

Generating Random Numbers (classical)

- generating random uniforms (and why it matters)
- using IIT (including Box-Muller)
- using histograms/tables
- the accept/reject method

Generating Random Numbers (modern)

- MCMC and stationary distributions
- Gibbs sampling
- Metropolis-Hastings
- generating CIs and posterior distributions

Randomization tests and CIs

- exchangeability
- generating permutations (possibly with constraints)
- the relationship between tests and CIs

Bootstrap distributions

empirical distribution	nonparametric bootstrap
smooth nonparametric bootstrap	parametric bootstrap
semiparametric bootstrap	

Bootstrap Inference

naive CIs	Bootstrap-t
Pivots	Bootstrap tests

Computational issues

- speeding things up (and does it matter?)
- HPC
- maintainable code
- R, Matlab and computational speed

The grade will be based on several homework assignments and a computing project.
(TBA)

Text: TBA