Objectives: This course fulfills the QB general requirement and aims to equip students with a deep understanding of statistics theories. The lectures will cover a variety of statistics topics including the descriptive statistics (ch 1-4), the probability theories (ch 5-7), estimation and statistical inference (ch 8-13). At the end of this semester, students are expected to demonstrate qualitative literacy and problem solving abilities.

Qualitative Literacy: (1) Interpretation: ECON 3640 teaches how to interpret different types of graphs (for example, pie chart, bar graph, histograms), numerical summaries of data (for example, proportion, mean, median, variance, standard deviation), statistical test results (for example, hypothesis tests about means, proportions). (2) Representation: ECON 3640 teaches how to construct appropriate graphical and numerical summaries of data, how to present estimates and test results. (3) Estimation: ECON 3640 teaches the theoretical foundations of statistical estimation and how to use a sample to construct the estimates. (4) Application: ECON 3640 teaches how to distinguish between different types of variables, so that they can use appropriate summaries and estimates for analysis. ECON 3640 also teaches the strengths and limitations of the estimations, so that they can apply them judiciously. (5) Communication: ECON 3640 teaches how to present statistical results in simple language so that it can be communicated to a general audience. Problem Solving: (1) Defining Problems: The assignments and project in ECON 3640 teaches how to systematically define a problem for statistical analysis. The students are required to state the objective of an analysis in very precise terms (example, gender based comparison of academic performance of ECON majors). They are also required to identify the following before embarking on the analytical process: the unit of analysis (for example it can be individual, firm, country), the attributes of the units that need to be analyzed, and the nature of attributes (quantitative or categorical). (2) Identifying Strategies: ECON 3640 teaches students to identify appropriate graphical and numerical analytical strategies based on the problem description and the nature of the variables. (3) Generating Solutions: ECON 3640 teaches students to appreciate that there exist several ways of addressing a question. For example, for a hypothesis testing one can construct different alternative hypotheses and the result can depend upon the way the hypothesis is stated. (4)
Selecting Solutions: ECON 3640 teaches students to select the solution approach that best suits their problem description. (5) Evaluating Outcomes: ECON 3640 emphasizes the need to interpret the statistical results in the broader context that requires synthesis of reasoning from varied perspectives.


Grade Weights:
Two midterms: 40% (The lowest midterm grade will be dropped.)
Final exam: 30%
Assignments: 20%
Quizzes: 10%

Conditions to drop the lowest midterm grade:
There will be three midterms. You can drop the lowest midterm grade if you have tried your personal best to prepare for all the midterms, and do not give up any of which.

Tentative Grade Scales: A: 93 or above
A-: 87 or above
B+: 83 or above
B: 75 or above
B-: 70 or above
C+: 65 or above
C: 60 or above
C-: 50 or above
E: less than 50

Tentative class schedules:
This schedule is suggested. The lectures may flow faster or slower to make sure a clear understanding of materials.

1/8: introduction
1/10: ch 1-4 descriptive statistics
1/15: no class, Martin Luther King Jr. Day
1/17: ch 1-4
1/22: ch 1-4
1/24: ch 1-4, quiz 1
1/29: ch 1-4
1/31: ch 1-4 (midterm review)
2/5: midterm 1 (ch 1-4)
2/7: ch 5-7 sampling and probability theory
2/12: ch 5-7
2/14: ch 5-7
2/19: no class, Presidents' Day holiday
2/21: ch 5-7, quiz 2
2/26: ch 5-7
2/28: ch 5-7 (midterm review)
3/5: midterm 2 (ch 5-7)
3/7: ch 8-1, uniform distribution
3/12: ch 8-2, normal distribution
3/14: ch 8-2, normal distribution, quiz 3
3/18-3/25: Spring Break
3/26: ch 8-4, other types of normal distribution
3/28: ch 9-10, quiz 4
4/2: ch 9-10
4/4: ch 9-10 (midterm review)
4/9: midterm 3 (ch 8-10)
4/11: ch 11, introduction of statistical inference
4/16: ch 11-ch 13 hypothesis testing, quiz 5
4/18: ch 11-13
4/23 (last class): ch 11-13 (final exam review)
4/26: final exam, 10:30 am- 12:30 pm (ch 1-13)

Class policies:
1. Students must take the exams on the scheduled dates. No make-up exams will be given except you have encountered unexpected urgent issues.
2. You are encouraged to study assignment questions with your classmates, but each of you must submit your own copy. In case two students are submitting the same copy, none of you will receive any credit.
3. Late homework submission will result in a mark of zero.

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.