



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
Department of Mathematical Sciences
United States Military Academy
West Point, New York 10996

3 January 20

MADN-MATH

MEMORANDUM FOR: AY20-2 Memo and Syllabus for MA376 - Applied Statistics

SUBJECT: MA376 Instructional Memorandum for AYT 20-2.

1. Text: Intermediate Statistical Investigations by Tintle, et al.

2. General Instructions:

a. Policies and Procedures of the Department of Mathematical Sciences pertaining to third and fourth class core mathematics courses will remain in effect unless amended by the instructor.

b. The writs and Midterm will occur during regularly scheduled class time on the lessons indicated on the syllabus unless previous arrangements have been made with the instructor.

c. The primary source for course information is the MA376 Blackboard Site

3. Grading: Assessment tools that contribute to your semester grade are itemized below.

Event	Points
Graded Explorations	360
Mentorship Project	40
Writs x3	300
TEE	300
Total	1000

4. Scope: This course extends the ideas of statistical inference and conducting a statistical investigation introduced in MA206. The course focus is on selecting, fitting, and interpreting various statistical models that enjoy widespread usage among applied statisticians. The focus expands on introductory level statistics by including explicit consideration of study design and statistical analysis strategies using a single, cohesive framework for thinking about and explaining variation across study designs and variable types.

5. Conduct of the Course: The MA376 website contains a syllabus (.pdf file) that enumerates the lesson sequence. Reading assignments and recommended problems will be posted in advance of the lesson dates. You are expected to read the material for each lesson as outlined by the syllabus. You will attempt all problems within each reading assignment and the suggested problems outlined by the syllabus or as directed by your instructor. The text contains many excellent problems in addition to the ones listed. The Dean's policy for the Documentation of Written Work is in effect.

6. Chain of Command: The Department of Mathematical Sciences has an open door policy. Your initial attempt to address problems or concerns should go through the chain of command. However, if you are uncomfortable addressing an issue with your instructor, please approach any individual in the chain. If you have any concerns related to respect in the classroom, unprofessional behavior, or sexual assault or harassment, please feel free to contact the Department Head directly. Below is the chain of command for MA376:

- a. Course Director: LTC Nicholas Clark, Thayer 226, 938-0267
- b. Program Director: COL Krista Watts, Thayer 239A, 938-2276
- c. Professor, USMA & Department Head: COL Tina Hartley, Thayer 238A, 938-5285

7. Software and Computer Usage: We will use the programming language R with the R-Studio interface. All students will be expected to have this software on their computers. Students may also use Excel and Mathematica. All students are expected to bring their laptops to class.

8. Course Objectives: By the end of this course, students should:

- a. Explain variation in a statistical experiment using a sources of variation diagram.
- b. Visualize adjusted vs unadjusted associations to examine the impact of adding explanatory variables to a model.
- c. Explore patterns in residuals and explain variation in the experiment.
- d. Use simulation to understand study design, consider test statistic choice, and reinforce core logic of inference.
- e. Implement standard model-fitting techniques using R software and correctly interpret the output.
- f. Communicate the results of a statistical experiment using both written and oral forms of communication.

NICHOLAS J. CLARK
LTC, Assistant Professor
MA376 Course Director