

# UNIVERSITY OF PENNSYLVANIA

Professors Gottlieb and Mitchell

The Wharton School

Fall 2014- Draft Syllabus (v 6-12-14)

## **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 modular sections. 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 and psychological considerations affect risk management. Then, the third module examines when firms do and do not have a motivation to manage risk and 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 and office hours\*** for the professors are presented below.

<i>Faculty</i>	<i>Email</i>	<i>Phone</i>	<i>Office</i>	<i>Office Hours</i>
Prof. Gottlieb	dgott@wharton.upenn.edu	215-898-7726	SH-DH 1452	TBA
Prof. Mitchell	mitchelo@wharton.upenn.edu	215-746-5706	SH-DH 3303	TBA

\*Please schedule these with each professor via email if you are planning to attend Office Hours.

The TAs for this course will announce office hours (and location) on the course Canvas.

**Prerequisites.** There are no formal prerequisites for the class but students are assumed to have an introductory knowledge of *statistics*, *microeconomics*, and *finance*, at the level of the Wharton undergraduate classes STAT 101, BEPP 250, and FNCE 100.

**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. We will drop one homework with the lowest score.

**Add/Drop Deadline.** As per Wharton policy, you may drop a course until October 3, 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 October 31, 2014. According to official policy, after the tenth week of the semester, withdrawals are not normally permitted.

**Exam Regrades.** To submit a regrade request for an exam, you student must submit your original test paper, a signed regrade affidavit (see the course 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.

**Missing an Exam.** Students may miss scheduled examinations only with a University-approved excuse; such valid excuses include direct conflicts with another course offered at Penn that cannot be rescheduled as well as a 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. Students are asked **to use laptop computers exclusively for taking notes; other electronic devices during class.**

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

### **Classrooms :**

BEPP 305/805-401	MW 10:30-12:00	JMHH 355
BEPP 305/805-402	MW 1:30-3:00	JMHH F50
BEPP 305/805-403	MW 3:00-4:30	JMHH F50

### **Course Material**

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

### **Module 1. The Theory of Risk (Gottlieb)**

The first module is an introduction to risk and its measurement. We discuss what risk means, how it is measured, and how insurance can allow offloading of risk and reducing potential insolvencies. We then analyze optimal decision-making under risk.

### **Module 2. Individual and Market Failures (Gottlieb)**

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 (Mitchell)**

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.

### **Midterm Review and Exam Dates - put these on your calendar now (*rooms TBA*):**

#### *Midterm 1:*

Review Session: Sept. 29, 6-8 pm

Exam: Weds, Oct 1, 6-7:30 pm

#### *Midterm 2:*

Review Session: Oct. 28, 6-8 pm

Exam: Weds Oct 29, 6-7:30 pm

#### *Midterm 3:*

Review Session: Dec. 8, 6-8 pm

Exam: Tues Dec. 9, 6-7:30 pm

**Tentative Course Agenda**

<i>Topic</i>	<i>Day</i>	<i>Date</i>	<i>Subject</i>
<b>Module 1</b>			
1	Wednesday	Aug 27, 2014	Overview of Probability
NC	Monday	Sept 1	Labor Day
2	Weds	Sept 3	Law of Large Numbers and Risk Pooling
3	Mon	Sept 8	Central Limit Theorem and Value at Risk
4	Weds	Sept 10	Expected Utility Theory (1)
5	Mon	Sept 15	Expected Utility Theory (2)
6	Weds	Sept 17	Expected Utility Theory (3)
7	Mon	Sept 22	Precautionary Saving
8	Weds	Sept 24	Subjective Expected Utility and Ambiguity
-	<b>Mon</b>	<b>Sept 29</b>	<b>Review Session: Module 1, 6-8 p.m.</b>
9	<b>Weds</b>	<b>Oct 1</b>	<b>Midterm Exam: Module 1, 6-7:30 p.m.</b>
<b>Module 2</b>			
10	Mon	Oct 6	In-Class Game
11	Weds	Oct 8	Adverse Selection (Lemons Problem)
12	Mon	Oct 13	Adverse Selection (Screening) and Reclassification Risk
13	Weds	Oct 15	Moral Hazard In Insurance Markets
14	Mon	Oct 20	Principal-Agent Relationships
15	Weds	Oct 22	Principal-Agent and Executive Compensation
16	Mon	Oct 27	Insurance Markets and Healthcare Reform
17	Weds	Oct 29	Behavioral Economics
-	<b>Weds</b>	<b>Oct. 29</b>	<b>Review Session, 6-8 p.m.</b>
18	<b>Thurs</b>	<b>Oct. 30</b>	<b>Midterm Exam: Module 2, 6-7:30 p.m.</b>

<i>Topic</i>	<i>Day</i>	<i>Date</i>	<i>Subject</i>
<b>Module 3</b>			
19	Mon	Nov 3	Corporate risk management and firm value
20	Weds	Nov 5	Limited liability and real options
21	Mon	Nov 10	Motivation for corporate risk management
22	Weds	Nov 12	BP Case - Background
23	Mon	Nov 17	BP Case – Response & Discussion
24	Weds	Nov 19	Motivation for corporate risk management
25	Mon	Nov 24	Corporate risk management strategies
NC	Weds	Nov 26	Thanksgiving Break
26	Mon	Dec 1	Corporate risk management strategies (cont)
27	Wed	Dec 3	Corporate legal liability
-	<b>Mon</b>	<b>Dec 8</b>	<b>Review Session, 6-8 p.m.</b>
28	<b>Tues</b>	<b>Dec 9</b>	<b>Midterm Exam: Module 3, 6-7:30 p.m.</b>