

**Syracuse University**  
**Department of Mathematics**  
**MAT 653: STATISTICAL SIMULATION & NONSTANDARD DATA ANALYSIS**  
**Spring 2014–15**

Instructor	William Volterman
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Lectures	TH 9:30 am – 10:50 am CARN 120
Office Hours	W 10:00 am – 12:00 am or by appointment
Text Book	Simulation (5th Edition) <i>Sheldon Ross</i> ISBN-13: 978-0124158252 ISBN-10: 0124158250

**Prerequisite:** Registration as a graduate student of Mathematics or Statistics or permission from the instructor.

**Goals:** To understand and apply various montecarlo techniques and their applications to data analysis. The learning outcomes as stated in the catalogue are as follows.

Pseudo random generation, Simulation of discrete/continuous random variates, ordinary monte carlo, variance reduction, bootstrapping, markov chain monte carlo

**Software:** Part of this course will require use of the R statistical software language. R is free and can be downloaded from <http://probability.ca/cran>. More information is also available at <http://www.r-project.org>.

You can find free manuals available at <http://cran.r-project.org/manuals.html>, in particular you can get the R manual as a pdf file at <http://cran.r-project.org/doc/manuals/R-intro.pdf>.

You may also want to consider the R IDE RStudio available at <http://www.rstudio.com/products/rstudio/>.

**Academic Integrity:** Syracuse Universitys academic integrity policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The university policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same written work in more than one class without receiving written authorization in advance from both instructors. The presumptive penalty for a first instance of academic dishonesty by an undergraduate student is course failure, accompanied by a transcript notation indicating that the failure resulted from a violation of academic integrity policy. The presumptive penalty for a first instance of academic dishonesty by a graduate student is suspension or expulsion. SU students are required to read an online summary of the universitys academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice. For more information and the complete policy, see <http://academicintegrity.syr.edu>.

**\*Important Message\*** The instructor(s) and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their email and course website during the term and to note any changes.

I.e., everything in this outline (or posted online) is subject to change.

**Grading Scheme:** The grading scheme is tentatively as below. Dates will be announced later. Alternative grading schemes may be considered .

- Assignments: 70% total
- Exam 30%

**Attendance:** You are expected to attend every class. If you miss a class, it is your responsibility to obtain a copy of the lecture notes for that class from another student. You are also responsible for any announcements about changes to the schedule/requirements/policies.

**Disabilities:** If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), <http://disabilityservices.syr.edu>, located at 804 University Avenue, room 309, or call 315-443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue Accommodation Authorization Letters to students with documented disabilities as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Our community values diversity and seeks to promote meaningful access to educational opportunities for all students. Syracuse University and I are committed to your success and to supporting Section 504 of the Rehabilitation Act of 1973 as amended and the Americans with Disabilities Act (1990). This means that in general no individual who is otherwise qualified shall be excluded from participation in, be denied benefits of, or be subjected to discrimination under any program or activity, solely by reason of having a disability.

Please contact me privately to discuss your academic needs although I cannot arrange for disability-related accommodations.

**Key dates:** See the Academic Calendar for important dates during the term  
<http://syracuse.edu/registrar/acadcalendars/acadd12014-15.pdf>

- Financial deadline to drop class: **Monday February 2<sup>nd</sup>**
- Academic drop deadline: **Tuesday March 17<sup>th</sup>**
- Withdrawal deadline: **Tuesday April 14<sup>th</sup>**