



University of Manitoba
Faculty of Science
Department of Statistics
STAT 4700 (A01) Winter 2019
Instructor: Professor Xikui Wang

Contents

1	Course Details	1
2	Instructor Contact Information	2
3	General Course Information	2
4	Course Goals and Intended Learning Outcomes	2
5	Recommended Reading Materials	3
6	Course Evaluation and Grading	3
7	Some Important Dates	4
8	Expectations: CARE	4
9	Academic Integrity and Student Accessibility Services	4
10	Using Copyrighted Materials	4

1 Course Details

Course Title and Number	Statistical Consulting, STAT 4700 (A01), CRN 57033
Number of Credit Hours	3
Class Times and Days of Week	10:00 am - 11:15 am, Tuesdays/Thursdays
Location for classes	316 Machray Hall
Course Material	All course materials are posted on UMLearn web
Pre-Requisites	Consent of Department

2 Instructor Contact Information

Instructor Name	Dr. Xikui Wang
Position	Associate Dean, Faculty of Graduate Studies Professor, Department of Statistics
Office Location	500 University Centre
Office Hours	Tuesdays/Wednesdays 11:30 am - 1:00 pm; or by appointment (I often have meetings. Please call or email to confirm appointment.)
Office Phone Number	204-474-9511
Email Address	xikui.wang@umanitoba.ca When feasible, I normally return a call or an email within 24 hours.

3 General Course Information

The role of a statistics consultant.

This is a non-traditional course to build skills of collaboratively investigating interdisciplinary research problems and communicating (in writing and orally) statistical results with laymen. We discuss the interaction between statisticians and clients (researchers, scientists, business people, etc.) and the role of statistics consultants. The overarching goal is to provide basic ideas of statistical consulting and some fundamental skills of providing effective statistical consulting service. The emphasis is on enhancing useful techniques and skills of developing comprehensive and creative approaches to real world problems involving statistical uncertainty.

Critical thinking and problem solving are required. Knowledge of fundamental probability techniques and statistical methods are essentially important. Course work will involve discussing relevant issues in classes, formulating approaches to practical problems, cleaning, organizing and analyzing data, writing statistics reports, and communicating ideas and results in writing and orally.

4 Course Goals and Intended Learning Outcomes

The goal is to develop and enhance some skills to succeed as a statistical consultant (doing the right things and doing things right): assessing your role, utilizing your statistics expertise, applying non-statistical skills, and communicating statistical ideas and results.

- **proper judgement and problem formulation:** formulate general research goals and specific statistics objectives, understand research problems, verify fundamental assumptions for their plausibility, investigate important (methodological, practical, computational and logistic) issues, determine the scope of research problems, clean, organize and analyze data, identify the challenges faced by and the role played by the statistics consultant;
- **analytic and computing skills:** choose the philosophic approach (Bayesian, frequentist), identify the statistical models and specific statistical methods required, determine the statistics software and packages needed, break down the research problems with gradually evolving conditions;
- **comprehension and generalization:** see the forest from the trees, learn by analogy, and generalize ideas and draw methods about other cases from related examples;

- **critical thinking and right reasoning:** critically appraise and compare the strengths and limitations of different methods (“all that glitters is not gold!”), elaborate on the pros and cons of the statistical approaches and results, as well as their logistic limitations and practical constraints;
- **effective (written and oral) communication and interpersonal skills:** communication is the lifeblood of successful consulting, respect each other, clarify non-statistical jargons by asking appropriate questions, maintain research integrity and ethics standards, exercise good statistical practice and project management skills.

Upon completing the course, we hope you become skillful in applying statistical and non-statistical skills and are prepared to take the challenges as a potential statistical consultant.

5 Recommended Reading Materials

- J. Spurrier. *The practice of statistics: putting the pieces together*, Duxbury Press, 1999.
- J.R. Boen and D.A. Zahn, *The human side of statistical consulting*, Research Methods Series, Lifetime Learning Publications, 1982.
- J. Derr, *Statistical consulting: a guide to effective communication*, Duxbury Thomson Learning, 2000.
- J. Cabrera and A. McDougall, *Statistical consulting*, Springer, 2002.
- D.J. Hand and B. Everitt, *The statistical consultant in action*, Cambridge University Press, 1987.
- G.J. Hahn and N. Doganaksoy, *A career in statistics - beyond the numbers*, Wiley, 2011.
- R.R. Newton and K.E. Rudestam, *Your Statistical Consultant*, (Second Edition), Sage, 2013.

6 Course Evaluation and Grading

Classroom participation:	10%:	(Attendance and engagement)
Three Assignments:	45%:	(Three assignments)
Analysis of dataset (report):	20%:	(Part one)
Consulting Project (report):	25%:	(Part two)

Grading system:

Letter Grade	A+	A	B+	B	C+	C	D	F
Final % mark	90-100	80-89	75-79	70-74	65-69	60-64	50-59	Less than 50

7 Some Important Dates

- **First class:** Tuesday January 8, 2019
- **Course drop date:** January 18, 2019
- **Winter term break:** February 18 - 22, 2019 (no classes)
- **Voluntary withdrawal deadline:** March 20, 2019
- **Graduate student group presentations:** April 2 and 4, 2019

8 Expectations: CARE

I expect you to maintain academic integrity and provide CARE (Collaboration/Commitment, Attitude/Attention, Review/Research, Exploration/Engagement).

You can expect me to provide CARE (Courage, Aspiration, Resource, Enthusiasm), dispel doubts, and most importantly, **inspire** you. I love teaching and the meaning of my teaching is to help you find the meaning of learning. My true success is helping you to succeed.

9 Academic Integrity and Student Accessibility Services

Links to resources that describe academic dishonesty can be found at: <http://www.umanitoba.ca/faculties/science/undergrad/resources/webdisciplinedocuments.html>

It is important that you understand what constitutes academic dishonesty and that you are familiar with the very serious consequences.

If you are a student with a disability, please contact the Student Accessibility Services (SAS) for academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services, <http://umanitoba.ca/student/saa/accessibility/>
520 University Centre, (204) 474-7423, Student_accessibility@umanitoba.ca

10 Using Copyrighted Materials

Please respect copyright and we will use copyrighted content in this course. All course notes, assignments, tests, exams, practice exams and solutions are the intellectual property of your instructor or the Department of Statistics. Reproduction or distribution of these materials is strictly forbidden without their consent. For more information, see the University's Copyright Office website at http://umanitoba.ca/copyright/orcontactum_copyright@umanitoba.ca.

Dr. Xikui Wang and the University of Manitoba hold copyright over the course materials, presentations and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission from Dr. Xikui Wang. Course materials (both paper and digital) are for the participant's private study and research.