College of Liberal Arts and Education
Department of Economics

Winter 2016

ECN 5150: Quantitative Foundations for Economics Analysis

Final Assignment

Please read the following guidelines carefully before submission. Fail to follow the guidelines will cause a substantial reduction of your grade in this assignment.

(1) The final assignment is due on **April 27, 2016 at 4:00pm** to Blackboard. Late submission will not be accepted under any circumstances.
(2) Please submit all answers in **ONE** Word document. Other formats will not be accepted.
(3) Please answer all questions clearly and thoroughly.
(4) Please show all your work.
(5) The questions carry equal weight.

1. At an electronics plant, it is known from past experience that the probability is 0.84 that a new worker who has attended the company's training program will meet the production quota, and that the corresponding probability is 0.49 for a new worker who has not attended the company's training program. If 70% of all new workers attend the training program, what is the probability that a new worker will meet the production quota?

2. A local ice cream shop in a beautiful Miami beach realizes that its ice cream sales go up along with the number of shark attacks. Assume you are the owner of the shop and you realize that shark attack can be an excellent predictor of ice cream sales in a linear regression setup. How do you specify the model? Do you see any potential problems related to your justification and model specification? How do you propose to improve it?

3. Texoil has a project available for compete. The project asks to estimate which one of its two gasoline brands -brand A or brand B, gives superior mileage. As a student with some background in Statistics, you would like to give it a try. How do you propose to conduct the experiment and the test?? Your answer has to include details of the experiment design, the measurement of the data/ variables, and the proposed test (hint: this question is **NOT** about regression)

4. You have $10,000 saved up to invest for a year, and are considering stocks (S) and/or short term Treasury bills (T). The returns from both sources are judged uncertain, of course, as the following probability table indicates:

		S			
		-10%	0%	10%	20%
T	6%	0	0	0.10	0.10
	8%	0	0.10	0.30	0.20
	10%	0.10	0.10	0	0

(1) If you split your investment 30% in stock and 70% in Treasury bills, what would be the expected return and standard deviation?

(2) Are the returns of stock and treasury bills independent?

5. To answer the following questions, please review the attached article “Why the SAT isn’t a ‘**S**tudent **A**ffluence **T**est’?

(1) In the first two paragraphs, instead of a simple regression, can you detail an ANOVA analysis to serve the same purpose?

(2) After reading through the article, sure you realize that there are other correlations need to be considered. According to the discussions, how do you propose to model it?? Are there potential complications on your specification? Explain.