



INFERENTIAL STATISTICS AND RESEARCH METHODS

Health Services Management

Course Code: STAT2001	Co-Requisites: Please see Course Related Information	Pre-Requisites: STAT1013
Applicable Program(s): C139 - Health Information Management	Core/Elective: Core	
Prepared by:	Taras Gula, professor	
Approved by:		
Approval Date:		
Approved for Academic Year:	2023-2024	
Contact Hours:	42.00	
Credit Hours:	3.00	

Course Description

This course designed to introduce students to the principles of quantitative and qualitative research design and inferential statistics. Students will learn to discern various research approaches (quantitative and qualitative), design and conduct a small quantitative study and use inferential statistics as part of the data analysis process, and familiarize themselves with the language of research through reading research abstracts and completing TCPS2 certification and the ethics approval process. Through the study of inferential methods, and by working with real data using SPSS, students will continue to develop their statistical literacy and thinking started in stat1013. The successful student will come away with a strong understanding of how researchers use sample data to make decisions about populations in the health sciences.

Essential Employability Skills

This course contributes to your program by helping you achieve the following Essential Employability Skills:

- EES 1 **COMMUNICATION:** Communicate clearly, concisely and correctly in the written, spoken and visual form that fulfills the purpose and meets the needs of the audience. (T, P, E,)
- EES 2 **COMMUNICATION:** Respond to written, spoken or visual messages in a manner that ensures effective communication. (P, E,)
- EES 3 **NUMERACY:** Execute mathematical operations accurately. (T, P, E,)
- EES 4 **CRITICAL THINKING & PROBLEM SOLVING:** Apply a systematic approach to solve problems. (T, P, E,)

EES 5	CRITICAL THINKING & PROBLEM SOLVING: Use a variety of thinking skills to anticipate and solve problems. (T, P, E,)
EES 6	INFORMATION MANAGEMENT: Analyze, evaluate and apply relevant information from a variety of sources. (P, E,)
EES 7	INFORMATION MANAGEMENT: Locate, select, organize and document information using appropriate technology and information systems. (T, P, E,)
EES 8	INTERPERSONAL: Show respect for diverse opinions, values, belief systems and contributions of others. (P,)
EES 9	INTERPERSONAL: Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals. (P,)
EES 10	PERSONAL: Manage the use of time and other resources to complete projects. (P,)
EES 11	PERSONAL: Take responsibility for one's own actions, decisions and consequences. (P,)

Note: "T" means elements of the skill are taught; "P" means elements of the skill are practiced; "E" means elements of the skill are evaluated; "C" means the skill culminates.

Course Learning Outcomes

When you have earned credit for this course, you will have demonstrated the ability to:

CLO 1	CLO1 - Describe research as a systematic process of gaining knowledge, rooted in a scientific worldview by using the following concepts: objectivity, replication, reliability, internal and external validity, precision, experiment, relation, prediction and description
CLO 2	CLO2 -Classify quantitative and qualitative research through reading research abstracts by looking at the goal, methods of data collection and analysis as well as time;
CLO 3	CLO3 - Produce a mini-literature review report on a topic relevant to health sciences and/or health information management.
CLO 4	CLO4 -Understand ethical issues that confront the researcher in the health sciences (complete TCPS2 certification) as well as the Research Ethics Board application process, and be familiar with legal and institutional standards in research.
CLO 5	CLO5 - Explore univariate and bivariate data and use non-inferential and inferential data analysis tools appropriately to answer research questions. Inferential tools include confidence intervals and/or hypothesis tests (Chi-sq, correlation and regression, ANOVA, t and z-tests).
CLO 6	CLO6 - Sketch an appropriate design for a straightforward research project including description of population, sampling method, recruitment, data collection and data analysis.
CLO 7	CLO7 -Plan and carry out a straightforward research study and self-evaluate internal and external validity.
CLO 8	CLO8 -Think statistically i.e. explain how and why certain tools/graphs are used, and understand that statistical analysis is but one part of the research process through which we are modeling reality.
CLO 9	CLO9 read and classify qualitative research abstracts as either Action, Case Study, Content Analysis, Ethnography, Phenomenology, or Grounded Theory.

Delivery Methods/Learning Activities

The course will be delivered face to face and in class (computer lab) setting primarily through activities and exercises and occasional lecture style presentations. Individual and group work using a mastery grading approach will allow for multiple opportunities to develop mastery in core topics.

