

# STATISTICS 7303

Room: Journalism Bldg 295

Spring 2019

Lecture: M W F 1:50PM-2:45PM

**Lecturer:** Prof. Mario Peruggia - 205A Cockins Hall, 292-0963  
e-mail: peruggia@stat.osu.edu

**Grader:** Ms. Xiaoyu Cai  
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**Text:** Berger, J.O., "Statistical Decision Theory and Bayesian Analysis," 2nd ed.

**Course Web Site:** Important announcements and course materials will be posted on the Carmen course web site at <https://carmen.osu.edu/>

**Office Hours:** Peruggia: M 3:00-4:00, T 5:30-6:30, and by appointment

**General:** During the semester we will cover the following core topics:

- Basic elements of Decision Theory
- Bayesian Expected Loss, Frequentist Risk, Bayes Risk
- Decision Principles (Bayesian, Frequentist, Likelihood)
- Foundations (Likelihood Principle, Conditionality Principle)
- Loss Functions
- Prior Distributions (Subjective, Noninformative, Improper, Empirical, Hierarchical)
- Posterior Distributions
- Bayes Inference (Estimation, Credible Sets, Hypothesis Testing)
- Bayes Decision Theory
- Empirical Bayes Analysis

As times permits, we will also cover a selection of the following discretionary topics:

- Bayesian Sequential Analysis
- Sequential Probability Ratio Test
- Hierarchical Bayes Models (Extended coverage)
- Bayesian Calculation
- Predictive Inference
- Bayesian Robustness

**Homework:** Problem sets will be regularly assigned and graded.

**Midterm Exam I:** Midterm Exam I will be on Wednesday, February 13, in lecture.

**Midterm Exam II:** Midterm Exam II will be on Wednesday, March 27, in lecture.

**Final:** The final examination will be on Tuesday, April 30, 4:00pm-5:45pm, in the lecture classroom.

**Grades:** The final numerical course grade will be determined according to the following scheme:

Homework .....	10%
Midterm Exam I .....	25%
Midterm Exam II .....	25%
Final Exam .....	40%

## **Rules and Policies**

**Academic Misconduct:** It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term academic misconduct includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

**Disability Services:** Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 614- 292-3307, [slds@osu.edu](mailto:slds@osu.edu); <http://slds.osu.edu>.

**Cell phones:** Cell phones must be either turned off or put on vibrate during class, as cell phones ringing during class disrupt the learning process.

**Recording equipment:** The use of any type of audio and/or visual recording equipment in the classroom is strictly prohibited. Exceptions will be made for students who need to have access to recordings of the lectures because of documented disabilities. Documentation must be obtained through the Office of Disability Services.

**E-mail Correspondence:** In order to protect your privacy, all course related E-mail correspondence must be done through a valid OSU “name.number” account. If you have not activated this email account, you can activate it at <https://my.osu.edu>