

## **Nursing 3340A: Understanding and Using Research: Analyzing Data**

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Academic Term: Fall 2023

**Class Time & Location:** Online Asynchronous

**Office:** FIMS Nursing Building, Room 3332

**Office Hours:** By Appointment (in person or via Zoom)

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## Understanding and Using Research: Analyzing Data

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### Calendar Description

Students are introduced to basic concepts and techniques used to analyze both qualitative and quantitative data. This will include descriptive and inferential statistics and common methods for qualitative analysis and interpretation.

### Expanded Description

The ability to interpret data analysis, critically analyze research results and implications enables nurses to engage in evidence informed practice. The course is an extension of the content covered in the research course (N2250) and will provide you with a basic foundation in the methods of quantitative and qualitative data analysis commonly encountered in published research.

In this course, you will focus on interpreting data output and study findings of published research articles that will be presented in the lectures and covered in the group assignments. Although this is not a course to equip you with the knowledge to independently perform sophisticated analyses of complex healthcare datasets, the course will include some basic analytic methods as well as underlying assumptions. While the main emphasis will be on developing the ability to critically interpret published research articles, the course will also use data analysis techniques in lectures, in class activities, assignments, tests, and the final exam.

**Pre-requisite:** N2250

**Course Weight:** 0.50

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### Course Delivery

This course will be offered as an asynchronous online learning experience. You will complete weekly self-directed learning activities (i.e., readings, videos, etc.) that will be posted on the OWL page. Lecture slides and recorded lectures will be posted on OWL each Sunday by 2355 hr. Weeks in the course will run Monday to Sunday. All students in this course must familiarize themselves with this course's OWL site.

### Course Communication

For whole class discussion, please use the OWL Forums where you can post questions about course material. Peers, Teaching Assistants, and the instructor can all participate in answering questions. For emergent non-content-related questions, please email the TA/instructor in OWL and check the box for "*Send a copy of this message to recipient(s) email address(es)*." Individual or group office hours are available by appointment only.

### Course Textbooks

#### **Required**

Kathryn H. Jacobsen. Introduction to Health Research Methods: A Practical Guide (3<sup>rd</sup> Edition). Jones & Bartlett Publishers. ISBN: 9781284197563 [Hardcopy or Digital/e-book]

Available for purchase at UWO bookstore

[https://bookstore.uwo.ca/textbook-search?campus=UWO&term=W2023A&courses%5B0%5D=650\\_UW/NUR3340A](https://bookstore.uwo.ca/textbook-search?campus=UWO&term=W2023A&courses%5B0%5D=650_UW/NUR3340A)

#### **Recommended**

American Psychological Association. (2018). *Publication manual of the American Psychological Association* (7<sup>th</sup> ed., revised). American Psychological Associations

### **Year 3 Goals**

- 1.3.1 Analyze, organize, and reconstruct information using the clinical judgment model to effectively respond to clients' needs in diverse health care settings.
- 1.3.2 Plan client-centered health promotion and nursing care for a variety of clients across diverse settings.
- 2.3 Advocate with others for public policy that will address health and social justice locally, nationally and internationally.
- 3.3 Participate as a member of the intra/interprofessional team to provide client-centered care in a variety of settings.
- 4.3 Understand the research process, its utility for nursing practice, and its contribution to the discipline.
- 5.3 Support the role of nurses as leaders in health and social care.
- 6.3 Implement nursing knowledge to develop culturally safe patient-centred care.
- 7.3 Implement reflective critical thinking strategies to enhance self -understanding, foster personal knowing, and refine one's nursing practice.
- 8.3 Practice competently and ethically in accordance with professional requirements.

### **Course Goals**

1. Describe the research processes of quantitative and qualitative data analysis.
2. Identify and determine the appropriateness of specific qualitative analysis methods and quantitative analysis methods reported in published research.
3. Assess the rigour of quantitative and qualitative data analysis in published research.
4. Demonstrate understanding of the results of published qualitative and quantitative studies.

