

STAT 6022-001 (600343)
Mathematical Statistics II
Spring 2016

Mondays/Wednesdays/Fridays, 9:05 am – 10:00 am, Room 130, 60WCHARL

Instructor: *Xia Wang*
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Office Hours: *Wednesdays/Fridays 8:00 am – 8:55 am or by appointment.*

Course Description: The purpose of the course is to introduce the theory of statistical inference. Specific topics include point and interval estimation, hypothesis testing, consistency, central limit theory, maximum likelihood estimation, Rao-Blackwell Theorem and Rao-Cramér lower bounds, likelihood ratio tests, sufficiency, exponential family, Neymann-Pearson Lemma and its applications.

Course Webpage: A lot of course related information will be posted on UC Blackboard (<http://canopy.uc.edu>), including course syllabus, lecture notes, reading assignments, handouts, homework assignments, and announcements, etc. **Visit the Blackboard frequently.**

Textbook: *Introduction to Mathematical Statistics, 7e*, by Hogg, McKean & Craig

Exam dates

Midterm 1

Wednesday February 17, in class

Midterm 2

Wednesday March 16, in class

Final Exam

Monday April 25, 7:30 am – 9:30 am

Homework due dates

HW#1 Friday January 22	HW#6 Friday March 4
HW#2 Friday January 29	HW#7 Friday March 11
HW#3 Friday February 5	HW#8 Friday April 1
HW#4 Friday February 12	HW#9 Friday April 8
HW#5 Friday February 26	HW#10 Friday April 15

Tentative Schedule (as of January 9, 2016):

Week	Topic	Reading Assignment
Beginning:		
January 11	Sampling and Statistics; Confidence interval; Hypothesis testing	4.1-4.2; 4.5 – 4.6
January 18	Important inequalities <i>No class on January 18 (Dr. Martin Luther King Jr.'s Birthday)</i>	1.10
January 25	Convergence in probability Convergence in distribution	5.1; 5.2
February 1	Central Limit Theorem	5.3
February 8	Maximum Likelihood Estimation and Rao-Cramér lower bound and efficiency	6.1-6.2
February 15	Maximum likelihood test <i>Midterm 1 on Wednesday February 17</i> <i>Review on Monday February 15</i>	6.3
February 22	Sufficiency	7.1-7.2
February 29	Properties of a sufficient statistic; Completeness and uniqueness	7.3-7.4
March 7		
March 14	The exponential class of distributions; function of a parameter <i>Midterm 2 on Wednesday March 16</i> <i>Review on Monday March 14</i>	7.5
March 21	<i>Spring Break ☺</i>	
March 28	The case of several parameters; Minimal sufficiency; Ancillary statistics	7.7-7.8
April 4	Sufficiency, completeness, and independence	7.9
April 11	Most Powerful Tests; Uniformly Most Powerful Test	8.1-8.2
April 18	Likelihood Ratio Tests <i>Review on Friday April 22</i>	8.3
April 25	Final Exam Week <i>Final Exam on Monday April 25 7:30 am – 9:30 am</i>	

Homework:

- Homework assignments will be due as specified in the above tentative schedule or as announced if there is any change (updates will be posted on UC Blackboard accordingly);
- Homework will be assigned one week before its due date;
- Prepare your homework with problems in order, on **one side** of standard 8½×11 sheets, **stapled** in the upper left-hand corner. Please note that your solutions need to be presented in a **clear, readable format** with sufficient details. **No credit** will be given to solutions lack of details or hard to read.
- Electronically handed-in homework will **not** be accepted.
- Homework assignments must be handed in **at the beginning of the class** on the due date. Do not slide them under the instructor/grader's office door or drop them off in the instructor/grader's mailbox. **They will not be accepted;**
- No late hand-in. If extenuating circumstances exist, you must speak directly to the instructor.

Examinations:

- There will be two midterms during the semester (Midterms) and the final examination (Final Exam).
- The Final Exam is cumulative. The chapters to be covered in Midterm 1 and Midterm 2 will be announced before the examination date.
- The examination dates are as specified in the syllabus or as announced if there is any change (updates will be posted on UC Blackboard accordingly). **Exams will cover materials from the textbook, lectures and handouts.**

- All three examinations (Midterms and Final Exam) are **close-book**.
- A calculator may be brought to exams (no cell phone calculators or PDAs).
- **There will be no scheduled make-up examinations** (including the Midterms and the Final Exam). When there are unavoidable circumstances, the student must contact the instructor *before* the examination date. **Documentation is required**. For medical circumstances, the student must contact the instructor with a written medical excuse document signed by a qualified professional.

Final Course Grade:

The upper limits for contributions to the final grade are HW (20%), ***in-class practice problems / in-class quiz problems (15%)***, Midterm 1 (20%), Midterm 2 (20%), and Final Exam (25%). The final grade will be converted to the traditional letter grade based on the following chart:

96-100:	A	87-89:	B+	77-79:	C+	67-69:	D+	<60:	F
90-95:	A-	83-86:	B	73-76:	C	63-66:	D		
		80-82:	B-	70-72:	C-	60-62:	D-		

Students should keep all returned work until they have received their final grade. It is the student's responsibility to get the graded homework and the exams from the instructor.

Communication

- ✓ Course announcements and materials are posted on Blackboard through the semester.
- ✓ Make good use of the instructor's office hours. As you may have seen in our tentative schedule, we are going to cover each chapter in approximately 3 weeks and usually one to two sections per lecture. ***It is thus extremely importance for you to ask the instructor's help as soon as possible if you have difficulty in the course materials covered.***
- ✓ Beyond class and office hours, the best way to contact the instructor is by email (xia.wang@uc.edu). Please note the course email correspondence must be done via UC email accounts. The instructor cannot send email to any other account (i.e. gmail, hotmail, yahoo, etc.)

Classroom Etiquette:

Our goal is to have a classroom atmosphere that allows the class to learn the material without distractions. The following behaviors will help us achieve this:

- ✓ Please turn off your cell phones or set it to vibration before coming to class.
- ✓ Please arrive in class on time.
- ✓ Please do not disrupt others during class.
- ✓ Please do not leave class early unless you have to. If you plan to leave early, sit near the door so as to disturb as few people as possible.

Academic Integrity Policy:

The University Rules, including the Student Code of Conduct, and other documented policies of the department, college, and university related to academic integrity will be enforced. Any violation of these regulations, including acts of plagiarism or cheating, will be dealt with on an individual basis according to the severity of the misconduct.

Special Needs Policy:

If you have any special needs related to your participation in this course, including identified visual impairment, hearing impairment, physical impairment, communication disorder, and/or specific learning disability that may influence your performance in this course, you should meet with the instructor to arrange for reasonable provisions to ensure an equitable opportunity to meet all the requirements of this course. At the discretion of the instructor, some accommodations may require prior approval by Disability Services.

(This syllabus is subject to changes.)