**MTH107 – Statistical Concepts and Analysis Syllabus**

**Mason Deja – Summer, 2017 (12-Jun through 18-Aug)**

**Description:** Introduction to the concepts and interpretation of statistics. Summary graphs and statistics; data production (sampling and experiments); random variables and sampling distributions; inference - introduction, for distributions, for proportions; correlation and regression. Prerequisite: MTH103, ACT math > 17, or SAT math > 470. 4 Credits.

**Learning Outcomes:** At the end of this class you will be able to …

1. describe why statistics is central to scientific inquiry (& your field of interest);
2. define basic statistical words and symbols;
3. design simple experiments and sampling strategies;
4. perform appropriate exploratory data analyses (univariate and bivariate);
5. identify the purposes of and conduct and interpret the results of a linear regression;
6. construct and interpret confidence intervals for one and two-sample mean and proportion problems;
7. identify the appropriate hypothesis test to perform in one- and two-sample quantitative and categorical data situations;
8. construct and interpret the results from a hypothesis test for one- and two-sample quantitative and categorical data situations; and
9. communicate statistical results and ideas in a succinct and informative manner.

**Instructor:** Dr. Derek H. Ogle, [dogle@northland.edu](mailto:dogle@northland.edu), 715-372-5554

**Meetings:** Mason will be in regular (weekly) contact (e-mail and phone) with Dr. Ogle regarding progress and questions.

**Grading:** An overall percentage score will be computed from the following items (relative contribution weights are in parentheses).

*Module preparation notes (20%). --* Mason will complete typed answers to the preparation questions for each module. An example module preparation guide [is here](http://derekogle.com/NCMTH107/modules/WhyStats_Prep). Approximately two to three of these will be due each week. It is expected that Mason will read the assigned readings and watch the assigned videos ([example list here](http://derekogle.com/NCMTH107/modules/WhyStats_HW)) to complete these notes.

*Module homework (20%). --* Mason will complete typed answers to the homework questions for each module. An example module homework assignment [is here](http://derekogle.com/NCMTH107/modules/WhyStats_HW). Approximately two to three of these will be due each week. It is expected that Mason will complete review or “in-class” exercises to prepare to complete these homeworks ([example practice exercises here](http://derekogle.com/NCMTH107/modules/WhyStats#practice)).

*Practica (60%). --* Mason will complete two practica that will require him to analyze real fisheries data, some of which he collected in the Fisheries Techniques class this past May and some of which he will collect this summer. This analysis will require Mason to enter data into R, construct appropriate tables and figures in R, and construct (and communicate) appropriate summaries of the data. These will be due in approximately mid-July and mid-August.