

**KWANTLEN POLYTECHNIC UNIVERSITY  
BSN NURSING PROGRAM**

**NRSG 4120:  
Quantitative & Qualitative Data Analysis**

**Fall 2009  
September 11 – December 4, 2009**

<u>Course Materials</u>	
<u>Faculty</u>	June Kaminski, RN MSN PhD(c) <b>Office:</b> G 2014 <b>Phone:</b> (604) 599-3185 <b>Voicemail:</b> 9179  <b>Email:</b> junekaminski@shaw.ca or <a href="mailto:june.kaminski@kwantlen.net">june.kaminski@kwantlen.net</a>
<b><u>Course Credits &amp; Location:</u></b>	3.0 credits <b>Rooms: C2810 and G1050</b>
<b><u>Required Texts:</u></b>	Streubert-Speziale, H. & Carpenter, D. (2007). <i>Qualitative Research in Nursing: Advancing the Humanistic Imperative</i> . Philadelphia: Lippincott, 4th. Ed  Web: <a href="http://www.virtualcurriculum.com/N4120">http://www.virtualcurriculum.com/N4120</a>  <b>NOTE: A 3.5" disk or USB device are needed for Lab</b>
<b><u>Course Days and Times:</u></b>	<b>S10: Fridays</b> <b>C2810 8:00 – 9:50 am and</b> <b>G1050 10 am – 11:50 am</b> <b>4 hour block (1 hour self-guided time)</b>

**Course Description:**

In this course, students will be grounded in the techniques commonly used in the analysis of both quantitative and qualitative data. They will engage in the process of qualitative analysis through examining qualitative data, data coding, and thematic construction. Students will also examine a range of descriptive and inferential statistical approaches to quantitative analysis using a computer-based system.

**Ends In View:**

The purpose of this course is to explore the process of analyzing quantitative and qualitative data in nursing. The focus of the course is on the development of data recognition and analysis techniques for nursing and the process of performing data analysis to produce reportable results. Through readings, reflection, and engagement in data analysis processes, participants will have the opportunity to:

1. understand the research process
2. use common techniques for analysis of quantitative data, including measures of central tendency, cross-tabulation, comparisons of means, and correlation
3. use common approaches for analysis of text data including phenomenology, content analysis, matrix analysis, and grounded theory
4. use computer-based systems for data analysis
5. prepare a data analysis report
6. understand and critique data analysis techniques commonly used in health care or discipline specific research
7. critique a research article by judging if the findings and recommendations are appropriate
8. identify how current research in health care or discipline contributes to evidence-based practice

### **COURSE STRUCTURE & CONTENT:**

Data Analysis focuses on four key areas of study. These areas include:

- 1) Data Analysis within the research process
- 2) Qualitative Data Analysis techniques and process
- 3) Quantitative Data Analysis techniques and process
- 4) Application of Data Analysis results

#### **Data Analysis within the Research Process**

In this initial key area of study, the qualitative and quantitative research process is reviewed with an emphasis on the importance of data collection, analysis and interpretation.

#### **Qualitative Data Analysis techniques and process**

The second key area of study introduces the principles of collecting and analyzing qualitative data and themes in health care using computer-based programs. This includes phenomenological data, content analysis, matrix analysis and grounded theory analysis.

#### **Quantitative Data Analysis techniques and process**

The third key area of study introduces the principles of collecting and analyzing descriptive and inferential quantitative data in health care using common techniques and computer-based programs. This includes hypothesis testing, univariate statistics (i.e. central tendency, variability); inferential statistics (i.e. inference, probability); non-parametric techniques (i.e. chi square test, correlation coefficients); parametric techniques (i.e. t-test); multivariate statistics (i.e. analysis of variance).

#### **Application of Data Analysis results**

The fourth key area of study focuses on the integration and application of data analysis results in nursing practice, education, research and administration. An emphasis on the application to evidence-based practice in nursing will be integrated throughout the course.

## **Summary and Integration**

This course concludes with a summary and integrative review of the content.

## **Course Processes**

Students engage in a variety of learning processes to learn about data analysis, including active participation in discussions, the use of computer systems for data entry and analysis, practice in statistical calculations, analysis of mock data sets, analysis of interviews and focus groups, concept mapping, and critique of published research studies.

## **Course Resources**

Required readings are listed in the "In Preparation" section of each learning activity. Enrichment readings are recommended to further expand your knowledge about nursing inquiry, and may be listed in the "Resources" section of the learning activities.

