

MATH 577 Monte Carlo Methods
Spring 2013 Course Policy

Last revised: March 26, 2013

Instructor: Kevin Lin

Course web page: <http://math.arizona.edu/~klin/monte-carlo>

You should consult the web page regularly for up-to-date course information, [including homework assignments, office hours, and course calendar](#).

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All course information, including this policy, are subject to change at any time. All changes will be posted to the course web page and announced in class as soon as possible. You are responsible for being aware of these changes.

Prerequisites.

- Probability at an advanced undergraduate / master's level, up to and including Law of Large Numbers and Central Limit Theorem. Some familiarity with Markov chains is helpful, but I'll review what we need.
- I will assume familiarity with the basic facts of linear algebra and differential equations at an advanced undergraduate / beginning graduate level.
- Basic scientific computing and numerical analysis, including numerical linear algebra, interpolation, integration.
- Ability to program in a language suitable for scientific computing, e.g., Matlab, R, Python, C, Fortran,

Texts. Two useful general references are

- *Monte Carlo Methods* by M. H. Kalos and P. A. Whitlock
- *Monte Carlo Strategies in Scientific Computing* by J. S. Liu

I do not plan to follow either book very closely, but they do contain most of the material to be covered in the course. I will provide additional references (and course notes) as needed.

Topics. I plan to cover (roughly) the following topics:

- *Basic sampling techniques*
- *Markov chain Monte Carlo: basic theory and applications*
- *Continuous-time Markov chains*
- *Importance sampling and rare event simulation*
- *Misc topics (TBA)*

Grading. Your grade will be based on a combination of class participation, ~~homework (expect a few problem sets over the entire semester)~~, and a final project. The topic of the project will be chosen in consultation with the instructor. You should do the project by yourself, but I will allow groups of 2 (permission required). ~~The outcome of the final project should be (i) a 25-minute presentation (+ 5 minutes for questions), and (ii) an “extended abstract” about 4-5 pages in length, single-spaced and single column, including figures and references. The latter should summarize the main things you have learned doing your project.~~

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Attendance. You are expected to be familiar with the University Class Attendance policy as it appears in the General Catalog. If you miss a class, it is your responsibility to keep informed of any announcements, syllabus adjustments, or policy changes. *You must attend the first two classes of the semester. You will be dropped from the course if you do not. If you cannot attend class but wish to stay in this section, contact me now.*

Academic integrity. You are expected to behave in accordance with the Student Code of Conduct and the Code of Academic Integrity. University policies can be found at <http://deanofstudents.arizona.edu/policiesandcodes> .

Withdrawing. If you withdraw from the course by Feb. 5, the course will not appear on your transcript. If you withdraw by March 5, you will receive a grade of *W*; after this date, the University allows withdrawals only with the Dean’s signature. Late withdraws will be dealt with on a case by case basis. Requests for late withdraw without a valid reason may or may not be honored.

Incompletes. The grade of *I* will be awarded if *ALL* of the following conditions are met:

1. You have completed all but a small portion of the required work.
2. You have scored at least 50% on the work completed.
3. You have a valid reason for not completing the course on time.
4. You agree to make up the material in a short period of time.
5. You ask for the incomplete before grades are due (which is 48 hours after the scheduled time for the final exam).