ASRM 461 COURSE OUTLINE

University of Illinois at Urbana-Champaign

ASRM 461/561 Loss Models and Credibility

Spring 2022 Course Outline

Instructor:

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Teaching Assistant:

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In Person Learning

• Learning will be conducted In-person in 217 NOYES LAB from 3:00 – 4:20 pm.

• Material will be uploaded to Canvas (LMS) using the following course space name: Spring 2022-ASRM 461 – Loss Models.

• The course is constituted of 15 modules (Each module is 1 week of instruction). Please note that the first lecture, Tuesday, the 18th of January at 3:00 pm, we will discuss the following:

- Course outline and learning outcomes
- Preliminary Calendar for Assignments and Exams
- Office hours: In person on Wednesdays from 11:00 – 12:00 in CAB office 263
- Virtual office hours: Email me to schedule an appointment on Wednesday between 12:00 PM and 1:00 PM.

Notes on Videos Caption and Lectures

- All lectures will be video captioned and uploaded to the media space. The videos will be accessible to all students registered in the course.

- Virtual office hours will not be recorded.

Additional Engagement Activities

To ensure efficient and timely engagement in the online learning experience students are encouraged to participate and effectively use the following:

1- **Discussion:**

In this space, students may ask questions to fellow colleagues and benefit from each other's help. The TA will check the questions weekdays and respond to any unanswered question. The instructor will double check every Monday and provide clarifications either through the forum or by addressing the questions in the next lecture.

2- **Announcements:**

Students are asked to regularly check the announcements related to the course logistics. Note that when announcements are posted, students receive immediately an email notifying them of a new announcement.

3- **Email and Zoom Appointment**: Emails and Zoom appointments are reserved for private and feedback matters. Teaching assistant checks and replies to emails on every weekday, while the instructor checks and replies emails on Fridays, Mondays, and Wednesdays evenings. Zoom appointments may be scheduled to discuss private matters and they have to be scheduled by email.

Course Syllabus

Description: This course aims to cover loss models used in casualty, property and health insurance. The material builds on concepts covered in previous courses such as random variables, parametric distributions, moment generating functions, etc. to develop mixed and aggregate models. We will cover the model building cycle starting from model specification, to parameter estimation and calibration, to model implementation and selection and finally model assessment. This course prepares for the STAM course of the SOA and part of exam MAS-1 of the Casualty Actuarial Society (CAS)

Textbooks:

Stuart Klugman, Harry Panjer, Gordon Willmot, Loss *Models, from data to decision*, 5th edition, John Wiley & Sons;

Supplemental References:

Samuel A. Broverman, SOA Exam STAM *Study Manual*, Spring 2018 edition, ACTEX Learning;

Prerequisites: Prerequisite: ASRM 401 (formerly MATH 408) or MATH 461

Course Learning Outcomes
I- Random Variables
II-Parametric Distributions and Transformations
III-Mixture of distributions
IV- Frequency Models
V- Policy provisions: Limits, Deductible, Coinsurance and inflation
VI- Models for Aggregate Loss: Compound Distributions
VII- Non- Parametric estimation on complete and incomplete data
VIII- Maximum Likelihood Estimation on complete and incomplete data
IX- MLE applied to Pareto and Weibull Distributions
X – Selecting a model using testing of hypothesis

Assessment tools:

The following table itemizes the assessment tools and their contribution to the final grade of the course:

Type	% of final grade
6 Assignments	8% each, drop lowest to account for 40% of final grade
2 Quizzes (15-20 min) on Canvas	8% each, drop lowest to account for 6% of the final grade.
Midterm 1 (1 hour) in person	10%
Midterm 2 (1 hour) in person	10%
Project	10%
Final on Canvas	12%

Attendance and Participation	10%

A detailed calendar for the above assessment tools will be uploaded on Canvas

Notes on Attendance points:

Grading of attendance will follow the following tables:

Num of Absences	≤ 5	6	7	8	9	10	11	12	13	14	≥15
Grade	10	9	8	7	6	5	4	3	2	1	0

Notes on Assessment tools:

- The sample solution of assignments will be uploaded two days after the due date.
- Any queries of assignment grading are forwarded to the TA.
- There is a 2-day late submission window on assignments with 20% penalty per day on the final grade of that assignment.
- Discussion is encouraged on assignments but plagiarism is strictly prohibited.
- Makeup quizzes/midterms are not stipulated except in the very rare event of having a major inevitable circumstance hindering the scheduled exam. A written permission must be granted by the instructor for that purpose.
- The coverage of each examination is announced two weeks before the examination.
- Sample solutions of midterms are uploaded after the examination.
- Graded home-works are returned within a week after the due date
- Graded examinations are returned within a week after the examination.
- Queries on exam grading are forwarded to the teaching assistant.

Final Grade and Letter Grading Scale

After calculating your grade using the above percentages, the letter grade is obtained according the following mapping:

Final Score	Letter Grade
A+	98% - 100%
A	92% - < 98%
A-	90% - < 92%
B+	88% - < 90%
B	82% - < 88%
B-	80% - < 82%

C+	75% - < 80%
C	70% - < 75%
C-	65% - < 70%
D+	60% - < 65%
D	55% - < 60%
D-	50% - < 55%
F	Below 50

Academic Integrity Statement

The University has the responsibility for maintaining academic integrity so as to protect the quality of education and research on our campus and to protect those who depend upon our integrity.

1. Expectations of Students. It is the responsibility of each student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions,

and from conduct that aids others in such infractions. Students have been given notice

of this Part by virtue of its publication. Regardless of whether a student has actually

read this Part, a student is charged with knowledge of it. Ignorance is not a defense.

2. Expectations of Instructors. It is the responsibility of each Instructor to establish and

maintain an environment that supports academic integrity. An essential part of each

Instructors responsibility is the enforcement of existing standards of academic integrity.

If Instructors do not discourage and act upon violations of which they become aware,

respect for those standards is undermined. Instructors should provide their students with

a clear statement of their expectations concerning academic integrity.

Further details: https://studentcode.illinois.edu/article1/part4/1-401/

Accommodations Statement

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services

(DRES) as soon as possible. To contact DRES, you may visit 1207 S. Oak St., Champaign,

call 333-4603, e-mail disability@illinois.edu or go to the DRES website. If you are concerned

you have a disability-related condition that is impacting your academic progress, there are academic screening appointments available on campus that can help diagnosis a previously undiagnosed disability by visiting the DRES website and selecting “Sign-Up for an Academic Screening” at the bottom of the page.

Further details: https://www.disability.illinois.edu/