

# Statistics Curriculum at Bucknell University

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KB BOOMER

# Bucknell University

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- o 3600 students in central Pennsylvania
- o 350 faculty members
- o Three colleges
  - Arts & Sciences
    - o Natural Sciences & Mathematics
    - o Social Sciences
    - o Humanities
  - College of Engineering
  - College of Management

# Majors

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- ◌ Mathematics BA, BSc
- ◌ Concentrations: Statistics & Pure Mathematics
- ◌ Applied Mathematical Sciences, established 2012
  - Required concentrations: Statistics or Applied Mathematics
  - Core courses include Introductory Statistics, Probability, Linear Algebra, Real Analysis
  - 5 courses in a “partner” department
- ◌ Mathematical Economics, BSc, established 2006
  - Required Mathematical tracks:  
Statistical, Computational, Theoretical
- ◌ Future plans
  - Statistics BSc

# 200 level Statistics courses

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- o Introductory statistics
  - Math 216: Algebra prerequisite
  - Math 226: Calculus-based (primarily engineering students)
- o 200 level Statistics II (Regression, ANOVA, logistics regression)
- o 200 level introduction to data science
  - “Interdisciplinary Perspectives Course”
    - o Team taught: computer science and statistics
    - o No prerequisites
    - o General Education requirement
    - o Cannot be required for a specific major
  - Focus on R

# Upper Level Statistics courses

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## ◊ 300 level

### ➤ Probability

- Discrete and continuous distributions, conditional expectation, joint distributions

### ➤ Mathematical Statistics

## ◊ 400 level

### ➤ “Statistical Designs for Scientific Studies”

- Combined survey sampling and design of experiments
- Weekly labs: R or SAS

### ➤ Statistical Modeling

- Theory and applications of multivariate regression & logistic regression
- Weekly labs: R or SAS

# Challenges & New Directions

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- o We are a statistics core in a (pure) mathematics department
  - 23 tenure track lines: 16 pure mathematics, 1 math educator, 2 applied mathematicians, 4 statisticians
- o Demand for introductory statistics
  - 16 sections per year
  - 4 statisticians
  - 5 course teaching load