



STAT 531 (3-1T) Monte Carlo Methods and Statistical Computing

(see Course Descriptions under the year applicable: <http://www.ucalgary.ca/pubs/calendar/>)

Syllabus

<u>Topics</u>	<u>Number of hours</u>
Information into basic ideas of computing; R programming	3
Review: basic and not-so-basic statistics and inference	3
Random number generation: uniform distribution; the inverse transform; accept-reject methods	6
Simulation and Monte Carlo integration: classical Monte Carlo integration; importance sampling	6
Numerical integration: Gaussian quadrature	4
Optimization and solving nonlinear equation: Newton-Raphson method; Generalized linear squares (GLS) algorithm;	5
EM optimization methods: expectation-maximization (EM) algorithm; Monte Carlo EM algorithm	4
Markov Chain Monte Carlo methods	5
TOTAL HOURS	36

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