## **Computer Access**

Computer access is crucial for this course, either at home or on campus. There are several areas on campus where student computer facilities are available. Labs in Buildings D and G are well equipped for student use, some with statistical software installed. Computers in the Learning Resource Center on the second floor of Building D are another possible area to do your work.

You will also need graphical access to the Internet (Firefox or Internet Explorer) to access research studies, databases, and other informative sites for study, practice, and research analysis.

Participants are expected to have or to develop basic computer skills, including statistical programs, wordprocessing, presentation skills, table and graph development, Internet browsing and downloading, email use including sending documents through attachments, and library searches. Each student must have a private email address that can receive attachments.

## **Policies and Procedures**

Students are expected to review the Student Resource Manual, the Kwantlen University College Calendar, and the online Kwantlen University College Policies and Procedures for pertinent policies to this course. Grading, Attendance, Plagiarism, Withdrawing from Courses, Student Conduct, Progression of Students, Applying for Awards and Scholarships, Late Assignments, and Cheating are all areas that should be reviewed and understood.

## **Evaluation**

Course grades will be calculated based on the sum of the individual assignment grades received. Students are reminded to review the Kwantlen University College Calendar for the grade criteria and parameters.

## **Course Assignments**

Further information is provided on the individual Course Assignments pages of this syllabus. The assignments are divided into two major foci: a Qualitative analysis project and Quantitative analysis worksheets completed by mastering smaller lab and self-directed components of these two assignments.

There is NO final or midterm examination for this course.

## **Nursing 4210 Data Analysis**

### **Assignment #1: Qualitative Data Analysis Project**

**Maximum Possible Mark:** 50 marks  
**Final Due Date: November 6, 2009**

This assignment will be completed using an integrated step-by-step approach during the first half of the course. Some of the work will be done during classroom lab experiences supplemented by self-directed effort. Attendance during scheduled lab times is highly recommended to ensure mastery of the various steps and processes taken to successfully complete this assignment.

#### **Guidelines:**

This assignment has six distinct stages - each will be worked on during one class period in the computer lab. To begin the project you will choose a small group of classmates to create research questions and plan the data collection, data analysis and final writeup of your findings.

#### **Step 1: Data Collection (begins Week 1). Worth 10/50 marks**

For your first assignment, you will need to collect and analyze qualitative data. Begin to consider a cluster of people you wish to collaborate with to collect this data. Your group can consist of 4 to 6 members. Sign up on the group list provided in class to begin this process.

As a group, you will need to decide what type of interview you are going to conduct to gather your qualitative data. The actual data collection will be planned and occur as a group effort. The data analysis phase will also be done as a group using the WEFT QDA computer software program.

- a) As a group, choose a minimum of five phenomenological research questions to use with at least five participants. You can choose to collect your data as a group using a focus group or individual interview type of environment. Or, you can ask the questions separately with a minimum of five individual participants. The goal is to collect a minimum of five pages of phenomenological data from five different participants. You can also collect data that your participants have written or typed out themselves, using hand delivery or email.
- b) You will need to create an informed consent form and have all participants sign it before collecting your interview data.
- c) Keep your collected data safe - you will need to hand in the research questions, raw data and consent forms as part of your submitted work for this assignment.

#### **Step 2: Data Input (begins Week 2) Worth 5/50 marks**

- a) To initiate this step you will need to have your data available in electronic form - as a text document (txt).
- b) Import your interview data into the QDA program as instructed during lab time.
- c) Be sure to save each file as a separate entity on your 3.5 floppy disk, CD or USB Flash device as backup.

**Step 3: Identify Themes (begins Week 3). Worth 10/50 marks**

- a) Input memos as appropriate as you begin to identify the themes inherent in your inputted data.
- b) As you scan your data, ensure that your themes are unique and merit a unique classification.
- c) Ensure that you save your work on your disk or device.

**Step 4: Group Themes (begins Week 4). Worth 7.5/50 marks**

- a) Continue to work with the themes inherent in your data by categorizing and grouping them appropriately.
- b) As you work with your data, notice which themes can be clustered or arranged to form "trees" or groups of interconnected themes.
- c) Save your work often.

**Step 5: Latent Analysis (begins Week 5). Worth 7.5/50 marks**

- a) Continue to analyze your data using advanced tools within the QDA software.  
You need to try a number of tools including the matrix, and creating a frequency table.
- b) Save your work..

**Step 6: Final Analysis Report (completed by Week 7). Worth 10/50 marks**

- a) Together, write your final 3 – 5 page narrative from your analyzed themes and subthemes.  
Create a demographic table, summarizing data about your participants. Also create a concept map to visually illustrate the major themes and important subthemes.
- b) Save your work.