### **CNO Competencies**

Competencies for entry-level Registered Nurse practice (CNO, 2020) addressed in the course:  
<https://www.cno.org/globalassets/docs/reg/41037-entry-to-practice-competencies-2020.pdf>

- Clinician: 1.1, 1.10, 1.11, 1.13 1.2, 1.5, 1.6
- Professional: 2.1
- Communicator: 3.4
- Collaborator: 4.3
- Leader: 6.5, 6.9, 6.10
- Scholar: 9.3

### **National Interprofessional Competencies (CIHC, 2010)**

Competencies addressed in the course:

- Interprofessional communication
- Role clarification
- Team functioning

### **Nursing Informatics Competencies (CASN, 2012)**

Competencies addressed in the course:

- Uses relevant information and knowledge to support the delivery of evidence-informed patient care
- Uses ICTs in accordance with professional and regulatory standards and workplace policies
- Uses information and communication technologies in the delivery of patient/client care

### **Professional Development in Nursing**

Many of you may question why nurses at the baccalaureate level need to understand the basics of

data analysis. This is an excellent question and is partially addressed by the recognition of nursing as a health sciences profession. Inherent in many definitions of a profession is the notion that professionals fulfill a distinctive function in society and that the function that is fulfilled is based on evidence that has a foundation in scientific inquiry. The health care system is in a constant state of evolution, and inquiry based on sound data analysis can help nursing to engage in evidence-informed decision making to enhance nursing practice, promote quality patient care and improve health. As evidence informed practices become the norm in health care, the number of nurses who are conducting and using research in practice will continue to increase.

As a consumer of research you will need to understand how research results are generated in order to critically appraise their implications for clinical practice. As well, the same analytic approaches are often used to evaluate healthcare programs and projects to meet accreditation and other standards. Although you may not conduct full research studies at the baccalaureate level of education, you will likely participate in program and service evaluations as part of practice. This course will prepare you for these various roles in practice.

### **Interprofessional Development**

This course will provide students with the basis from which to expand conceptualizations related to how knowledge is generated within the healthcare sector. Subsequently, other healthcare team members' contributions in research process will be described and explored from an interprofessional perspective. Insights will be provided as to how nursing can become further involved in inter-professional research through the use of various exemplar case studies, analysis strategies, and other learning material related to knowledge translation for professional practice.

### **This course will cover the following statistics which can be used as a statistics prerequisite:**

- Frequency distributions and skewness
- Measures of central tendency: mean, median, mode
- Levels of measurements: nominal, ordinal, interval/ratio
- Measures of variation: Standard deviation, standard score, standard error
- Probability, normal curve
- Sampling, confidence intervals
- Tests of significance: Null hypothesis: t-test, one-tail/two tail tests
- Analysis for proportions and categories (e.g., Chi-square)
- Analyses for group means (e.g., t-tests, analysis of variance)
- Correlation
- Simple linear regression

## Course Schedule and Readings

Week	Dates (Mon-Sun)	Topic	Textbook Readings
1	Sept 7-10	Introduction to course, OWL navigation, review group assignments and course materials	Chapter 1 Chapter 2: 2.1, 2.4. 2.5, 2.6, 2.7
2	Sept 11-17	Intro to Quantitative and Qualitative Data Analysis <b>*Tri-Council Policy Statement (due by Sept 17 at 2355 hr)</b>	Chapter 4: 4.1-4.4 Chapter 7: 7.1-7.2 Chapter 13: 13.1-13.4
3	Sept 18-24	Qualitative Research Methods and Data Analysis	Chapter 13: 13.4 Chapter 19: 19.1-19.3, 19.9, 19.11 Chapter 23: 23.1-23.7
4	Sept 25-Oct 1	Preparing Qualitative Data: Coding	Chapter 28: 28.1-28.4 Chapter 32: 32.2-32.4
5	Oct 2-8	Content Analysis and Discourse Analysis	Alexander 2003 McCloskey 2008
6	Oct 9-15	Qualitative Rigour and Epistemic Justice	Chapter 32: 32.5 Noble & Smith 2015
7	Oct 16-22	Foundations of Quantitative Data Analysis <b>*Test #1 (due by Oct 22 at 2355 hr)</b>	Chapter 7: 7.3-7.5 Chapter 8-13 (Overview subsection only, e.g., 8.1) Chapter 19: 19.4 Chapter 22 Chapter 28.5-28.6 Chapter 29.1-29.8
8	Oct 23-29	Common Quantitative Data Analytic Techniques <b>*Critical Appraisal Paper (due by Oct 27 at 2355 hr)</b>	Chapter 29.1-29.8 Chapter 30: 30.2-30.6
9	Oct 30-Nov 5	<i>Reading Break (No Class)</i>	
10	Nov 6-12	Comparing Two Groups	Chapter 10:10.5 Chapter 30: 30.7-30.10
11	Nov 13-19	Comparing Three of More Groups: ANOVA <b>*Test #2 (due by Nov 19 at 2355 hr)</b>	Chapter 30: 30.11
12	Nov 20-26	Examining Relationships: Correlation & Regression	Chapter 30: 30.12 Chapter 31:
13	Nov 27-Dec 3	Tertiary Studies	Chapter 15 Chapter 26
14	Dec 4-8	Preserving Integrity in Knowledge Mobilization <b>*Research Synthesis (due December 7 by 2355 hr)</b>	

