions they make. Individuals face uncertainty in their choice of career, their spending and saving decisions, family choices, and many other facets of life. Similarly, the value that firms create by designing and marketing good products is at risk from a variety of sources. The bankruptcy of a key supplier, a sharp rise in the cost of financing, the destruction of an important asset, or a liability suit can quickly squander the value created by a firm. In extreme cases, risky outcomes can bankrupt a firm, as has happened recently to manufacturers of automobile parts and a variety of financial service firms. The events since 2007 provide stark evidence that risk can impose significant costs on individuals, firms, governments, and society as a whole.

BEPP 305/805 explores how individuals and firms assess and evaluate risk, the tools available to successfully manage risk, and real-world frictions that limit the amount of risk-sharing. Our focus is primarily on explaining the products and institutions that we see in the world, which will serve you in making decisions in your future careers and lives.

**Course Structure and Requirements.** The course is organized around three modules. The first module introduces the concept of risk, explores different measures of risk, and presents the theory of optimal decision-making under uncertainty. The second module illustrates how asymmetric information affects risk management in markets. Last, the third module examines when firms do and do not have reasons to manage risk; it also investigates the role of the legal system in corporate risk management.

At the end of each module, there will be a midterm exam covering the material from that module. There is no final exam. Final grades are determined by the three midterm exams (90%) and exercises (10%); see below for additional information.

**Contact information** for the professors follows here. Office hours and TA details will be posted at the start of the semester.

<i>Faculty</i>	<i>Email</i>
Prof. Tobacman	<a href="mailto:tobacman@wharton.upenn.edu">tobacman@wharton.upenn.edu</a>
Prof. Wang	<a href="#">TBD</a>
Prof. Nini	<a href="mailto:greg30@wharton.upenn.edu">greg30@wharton.upenn.edu</a>

**Prerequisites.** There are no formal prerequisites for the class but students must have an introductory knowledge of *statistics, microeconomics, and finance*, at the level of the Wharton undergraduate classes [STAT 101](#), [BEPP 250](#), and [FNCE 100](#) (follow links to syllabi of those courses). Univariate calculus will be used throughout BEPP 305/805.

**Course grades.** Final grades for the course are determined by midterm exams and exercises. The *equally-weighted* average of the **three midterm exams** is worth 90% of the final grade. The remaining 10% is determined by the grades on **homework exercises and survey responses** turned in by the appropriate deadline. Problems may be worked with other class members but each student

must submit his/her own homework to the professor and collaborators must be acknowledged. We will drop one homework with the lowest score.

**Add/Drop Deadline.** As per Wharton policy, you may drop a course until February 21, 2014. After the drop deadline, you need written permission from an instructor to drop the course. It is the policy of the course instructors that we do not sign petitions to drop the course after the official drop date. Please refer to the following link for more information:

[http://spike.wharton.upenn.edu/ugrprogram/policies\\_forms/acad/withdrawing.cfm](http://spike.wharton.upenn.edu/ugrprogram/policies_forms/acad/withdrawing.cfm)

**Withdrawal Deadline.** As per Wharton policy, the formal withdrawal deadline is April 4, 2014. According to official policy, after the tenth week of the semester, withdrawals are not normally permitted.

**Exam Regrades.** If you want to submit a regrade request for an exam, you submit your original test paper, a signed regrade affidavit (see Canvas for the template), and a written memorandum explaining why you think that the exam should be regraded. This request must be submitted within 5 business days after the graded examination papers have been made available for pickup. Your entire exam will then be reviewed, and your grade may go down, go up, or remain unchanged at the prerogative of the professor for the module. Students must not mark, make notes on, or alter the exam papers for which they seek a regrade; any such alteration will be seen as a violation of the Code of Academic Integrity and students will receive an automatic failing grade for the course. Exams are scanned to pdf and saved by course staff prior to being returned to students.

**Missing an Exam.** Students may **ONLY** miss scheduled examinations with a University-approved excuse; such valid excuses include direct conflicts with another course offered at Penn that cannot be rescheduled or varsity (but not club) sport competition (but not training). In particular, job interviews are *not* a legitimate reason to miss an exam. Missing an exam without a University-approved excuse will result in a zero for the exam. Arriving late to an exam will be treated as missing an exam.

**Expectations.** All students must become familiar with and adhere to the Penn Code of Academic Integrity ([http://www.upenn.edu/academicintegrity/ai\\_codeofacademicintegrity.html](http://www.upenn.edu/academicintegrity/ai_codeofacademicintegrity.html)). Class attendance and punctuality are expected. Table tents must be brought to class. Use of laptops during class will be permitted for course-relevant tasks.

