ASRM 409 COURSE OUTLINE

University of Illinois at Urbana-Champaign

ASRM 409 Stochastic Processes for Finance and Insurance

Spring 2021 Course Outline

Instructor:

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Teaching Assistant:

- Name:
- Email:

Online Learning

• Learning will be conducted completely online.

• Material will be uploaded to the Illinois Compass 2g Learning Management System (LMS) using the following course space name: , with the following link:

• The course is constituted of 15 modules (Each module is 1 week of instruction). Please note that the first lecture, Monday, the 25th of January at 10:00 am, our meeting will discuss the following

- Course outline and learning outcomes
- Preliminary Calendar for Assignments and Exams
- Time zones survey to decide on convenient office hours
- Course delivery preferences

Notes on Videos and Lectures

- All lecture notes discussed in the synchronous meetings will be uploaded to the content area, accessible from the left-hand panel of the Compass course space.

- All synchronous zoom meetings will be recorded and uploaded to the Illinois Media Space and embedded into the Compass 2g course space.

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 Board:** (Found on the left hand panel of the Compass course space)

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 week's lecture.

2- **Announcements:** (Found on the left hand panel of the Compass course space).

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 develop the knowledge of the theoretical foundation of *Probability Models* and their applications to finance and insurance. This course prepares the Section A, Probability Models (Stochastic Processes and Survival Models), of the Modern Actuarial Statistics-I examination (Exam MAS-I) by the Casualty Actuarial Society (CAS).

Textbooks:

Ross, S. M. (2014), *Introduction to Probability Models,* 11th edition, Academic Press;

Supplemental References:

1- Daniel, J. W. (2008), Poisson processes (and mixture distributions), CAS Study Note;

2- Lo, A. (2019), *Study Manual for CAS Exam MAS-I*, Spring 2019 edition, ACTEX Learning;

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

Course Learning Outcomes
I- Introduction to Stochastic Processes
II-Review of Conditional Probability and Expectation
III-Poisson Processes
IV- Reliability Theory
V- Discrete Time Markov Chains
VI- Markov Chains in multi-state life contingencies
VII- Simulation Methods and Continuous Time Markov Chains (if time permits)

Assessment tools:

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

Type	% of final grade
8 Assignments	6% each, drop lowest to account for 42% of final grade
2 Quizzes (15-20 min) on BB	6% each, drop lowest to account for 6% of the final grade.
Midterm 1 (1 hour) on BB	10%
Midterm 2 (1 hour) on BB	10%
Final on BB	20%
Attendance	12%

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

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 hws 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/