

# MATH 4001: Actuarial Mathematics in Practice

Spring 2012

**Class time & location:** Mon (1 academic hour), Wed (2 academic hours).

**Instruction:** Rina Ashkenazi ([ashke004@umn.edu](mailto:ashke004@umn.edu)) / Laurie Derechin ([lderechi@umn.edu](mailto:lderechi@umn.edu)) in collaboration with actuaries from local companies.

**Website:** Moodle website

**Course Description and Goals:** This course is designed to expose students to real world actuarial problems in a variety of actuarial segments, where they are required to integrate their mathematical skills with relevant knowledge from other disciplines such as economics, statistics and finance. The course's setting mimics business environment, where students learn a variety of problem solving techniques for uncertain scenarios, are presented with problems and are asked to make decisions or recommendations based on a series of assumptions. Students enhance their communication and interpersonal skills and develop teamwork and leadership by working in teams pre-set by the instructors. In addition, students will focus on presentation techniques and clear communication of ideas by giving a special attention to the quality of written reports and oral presentation of project solutions, rationale and methodology.

**Course's format:**

Week		Instructor
1	General overview / writing and presentation tools	Laurie/Rina
2-4	Module 1	Sponsor Company 1
5-6	Module 2	Sponsor Company 2
7	mid-course discussion, feedback, writing and presentation tools	Laurie/Rina
8-11	Module 3	Sponsor Company 3
12-14	Module 4	Sponsor Company 4
15	Course summary, feedback, evaluations	Laurie/Rina

- Week 1 will be devoted to a general overview of the course, goals expectation from students, as well as a first tutorial to presentation. The teams will be set.
- ***The general format of a three-week module:***
  - ***Week 1:*** Overview of a specific actuarial segment (such as Life Insurance, Health insurance, Property–Casualty, etc.) and a set up of the project by the visiting actuaries. Teams start working on projects - instructors and visiting actuaries are present in class for assistance/guidance, if needed.
  - ***Week 2:*** Team-work sessions with instructors and visiting actuaries.
  - ***Week 3:*** Teams work on presentations or reports / Four of the teams present to the instructors, instructing actuaries and students.
- Week 7 will be devoted to enhancement of writing / presentation skills and sharpening analytical and computational modeling tools.
- Week 15 will be devoted to a review of tools that have been used in class across the various projects, further discussions, feedback and evaluations.

**Teams:** 8 teams have been selected by the instructors. You will be on the same team for the entire semester.

**Attendance:** Attendance in all class meetings is mandatory and necessary to passing the class.

**Grading:** Grading is determined by the following weights:

- **Written reports** –  $4 \times 10\% = 40\%$
- **Presentation (team)** -  $2 \times 10\% = 20\%$
- **Presentation (individual)** -  $2 \times 5\% = 10\%$
- **Report (team)** -  $2 \times 5\% = 10\%$
- **In class participation** –  $10\%$
- **Peer evaluation** -  $10\%$

**Written reports:** During each module students will write different documents that describe and report the working process of their team. Each student will be responsible for one document each module and will be graded individually (10% per document).

**Presentation:** You will be given the chance to present the results of one of your projects before the “project board” consisting of the primary instructors and the instructing actuaries from the module’s sponsoring company. The non-presenting students from all other teams are expected to be a critical audience. Your team is expected to develop a PowerPoint presentation to be given on the last class of a specific module. ***Each team will present twice during the course.*** The presentation should be 15 minutes long, with additional 5-7 minutes Q & A session. The presentation is evaluated as a team project (15% per presentation), and in addition each presenting student will be evaluated individually (10% per presentation).

**Report:** Each team that does not present during a module needs to submit a short report that summarizes the main course of final decision making / recommendation for the project, including the sources and reliability of data, working assumptions, model, analysis and results (5% per module that is not presented).

**In-class participation:** Each class will have opportunities for students to participate, either by active interaction within teams, or by participation in the plenary class sessions.

**Peer evaluation:** Students will get feedback from their teammates through peer evaluation. This important feedback will give students an insight on how they operate as part of a team and how their actions are viewed by their peers.

