

## SOCIOLOGY 4FF3: APPLICATIONS OF QUANTITATIVE METHODS IN THE SOCIAL SCIENCES

Winter 2018

Day and Time of Classes: Thursday 12:30-2:20pm

Class Location: KTH/712

Instructor: Marisa Young

Ext.: 23621

Office Hours: Wednesday 12:30-1:30pm

Location: KTH/640

Email Address: myoung@mcmaster.ca

### COURSE DESCRIPTION

This course is an applied research course that involves intensive writing requirements and the use of a statistical software package to carry out secondary data analyses on publically available community datasets. Throughout this course, students will be given an introduction to the nature of association and the logic of controlling for variables. We will begin by introducing standard analytical techniques, including bivariate regression, correlation, and multiple regression. Students will also learn extensions of the standard multivariate regression model that reflect its flexibility, including interaction effects between variables (intersections), nonlinear relationships, and logistic regression for dichotomous outcomes. All lessons will require applied components, where students will be working directly with data using a preferred statistical software program for the social sciences.

### COURSE OBJECTIVES

By the end of the course, you will:

- Advance your understanding of the importance of advanced statistical approaches in the social sciences.
- Be able to effectively analyze and interpret results from secondary data analysis.
- Be knowledgeable of the importance and meaning of statistical inference, and comprehend the reasoning of multivariate regression analysis.
- Understand when necessary to employ analytical techniques beyond the traditional multivariate regression model
- Be able to present research results from secondary data analysis in forms similar to those of published research in the social sciences.

### LEARNING OUTCOMES

This course addresses several University Undergraduate Degree Level Expectations (see, <http://c1l.mcmaster.ca/COU/pdf/Undergraduate%20Degree%20Level%20Expectations.pdf>).

- Sociologists rely on a range of analytical tools to test hypotheses and answer research questions about the social world. Gaining knowledge of these diverse approaches will enhance students' depth and breadth of knowledge, as well as advance their skills in conducting original research.
- Depending on the research question asked and the nature of the data analyzed, researchers must use more complex statistical tools beyond standard regression techniques. Students will learn to evaluate the appropriateness of different approaches and techniques to answering research questions, depending on the variables available.
- Students will learn how to output and present research results in a professional manner.
- This course will further develop students' writing skills and their comprehension of published research using advanced quantitative research techniques.

PREREQUISITE: SOCIOL 3FF3 and enrolment in Level IV of any Honours Sociology (Specialist Option) program or permission of the department.

ANTIREQUISITE: SOCIOL 3H06 A/B.

### OVERVIEW

This course is a follow-up to a first methods course that includes some introduction to descriptive and inferential statistics and the logic of multivariate analysis. We begin by going back to go forward, reviewing some material on the fundamental building blocks of statistical theory and statistical inference.

We will look at tables to establish the nature of association and the logic of controlling for variables, and then introduce regression, correlation, and multiple regression. Multiple regression is a universal technique used in most disciplines that apply quantitative data analysis.

Near the end of the course, we will consider the extensions of this model, including interaction effects between variables (intersections), nonlinear relationships, and logistic regression for dichotomous outcomes.

### STATISTICAL SOFTWARE

We will be using a program called the Statistical Analysis System (SAS); a popular program among social scientists, public organizations, and private businesses. You are not required to buy this program for your personal computer. There is a free downloadable version of SAS University. I plan to provide additional information about this software in the first two weeks of the course.

### REQUIRED WORK

#### *Assignments and Presentations*

There will be two computer assignments in which you will analyze data I provide. The first assignment will be on cross-classification and tables; the second will use multiple regression. You will present on your multiple regression results towards the end of the course. I will teach the use of SAS and provide detailed instruction about the data you will analyze throughout the course.

Assignments are written up as short papers meant to analyze a specific research question, following the requirements of the question(s) in the assignment. Results from your computer analyses can be embedded into your assignment as tables.

**\*Important Note\*** In completing the assignments (and presentation) I expect students to work in groups—the membership of which I will determine. You will be working with the same group members for both assignments. I encourage group work for multiple reasons: (1) it allows students to distribute the workload; (2) it encourages collaboration and cooperation among students; and, (3) it ensures students have access to statistical software outside of class time.

