



**UNIVERSITY OF ALBERTA  
COLLABORATIVE BACCALAUREATE  
NURSING PROGRAM**

Grande Prairie Regional College  
Grant MacEwan College  
Keyano College  
Red Deer College  
University of Alberta

**NURSING 3690/NURSING 3010  
Nursing Research and Statistics**

**Course Outline  
Fall 2006/Winter 2007**

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Approved (May, 2000)

**NURSING 3690**  
**Nursing Research and Statistics**  
**6 credits (0-6-0.5) UT 100 Hours 14 Weeks.**

**Instructors:**

**Teresa Evans**                      **Research Component**  
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**Calendar Statement:**

*Introduction to the process of research through a comparative analysis of selected studies exemplifying different theoretical, methodological and analytical approaches.*

*Emphasis will be on the communicability of research, the needs of the research consumer, and the development of skills of critical appraisal. Also included are introduction to descriptive and inferential statistics and the application of statistical methods to nursing problems.*

Co requisites: NS 3900.

\*Note: Students with credit in NS 3970 and NS 4970, or NS 4960 will not receive credit for NS 3690.

**Course Hours:**

NS 3690 is 14 weeks in total. There are six (6) hours of seminar/lecture scheduled per week, three hours for nursing research approaches and three hours for statistics content.

<b>Research Class (Fall and Winter):</b>	<b>Wednesday 1300-1550</b>	<b>Portable D</b>
<b>Statistics Class (Fall only):</b>	<b>Tuesdays and Thursdays</b>	<b>1300-1420</b>
		<b>Room TBA</b>

There will also be 6 hours of laboratory time scheduled during each of the seven weeks for application of selected research and statistical concepts. The statistical laboratory time will be computer assisted. Dates and times will be discussed at the beginning of the semester with your individual instructors.

## Course Description

The course introduces students to the process of nursing research through critical appraisals of selected quantitative and qualitative studies. Emphasis will be on understanding the research process and in knowing how to critically read, analyze, and begin to apply the knowledge gained from research in practice. The focus of this course will be on the planning and implementation phases of the research process which includes: the research problem and purpose, the literature review, theoretical /conceptual frameworks, variables and hypotheses if applicable, research questions, ethical considerations, research designs, study populations, data collection and analysis, and the interpretation of findings. Additionally, students will also examine trends and issues in developing evidence based practice for the nursing profession.

The course also introduces students to the descriptive and inferential statistical concepts required to understand and critique quantitative research designs.

## Course Objectives

At the completion of this course, the student will:

1. Discuss the types, advantages, and limitations of data collection methods used in both quantitative and qualitative nursing research methods.
2. Discuss the criteria for determining the validity and reliability of measurement tools.
3. Discuss the criteria for determining confirmability of findings in a qualitative study.
4. Discuss appropriate data collection methods for various qualitative and quantitative designs.
5. Differentiate data analysis methods for both quantitative and qualitative research.
6. Identify the purpose and appropriateness of commonly used inferential statistics.
7. Distinguish between type I and type II errors and their effects on findings.
8. Differentiate between the meanings of statistical significance and clinical significance.
9. Apply critiquing criteria for an analysis of a published research report.
10. Develop and use a systematic approach for reading and critical appraisal of multiple published research reports on a selected topic.
11. Determine the applicability of knowledge gained from research for evidence-based practice.
12. Discuss the role of a nurse in promoting research activities and using knowledge from research in the practice settings.
13. Discuss issues including barriers and facilitating factors influencing the advancement of nursing research and evidence-based practice.

## Required Textbooks for NS 3690:

Loiselle, C., G., & Profetto-McGrath, J. (2007). *Canadian essentials of nursing research*. (2<sup>nd</sup> ed.). Philadelphia; Lippincott Williams & Wilkins.

## Recommended Resources for NS 3690:

Whenever possible Nursing 3690 utilizes research studies pertaining to the scenarios in NS 3900 and 3940. Students will be required to find appropriate research articles as well as the tutor will place articles on Blackboard if necessary.

## Important Policies

### **Attendance at Seminars/Lectures and Labs:**

The purpose of the seminars/lectures and labs is to highlight concepts of basic statistical analysis and the nursing research process. Study of these concepts will assist the student to develop the ability to understand and critique published nursing research. The opportunity to discuss and critique selected nursing research articles and statistical concepts in small groups of peers will assist in understanding these concepts.