## Evaluation

Evaluation	Value	Due Date
Tri-Council Policy Statement (TCPS)	5%	September 17, 2023
Test #1	25%	October 22, 2023
Critical Appraisal Paper	20%	October 27, 2023
Test #2	25%	November 19, 2023
Research Synthesis	25%	December 7, 2023

### 1. Tri-Council Policy Statement (TCPS) (due by September 17, 2023 at 2355 hr): 5%

Students must individually complete the TCPS 2 – CORE-2-22 online course on research ethics provided by the Government of Canada. Go to <https://tcps2core.ca/welcome> and click on Create Account. After making an account, navigate through all online modules. After completing the

*Knowledge Consolidation Exercise* you will be provided a TCPS 2 certificate (PDF). Please upload this certificate to OWL under the Assignments tab. Each student will require their own TCPS 2 certificate. This assignment is graded as a PASS/FAIL.

**2. Test #1 (due by October 22, 2023 at 2355 hr): 25%**

The test portal on OWL will open two weeks prior to the deadline (Oct 22 at 2355 hr). Students will choose a date and time during this two-week window which is convenient to complete the test independently. Students may use any of the course content or resources to aid in their completion of the test. The material on Test #1 will cover weeks 3-6 (qualitative research) and consist of a variety of question types (e.g., multiple choice, fill in the blank, etc.). Each test provides the student with an opportunity to review course content and demonstrate the application of course concepts.

**3. Critical Appraisal Paper (due by October 27, 2023 at 2355 hr): 20%**

Students will work in groups of four (4) to review a single research article and critically appraise it focusing specifically on the analysis. Students will critique a single primary research nursing article of their choosing (quantitative or qualitative). Students may submit this assignment any time until the due date (Oct 27 at 2355 hr). Please see detailed assignment and rubric documents on OWL.

**4. Test #2 (due by November 19, 2023 at 2355 hr): 25%**

The test portal will open two weeks prior to the deadline (Nov 19 at 2355 hr). Students will choose a date and time during this two-week window which is convenient to complete the test independently. Students may use any of the course content or resources to aid in their completion of the test. The material on Test #2 will cover weeks 7-11 (quantitative research) and consist of a variety of question types (e.g., multiple choice, fill in the blank, etc.). Each test provides the student with an opportunity to review course content and demonstrate the application of course concepts.

**5. Research Synthesis (due by December 7, 2023 at 2355 hr): 25%**

Students will work independently to complete a research synthesis project. This assignment will have three main parts which are intended to allow students to apply course concepts in a practical way. Briefly, students will select from one of two research case studies (qualitative or quantitative). They will be provided with a short description of the study question, methods, and raw data applicable to the case. Students will write a short research report including an introductory background (with annotated bibliography), and an overview of the methods. They will design a data analytic plan, execute the analysis, and report preliminary findings. Finally, students will highlight the key findings and implications, and produce a single knowledge mobilization product. Please see detailed assignment and rubric documents on OWL.