## BEPP 305/805: Risk Management

### Sections

401: 10:30a-noon

402: 1:30-3p

403: 3-4:30p

Classrooms TBA

### Course Material

Lecture notes, readings, case studies, problem sets, and surveys will be posted on Canvas or on Study.net. Students are responsible for checking this site regularly for updates. Go to <https://wharton.instructure.com>

### Module 1. The Theory of Risk (Tobacman)

### Lectures 1 – 8

The first module is an introduction to risk and its measurement. We ask what risk means and how it is measured, and we apply these principles to show how insurance offloads risk and reduces/prevents potential insolvencies. Optimal decision-making under risk, the main subject of this module, is a powerful analytical framework.

### Module 2. Individual and Market Failures (Wang)

### Lectures 9 - 16

The second module explores barriers to risk management. First, we study incentive problems that arise because of asymmetric information, under the themes of “moral hazard” and “adverse selection.” Then, we study typical mistakes when making decisions involving risk. We will use a variety of real world examples to illustrate the ideas.

### Module 3. Corporate Risk Management (Nini)

### Lectures 17 - 25

The third module addresses how firms can manage their own risk. We begin by asking why risk is a problem. Though the answer may seem obvious, it is not. We show that risk not only increases the possibility of future bankruptcy costs, but it also causes conflicts between the various stakeholders which can result in dysfunctional decision-making. Additionally, risk can raise financing costs and lead to the sacrifice of otherwise profitable investment opportunities. Finally, as exemplified by recent accounting scandals, risk management decisions often are made by managers to further their own welfare, rather than that of owners. We examine the legal duties of directors and officers and liabilities toward customers and other parties.

### Dates to put on your calendar now (*rooms TBA*):

#### Midterm 1:

Review Session	Wednesday, 2/12/14	6-8 p.m.
Exam	Thursday, 2/13/14	6-7:30 p.m.

#### Midterm 2:

Review Session	Monday, 3/24/14	6-8 p.m.
Exam	Tuesday, 3/25/14	6-7:30 p.m.

#### Midterm 3:

Review Session	Monday, 4/28/14	6-8 p.m.
Exam	Tuesday, 4/29/14	6-7:30 p.m.

**Tentative Course Agenda**

Class	Day	Date	Topic
1	Thurs	1/16/2014	Overview of Probability
2	Tues	1/21	Law of Large Numbers and Risk Pooling
3	Thurs	1/23	Central Limit Theorem and Value at Risk
4	Tues	1/28	Expected Utility Theory (1)
5	Thurs	1/30	Expected Utility Theory (2)
6	Tues	2/4	Expected Utility Theory (3)
7	Thurs	2/6	Precautionary Saving
8	Tues	2/11	Subjective Expected Utility and Ambiguity
-	<b>Wed</b>	<b>2/12</b>	<b>Review Session: Module 1, 6-8 p.m.</b>
-	<b>Thurs</b>	<b>2/13</b>	<b>Midterm Exam: Module 1, 6-7:30 p.m.</b>
9	Tues	2/18	In-Class Game
10	Thurs	2/20	Adverse Selection (Lemons Problem)
11	Tues	2/25	Adverse Selection (Screening) and Reclassification Risk
12	Thurs	2/27	Moral Hazard In Insurance Markets
13	Tues	3/4	Principal-Agent Relationships
14	Thurs	3/6	Principal-Agent and Executive Compensation
-	Tues/Thurs	3/11, 3/13	Spring Break
15	Tues	3/18	Insurance Markets and Healthcare Reform

Class	Day	Date	Topic
16	Thurs	3/20	Behavioral Economics
-	Mon	3/24	Review Session: Module 2, 6-8 p.m.
-	Tues	3/25	Midterm Exam: Module 2, 6-7:30 p.m.
17	Thurs	3/27	Corporate risk management and firm value
18	Tues	4/1	Corporate risk management and firm value (cont.)
19	Thurs	4/3	Limited liability and real options
20	Tues	4/8	Motivation for corporate risk management
21	Thurs	4/10	Motivation for corporate risk management (cont.)
22	Tues	4/15	Motivation for corporate risk management (cont.)
23	Thurs	4/17	Corporate risk management strategies
24	Tues	4/22	Corporate risk management strategies (cont.)
25	Thurs	4/24	Corporate legal liability (cont.)
-	Mon	4/28	Review Session: Module 3, 6-8 p.m.
-	Tues	4/29	Midterm Exam: Module 3, 6-7:30 p.m.