### **Important Dates:**

Last day to change registrations dropping full-year courses is **September 20<sup>th</sup>**. After this date you will be charged full fees for this course.

Last day to withdraw with permission for NS 3690 is: **January 26<sup>th</sup>, 2007**.

### **Nursing Program Policies**

Please refer to the *Grande Prairie Regional College* calendar and the *University of Alberta Collaborative Baccalaureate Nursing Program with Grande Prairie Regional College Student Handbook 2006-2007* for specific nursing program policies that may pertain to this course.

### **Assignment Policy:**

Research assignments are due at the date and time they are due in the front office and must be verified (stamped with date and time) by Nursing Office Personnel. Extensions on assignments may be granted and must be negotiated with the instructor prior to the due date and with a date specified for late submissions. Extensions will not be granted the day the assignment is due.

A penalty of one letter grade per day will be deducted from the final grade of a late assignment. For example, a paper graded at a C would receive an adjusted grade of C- if handed in one day late.

It is the responsibility of the student to ensure electronically submitted papers and assignments are delivered and retrievable to the instructor (i.e. blackboard drop box or emailing assignments). If the instructor is unable to open documents or if documents are sent in error via electronically, the assignment will be

considered late and the student will have one letter grade deducted from the final grade. It is highly recommended that students ensure their assignments have been retrieved by the tutor prior to the due date and time.

In the statistics portion of the course, assignments will be handed out at the beginning of class and handed into the instructor at the end of that same class.

### **Plagiarism and Cheating:**

Please refer to your rights and responsibilities in the Grande Prairie Regional College 2007/2007 Calendar on page 43.

**We expect honesty from our students.** This demands that the contribution of others be acknowledged (GPRC Calendar, 2006/2007, page 44). Penalties will be given according to the degree of the plagiarism or cheating. If you are unsure whether an action is plagiarism or not, please consult your tutor. Cheating refers to dishonest conduct such as speaking in an exam, bringing written material not authorized by the tutor, tampering with grades, or consciously aiding another student to cheat). Please refer to pages 44-47 of your 2006/2007 GPRC Calendar.

## Grading System

A grade will be assigned for each assignment using grading criteria and then based on the grade descriptors (excellent, good, satisfactory, poor). Rationale will be given as to the assigned grade.

*Effective July 1, 2003 Grande Prairie Regional College uses the alpha grading system and the following approved letter codes for all programs and courses offered by the College.*

<i>Alpha</i>	<i>4-point equivalence</i>	<i>Descriptor</i>
<i>A+</i>	<i>4.0</i>	
<i>A</i>	<i>4.0</i>	<i>Excellent</i>
<i>A-</i>	<i>3.7</i>	<i>First Class</i>
<i>B+</i>	<i>3.3</i>	<i>Standing</i>
<i>B</i>	<i>3.0</i>	
<i>B-</i>	<i>2.7</i>	<i>Good</i>
<i>C+</i>	<i>2.3</i>	
<i>C</i>	<i>2.0</i>	
<i>C-</i>	<i>1.7</i>	<i>Satisfactory</i>

**These are considered passing grades in Nursing courses**

<i>D+</i>	<i>1.3</i>	<i>Poor</i>
<i>D</i>	<i>1.0</i>	<i>Minimal Pass</i>
<i>F</i>	<i>0.0</i>	<i>Failure</i>

**These are NOT considered passing grades in Nursing courses.**

Students **may** receive a grade of D or D+ in an assignment or component of a course, but must have an overall grade of C- to achieve a passing grade in a nursing course.

**\*\*Note:** Refer to the 2006-2007 GPRC calendar p. 37 for further details regarding the grading policy and p. 122 and 123 regarding Progression Criteria in the Bachelor of Science in Nursing program.

**PLEASE NOTE:** The student must pass each of the statistics portion and the nursing research methods portion of the course with a minimum Grade of "C-" to receive credit for this course. If a student fails either of the stats or research portion, they will receive an "F" in NS 3690.