#### *Examinations*

In addition to the assignment and presentation, there will be an in-class term test, and a final exam during the scheduled exam period. The term test will focus on problems, including some calculation and/or interpretation, but will also include some conceptual questions. The final is non-cumulative.

## DUE DATES AND WEIGHTS FOR REQUIRED WORK:

| <b>Assessment or Task</b>  | <b>Date</b> | <b>Weights</b> |
|----------------------------|-------------|----------------|
| 1. Assignment 1 (proposal) | February 8  | 15%            |
| 2. Term Test               | February 15 | 20%            |
| 3. Presentation            | April 5     | 15%            |
| 4. Assignment 2 (analyses) | April 12    | 20%            |
| 5. Final Exam              | Exam period | 30%            |

## LATE ASSIGNMENTS & MISSED TESTS

Late assignments will be deducted 5% per day starting immediately after the designated due date and time has passed. Students who miss a test or assignment deadline due to extremely special circumstances must contact me at least 48 hours prior by email and provide formal documentation as outlined below under Departmental/University Policies.

## AVENUE TO LEARN

Avenue will be used in this course primarily for two purposes – to post: 1) data, assignments, SAS examples, and other course materials; and 2) most lecture Power Point materials, along with helpful aids related to course material.

## REQUIRED READING

1. **Allison, Paul.** 1999. *Multiple Regression: A Primer*. Thousand Oaks: Pine Forge Press\*
2. **Lewis-Beck, Michael S.** 1980. *Applied Regression: An Introduction*. Beverley Hills, CA: Sage Publications\*\*
3. **Hardy, Melissa.** 1993. *Regression with Dummy Variables*. Beverley Hills, CA: Sage Publications\*\*
4. **Pampel, Fred.** 2000. *Logistic Regression*. Beverley Hills, CA: Sage Publications\*\*
5. **Jaccard, James and Robert Turrisi.** 2003. *Interaction Effects in Multiple Regression*. Beverley Hills, CA: Sage Publications\*\*

\*Available at *McMaster University's Titles Bookstore*

\*\*Available through the *McMaster Library (online or offline free access)*

~All additional readings will be available through *Avenue to Learn*

## ACADEMIC DISHONESTY:

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at <http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf>

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

Students will be required to submit their work electronically and in hard copy so that it can be checked for

academic dishonesty.

#### DEPARTMENTAL/UNIVERSITY POLICIES:

Do NOT fax assignments. Please see your instructor for the most appropriate way to submit assignments.

The Sociology staff do NOT date-stamp assignments, nor do they monitor the submission or return of papers.

The McMaster Student Absence Form (<http://www.mcmaster.ca/msaf/>) is a self reporting tool for Undergraduate Students to report absences that last up to 3 days and provides the ability to request accommodation for any missed academic work. Please note, this tool cannot be used during any final examination period.

You may submit a maximum of 1 Academic Work Missed request per term. It is YOUR responsibility to follow up with your instructor immediately regarding the nature of the accommodation.

If you are absent more than 3 days, exceed 1 request per term, or are absent for a reason other than medical, you MUST visit your Associate Dean's Office (Faculty Office). You may be required to provide supporting documentation.

This form should be filled out when you are about to return to class after your absence.

Students should check the web, the white board and the Undergraduate Bulletin board outside the Sociology office (KTH-627) for notices pertaining to Sociology classes or departmental business (eg. class scheduling information, location of mailboxes and offices, tutorial information, class cancellations, TA job postings, etc.).

Computer use in the classroom is intended to facilitate learning in that particular lecture or tutorial. At the discretion of the instructor, students using a computer for any other purpose may be required to turn the computer off for the remainder of the lecture or tutorial.

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check his/her McMaster email and course websites weekly during the term and to note any changes.

It is the policy of the Faculty of Social Sciences that all e-mail communication sent from students to instructors (including TAs), and from students to staff, must originate from the student's own McMaster University e-mail account. This policy protects confidentiality and confirms the identity of the student. It is the student's responsibility to ensure that communication is sent to the university from a McMaster account. If an instructor becomes aware that a communication has come from an alternate address, the instructor may not reply at his or her discretion.