**Summary of Grade Breakdown:**

**Maximum Grades**

<b>Step 1:</b> Five research questions Informed Consent Form Raw Data (minimum 5 narrative pages).....	10 marks
<b>Step 2:</b> Inputted data into QDA program.....	5 marks
<b>Step 3:</b> Identification of preliminary Themes.....	10 marks
<b>Step 4:</b> Thematic Grouping.....	7.5 marks
<b>Step 5:</b> Latent content analysis and matrix .....	7.5 marks
<b>Step 6</b> Final analysis report (narrative, demographics, concept map).....	10 marks

**TOTAL: 50 marks**

**DUE: Week 8**

## **Nursing 4210 Data Analysis**

### **Assignment #2: Quantitative Data Analysis Project**

**Maximum Possible Mark:** 50 marks  
**Final Due Date:** December 4, 2009

This assignment will be completed using an integrated step-by step approach during the second half of the course. Some of the work will be done during classroom lab experiences supplemented by self-directed effort. Attendance during scheduled lab times is highly recommended to ensure mastery of the various steps and processes taken to successfully complete this assignment.

#### **Guidelines:**

**Your mark for this half of the course will depend on your final grade on five quantitative worksheets. The worksheets will correspond to the various topics studied during the second half of the course. The five sheets will be handed out each week during class. Each sheet will be marked out of a maximum grade of 10, for a total mark out of 50.**

**Worksheet No. 1** - Descriptive Statistics, Frequency, Central Tendency, Variability

**Worksheet No. 2** - Inferential Statistics, Chi-Square

**Worksheet No. 3** - Descriptive/ Inferential Statistics, Relationships, T-test

**Worksheet No. 4** - Descriptive/Inferential Statistics, Relationships, Correlation Coefficients

**Worksheet No. 5** - Inferential Statistics, Analysis of Variance

**Nursing 4210: Data Analysis  
Fall 2009**

<b>SUGGESTED WEEKLY CLASS SCHEDULE</b>		
<b>WEEK</b>	<b>THEORY FOCUS</b>	<b>LEARNING ACTIVITIES</b>
1. Sep 11		Orientation to Course and Expectations
2. Sep 18	Data Analysis within the research process	Review of the Research Process Evidenced-based Practice and Data  <b><i>NOTE: lab content is italicized</i></b>
3 Sep 25	Qualitative Data Analysis techniques and process	Nature of the Data Principles of Data collection <i>Introduction to QDA software</i>
4. Oct 2	Qualitative Data Analysis techniques and process	Principles of Data analysis Overview of Methods – Phenomenology <i>QDA - inputting data</i>
5. Oct 9	Qualitative Data Analysis techniques and process	Principles of Data analysis Methods - Ethnography, Historical <i>QDA - analyzing themes</i>
6. Oct 16	Qualitative Data Analysis techniques and process	Principles of Data analysis Methods - Grounded Theory <i>QDA - thematic categories</i>
7. Oct 23	Qualitative Data Analysis techniques and process	Latent content analysis Concept mapping <i>QDA - content analysis and reporting</i>
8. Oct 30	Qualitative Data Analysis techniques and process	Matrix analysis - theory <i>QDA - Matrix analysis</i> <i>Final Narrative work in Word</i>

**SEE NEXT PAGE FOR QUANTITATIVE ANALYSIS SCHEDULE**

### SUGGESTED WEEKLY CLASS SCHEDULE

9. Nov 6	<p>Quantitative Data Analysis techniques and process</p> <p><b>Assignment #1 due</b></p>	<p>Nature of the Data (descriptive) Univariate Statistics (central tendency, spread, variability)</p> <p><i>Excel - measure of central tendency &amp; variability, spread</i></p>
10. Nov 13	<p>Quantitative Data Analysis techniques and process</p>	<p>Inferential Statistics - inference, probability Non-parametric techniques - chi-square test</p> <p><i>Online Chi Square calculation</i></p>
11 Nov 20	<p>Quantitative Data Analysis techniques and process</p>	<p>Relationships, Group Means Bivariate Data Parametric technique - t-test</p> <p><i>Vassar Online t-test calculation</i></p>
12. Nov 27	<p>Quantitative Data Analysis techniques and process</p>	<p>Association between variables Non-parametric technique - correlation</p> <p><i>Vassar Online Correlation Coefficients</i></p>
13. Dec 4	<p>Quantitative Data Analysis techniques and process</p> <p><b>Assignment #2 due (5 Quantitative quizzes)</b></p>	<p>Multivariate techniques Parametric technique Analysis of Variance</p> <p><i>Vassar Online Analysis of Variance</i></p>