

University of Manitoba  
Faculty of Science  
Department of Statistics  
Fall 2011

**Course Title:**An Introduction to Nonparametric Statistics

**Course No:** STAT 3380

**Class Time:** MWF 11:30-12:20p.m.

**Location:** 315 Buller

**Office Hours:** T: 1:00p.m. – 2:00p.m. and Th: 10:00a.m. – 11:00a.m.

**Instructor:** Carrie Paquette

**Office:** 335 Machray Hall

**Telephone:** (204) 474-6040

**Email:** carrie.paquette@umanitoba.ca

I encourage students to contact me throughout the course whenever they feel the need. Whether you are asking a question about course material or are requesting to arrange a meeting, you can contact me by phone, email or in person. If my office hours don't work with your schedule please drop by anytime my door is open and I will be more than happy to speak with you. If I have to cancel office hours I will try and let you know in class, otherwise I will post a note on my office door. Always feel free to email me I usually respond quite quickly (within 24 hours), even on weekends...sometimes.

### Course Description

Parametric versus nonparametric inference; inference using ranks and order statistics; tolerance intervals; contingency tables; goodness-of-fit tests; examples from the social and physical sciences.

### Prerequisite

STAT 2000 (C), or the equivalent.

### Textbook:

- Applied Nonparametric Statistics, 2nd Edition, Wayne W. Daniel, Brooks/Cole, Duxbury Thomson Learning, 1990, ISBN: 0-534-91976-6.
- JMP, which can be accessed at <http://www.stats.umanitoba.ca/downloads/jmp>.

### Course Evaluation:

Term Tests (2): 30% for the best, and 20% for the worst  
Final Exam: 50%

For your final grade, I have the following “guarantees”:

Minimum Percent Grade Required	Letter Grade
90	A+
80	A
75	B+
70	B
65	C+
60	C
50	D

This means, for example, that if you obtain 80% or more, you will receive no worse than an A. Your grades will be posted on [www.stats.umanitoba.ca/gradebook](http://www.stats.umanitoba.ca/gradebook), it is your responsibility to ensure your grades are correct.

### Examination and Term Tests

There will be **two non-cumulative** “in class” midterm tests. The first midterm test is tentatively scheduled for **Monday, October 17, 2011**. The second midterm test is tentatively scheduled for **Monday, November 14, 2011**. There will be a 2 hour cumulative final examination to be scheduled by student records.

### JUMP Portal:

I will be making use of the JUMP Portal in order to post announcements, examples etc... It is your responsibility to check JUMP regularly. Be sure you have claimed your computer ID in order to access the course material.

**Voluntary Withdrawal** The voluntary withdrawal date is **November 16, 2011**, by which you will have received grades for the first term test and several assignments.

### Academic Integrity:

*A Note about Academic Dishonesty:* It is important that you understand what constitutes academic dishonesty and that you are familiar with the consequences. For descriptions of these terms and other issues, please see <http://umanitoba.ca/science/student/webdisciplinedocuments.html>.

*Important Note from the Dean of Science:* It is your responsibility to ensure that you are entitled to be registered in this course. This means that you have:

- the appropriate prerequisites, as noted in the calendar description, or have permission from the instructor to waive these prerequisites;
- not previously taken, or are concurrently registered in, this course and another that has been identified as “not to be held with” in the course description. For example, BIOL 1000 cannot be held for credit with BIOL 1020.

The registration system may have allowed you to register in this course, but it is your responsibility to check. If you are not entitled to be in this course, you will be withdrawn, or the course may not be used in your degree program. There will be no fee adjustment. This is not appealable. Please be sure to read the course description for this and every course in which you are registered.

## Course Outline:

- Introduction
- Review of basic statistics
  - Terminology
  - Hypothesis Testing
  - Measurement Scales
  - Differences between parametric and nonparametric methods
- Procedures that utilize data from a single sample
  - Inferences about a location parameter
  - Inferences about a population proportion
  - One-Sample runs test for randomness
  - Cox-Stuart test for trend
- Procedures that utilize data from two independent samples
  - Making inferences about differences between two location parameters
  - Making inferences about the equality of two dispersion parameters
- Procedures that utilize data from two related samples
  - Procedures for testing hypotheses about location parameters
  - Confidence interval procedures for median differences
  - Test for two related samples when data consists of frequencies
- Chi-Square tests of independence and homogeneity
  - Mathematical properties of the chi-square distribution
  - Chi-square test of independence
  - Chi-square test of homogeneity
- Procedures that utilize data from three or more independent samples
  - Extension of the median test
  - Kruskal-Wallis one-way analysis of variance by ranks
  - Multiple Comparisons
- Procedures that utilize data from three or more related samples
  - Friedman two-way analysis of variance by ranks
  - Multiple comparison procedures for use with Friedman test
- Other Topics (as time permits):
  - Goodness-of-fit tests