#### Religious, Indigenous and Spiritual Observances (RISO)

The University recognizes that, on occasion, the timing of a student's religious, Indigenous, or spiritual observances and that of their academic obligations may conflict. In such cases, the University will provide reasonable academic accommodation for students that is consistent with the Ontario Human Rights Code.

Please review the [RISO information for students in the Faculty of Social Sciences](#) about how to request accommodation.

# January 2018

| Sunday    | Monday    | Tuesday   | Wednesday | Thursday                                    | Friday    | Saturday  |
|-----------|-----------|-----------|-----------|---|-----------|-----------|
|           | <b>1</b>  | <b>2</b>  | <b>3</b>  | <b>4</b><br>INTRODUCTION                    | <b>5</b>  | <b>6</b>  |
| <b>7</b>  | <b>8</b>  | <b>9</b>  | <b>10</b> | <b>11</b><br>REGRESSION<br>REVIEW           | <b>12</b> | <b>13</b> |
| <b>14</b> | <b>15</b> | <b>16</b> | <b>17</b> | <b>18</b><br>INTRODUCTION<br>TO SAS         | <b>19</b> | <b>20</b> |
| <b>21</b> | <b>22</b> | <b>23</b> | <b>24</b> | <b>25</b><br>INTRODUCTION<br>TO SAS (CONT.) | <b>26</b> | <b>27</b> |
| <b>28</b> | <b>29</b> | <b>30</b> | <b>31</b> |   |           |           |
|           |           |           |           |   |           |           |

# February 2018

| Sunday | Monday    | Tuesday   | Wednesday | Thursday                                   | Friday    | Saturday |
|--------|-----------|-----------|-----------|--|-----------|----------|
|        |           |           |           | <b>1</b><br>DUMMY<br>VARIABLES             | <b>2</b>  | 3        |
| 4      | <b>5</b>  | <b>6</b>  | <b>7</b>  | <b>8</b><br>TEST REVIEW<br>(ASSIGN. 1 DUE) | <b>9</b>  | 10       |
| 11     | <b>12</b> | <b>13</b> | <b>14</b> | <b>15</b><br>TEST 1                        | <b>16</b> | 17       |
| 18     | <b>19</b> | <b>20</b> | <b>21</b> | <b>22</b><br>READING WEEK                  | <b>23</b> | 24       |
| 25     | <b>26</b> | <b>27</b> | <b>28</b> |  |           |          |
|        |           |           |           |  |           |          |

# March 2018

| Sunday | Monday    | Tuesday   | Wednesday | Thursday  | Friday    | Saturday |
|--------|-----------|-----------|-----------|---|-----------|----------|
|        |           |           |           | <b>1</b><br>TYPES OF<br>RELATIONSHIPS           | <b>2</b>  | 3        |
| 4      | <b>5</b>  | <b>6</b>  | <b>7</b>  | <b>8</b><br>INTERACTIONS                        | <b>9</b>  | 10       |
| 11     | <b>12</b> | <b>13</b> | <b>14</b> | <b>15</b><br>INTERACTIONS<br>(CONT.)            | <b>16</b> | 17       |
| 18     | <b>19</b> | <b>20</b> | <b>21</b> | <b>22</b><br>INTRO TO<br>LOGISTIC<br>REGRESSION | <b>23</b> | 24       |
| 25     | <b>26</b> | <b>27</b> | <b>28</b> | <b>29</b><br>ASSIGNMENT 2<br>WORKSHOP           | <b>30</b> | 31       |
|        |           |           |           |   |           |          |

# April 2018

| Sunday | Monday | Tuesday | Wednesday | Thursday  | Friday | Saturday |
|--------|--------|---------|-----------|---|--------|----------|
| 1      | 2      | 3       | 4         | 5<br>PRESENTATIONS<br>&<br>TEST REVIEW<br>(ASSIGN. 2 DUE) | 6      | 7        |
| 8      | 9      | 10      | 11        | 12  | 13     | 14       |
| 15     | 16     | 17      | 18        | 19  | 20     | 21       |
| 22     | 23     | 24      | 25        | 26  | 27     | 28       |
| 29     | 30     |         |           |   |        |          |
|        |        |         |           |   |        |          |