

MATH 331 - INTRODUCTION TO PROBABILITY AND MARKOV CHAIN MODELS

Section 1 – Winter 2009

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Lectures: TR 11:00-12:15, Van Vleck B135

Textbook: *Fundamentals of Probability, with stochastic processes, 3rd ed.*, by S. Ghahramani

Course description:

Math 331 is an introduction to the basic concepts of probability theory, the mathematical discipline for analyzing and modeling uncertain outcomes. The course concentrates on discrete models in probability, and beyond basic introduction to the subject, it also presents material on Markov chains. Probability theory is applied in several disciplines (e.g. natural sciences, social sciences, economics, engineering) so the course can be valuable in conjunction with many different majors.

Prerequisites:

The basic skills needed for Math 331 are calculus and basic set theory. Success in this class will also require the ability to think/reason abstractly.

Evaluation: Assignments and quizzes: 30%
First Midterm: 15%
Second Midterm: 15%
Final Exam: 40%

Online Resources:

All relevant information will be posted on the website of the course:

<http://www.math.wisc.edu/~valko/courses/331/331.html>

It is strongly advised that you regularly visit this site for assignments, dates and announcements.

I will use the class email list to send out corrections, announcements, please check your wisc.edu email from time to time.

Assignments:

There will be weekly assignments posted on the course website. These will contain practice problems and also the **home work assignments** which are to be handed in at the *beginning* of the class on the indicated date. *Late homework will not be accepted.* At the end of the semester the lowest homework score will be dropped.

The assignments will also contain challenge problems which may be handed in for bonus marks.

Homework instructions/suggestions:

- Write all answers clearly and carefully. You should write as if you were presenting a brief yet logically complete argument to convince a fellow classmate of the truth of your assertions. Thus you do not need to re-state any definitions or theorems you use, though you should mention them by their proper names and state when you are using them.
- You must present an original solution to each problem you are asked to hand in. Cheating/plagiarization will not be tolerated. Instances of academic misconduct will lead to disciplinary action.
- You are encouraged to work in small groups, but you should write up your own solutions. Copying other people's solution is not acceptable, even if you worked on the problems together.
- You will be marked both for the correctness of your answer and the style in which you present it.
- Use proper English. Write in complete sentences. Be neat. Recopy problems if necessary.
- Please put the problems in the correct order and staple your pages together.

Midterm exams:

The two midterm exams will take place during class periods. The first exam will be on Chapters 1-4 and take place on Tuesday, October 13. The second one will be on Chapters 5-10 and take place on Thursday, November 19.

Quizzes:

There will be weekly quizzes in the first half of the semester. Their purpose is to give you a chance for problem solving under a time limit before the midterm exams. The lowest quiz score will be dropped.

Final exam:

The final exam will cover the entire course. It will take place on Thursday, December 17, 7:45AM - 9:45AM.

Miscellaneous:

- There are many deadlines in this course. You must give advanced warning and/or provide a doctors note (or equivalent justification) to the lecturer if you miss any of these deadlines. The marking scheme will be amended in your case to reflect the amount of work you miss. However, if you must miss a significant amount of work, you must make special arrangements with the lecturer or else risk being docked marks regardless of your justification.
- The use of calculators is **not permitted** on tests, quizzes and during the final exam. You may use calculators for your homework assignments.