**The Department of Sociology and Anthropology**
**Sociology 5102F, Fall Term 2024**
**Multiple Regression Analysis**

**Instructor:** Dr. Zhiqiu Lin

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**Class and Lab Meeting Time**:
weekly classes: 10:35 am - 12:25 am, Tuesdays
computer labs: 1:35 pm -2:25 pm, Tuesdays

## Method of Delivery: in person at Carleton University Campus

**Course Description:**
This course is designed to familiarize the students with the basic properties of the general linear models, and to give students the detailed working knowledge of multiple regression analysis including both OLS and logistic regression analysis, as they are the very foundations for studying any other multivariate statistical methods. The course will concentrate on many practical issues concerning the applications of multiple regression analysis, such as regression assumptions, diagnostic procedures, modeling categorical independent and dependent variables (i.e., dummy/binary variables) and statistical interactions.

This is a graduate course in applied quantitative research methods. Therefore, the course materials will be presented based on the assumption that the students who enroll in this course have already completed an undergraduate course in social statistics, such as SOCI 3002, or have good working knowledge of basic statistics. This implies that the students have a thorough understanding of basic statistical concepts such as variance, standard deviation, correlation, and statistical inferences, hypothesis testing, and good working knowledge of simple linear regression analysis. Students who are weak on descriptive or inferential statistics should independently review the related materials in an introductory social statistics textbook before and during the first two weeks of the term. Elifson's Fundamentals of Social Statistics (3rd edition) provides useful discussions of these topics.

Students are expected to learn the course materials through lectures, readings, problem solving and participation in computer laboratory sessions. Computer labs are an important component of this course; they are designed to familiarize students with basic SAS programming and to give each student "hands-on" experience with SAS programming in retrieving, managing, and analyzing social science data using various statistical methods including the general linear models and related statistical techniques.

Please note that as this is a graduate course with a limited class meeting time, the past students have characterized the course works heavy including readings, computer lab works, assignments, and a final research project. Therefore, *students are expected and should prepare to spend a considerable amount of time in studying course materials and SAS, and in completing course assignments and a final research project independently. The instructor will be happy to answer any questions in their studies but will not provide the answers to the assignments. In addition, all the teaching contents described in the course outline are necessary components of the course and any requests to cut course components will not be considered.*

**Reading (s)/Textbook (s):**

1) Melissa A. Hardy, *Regression With Dummy Variables,* A Sage University Paper #93, Newbury Park: Sage Publications, Inc. 1993. (An e-copy of this text is available in library reserves for this course on Ares which can be accessed from our course website.)

2) Paul D. Allison, Multiple Regression: A primer, California: Pine Forge Press, 1999. (This text (both physical text and e-copy of this text have been ordered through Carleton Bookstore)

3) J. Jaccard, R. Turrisi, and C. Wan, *Interaction Effects in Multiple Regression,* A Sage University Paper #72, second edition, Newbury Park: Sage Publications, Inc. 2003. (An e-copy of this text is available on Ares.)

4) Scott Menard, *Applied Logistic Regression Analysis, A* Sage University Paper #106, Newbury Park: Sage Publications, Inc. Second edition, 2001. (An e-copy of this text is available on Ares.)

5) R. Freund and R. Littell, SAS System for regression (Third edition), SAS Institute, 2000. (This text has been ordered through Carleton Bookstore, but you can also purchase it from Amazon or any other online bookstores)

6) William D. Berry, *Understanding Regression Assumptions,* A Sage University Paper, #2, Newbury Park: Sage Publications, Inc. 1993. (An e-copy of this text is available on Ares.)

**Course Requirements & Methods of Evaluation**

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**Methods of Evaluation**

**1) Assignments**

(a) There will be three assignments (value: 15% each).
(b) Value: 45% in total.

**2) Presentation of the final research project proposal (value: 5%)**

**3) Independent take-home practice research project (Value: 50%)**