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UNIVERSITY OF PENNSYLVANIA
Professors Jeremy Tobacman and Gregory Nini
The Wharton School
Spring 2015 Draft Syllabus (v 11/25/2014)

BEPP 305/805: Risk Management

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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 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 and TAs follows here. Office hours will be posted at the start of the semester. For course administration questions (add, drop, scheduling, etc.) contact Beth Moskat emoskat@wharton.upenn.edu.

Faculty:		Office hours and locations
Prof. Tobacman	tobacman@wharton.upenn.edu	4:30-5:30p T, 1409 SHDH
Prof. Nini	greg30@wharton.upenn.edu	4:30-5:30p T, 2427 SHDH
TAs:		
Banruo (Rock) Zhou	banruo@wharton.upenn.edu	Th 3-4pm, SHDH 107
Neil Iyer	neiliyer@wharton.upenn.edu	W 3-4pm, SHDH 1201
Ella Zhang	zhq@sas.upenn.edu	M 2-3pm, JMHH F88

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 and collaborators must be acknowledged. We will drop one homework with the lowest score.

Administrative Deadlines. As per Wharton policy, you may drop a course until February 20, 2015 or withdraw from a course until March 27, 2015. It is the policy of the course instructors that we do not sign petitions to drop the course after the drop date. See Spike for more information.

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. Class attendance and punctuality are expected. Table tents must be brought to class. Use of laptops during class will be permitted only for course-relevant tasks.

BEPP 305/805: Risk Management

Sections
401: 10:30a-noon, SHDH 1203
402: 1:30-3p, SHDH 109
403: 3-4:30p, SHDH 109

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 (Nini)   **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, 2/11/15	6-8 p.m.
Exam	Thursday, 2/12/15	6-7:30 p.m.

Midterm 2:
Review Session	Monday, 3/23/15	6-8 p.m.
Exam	Tuesday, 3/24/15	6-7:30 p.m.

Midterm 3:
Review Session	Monday, 4/27/15	6-8 p.m.
Exam	Tuesday, 4/28/15	6-7:30 p.m.

Tentative Course Agenda

Class	Day	Date	Topic
1	Thurs	1/15/2015	Overview of Probability
2	Tues	1/20	Law of Large Numbers and Risk Pooling
3	Thurs	1/22	Central Limit Theorem and Value at Risk
Assignment Due Sunday January 25			
4	Tues	1/27	Expected Utility Theory (1)
5	Thurs	1/29	Expected Utility Theory (2)
6	Tues	2/3	Expected Utility Theory (3)
7	Thurs	2/5	Precautionary Saving
Assignment Due Sunday February 8			
8	Tues	2/10	Subjective Expected Utility and Ambiguity
-	**Wed**	**2/11**	**Review Session: Module 1, 6-8 p.m.**
-	**Thurs**	**2/12**	**Midterm Exam: Module 1, 6-7:30 p.m.**
9	Tues	2/17	State Contingent Utility
10	Thurs	2/19	Optimal Risk Sharing
11	Tues	2/24	Adverse Selection I
12	Thurs	2/26	Adverse Selection II
13	Tues	3/3	Adverse Selection III
14	Thurs	3/5	Moral Hazard I
-	Tues/Thurs	3/10, 3/12	Spring Break
15	Tues	3/17	Moral Hazard II

Class	Day	Date	Topic
16	Thurs	3/19	Moral Hazard III
Assignment Due Sunday March 22			
-	**Mon**	**3/23**	**Review Session: Module 2, 6-8 p.m.**
-	**Tues**	**3/24**	**Midterm Exam: Module 2, 6-7:30 p.m.**
17	Thurs	3/26	Applications
18	Tues	3/31	Introduction to corporate risk management
19	Thurs	4/2	Corporate risk management and firm value
Assignment Due Sunday April 5			
20	Tues	4/7	Limited liability and real options
21	Thurs	4/9	Motivation for corporate risk management
22	Tues	4/14	Motivation for corporate risk management (cont.)
23	Thurs	4/16	Motivation for corporate risk management (cont.)
Assignment Due Sunday April 19			
24	Tues	4/21	Corporate risk management strategies
25	Thurs	4/23	Corporate risk management strategies (cont.)
-	**Mon**	**4/27**	**Review Session: Module 3, 6-8 p.m.**
-	**Tues**	**4/28**	**Midterm Exam: Module 3, 6-7:30 p.m.**