

## MTH109 COURSE SYLLABUS

SUMMER 2014

PROFESSOR: JIM NORRIS (x4888; Manchester 337; [norris@wfu.edu](mailto:norris@wfu.edu))

Goals: To introduce proper methods for the collection, analysis and interpretation of information. To introduce the mathematical underpinnings of these methods and to examine models which involve random components. To illustrate the various practical applications of statistics including the examination of possible climate change.

Requirements: Attendance at all class sessions with the assigned preparation and homework being completed before the beginning of the class session. Purchase (and study) **TEXTBOOK**: STATISTICS (4<sup>th</sup> edition) by Freedman, Pisani, Purvis. Be a constructive participant in discussions.

Class Meeting Times: 9:25-10:40am MTWRF ; in addition, 12:15-**1:30 (instead of 1:15)**pm Mondays and Thursday.

Method of evaluation: Attendance. Random homework checks. Participation. Projects to be assigned throughout the course. Regular tests given every Wednesday. Final exam will be comprehensive and will be on July 2 from 2-5pm.

### Topic

Projects	(combined)	30
Homeworks	(combined)	30
Attendance		20
Participation		20
Test 1		100
Test 2		100
Test 3		100
Test 4		100
Final Exam		100

My Office Hours (Manchester 337): Monday 10:40am-11:40am ; Tuesday 12:15-1:30 Wednesday and Thursdays 10:40am-11:40am. Also, you can make an appointment if you want to meet at another specific time OR feel free to drop by my office at any time, or call (x4888), or email ([norris@wfu.edu](mailto:norris@wfu.edu))

Math Center tutoring hours: Mon 6-9pm ; Tues 3-5pm ; Wed 3-5pm ; Thurs 6-9pm.

Climate Change component: We will examine many of the statistics relating to the study of possible climate change; thus illustrating the power of data and statistics to inform us about important situations. At least one of your projects will involve this topic.

## List of Topics for Elementary Probability and Statistics (MTH109)

Experimental Design  
Observational Studies  
Sampling  
Exploratory Data Analysis  
Descriptive Statistics  
Normal Curve  
Measurement Errors and Quality Control  
Climate change part 1: descriptive  
Correlation between two quantitative variables  
Regression between two quantitative variables  
Probability  
Random variables  
Binomial Theorem  
Box Models and Modeling  
Expected Values and Standard Errors of (process) random variables  
Approximate Probabilities for Sums (and for Averages)  
Sampling  
Statistical Inferences about population percentages: estimates, confidence intervals  
Statistical Inferences about population averages: estimates, confidence intervals  
Tests of hypotheses: general  
Test of hypothesis for population percentage or average: for large sample  
Climate change part 2: inference  
Test of hypothesis for population average: for small sample, but normal distribution  
Test of hypothesis for differences in population averages, percentages  
Test of hypothesis for model validity  
Test of hypothesis for independence between two qualitative variables

Assigned Homework Problems in the Book.

Chapter: Problems:

2	A:4, 5, 8; R: 5, 6, 8, 10, 11
3	A: 1,2,3, 4, 8; C:1, 4; D:1, 2; E:1; R:9, 11
4	A:1, 8, 9; B:1, 6; c:1, 6; D: 3, 6, 7; E:1; R:2, 6, 9, 12
5	A: 1; B:1, 3, 4; C:2; D:2, 5; E:3; R:3, 5
6	R:1, 2, 4, 5
7	A:1, 2; B:1; C:1; D:1; E:4,6
8	A:3,6; B:1,6,7,8,9; C:1,2,4; D:1 <sup>a</sup> ; R:1,5,7,8,11,12
9	A:1,2,3,4,6,7; B:3,4; C:1,3; D:2; R:10,11,12
10	A:2; B:2; C:2, D:1,2; R:5,7,8,10
11	A:1,2,3,4; B:3; C:1,2; D:1,2,4; E:1,2,3; R:4,6,8,10
12	A:2,3,4; B:3,5; R:3,4,8,12
13	A:1,2,3,4,5; B:4; C:1,2,5; D:1,2,6,8; R:11,12
14	A:2,4; B:2,3; C:1; D:1,6; R:3,9,13,14
15	A:1,3,4,6; R:1,2,3,4,9,10,11
16	A:1,4,6,9; B:1,3,5,6,7; C:1,2,3; R:1,6,10
17	A:1,2,3,6; B:1,2,3; C:1,5,7,8; D:3,4; E:3,4,8; R:6,8,10,11,12
18	A:1,2,4,5; B:1,5,6; C:1,3,4,5; R:5,6,10,12,14
19	A:1,2,4,6,8,9,10; R:4,6,11,12
20	A:1,2,3,7,8; B:1,4; C:1,2,5; R:3,7,12
21	A:1,4,5,6,8; B:1,2,4; C:1,4; D:2; E:1; R:1,2,4,11,12,13,15
22	A:1,2,5; R:1,7,8,9,10
23	A:1,6,10; B:1,5,6,7,9; C:1,4; D:6; R:3,8,11,12
24	A:2,5; B:1,3,5; C:2,4,6,7,8; R:7,8,11
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26	A:1,3,5; B:3,5; C:1,2,7; D:3,5; E:1,2,6,10; F:4,5,6,7; R:2,3,5,6,7,10
27	A:2,4,6; B:7; R:8,9
28	A:1,3,5,7; C:2,3,7; R:7,8,10
29	A:2; B:1,2; C:6,8; D:5; E:3; R:6,12

NOTE: Additional “non-book” homework problems will be assigned. Also, projects will be assigned.