Whitman
SCHOOL of MANAGEMENT
SYRACUSE UNIVERSITY

MBC 638 – Data Analysis and Decision Making
M.J. Whitman School of Management
Fall 2017

- **Lectures:** MW 11:00am-12:20pm @ WSM 007 (Lender auditorium)

- **Instructor:** Prof. ANNA CHERNOBAI
  Office: WSM 609 *Phone:* 443-3357 *Email:* annac@syr.edu
  Office hours: MW 1:30pm-2:30pm, or by appointment
  TA: Arjun Muralidharan, aharurmu@syr.edu
  office hours: MW 2:30pm-3:30pm @ WSM 3rd floor computer lab

- **Course Objectives:** The aim of this course is to learn essential concepts of data analysis, probability, and statistics necessary to understand and perform analysis of business and economic data.

- **Course Topics:** Sample descriptive methods—graphical, tabular, and numerical; correlation and association; probability; Normal distribution; Central Limit Theorem and sampling distributions; confidence intervals; hypothesis testing; multivariate analysis with continuous and categorical variables (OLS and Logistic regressions); time series modeling and forecasting; Monte Carlo simulation (if time permits).

- **Learning Objectives:**

  1. The student can create and interpret various descriptive statistics for business data, including graphs, tables, and numerical measures.
  2. The student can create and interpret confidence intervals and hypothesis testing for population mean and proportions.
  3. The student can create and interpret regression models (OLS and Logistic) using business data.
  4. The student can perform time series and forecasting analysis of business data.

- **Prerequisites:** College level math and basic statistics, and most importantly, eagerness to learn.

- **Required Textbook:** *"Data Analysis and Decision Making,"* by Albright, Winston, and Zappe, 4th ed. (or higher), ISBN 0538476125.

- **Computer Software:** We will use Excel and Palisade's StatTools add-in for Excel. It is available on all computers at Whitman. You can also access them remotely from home.

- **Calculator:** Not necessary. We can use Excel for all calculations.

Course Performance Evaluation

- **Attendance (1%):** Attendance is mandatory and will be taken in every lecture. One unexcused absence is allowed. Please note that missing classes may significantly affect your performance and understanding of the material.

- **Quizzes (24%):** Quizzes will be assigned <u>weekly</u> and will be take-home. Each quiz will last approximately 30 minutes. Many quizzes will require Excel. <u>Two lowest quiz scores will be dropped.</u>

- **Group Project (15%):** A team project will be due on Thursday, December 7, 2017. You will be required to work in groups of approximately 4-5 people. For MBA students, the team assignments follow those provided by the MBA office, for other students I will assign teams randomly myself. You will be asked to collect your own data on a business-related project and then analyze it. Formal guidelines will be provided. It is your responsibility to make sure each team member does his fair share of work. It is also your responsibility to check each other's work. On December 7, 2017, the written project will be due. It should not exceed 5 pages, excluding tables, figures, and cover page. The project grade will consist of two components: (i) my evaluation of your written project, (ii) evaluation by your peers (i.e., your contribution to your team's work).

- **Midterm and Final Exams (30% each):** The date for the Midterm exam is Monday, October 16, 2017. The date for the Final exam is TBA (most likely, December 11, Monday). These are comprehensive exams. The final exam is cumulative. You may not schedule trips and be out of town for the dates of the midterm or final exam. No late exams or make-up are allowed. The exams are open notes and open book. The midterm exam and the final exam are graded out of 100 points.

  Note: Midterm and Final are 30% each, however the following adjustment to the grades will be made to account for your progress throughout the semester. If your final exam grade is *higher* than the midterm grade, then <u>half</u> of your midterm grade will be replaced by <u>half</u> of your final exam grade. Example 1: midterm grade is 70/100, final exam grade is 90/100, then the new midterm grade is 35/100+45/100=80/100. Example 2: midterm grade is 70/100, final exam grade is 60/100, then the new midterm grade will remain as 70/100.

- **Extra Credit Work**: None! Please don't put me in an uncomfortable position by asking for one.

- **Grade Distribution**: No more than 35% of A and A- combined. This means that, what's most important for your grade is your percentile in class rather than your raw scores.

