

GS/NURS 5300 3.0 Quantitative Research Methods in Nursing Science

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A. Calendar Course Description

This online course focuses on the acquisition and the application of fundamental concepts, methods, and procedures of quantitative nursing research required to develop a research proposal; including but not limited to: developing researchable questions, designing research, and selecting appropriate methods and analyses.

Co-requisite or prerequisite NURS 5100 6.0 or with permission of the Course Director.

B. Expanded Course Description

This course will enhance the student's knowledge in quantitative research methodology, one of the multiple ways of knowing in nursing. The student will develop the skills required to develop a research proposal using quantitative research methods by completing key steps in this process.

By the end of this course, the student will be able to:

- Formulate researchable questions and hypotheses;
- Understand the relationship between theory and research;
- Synthesize current literature pertaining to the research questions;
- Articulate the linkages between the research question and study design;
- Compare and contrast various quantitative research designs;
- Understand threats to the internal validity of quantitative research designs and methods to reduce such threats;
- Identify appropriate data collection methods, and the validity and reliability of data collection instruments; and
- Demonstrate knowledge in a selected number of data analysis techniques, such as ANOVA.

This is an Internet course and students are required to regularly access Moodle and their yorku.ca email account. Note that email communication about the course should be via your yorku.ca email. Access to Moodle requires a Passport York login and password. If you managed to obtain a copy of this paper, but do not yet have a Passport York account, go to <http://www.yorku.ca/computing/students/accounts/passportyork.html> to set one up. To access Moodle, go to <http://moodle.yorku.ca> and remember to join the course so you can obtain materials and start posting.

C. Progress Through the Course

Course workload expectations. This is a 3.0 credit course which means that if you were on campus you would have 12 weeks of 3 hour classes, or 36 hours total in a classroom setting. As a rule of thumb in undergraduate courses, students need another 2-3 hours *per classroom hour* to complete readings, assignments, and other details related to a course. However, that number increases in graduate school and you should anticipate 4-5 hours, rather than 2-3 *per classroom hour*. As you can see, the hours add up pretty quickly. Graduate courses are more demanding than undergraduate courses, so a 3.0 credit graduate course is more intensive than a 3.0 credit undergraduate course. Typically, 9.0 credits in a term are considered full-time for graduate students, whereas a full-time undergraduate student would be expected to take 15.0 credits in a single semester.

An online course is not the same as a distance course. In a distance course, students generally complete work on their own timetable and without interaction with others. An online course requires students to attend to the course schedule and to interact with one another. An online course means that you do not have to travel to campus so you save traveling time, but you still need to spend time completing the course work. Much of the discussion that would take place in a classroom course has to take place online, so you are expected to participate regularly in online discussions to gain as much as you can from the course. Prior students has found that responding to the weekly questions and to other students' postings about 3 times per week helps them to get the most out of the course and keep the workload manageable. It is important that you plan your time and are prepared to spend the needed hours to complete the work to the best of your ability.

Course organization. The course is organized in a way that helps you build knowledge and develop skills as you move through the modules. While you are expected to have successfully completed undergraduate research and statistics courses, I recognize that this may have been some time ago. Therefore, I encourage you to reflect on your knowledge level and then to review the basic material carefully by yourself or with colleagues so you will be successful in the course.

Table 1. Topics by week and module. Chapters are for the 9th edition of *Polit and Beck (2012).

Week	Topic (*Text)
Module 1. Beginning a Quantitative Research Study	
Week 1	<ul style="list-style-type: none"> • Overview of the research process in quantitative studies (Ch. 3) • Conceptualizing research problems, research questions, & hypotheses (Ch. 4)
Week 2	<ul style="list-style-type: none"> • Intro to nursing research, paradigms, & philosophical positions (Ch. 1) • Developing a theoretical or conceptual context (Ch. 6)
Week 3	<ul style="list-style-type: none"> • Finding and critiquing evidence: Research literature reviews (Ch. 5)
	Recommended reading <ul style="list-style-type: none"> • Systematic reviews (Ch. 27) Ongoing reading - not specific to Module 1 <ul style="list-style-type: none"> • Writing proposals to generate evidence (Ch. 29) • Utilizing research (Ch. 2) • Communicating/disseminating quantitative research (Ch. 28)
Module 2. Design and Rigour	
Week 4	<ul style="list-style-type: none"> • Planning a nursing study (Ch. 8) • Designing quantitative studies (Chs. 9 & 11)
Week 5	<ul style="list-style-type: none"> • Enhancing rigor in quantitative research (Ch. 10)
	Recommended reading <ul style="list-style-type: none"> • Developing complex nursing interventions (Chap. 26)
Module 3. Measurement and Data Collection	
Week 6	<ul style="list-style-type: none"> • Designing and implementing a data collection strategy (Ch. 13) • Assessing measurement quality in quantitative studies (Ch. 14)
Week 7	<ul style="list-style-type: none"> • Developing self-report scales (Ch. 15)
Module 4. Sampling and Ethics	
Week 8	<ul style="list-style-type: none"> • Quantitative sampling strategies (Ch. 12)
Week 9	<ul style="list-style-type: none"> • Generating research evidence ethically (Ch. 7)
Module 5. Data Analysis	
Week 10	<ul style="list-style-type: none"> • Descriptive statistics (Chap. 16) • Inferential statistics (Ch. 17)
Week 11	<ul style="list-style-type: none"> • Multivariate statistics to analyze complex relationships (Ch. 18) • Processes of quantitative data analysis and interpretation (Ch. 19)
Week 12	<ul style="list-style-type: none"> • Proposal data analysis plans

