STAT 4157 Fall 2014
Introduction to Mathematical Statistics I

- **Instructor:** Dr. Judy Huixia Wang
  
  Email: [judywang@gwu.edu](mailto:judywang@gwu.edu)
  
  Office: Old Main 301G
  
  Phone: 202-994-5658
  
  Office hours: Wednesday 1:15-3:15pm or by appointment

- **Class schedule:** MW 3:45pm to 5:00pm

- **Classroom:** 2020 K st, Rm 13

- **Grader:** Siwei Long (arancialong@gwmail.gwu.edu)


**Course Description**

- **Prerequisite:** MATH 1232 (Calculus II) or equivalent.

- **Topics:** We shall cover most, but not all of the material in chapters 1 through 7 of WMS.
  
  1. Introduction to descriptive statistics.
  2. Probability basics: experiments, outcomes, sample space, sample point, events, set algebra, probability, counting tools, independence of events, conditional probability, Bayes theorem, calculating probabilities.
  3. Probabilistic models for discrete random variables: probability distribution, expectation, common distributions (including binomial, geometric, negative binomial, hypergeometric and Poisson), moment generating functions.
  4. Probabilistic models for continuous random variables: density function; cumulative distribution function, expectation, families of distributions (including uniform, normal, gamma, beta, exponential, and chi-square) moments, mgf.
  5. Probabilistic models for multivariate random variables: probability distributions, joint, marginal, and conditional distributions; expectation of functions of random variables, covariance, moments of linear functions.
  6. Transforming and combining random variables: cdf method; method of transformation, mgf method; order statistics.
  7. Sampling from a normal population; the central limit theorem.

**Homework assignments (weight: 20%):**

Homework will be assigned approximately every week. Late homework submitted within 2 days of due date will receive 25% penalty for each day late. Any HW late by more than 2 days will not be graded and receive zero point. The two lowest homework scores will be dropped.

In writing up homework, it is not sufficient to give only the answer to a problem; you must show reasonably detailed justifications/calculations.

Discussion of homework with fellow students is allowed, but students are expected to work alone while writing up the solutions. No credit will be given to either party for work that has been copied.

**Examinations:**
There will be two 75-min midterm exams (weight: 20% each) and one cumulative 2-hour final exam (weight: 40%). The two midterm exams will be held in the regular class time. All exams will be closed book and closed notes. However, one two-sided 8½ by 11 inch “cheat sheet” is allowed for the midterm exams, and two two-sided 8½ by 11 inch cheat sheets are allowed for the final exam. You can bring a calculator to the exams, but sharing calculators is not allowed.

Please mark the exam dates on your calendar:

| Exam 1: 09/24 | Exam 2: 10/27 | Final Exam: 12/10 5:20-7:20pm |

Make-up exams will be given only for legitimate, documented reasons (e.g., illness). Under no circumstances will make-ups be given to accommodate travel arrangements that conflict with scheduled course activities. If you must miss an exam, then it is your responsibility to contact me directly, in person, and in advance of the scheduled exam to make alternate arrangements.

**In-class participation:** The students’ in-class participations, such as in-class practices, are expected.

**Grading Policy:** A student’s final GPA (100 scale) is computed as the following weighted average:

\[
GPA = 0.20 \times \text{Exam1} + 0.20 \times \text{Exam2} + 0.20 \times \text{Homework} + 0.40 \times \text{Final}
\]

The final letter grade will be assigned as follows:

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<thead>
<tr>
<th>GPA</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
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<th>C-</th>
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<tr>
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<td>&gt;92</td>
<td>91-92</td>
<td>89-90</td>
<td>83-88</td>
<td>81-82</td>
<td>77-80</td>
<td>71-76</td>
<td>66-70</td>
<td>61-65</td>
<td>55-60</td>
<td>50-54</td>
<td>&lt;50</td>
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**Religious Holidays:** GWU Policy on Religious Holidays states that

1. Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance.
2. Faculty should extend to these students the courtesy of absence without penalty on such occasions, including permission to make up examinations.
3. Faculty who intend to observe a religious holiday should arrange at the beginning of the semester to reschedule missed classes or to make other provisions for their course-related activities.

**University Policies and Supports for Students outside the Classroom**

- **Academic Integrity:** University policy on academic integrity is spelled out in Code of Student Conduct.
- **Students with Disabilities:** Reasonable accommodations will be made for students with verifiable disabilities. Please inform the instructor if you have a documented disability and need special arrangements for tests or quizzes. To establish eligibility and coordinate reasonable accommodations for exams, please contact the Disability Support Services Office (202-994-8250), in Rome Hall, Suite 102, or at http://gwired.gwu.edu/dss/
- **University Counseling Center** (UCC): The University Counseling Center offers 24/7 assistance and referral to address students personal, social, career, and study skills problems. Services for students include crisis and emergency mental health consultations, confidential assessment, counselling services (individual and small group), and referrals visit http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices/ or call 202-994-5300.

Note: The instructor reserves the right to make any changes she considers academically advisable. Such changes, if any, will be announced in class. Please note that it is your responsibility to attend the class and keep track of the proceedings.