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**\*\*\*There is no final exam during the exam period for this course. Once you have completed the course content, tests, and assignments, you will have completed the course. \*\*\***

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**Policies**

All policies related to assignments are in the Undergraduate BScN Programs Manual on the Western web site at [owl.uwo.ca](http://owl.uwo.ca) and on the Fanshawe College web site in the Program manual located in the Virtual Home Room at [www.fanshaweonline.ca](http://www.fanshaweonline.ca)

**Engagement**

Due to the significance of theoretical and practice knowledge in developing professional competence,

students are expected to demonstrate professional responsibility through regular participation in all scheduled learning activities. Much of the learning that takes place is a result of preparation and engagement with the course material and active dialogue with colleagues and faculty. Lack of engagement with the material will directly hinder one's success in the course.

### **Statement on Plagiarism**

Student work is expected to be original; assignments and online postings should be written in your own words. An idea or a passage from another author must be acknowledged by using quotation marks, where appropriate, and proper APA 7<sup>th</sup> Ed. referencing.

While use of AI-based content creating platforms (e.g., ChatGPT) can be useful to assist in information collection and problem-solving of complex scenarios, outputs generated from these platforms need to attribute in terms of direct citation/quote and referencing as per writing style (e.g., APA 7<sup>th</sup>), if used in assignments or course participation. In other words, AI-generated content, while interesting and potentially informative to assist in the refinement of ideas and insights, should not be used verbatim or suggested to be original content generated by student(s) for assignments in this course. If outputs from AI-based content creating platforms are used verbatim, they must be attributed and cited accordingly.

Plagiarism is a serious academic offence and could lead to expulsion from the nursing program. ***You are plagiarizing if you insert a phrase, sentence or paragraph taken directly from another author without acknowledging the work to belong to them. Similarly, you are plagiarizing if you paraphrase or summarize another author's ideas without acknowledging that the ideas belong to someone else. You are self-plagiarizing when you reuse all or part of an assignment that you previously submitted.*** Students can not present their credited work as new scholarship. You may be asked to submit your work, at the discretion of the course instructor, to turnitin.com to verify originality (see 26 *Undergraduate BScN Programs Manual 2013 - 2014* Scholastic Offence Policy in the Western Academic Calendar or Fanshawe College Policy Manual).

Scholastic offences are serious, and students should read the policy as to what constitutes a Scholastic Offence at the following site:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf)

### **Assignments and Exams**

Please refer to the Undergraduate Programs Manual for information on penalties for late assignments, re-grading of assignments, and the protocol for missed tests. Western at owl.uwo.ca or Fanshawe in Virtual Home Room [www.fanshaweonline.ca](http://www.fanshaweonline.ca)

### **Mental Health**

Students who are in emotional/mental distress should refer to the following links for a complete list of options about how to obtain help. MentalHealth@Western <http://www.uwo.ca/uwocom/mentalhealth/> Counseling Services <http://www.fanshawec.ca/counselling/>

### **Accessibility, Accommodation and Support Services at Western**

*Technical Support:* For OWL support contact the WTS HelpDesk at <https://wts.uwo.ca/helpdesk/index.html>

*New to Online Learning?* Check out the following link for a variety of to support online learning from Western StudentExperience: <https://www.uwo.ca/se/digital/>

*Academic Support and Accommodation Services:* Check out these services that support academic success. I encourage all students to engage in the writing supports available to them at Western. [http://academicsupport.uwo.ca/accessible\\_education/index.html](http://academicsupport.uwo.ca/accessible_education/index.html)

*Physical Health, Wellness Education and Mental Health:* Connect with Student Health Services at Western here: <https://www.uwo.ca/health/Physical%20Health/index.html>

*Indigenous Student Center* staff and Elders are available to support you personally, academically and culturally. Reach out at: <https://indigenous.uwo.ca/students/>

For services related to inclusion, equity and diversity visit *Equity and Human Rights Services*: <https://www.uwo.ca/equity/>

View Westerns *Anti-Racism Working Group Report* here: <https://president.uwo.ca/anti-racism/>