Policy on Missed Lectures, Exams, and Quiz Assignments

The following are considered excused absences:

- Documented athlete absence,
- Documented illness. See "Verification of Medical Condition" policy.
- Documented loss of a family member of relative.
- Religious observance. See "Religious Observances" policy.

Blackboard

- There is a website created for this class. This site is used to distribute class material and any corrections or clarifications. Students are strongly advised to check the Blackboard for announcements and updates daily.

Tentative Schedule of Lectures

Week 1	⇛ Introduction. Graphical, tabular, & numerical descriptive measures.
	⇛ Descriptive measures (continued).
Week 2	⇛ *No class (Labor Day)*
	⇛ Descriptive measures (continued).
Week 3	⇛ Covariance and correlation. Regression analysis: simple linear regression (OLS).
	⇛ Multiple linear regression.
Week 4	⇛ Multiple linear regression with dummy & interaction variables.
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Week 5	⇛ Regression models for categorical response variables (Logistic regression); application to bankruptcy prediction.
	⇛ Probability, Bayes formula.
Week 6	⇛ Population mean & variance (discrete case); conditional variance & conditional expectation; weighted sums.
	⇛ Conditional variance and conditional expectation; weighted sums (continued).
Week 7	⇛ Conditional variance and conditional expectation; weighted sums (continued).
	⇛ Normal distribution.
Week 8	⇛ Central Limit Theorem; sampling distributions.
	⇛ 10/16/2017 (Monday): MIDTERM.
Week 9	⇛ Confidence intervals (one population) for means & proportions.
	⇛ Confidence intervals (two populations: random and paired data).
Week 10	⇛ Confidence intervals (two populations: random and paired data) (continued).
	⇛ Confidence intervals (two populations: random and paired data) (continued).
Week 11	⇛ Hypothesis testing (one population) for means & proportions.
	⇛ Hypothesis testing (one population) for means & proportions (continued).
Week 12	⇛ Hypothesis testing (two populations: random and paired data).
	⇛ Hypothesis testing (two populations: random and paired data) (continued).
Week 13	⇛ *No class (Thanksgiving).*
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Week 14	⇛ Time series modeling.
	⇛ Time series modeling (continued).
Week 15	⇛ 12/07/2017: Team projects are due.
	⇛ Finish remaining material.
Week 16	⇛ 12/11∼15/2017 (exact date TBA): FINAL EXAM.

University and School Policies

- **Academic Integrity.**
  Syracuse Universitys Academic Integrity Policy Syracuse Universitys Academic Integrity Policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities.

The policy also prohibits students from submitting the same work in more than one class without receiving written authorization in advance from both instructors. Under the policy, students found in violation are subject to grade sanctions (including course failure) determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered as described in the Violation and Sanction Classification Rubric. SU students are required to read an online summary of the Universitys academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice.

- **Academic Accommodations for Students with Disabilities.**
  If you need accommodations for a disability, please contact the Office of Disability Services (ODS), located at 804 University Avenue, room 309, or call (315) 443-4498, TDD: (315) 443-1371 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented "Disabilities Accommodation Authorization Letters," as appropriate. Since accommodations may require early planning and are not provided retroactively, please contact ODS as soon as possible. You need to inform/remind me *at least 2 weeks prior to the quizzes, midterm, or final exam* if you need extra accommodations.

- **Religious Observances.**
  Syracuse University's religious observances policy recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes and by the submission deadline for flexibly formatted classes. In addition to following the necessary steps on MySlice, if a holiday coincides with a quiz deadline or exam, you must inform me *at least one week in advance*, to allow me for the time to arrange for you to take/submit the assignment early.

- **Verification of Medical Condition.**
  Excuses for class absences for medical reasons will be given only if such absences are advised by a health care provider at the Health Center, based on clinical findings and prescribed treatment recommendations. Excused notes will not be given solely to confirm a visit to the Health Center. For complete details on excuse notes, visit `http://health.syr.edu/students/policies.html`.

- **Work Produced by Students as Part of this Course May Be Used for Educational Purposes.**
  I may use academic work that you complete this semester in subsequent semesters for educational purposes. Before using your work for that purpose, I will either get your written permission or render the work anonymous by removing all your personal identification.