## Grade Distribution NS 3690

Name: \_\_\_\_\_

Tutor: \_\_\_\_\_

<i>Alpha</i>	<i>4-point equivalence</i>	<i>Descriptor</i>
<i>A+</i>	<i>4.0</i>	<i>Excellent</i>
<i>A</i>	<i>4.0</i>	
<i>A-</i>	<i>3.7</i>	<i>First Class Standing</i>
<i>B+</i>	<i>3.3</i>	
<i>B</i>	<i>3.0</i>	<i>Good</i>
<i>B-</i>	<i>2.7</i>	
<i>C+</i>	<i>2.3</i>	<i>Satisfactory</i>
<i>C</i>	<i>2.0</i>	
<i>C-</i>	<i>1.7</i>	

*These are considered passing grades in Nursing courses*

<i>D+</i>	<i>1.3</i>	<i>Poor</i>
<i>D</i>	<i>1.0</i>	<i>Minimal Pass</i>
<i>F</i>	<i>0.0</i>	<i>Failure</i>

*These are NOT considered passing grades in Nursing courses*

Students may receive a grade of D or D+ in an assignment or component of a course, but must have an overall grade of C- to achieve a passing grade in a nursing course.

**PLEASE NOTE:** The student must pass the each of the statistics portion and the nursing research methods portion of the course with a minimum Grade of "C-" to receive credit for this NS 3690.

<i>Evaluation</i>	<i>Grade</i>	<i>4-point Equivalent</i>	<i>Percentage of Total Mark</i>	<i>Value</i>
<b>Fall, 2006</b>				
Critique Part I			10%	
Weekly Stats Assignment Part I			10%	
Research Midterm Exam			15%	
Statistics Midterm Exam			15%	
<b>Winter, 2007</b>				
Critique Part II			10%	
Weekly Stats Assignment Part II			10%	
Research Final Exam			15%	
Statistics Final Exam			15%	
				<b>Total:</b>

**Total 4-Point Equivalent Values:** \_\_\_\_\_ **Translated to Final Grade:** \_\_\_\_\_

Grades for each assignment were translated into the 4-point equivalent, then multiplied by the percentage of total mark for each assignment. The value of those percentages are added up to make a total. That total was converted back into the grade scale to receive your final grade. If you have any questions or concerns, please see your tutor. Exams can be viewed by setting up an appointment with your tutor

**EVALUATION FOR NS 3690  
FALL 2006**

**1. Critique Two (2) Research Reports Part I: Value: 10% of Final Grade**

Students will critique two instructor chosen research reports (one qualitative and one quantitative) using the criteria outlined in the text and information from seminars/lectures. Please refer to Chapter 17 in Polit and Beck, 2007 for guiding questions to use when critiquing a research article. APA and scholarly writing formats are to be used.

The critique will focus on the following topics:

1. The Research Question and the Problem.
2. The Literature Review, The Theoretical Framework if applicable
3. The Research Design, including Hypotheses if applicable
4. The Population
5. The Sampling Method
6. The Data Collection Method

Total length of both critiques combined will be 1000 words.

**Grading Guide is located at the back of the course outline**

**Due Date: October 20th, 2006 at 1600 hours.**

**2. Weekly Statistics Assignments: Value: 10% of Final Grade**

These assignments, in a worksheet format, will be completed weekly.

The raw scores for each assignment will be added and given a total percentage and grade determined.

**3. Mid-Term Examination: Value: 30% of Final Grade**

Questions will arise from labs, seminars/lectures and the textbook. **Please refer to the Examination Policies located in your Student Handbook.**



The Instructor will discuss the composition of the exam closer to the exam date with the students (i.e. how many questions, is it multiple choice, short answer, etc.

Each midterm exam will be given a percentage out of 100. Your grade will be based on the following grid:

Grade	Designation
A+	Excellent
A	
A-	First Class Standing
B+	
B	Good
B-	
C+	Satisfactory
C	
C-	
D+	Minimal Pass
D	
F	Fail

**Part I:** Statistical Concepts: (Value 15% of Final Grade)

Date: October 26<sup>th</sup>

Time: 1300-1420

Place: TBA

**Part II:** Nursing Research Concepts: (Value 15% of Final Grade)

This exam will be composed of multiple choice and short answer questions.

Date: October 25<sup>th</sup>, 2006

Time: 1300 hours-1500hrs

Place: TBA

**EVALUATION FOR NS 3690  
Winter 2007**

**1. Critique Two (2) Research Reports Part II: Value: 10% of Final Grade**

Students will critique the same two research reports (one qualitative and one quantitative) from the fall semester using the criteria outlined in the text and information from seminars/lectures. Please refer to Chapter 17 in Polit and Beck, 2007 for guiding questions to use when critiquing a research article. APA and scholarly writing formats are to be used.

