



Department of Mathematics and Statistics

COLLOQUIUM

Tuesday, February 2nd, 2016

4:00 – 5:00 pm, Adel Mathematics Bldg., Room 164
(refreshments at 3:45)

Dr. Roy St. Laurent
NAU

Bootstrap Confidence Intervals, Randomization Tests, and STA 270

STA 270 is a non-calculus based introductory statistics course that includes coverage of statistical inference, especially hypothesis testing and confidence intervals for one and two sample problems involving population means and proportions. Traditionally the focus on inference methods has been in developing students' understanding of sampling distributions via the Central Limit Theorem, in applying standard formulas for test statistics and confidence intervals derived assuming either large samples, or population distributions that are normal, and interpreting the subsequent results.

One recent trend in teaching statistical inference in such introductory courses relies less on large sample results, the normal distribution, and student's ability to remember and apply formulas, and more on developing students' conceptual understanding of the big ideas of inference – replacing situation-specific formulae with common simulation-based methods to carry out calculations.

Bootstrap-based confidence intervals and randomization tests for evaluating hypotheses are the key tools used in this approach, which was piloted in two sections of STA 270 in Fall 2015. This talk will discuss the statistical theory justifying these methods, and illustrate how they were used in the course pilot. Audience members are encouraged to bring a device with web-browsing abilities (smart phone, laptop, tablet, iPad, etc.) as the freeware used in the course (StatKey, <http://lock5stat.com/statkey>) will be demonstrated.

Algebra Combinatorics Geometry and Topology (ACGT) Seminar meets every Tuesday, 12:45 – 1:45 pm, AMB 164.

Applied Math Seminar (AMS) meets every Thursday, 12:45 – 1:45 pm, AMB 164.

Friday Afternoon Undergraduate Mathematics Seminar (FAMUS) meets Fridays, 3pm, AMB 164.