Course Description:

This course focus on the the concepts of probability and distributions of random variables. Students are expected to learn the following topics:

- Probability (probability axioms; independence; conditional probability; Bayes Theorem)
- Discrete Distributions (pmf; cdf; expectation; mgf; binomial, negative binomial, hypergeometric, and Poisson distributions)
- Continuous Distributions (pdf; cdf; expectation; mgf; exponential, gamma, $\chi^2$, and normal distributions)
- Bivariate Distributions (joint, marginal, and conditional pmf/pdf; conditional expectation; correlation; bivariate normal)
- Functions of Random Variables (distribution function technique; change of variable technique; $\chi^2$, $t$, and $F$ distributions; CLT; Chebyshev's inequality)

Course Webpage:

log into ICON at https://icon.uiowa.edu. Check the "Announcements" page and the "Modules" page regularly for updates.

Authors: Hogg, Tanis, and Zimmerman (2015)
Course Policies:

• General
  – Students are expected to learn probability, conditional probability, discrete and continuous distributions, certain mathematical expectations, bivariate distributions along with marginal and conditional distributions, correlation, functions of random variables.

• Attendance and Absences
  – Attendance is expected and will be taken at random dates. You are allowed to miss 1 class during the semester without penalty. Any further absences will result in point and/or grade deductions.
  – If you must miss class due to illness or other valid excuse, please send the instructor an email with explanation prior to the class date/time.
  – Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee’s responsibility to get all missing notes or materials.

• Homeworks and Quizzes
  – Students are encouraged to study with others. But submitted work must reflect independently write up using students own words.
  – Students are expected to show all work to get full points.
  – No late homework will be accepted, only as required by university policy: “academic conflicts, family emergencies or medical reasons (you must have documentation)”.
  – No makeup quizzes will be given. The lowest quiz score for the semester will be dropped.

• Exams
  – There will be two midterm exams and one final exam. Only final exam will be comprehensive and every student must take it.
  – Missed exams may be made up only with documentation of reasons required by university policy
  – For each exam (including the final) you are allowed one 8½ by 11 sheet of paper with whatever you wish to hand-write on it front and back (everything must be handwritten, no photocopies).
  
Midterm 1    September 22 (tentative date)
Midterm 2    October 27 (tentative date)
Final        TBA by the University.

Grade Distribution:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendances</td>
<td>5%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Homeworks</td>
<td>20%</td>
</tr>
<tr>
<td>Midterms</td>
<td>40% (20% each)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
</tr>
</tbody>
</table>
Letter Grade Distribution:

- 90% or above  A
- 80%–89.9%   B
- 70%–79.9%   C
- 60%–69.9%   D
- below 60%   F

College of Liberal Arts and Sciences: Policies and Procedures:

Administrative Home

The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at https://clas.uiowa.edu/students/handbook.

Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences (Operations Manual, III.15.2, k.11).

Accommodations for Disabilities

The University of Iowa is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (which includes but is not limited to mental health, attention, learning, vision, and physical or health-related conditions). A student seeking academic accommodations should first register with Student Disability Services and then meet with the course instructor privately in the instructor’s office to make particular arrangements. Reasonable accommodations are established through an interactive process between the student, instructor, and SDS. See https://sds.studentlife.uiowa.edu/forinformation.

Nondiscrimination in the Classroom

The University of Iowa is committed to making the classroom a respectful and inclusive space for all people irrespective of their gender, sexual, racial, religious or other identities. Toward this goal, students are invited to optionally share their preferred names and pronouns with their instructors and classmates. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University’s Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity, diversity@uiowa.edu, or visit diversity.uiowa.edu.
Academic Honesty

All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College’s Code of Academic Honesty: "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled (CLAS Academic Policies Handbook).

CLAS Final Examination Policies

The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. No exams of any kind are allowed during the last week of classes. All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar’s web site and will be shared with instructors and students. It is the student’s responsibility to know the date, time, and place of a final exam.

Making a Suggestion or a Complaint

Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident (CLAS Academic Policies Handbook).

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Office of the Sexual Misconduct Response Coordinator for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Department of Public Safety website.
**Tentative Course Outline:**
The weekly coverage might change as it depends on the progress of the class. However, you must keep up with the reading assignments.

<table>
<thead>
<tr>
<th>Week</th>
<th>Content</th>
</tr>
</thead>
</table>
| Week 1 | • Chapter 1  
         • Probability & Methods of Enumeration |
| Week 2 | • Chapter 1  
         • Conditional Probability and Independent events |
| Week 3 | • Chapter 2  
         • Discrete distributions & Expectations |
| Week 4 | • Chapter 2  
         • Mathematical Expectations |
| Week 5 | • Chapter 2  
         • Different Types of Discrete Distributions |
| Week 6 | • Chapter 3  
         • Continuous Distributions |
| Week 7 | • Chapter 3  
         • Different Types of Distributions |
| Week 8 | • Chapter 3  
         • The Normal Distribution |
| Week 9 | • Chapter 4  
         • Bivariate Distributions of Discrete type |
| Week 10| • Chapter 4  
         • Bivariate Distributions of continuous type |
| Week 11| • Chapter 5  
         • Distribution of Functions of Random Variables |
| Week 12| • Chapter 5  
         • Transformations |
| Week 13| • Chapter 5  
         • CLT and Convergence |
| Week 14| • Chapter 6  
         • Point Estimation |
| Week 15| • Chapter 7  
         • Interval Estimation |