Students will critique the following topics:

1. Evidence Ethical Review of the Study and Protection of Human Rights
2. Rigor in Sampling and Data Collection
3. Data Analysis, Rigor in Data Analysis
4. Reliability and Validity, Trustworthiness of Study
5. Interpretation and Discussion of Findings (include implications for nursing practice)

Total length of both critiques combined will be 1000 words.

**Grading Guide is located at the back of the course outline**

**Due: February 9, 2006 at 0830 hours**

**2. Weekly Statistics Assignments: Value: 10% of Final Grade.**

These assignments, in a worksheet format, will be completed weekly,

The raw scores for each assignment will be added and given a total percentage and a grade determined.

**3. Final Examination:****Value: 30% of Final Grade.**

Questions will arise from labs, seminars/lectures and the textbook. **Please refer to the Examination Policies located in your Student Handbook.** The Instructor will discuss the composition of the exam closer to the exam date with the students (i.e. how many questions, is it multiple choice, short answer, etc.

Each final exam will be given a percentage out of 100. Your grade will be based on the following grid:

<i>Grade</i>	<i>Designation</i>
A+	Excellent
A	
A-	First Class Standing
B+	
B	Good
B-	
C+	Satisfactory
C	
C-	
D+	Minimal Pass
D	
F	Fail

**Part I: Statistical Concepts: (Value 15% of Final Grade)**  
Date and Time TBA

**Part II: Nursing Research Concepts: (Value 15% of Final Grade)**

The final exam for nursing research will be a take home exam and will be given out on January 31<sup>st</sup>, 2007. Students have one week to complete and hand in the final exam. The take home exam will be given a raw score and a grade determined.

Date: February 7th, 2006

Time: 1300 hours the Exam must be handed into the instructor during class.

## Seminar Topics\*

### Fall 2006

Dates	Nursing Research	Statistics
September 11-15 Jennifer Hardy	Overview of nursing research; review of Nurses' role in research; methods of inquiry; frameworks for critique of research reports.	What is Statistics? Random Samples Introduction to Experimental Design
September 18-22 Katherine Wilde	The research question, problem, theoretical framework and the literature review	Bar Graphs, Circle Graphs, and Time-Series Graphs Frequency Distributions, Histograms, and Related Topics Stem and Leaf Displays
September 25-29 Katherine Wilde cont...	Quantitative research designs	Measures of Central Tendency: Mode, Median, and Mean Measures of Variation Mean and Standard Deviation of Grouped Data
October 2-6 Carl and Mae	Qualitative research designs  <b>Guest Speaker:</b> Monique Sedgwick to discuss her research	What is Probability? Some Probability Rules— Compound Events Trees and Counting Techniques
October 9-13 Thomas	Population and Sampling  <b>Guest Speakers:</b> Liz Richard and Dorothy Eiserman to discuss their research	Introduction to Random Variables and Probability Distributions Binomial Probabilities Additional Properties of Binomial distribution
October 16-20 Nursing Organizations	Data Collection	Graphs of Normal Probability Distributions Standard Units and Areas Under the Standard Normal Distribution Areas Under Any Normal Curve
October 23-27	Midterm Exams	

\* The Schedule May be Subject to Change

**LABS**  
**FALL 2006**  
(6.0 hrs)

The focus of these labs is:

**Statistics:** understanding the purpose, use, and interpretation of descriptive statistics (*frequency distributions, measures of central tendency and variability, standard scores, levels of measurement, reading descriptive tables and graphs*) for quantitative nursing research.

**Nursing Research:** A nursing clinical situation related to one of the scenarios in NS 3900 will be provided. Students will describe the research phenomena, develop a research question, identify a population to study, and develop a quantitative research method to examine the research question. *Levels of measurement and type of descriptive tables and graph needed will be identified.*

Lab: This is a three hour Lab. Day and Time to be negotiated at first class.

