Cleveland State University Mathematics Department

Faculty: Linda M. Quinn, PhD
Office: RT 1512
Office Hours: TTh 9:00-10:00am; TTh 2:30-3:30pm; and by appointment
Office Phone: 216-687-4691
E-mail: l.quinn@csuohio.edu
Prerequisite: For MTH435: MTH 347 with a C or better AND senior standing
For MTH593/597: at least one statistics course OR permission of instructor
Drop Dates: January 29 (drop) and April 1 (withdrawal with a “W”)

Section: MTH435 (3cr) MTH593 (4 cr) MTH597 (3 cr)
Class Meetings: TTh 4:00-5:50pm

Last Day of Instruction: T, April 5th Th, May 5th T, April 5th
Final “Exam” Period: Th, April 7th T, May 10 4:00-6:00 pm Th, April 7th


OPTIONAL READING:
- SAS, SPSS, Minitab, and R manuals

COURSE DESCRIPTION: This course assigns students to work in consulting teams with university or community partners on real-world case studies of statistical methods learned in previous courses. Students prepare written reports and oral presentations that discuss the findings of the analysis. Topics specific to this course include sample size determination, reliability and validity, and missing data imputation. In addition, students learn data manipulation and graphics using a variety of software to include SAS, SPSS, Minitab, and R.

COURSE OBJECTIVES:
- Students will understand the ethics of research and collaboration in university, industrial, and government settings (CITI/IRB).
- Students will be independent and peer learners (learning circles, statistical procedures project).
- Students will be able to manipulate and clean data for use in a statistical analysis (Consulting).
- Students will be able to take reproducible random samples from a population (Randomization project)
- Students will be able to create a randomization schema for an experimental design (Randomization project)
- Students will be able to design a valid and reliable instrument (Psychometrics).
- Students will be able to assess the impact of missing data or its imputation on analyses (Articles).
- Students will be able to assess the impact of sample size on the analysis (Articles).
- Students will be able to investigate and apply new statistical analyses in multiple software packages (statistical procedure and consulting projects).
• Students will be able to work in a multi-disciplinary collaborative environment (learning circle projects).
• Students will be able to effectively communicate statistical information formally and informally, written and oral, to a non-statistical audience (multiple presentations and reports)
• Students will be able to manage multiple projects at the same time (multiple assignments at same time).

**TEACHING APPROACH:** This course is taught with the expectation that statistics as a subject is best learned in the context of research problems. There will be multiple topics per week discussed, consistent with the multi-tasking statistical consultant. The majority of the class, students will be using guided learning to understand different statistical topics, similar to what a consultant may need to need to do. There will be guest speakers/practicing consultants. We will be reading research articles and making presentations.

**GRADUATE (MTH593/MTH597) vs. UNDERGRADUATE(MTH435):** Graduate students are expected to complete all the assignments that are made to the undergraduates and engage in research and consulting projects at a more advanced level. They will also complete additional statistics topics, will use multiple software packages, and will have challenge problems on the assessments. Graduate students and undergraduate students will have a differing amount of points to earn in the course. The grading scale, based on overall course average, is identical for both groups; however, each group will have different point values for different assignments. There will be differing points for the two sections for graduate students due to the differing length of the courses.

A = 93-100%  A- = 90-92.9%
B+ = 87-89.9%  B = 83–86.9%  B- = 80-82.9%
C+ = 77-79.9%  C = 70–76.9%
D = 60-69.9%

**ASSESSMENT AND GRADING:** Please note well: There may be multiple assignments due in close proximity to each other. Please budget and plan accordingly. Grades will be based on:

1. **Consulting Project (25%)** – a consulting team will take on a consulting project for the semester. This may require arranging meeting times, outside of class time. It will require data management, descriptive and inferential analyses.
2. **Psychometrics (25%)** – this will be follow our textbook
3. **Random Sampling & Randomization Schemas (15%)** – each student will be able to select random samples from a population that can be replicated. Each student will be able to construct a randomization assignment schema that can be replicated. (UG=2 types, GRAD=3 types)
4. **CITI / Research Ethics (10%)** this project will be a self taught course that is strongly suggested for all CSU researchers conducting research. It should enable students to understand the importance of federal guidelines on the protection of human subjects and their role as a responsible and ethical researcher. There are two courses to complete:
   o Responsible Conduct of Research Basic Course, Stage 1 (ALL)
   o Social & Behavioral Research Investigators, Basic Course (GRAD)
After completion of the course, print out the completion certificate and/or the course completion record. Your grade will be based on the overall points earned versus points available.

5. **Article Reviews (10%)** – each student will be assigned to learning circles that will review related research articles on sample size calculations, missing data imputation, or other consulting topics and then each circle will provide a short presentation for a hypothetical client based on a related problem.

