Purpose: This course offers an introduction to the practice of statistics, with a special emphasis on applications to economics research. The approach followed emphasizes the hands-on exploration of diverse data sets through the use of spreadsheet and statistical software. Although the examples considered come from many fields, special consideration is given to the use of statistics in contemporary economics research. While the mastering of basic quantitative statistical techniques is an important objective of this course, an even more important objective is to gain a critical understanding of the uses and misuses of data.

Requirements: The final grade will be based on the following assignments. Class participation will be taken into account when computing the final grade.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Date and time</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Problem sets</td>
<td>Wednesdays at 4:00 pm</td>
<td>10%</td>
</tr>
<tr>
<td>Reading report</td>
<td>10/1 at the beginning of class</td>
<td>5%</td>
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<tr>
<td>Midterm test</td>
<td>10/17 in class</td>
<td>25%</td>
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<tr>
<td>Project outline</td>
<td>11/8 at the beginning of class</td>
<td>5%</td>
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<tr>
<td>Project report</td>
<td>12/6 at 4:00 pm</td>
<td>25%</td>
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<tr>
<td>Final exam</td>
<td>12/20 from 9:00 am to 12:00 pm</td>
<td>30%</td>
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</tbody>
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Readings: (a) Moore, David S. and George P. McCabe (1998), *Introduction to the practice of statistics*, Third edition, New York: W.H. Freeman and Co (available for purchase at Atticus); (b) a series of articles available at Olin Reserve Collection and/or the electronic reserve system; (c) a series of complementary handouts with summaries of topics not covered in the readings.

Honor code: All work handed in must be your own and must be performed for this course only. This does not mean that you must refrain from discussing problems with other students as an aid to understanding the material, but it does preclude copying other students' work. You are expected to discourage such behavior on the part of others. This distinction is generally clear enough to make in practice; when in doubt, please discuss it with me.

Policy on late assignments: All tests must be written and all assignments must be handed in at the dates and times indicated on this syllabus. Please do not request a personal exception from this policy, or an incomplete, except in the event of a grave medical or family emergency.
Topics and Readings

I- INTRODUCTION
Sept. 3  A road map to the course; Introduction to regression analysis
    - FYI Handout #1: Introduction to regression analysis

II- DATA
Sept. 5  Using graphs and numbers to describe distributions
    - Moore and McCabe (1998), sections 1.1 and 1.2
Sept. 10 Normal distributions; Scatter plots
    - Moore and McCabe (1998), section 1.3 and 2.1

Sept. 11 (Wed) Problem set #1 due today at 4:00 (econ box)
Sept. 12 Correlations, Least squares regression
    - Moore and McCabe (1998), sections 2.2 and 2.3
Sept. 17 Multiple regression; Functional forms
    - FYI Handout #2: Estimating and interpreting linear regression
    - Moore and McCabe (1998), section 2.5

Sept. 18 (Wed) Problem set #2 due today at 4:00 (econ box)
Sept. 19 Dummy variables in linear regression; Two-way tables
    - FYI Handout #2
    - Wonnacott and Wonnacott (1990), section 14.1
    - Moore and McCabe (1998), section 2.6

Sept. 24 Cautions on regression and correlation; Omitted variable bias
    - Moore and McCabe (1998), sections 2.4 and 2.7
    - FYI Handout #2

Sept. 25 (Wed) Problem set #3 due today at 4:00 (econ box)
Sept. 26 Production of data; Towards statistical inference
    - Moore and McCabe (1998), sections 3.1, 3.3, and 3.4 (3.2 FYI)
III- PROBABILITY

Oct. 1  Reading report due today at the beginning of class

Oct. 1  Elementary probability models; Random variables
        - Moore and McCabe (1998), sections 4.1 to 4.3

Oct. 3  Mean and variances of random variables; General probability rules
        - Moore and McCabe (1998), sections 4.4 and 4.5

Oct. 4 (Fri)  Problem set #4 due today at noon (econ box)

Oct. 8  More on expectations
        - FYI Handout #3: More on probability and expectations

Oct. 9 (Wed)  Problem set #5 due today at 4:00 (econ box)

Oct. 10  Application of expectations: properties of an estimator; Review for the midterm
        - FYI Handout #3

Oct. 15  Fall break

Oct. 17  Midterm test

Oct. 22  Sampling distributions for counts and proportions
        - Moore and McCabe (1998), sections 3.4 (review) and 5.1

Oct. 24  Sampling distribution of the sample mean
        - Moore and McCabe (1998), section 5.2

IV- STATISTICAL INFERENCE

Oct. 29  Confidence intervals
        - Moore and McCabe (1998), section 6.1

Oct. 30 (Wed)  Problem set #6 due today at 4:00 (econ box)

Oct. 31  Tests of significance
        - Moore and McCabe (1998), sections 6.2 and 6.3

Nov. 5  Inference for the mean of a population
        - Moore and McCabe (1998), section 7.1

Nov. 6 (Wed)  Problem set #7 due today at 4:00 (econ box)

Nov. 7  Comparing two means
        - Moore and McCabe (1998), sections 7.2 and 7.3

Nov. 8 (Fri)  Outline of research project due today at 4 pm (econ box)
Nov. 12  Inference for proportions; Power of a test and inference as a decision
   - Moore and McCabe (1998), section 8.1, 8.2, and 6.4
   - Wonnacott and Wonnacott (1990), section 9.3

V- REGRESSION AND EXTENSIONS

Nov. 13 (Wed) Problem set #8 due today at 4:00 (econ box)

Nov. 14  Inference for linear regression
   - Moore and McCabe (1998), chapter 10

Nov. 19  Multiple regression
   - Moore and McCabe (1998), chapter 11
   - FYI Handout #5: More on F tests

Nov. 20 (Wed) Problem set #9 due today at 4:00 (econ box)

Nov. 21  More on the error term
   - FYI Handout #5: More on the error term

Nov. 26  Models with discrete dependent variables; Maximum likelihood estimation
   - TBA

Nov. 28  Thanksgiving recess

Dec. 3   Endogeneity, identification, and instrumental variables
   - Wonnacott and Wonnacott (1990), chapter 25

Dec. 4 (Wed) Problem set #10 due today at 4:00 (econ box)

Dec. 5   Conclusions and review

Dec. 6 (Fri) Project due today at 4:00 (econ box)

Dec. 20 (Fri) Final exam (9:00 am-12:00 pm)