## Seminar Topics\* Winter 2007

Dates	Nursing Research	Statistics
January 2-5	Ethics in research Review of Qualitative and Quantitative Research methodologies	Sampling Distributions The Central Limit Theorem
January 8-12	Rigor in Quantitative Research Designs: Sampling, and Data Collection Reliability and Validity of Instruments Levels of Measurements Applicability	Estimating $\mu$ When $\sigma$ Is Known Estimating $\mu$ When $\sigma$ Is Unknown
January 15-19	Rigor in Qualitative Research Design Data Collection, eg. Interviewer as Instrument Trustworthiness	Introduction to statistical Tests Testing the Mean $\mu$ Tests Involving Paired Differences (Dependent Samples) Testing The Difference of Two Means
January 22-26	Analysis of Data, focus on Qualitative Data	Scatter Diagrams and Linear Correlation Linear Regression and the Coefficient of Determination Inferences for Correlation and Regression Multiple Regression
January 29-February 2	Critique of Results, Interpretation of Qualitative and Quantitative findings Issues in nursing research	<b>Inferences Using the Chi-Square Distribution:</b> Overview of the Chi-Square Distribution Chi-Square: Tests of Independence Chi-Square: Goodness of Fit Testing and Estimating a Single Variance or Standard Deviation
February 5-9	Interpretation of Epidemiological studies Application of selected research methodologies.	<b>Inferences Using the F Distribution</b> Testing Two Variances One-way ANOVA: Comparing Several Sample Means Introduction to Two-Way ANOVA
February 12-16	Final Examination Time and Place TBA	Review and Final Examination: Time and Place TBA

\* The Schedule May be Subject to Change

**LABS**  
**Winter 2007**  
(6.0 hrs)  
**Dates and Times of Labs TBA January 2007**

**Statistics Labs: Inferential Statistics (3.0)**

The focus is on understanding the purpose, use, and interpretation of inferential statistics (*t-Tests, ANOV, Chi Square, Regression Analysis, Factor Analysis*) for quantitative nursing research.

**Nursing Research Lab: Qualitative Analysis (3.0)**

1. Students will review a transcript of a tape recorded interview, provided by the instructor.
2. Students will perform a content analysis on data in the transcript provided and begin to thematically analyze it.

Lab: This is a three hour Lab. Day and Time to be negotiated at first class.

## **Grading Guide**

### **Critiquing a Research Report**

#### **(A) Excellent**

Exceptional organization and flow. Answers questions in a brief and succinct way.

Clear and in-depth understanding of the article.

Critique is objective, comprehensive, thoughtful, and balanced in identifying both strengths and weaknesses of the study. Provides clear examples to support answers using direct references or quotes with page numbers. Avoids using generalizations in paper. Justifies criticisms and offers rationale for how a limitation will affect the quality of the study, and suggests an alternative approach that could have eliminated the problem. Suggestions are practical.

Exceptional spelling, grammar and use of APA guidelines. Exceptional referencing throughout paper.

#### **(B) Very Good**

Well organized and easy to read. Answers questions in a thorough manner.

Clear understanding of the article.

Critique is objective and thorough in identifying both strengths and weaknesses of the study. Provides examples to support answers using references or quotes with page numbers. Few generalizations are made in the paper. Justifies criticisms and offers rationale for how a limitation will affect the quality of the study, with some suggestions on using an alternative approach. Able to give general information as to how the alternative approach would have eliminated the problem. Suggestions are practical.

Excellent use of APA guidelines with minimal mistakes. Minimal spelling or grammatical errors. Paper is well referenced and detailed with minimal errors.

#### **(C) Satisfactory**

Generally well organized with some difficulty in the flow of answering the questions. Answers questions superficially or not concisely.

General understanding of the article with some confusion noted.

Critique is mostly objective with some generalizations made. Missing some information related to the specific components of the critique. Information identifies some strengths and weakness to the study and provides a few examples to support answers from the study. Justification of criticism given but somewhat superficial with rationale as to how the



limitation affects the quality of the study. Suggestions of alternatives and how the approach would have eliminated the problem are vague and may not be practical.

Satisfactory use of APA with some corrections needed to format. Occasional spelling and grammatical errors. Able to provide referencing although not all information included.

### **(D) Minimal Pass**

Poor organization and difficult to read. Questions answered superficially and are not complete.

Lack of understanding of the study evident. Discussion of article is confusing and vague.

Critique is not objective with many generalizations made. Missing key information related to the components of the critique. Identifies minimal strengths and weakness to the study and provides minimal examples to support answers with little or no quotes from the study. No justification of criticism given with little rational as to how limitations will affect the quality of the study. No suggestions of alternatives and how the approach would have eliminated the problem used.

Frequent spelling and grammatical errors with little use of APA format used. Poor or inadequate referencing used.

### **(F) Fail**

Lack of organization evident. No structure or format to paper. Questions are not answered.

No understanding of the study evident in paper.

Critique is incomplete and missing key information. Little or no understanding evident related to the strengths and weaknesses of the study with no examples to support answers.

Many spelling and grammatical errors with little or no use of APA format.

Paper is plagiarized, lack of referencing.