

University of Illinois at Urbana-Champaign

ASRM 499 Section 13 Statistics for Risk Management

Spring 2022 Course Outline

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**Instructor:**

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**Teaching Assistant:**

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**In Person Learning**

- Learning will be conducted In-person in 1060 LINCOLN HALL from 11:00 – 12:20 pm.
- Material will be uploaded to Canvas (LMS) using the following course space name: Spring 2022-ASRM 499 section 13 – SRM.
- The course is constituted of 15 modules (Each module is 1 week of instruction). Please note that the first lecture, Tuesday, the 18<sup>th</sup> of January at 11:00 pm, we will discuss the following:
  - Course outline and learning outcomes
  - Preliminary Calendar for Assignments and Exams
  - Office hours: In person on Wednesdays from 1:00 – 2:00 PM in CAB office 263
  - Virtual office hours: Email me to schedule an appointment on Wednesday between 2:00 PM and 3:00 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 will introduce students to the theory behind supervised and unsupervised data analysis techniques. Topics will cover: the theory behind generalized linear regression (link functions, parameter estimation, testing of hypothesis and model selection criteria); Data shrinkage, Time series (ARIMA models); Decision trees (Regression and Classification Techniques CART); Unsupervised learning technique using cluster analysis. This course will prepare students for the SOA Exam SRM and part of CAS MAS I Exam.

### Textbooks:

Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, An Introduction to Statistical Learning with Applications in R, Springer;

Edward W. Frees, Regression Modeling with Actuarial and Financial Applications, Cambridge University Press

### Supplemental References:

ACTEX Study Manual for Exam SRM (Fall 2021 Edition) by Runhuan Feng, Daniel Linders, Ambrose Lo.

**Prerequisites:** Prerequisite: [ASRM 401](#) (formerly [MATH 408](#)) or [MATH 461](#)

<b>Course Learning Outcomes</b>
<b>I- Refresher on Linear Regression</b>
<b>II-Multiple Linear Regression with model diagnostics of assumptions</b>
<b>III- Statistical Learning as applied to Linear Models</b>
<b>IV- Generalized Linear Models</b>
<b>V- Introduction to Time Series analysis and forecasting</b>
<b>VI- Decision Trees</b>
<b>VII- Cluster Analysis</b>

**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 to 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](mailto: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/>