EFFECTIVE: JANUARY 2009
CURRICULUM GUIDELINES

A:	Division:	**EDUCATION**	Effective Date:		**JANUARY 2009**	

B:	Department / Program Area:	**GEOGRAPHY** **FACULTY OF HUMANITIES & SOCIAL SCIENCES**	Revision		New Course	**X**

If Revision, Section(s) Revised:
Date of Previous Revision:

Date of Current Revision: **September 2008**

C:	**GEOG 2251**	**D**:	**QUANTITATIVE METHODS IN GEOGRAPHY**	**E:**	**3**
	Subject & Course No.		Descriptive Title		Semester Credits

F: Calendar Description: This course in an introduction to the use of quantitative information in geography, including data collection, management, and analysis. Analytical procedures will include graphical presentation of data, descriptive statistics, application of probability and sampling theory, and inferential statistics. Examples will be taken from both physical and human geography. Computers and data analysis software will be used.

G: Allocation of Contact Hours to Type of Instruction / Learning Settings

Primary Methods of Instructional Delivery and/or Learning Settings:

Lecture and Lab

Number of Contact Hours: (per week /semester for each descriptor)

Lecture: **2 hrs. per week / semester**
Labs: **2 hrs. per week / semester**

Number of Weeks per Semester: **15**

H: Course Prerequisites:

One 2000-level Geography course and C grade or better in BC Principles of Math 11 (or equivalent), or permission of instructor

I: Course Corequisites:

NONE

J: Courses for which this Course is a Prerequisite

NONE

K: Maximum Class Size:

35

L: PLEASE INDICATE**:**

	Non-Credit
	College Credit Non-Transfer
X	College Credit Transfer:

SEE BC TRANSFER GUIDE FOR TRANSFER DETAILS (www.bctransferguide.bc.ca)

M: Course Objectives / Learning Outcomes:

At the conclusion of the course the successful student will be able to:

1.   Explain the role of quantitative information in geographic research and applications

2.   Demonstrate an understanding of basic descriptive statistics and regression methods as they apply to problem solving in Geography

3   Perform basic data manipulation, statistical calculations and graphical presentation by hand, and using computer spreadsheets or statistical software (e.g. Excel, SPSS, R)

4.   Evaluate the roles of probability theory and sampling distributions in drawing inferences about populations based on samples

5.   Identify when and where statistical procedures are appropriate

N: Course Content:

1.   Introduction
        -quantitative geography
        -statistics
        -nominal, ordinal, interval data
        -primary and secondary data
        -measurement and collection of data

2.   Visualization of data
        -    tables, graphs and maps

3.   Descriptive statistics
        -    central tendency
        -    variability

4.   Spatial data analysis
        -    areal and point data
        -    directional statistics

5.   Probability theory and distributions
        -    random variables
        -    discrete probability distributions
        -    continuous probability distributions

6.   Sampling and populations
        -    types of samples
        -    random sampling
        -    sampling distributions
        -    geographic sampling

7.   Parametric inferential statistics
        -    estimation
        -    hypothesis testing
        -    t-tests
        -    confidence intervals
        -    statistical significance

8.   Nonparametric statistics
        -    comparison of parametric and nonparametric tests
        -    examples of nonparametric tests

9.   Correlation
   - Pearson's product-moment correlation coefficient
   - nonparametric correlation coefficients
   - spatial autocorrelation

10.   Regression
   - simple linear regression model
   - goodness of fit
   - assumptions of linear regression
   - non-linear regression models
   - multiple regression analysis

11.   Analysis of Variance (ANOVA)

12.   Goodness of fit
   - Chi-Square testing

13.   Time series analysis
   - characteristics of time series
   - data homogeneity
   - smoothing

Methods of Instruction:

The course will employ a variety of instructional methods to accomplish its objectives, including some of the following: lecture, labs, observation, analysis and interpretation of geographic data, slides, videos, individual and/or team projects and small group discussions.

P: **Textbooks and Materials to be Purchased by Students:**

Texts will be updated periodically. Typical examples are:

Berk, K.N. and Carey, P. (2004) *Data Analysis with Microsoft Excel*. New York: Thomson.

Burt, J.E. and Barber, G.M. (1996) *Elementary Statistics for Geographers* (2nd ed.). New York: The Guilford Press.

Ebdon, David (1985). *Statistics in Geography* (2nd ed.). Oxford: Blackwell.

Fleming, M.C. and Nellis, J.G. (2000) *Principles of Applied Statistics.(2nd ed.)*. New York: Thomson Learning.

McGrew, J. Chapman and Monroe, Charles B. (2000) *An Introduction to Statistical Problem Solving in Geography*. Boston: McGraw Hill.

Moore, D.S. and McCabe, G.P. (2006) *Introduction to the Practice of Statistics* (5th ed.). New York: W.H. Freeman and Sons.

Pavkov, T.W. and Pierce, K.A. (2003) *Ready, Set, Go: A Student's Guide to SPSS 11.0 for Windows*. Toronto: Mc-Graw Hill

Rees, D.G. (2001) *Essential Statistics* (4th ed.). USA: Chapman and Hall/CRC.

Verzani, John (1996) *Using R for Introductory Statistics*. USA: Chapman and Hall /CRC.

Q: Means of Assessment:

The evaluation will be based on course objectives and will be carried out in accordance with Douglas College policy. The instructor will provide a written course outline with specific evaluation criteria during the first week of classes.

Evaluation will include some of the following:
-   Laboratory assignments with a combined value of up to 50%.
-   Multiple choice and short answer exams with a combined value of up to 50%.
-   A term project with a value of up to 25%.

An example of a possible evaluation scheme would be:

Laboratory Assignments	40%
Midterm Examination	25%
Final Examination	25%
Term Project	10%
	100%

Note: This course received a standing variance from Education Council in November 1999 to allow up to a 15% open book lab exam in the penultimate week of the semester. This is not a final exam; it is an assessment of student learning of lab work performed in the second half of the semester.

R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR

No.

Course Designer(s): K. Runnalls   Education Council / Curriculum Committee Representative

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Dean / Director   Registrar