* Only read the sections of the text pertaining to quantitative studies. It is not necessary to read the qualitative sections for this course.

D. Resources

Required text.

Polit, D.F., & Beck, C.T. (2012). *Nursing research: Generating and assessing evidence for nursing practice* (9th ed.). Philadelphia, PA: Lippincott, Williams and Wilkins.

Recommended text.

American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

Required Articles for Online Discussion

Fox, M.T., Sidani, S., & Brooks (2010a). Differences in sleep complaints in adults with varying levels of bed days residing in extended care facilities for chronic disease management. *Clinical Nursing Research: An International Journal*, 19(2), 181-202. doi: 10.1177/1054773810365957.x

Fox, M.T. Sidani, S., & Brooks, D. (2010b). The relationship between bed rest and sitting orthostatic intolerance in adults residing in chronic care facilities. *Journal of Nursing and Healthcare of Chronic Illness*, 2(3), 187-196. DOI: 10.1111/j.1752-9824.2010.01058.x. Available in open access from <http://onlinelibrary.wiley.com/doi/10.1111/j.1752-9824.2010.01058.x/pdf>

Fox, M.T., Sidani, S., Streiner, D., McGilton, K.S., & Grady, C. (2011). Effect of the response tree format on the utility and psychometric properties of scales measuring symptoms in adults undergoing in-patient rehabilitation, *Research in Nursing & Health*, 34(6), 508-519. DOI: 10.1002/nur.20458

McGilton, K.S., Sorin-Peters, R., Sidani, S., Boscart, V., Fox, M. & Rochon, E. (2012). Patient-Centred Communication Intervention Study to Evaluate Nurse-Patient Interactions in Complex Continuing Care (Study Protocol). *BMC Geriatrics*, 12:61, doi:10.1186/1471-2318-12-61.x. Available in open access from <http://www.biomedcentral.com/1471-2318/12/61>

Northouse, L. L., Rosset, T., Phillips, L., Mood, D., Schafenacker, A., & Kershaw, T. (2006). Research with families facing cancer: The challenges of accrual and retention. *Research in Nursing & Health*, 29(3), 199-211. doi:10.1002/nur.20128

Rew, L., Grady, M., Whittaker, T. A., & Bowman, K. (2008). Interaction of duration of homelessness and gender on adolescent sexual health indicators. *Journal of Nursing Scholarship*, 40(2), 109-115. doi:10.1111/j.1547-5069.2008.00214.x

Note. Should I come across an article that provides an improved learning opportunity for a specific week I may use it in place of one of your weekly readings. I will inform you should this happen.

Recommended articles (not required for online discussion)

General

- Galvan, J. L. (2009). *Writing literature reviews: A guide for students of the social and behavioral sciences* (4th ed.). Glendale, CA: Pyczak Publishing.
- Pierce, L. (2009). Twelve steps for success in the nursing research journey. *The Journal of Continuing Education in Nursing*, 40(4), 154-162.
- Tornquist, E.M. & Funk, S.G. (2007). How to write a research grant proposal. *Journal of Nursing Scholarship*, 22(1), 44-51.

References on how to understand synthesized evidence

- Whittemore, R., & Knafl, K. (2005). The integrative review: updated methodology. *Journal of Advanced Nursing*, 52(5), 546-553. doi: 10.1111/j.1365-2648.2005.03621.x. Available at: http://users.phhp.ufl.edu/rbauer/EBPP/whittemore_knafl_05.pdf
- Wong, S. T., MacLeod, M. L. P., & Farrally, V. (2009). Health Human Resource: Scoping literature review and synthesis.

References on how to understand meta-analyses

- Crombie, I.K. & Davies, H.T. (2009). What is a meta-analysis? Evidence-based medicine: What is....series. Available from <http://www.medicine.ox.ac.uk/bandolier/painres/download/whatis/meta-an.pdf> (very basic and easy to understand).
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Group, T. P. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Medicine*, 6(7), e1000097.
- Ried, K. (2006). Interpreting and understanding a meta-analysis. A practical guide. Reprinted from *Australian Family Physician*, 35(8), 635-638. Available from http://digital.library.adelaide.edu.au/dspace/bitstream/2440/43554/1/hdl_43554.pdf (very basic and easy to understand especially forest plots).