6. **Self-guided Topics (10%)** – students will each self-learn with guidance, software, or a statistical topic or procedure that is new to them and present

7. **Business Etiquette (5%)** – Resumes, interviews

**ATTENDANCE/TARDINESS:** Students are strongly encouraged to attend all class meetings. While there are occasionally good reasons to miss class, regular attendance (awake and listening) will assist you in learning. Further, active participation is encouraged and will contribute positively to your grade. Students tend to do well in the tests if they do not miss too many classes. Furthermore, students are expected to be aware of any changes in the dates of assignments or tests. Printed handouts will only be available the day they are handed out. After that, you may retrieve them from Blackboard. Attendance sheets will be passed around most class days. If you are late to class or leave early, please do so with minimal disruption to the classroom environment.

**CELL PHONES:** Cell phones should be turned off or placed on vibrate during class. Test messaging, checking email, and web surfing are all not appropriate when the instructor is talking or you are doing class work. Such behavior is grounds for removal from the class.

**ACADEMIC HONESTY:** Acts of academic dishonesty (cheating, plagiarism—includes not citing sources, submission of work for more than one class, fabrication, fraud, etc.) are expressly forbidden. Cheating includes copying or receiving help from another student on exams or quizzes and all work that is expressly an individual assessment. Merely copying someone’s work or allowing someone to copy your work is also considered cheating. Additionally, attaching student names to a group project that did not contribute substantially to the final work product is also cheating. Infringements will be dealt with according to CSU policy. If cheating occurs, the student will receive a grade of 0 for that component of the course. If cheating occurs on the final exam, the student will receive a grade of F in this course. Information regarding the official CSU policy regarding cheating and plagiarism can be found in the CSU Code of Student Conduct at www.csuohio.edu/studentlife/StudentCodeOfConduct.pdf

**COURSE WITHDRAWALS:** The last day to drop (without a “W”) and the last day to withdraw are at the top of the syllabus. Withdrawing from the course may put you in violation of the federally mandated standards for academic progress (SAP) that you must maintain to be eligible for financial aid. You may refer to http://www.csuohio.edu/moneysmarts/financial-impacts-drops-and-withdrawals about the implications of withdrawing from the course for your financial aid or visit Campus 411.

**STUDENTS WITH DISABILITIES:** Students with documented disabilities are entitled to reasonable accommodations if needed. If you believe you need accommodations, please see Office of Disability Services at 216-687-2015 in MC 147 (www.csuohio.edu/offices/disability).
STUDENT WORK FOR COURSE PORTFOLIO: The professor reserves the right to retain, for pedagogical reasons, either the original or a copy of your work submitted either individually or as a group project for this class. Students’ names will be deleted from any retained items.

OTHER RESOURCES / ASSISTANCE TOWARDS SUCCESS: The instructor will place additional resources on Blackboard. If you find other resources that you think may be helpful to your classmates, please give them to the instructor for placement on Blackboard.

Directions to get into the CITI system.

User Name:___________________________ Password:___________________________

CITI Course in the Responsible Conduct of Research (RCR)

Registration Instructions
The CITI RCR course materials are available through Cleveland State University’s CITI Program Account, which also houses the Human & Animal Research training modules. The courses are independent of each other and can be taken separately. All CITI training modules are available at no cost to the individual user. Remember to retain your username and password to re-enter the RCR course at the login page.

Instructions:
A. Start at the CITI Home Page (https://www.citiprogram.org/). If you do not already have a CITI account, proceed to Section B. If you do have a CITI account, proceed to Section C.

B. New CITI Users:
   1. Click on the “Register Here” link:
   2. Select your institution: under “Participating Institutions” choose Cleveland State University from the drop menu. The three other fields should remain blank.
   3. Create Username and Password (record above for future reference).
   4. Create security question and answer.
   5. Enter first and last name.
   6. Enter your preferred e-mail address (should use the email associated with CSU)
   7. Answer remaining items and click “Submit.”
   8. Proceed to Section C below.

C. Returning CITI Users:
   1. Enter Username and Password:
   2. Click “Add a Course or Update Your Learner Groups.”
   3. Scroll to Question #3 and select “Enroll me in RCR.” You may also choose other categories in Questions 1 and 2 .
   4. Click “Continue.”

D. From the “My Courses” section of the Main Menu, select “Responsible Conduct of Research Basic Course, Stage 1” by clicking the “Enter” hyperlink to the right. This will take you to your personal “Gradebook” which lists the required RCR modules, the date completed, and your scores.
**VERY TENTATIVE SCHEDULE:** A tentative schedule is posted and updated using Blackboard. Changes to this schedule will be announced in class. It is the student’s responsibility to attend class and be aware of any changes to the schedule. Please realize in consulting, there are sometimes flexible deadlines and sometimes rigid deadlines.

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