Learning Resources

Taras Gula created readings are available at www.stataras.com

Exercises assignments and summative assessments will be delivered through OneNote, D2L, and the HNP webapp (bit.ly/henupr)

Trochim, William M. The Research Methods Knowledge Base, 2nd Edition. Internet page, at URL: www.socialresearchmethods.net/kb (version current as of 2006).

Optional:

- Robson, Colin; *How to Do a Research Project: A Guide for Undergraduate Students*; Blackwell Publishing, 2007 Oxford UK ISBN 9 781405 114905
- Latour, Kathleen M., Eichenwald-Maki, Shirley Eds. *Health Information Management Concepts, Principles, and Practice* 2nd ed. ; c 2006; chapter 16; ISBN 1-58426-142-0

Course Related Information

PREREQUISITES: STAT 1013

George Brown Related Information

ACKNOWLEDGEMENT OF THE TRADITIONAL LAND

We would like to acknowledge that George Brown College is located on the traditional territory of the Mississaugas of the Credit First Nation and the land of other Indigenous Peoples who have lived here over time.

PROGRAM LEARNING OUTCOMES

College programs are designed to deliver program learning outcomes that relate to the unique content of a particular area of study. To review the specific program learning outcomes for your program, please go to your program page on the George Brown College website at <https://www.georgebrown.ca/>

IMPORTANT PROGRAM INFORMATION

Students are advised to consult program coordinators regarding specific requirements for successfully completing their program, including adding/dropping courses and other issues that might disrupt their course of study.

RETENTION OF COURSE OUTLINES

Students are expected to retain their course outlines to support learning in the course and for future use in

applications for transfer of credit to other educational institutions.

COLLEGE POLICIES

It is essential that students review all college policies, including Academic Policies available at <https://www.georgebrown.ca/policies>.

DIGITAL LEARNING REQUIREMENTS

Students are required to have access to a computer and to the internet. There may also be additional technology-related requirements to participate in a course that are not included in the course materials fee, such as headphones, webcams, specialized software, etc. Details on these requirements can be found in the course outline for each course.

The Library Learning Commons (LLC) has a limited number of devices including laptops and portable WIFI devices to support students; however, the LLC cannot guarantee access to a device for all students.

ACCESSIBLE LEARNING SERVICES FOR STUDENTS

Accessible Learning Services facilitates academic support and services for George Brown College students with physical, sensory, learning, medical or mental health disabilities. Delivered in collaboration with academic departments and other service areas, these services are available to students in all programs at all campuses.

George Brown College is committed to upholding a student's right to individualized and timely accommodation that promotes dignity, independence, autonomy, equity, and inclusion for the student. In addition to our current supports, we are working to eliminate barriers by increasing access to alternate formats, planning accessible buildings and classrooms, enhancing employee training, and adopting inclusive practices in placement and on campus.

Only those involved in a student's accommodation plan shall be alerted to their registration with Accessible Learning Services, and a student's registration with Accessible Learning Services will not be identified on the student's official college transcript and/or graduation documentation. For more information, please visit the Accessible Learning Services website at <http://www.georgebrown.ca/accessible-learning-services/> or call 416-415-5000 ext. 2622 or email letstalk@georgebrown.ca

EQUITY STATEMENT

George Brown College values the diversity of our students, employees, and community partners, and is committed to providing a learning environment where all people are safe and respected. Comments, behaviours, or interactions that are inconsistent with our values may be a violation of the following college policies: Sexual Assault and Sexual Violence, Human Rights Discrimination and Harassment, and the Prevention of Workplace Violence and Harassment. These types of actions or comments are not acceptable and will not be tolerated. The commitment and cooperation of all students and employees is required to maintain a welcoming environment in which to learn and work.

Support and information are available through a Human Rights Advisor at diversity@georgebrown.ca or the Sexual Violence Response Advisor at svra@georgebrown.ca

For information on the relevant policies visit <https://www.georgebrown.ca/diversity/>

TEXT-MATCHING DETECTION SOFTWARE

Text-matching detection software assists faculty and students in preventing and detecting plagiarism. Faculty may use such software to check the originality of the academic work students submit in a course by comparing submitted assignments to those contained in publicly accessible internet sites, and academic journals, as well as databases of submitted papers and other sources. Faculty may not submit any student work that contains personally identifiable information through a text matching/anti-plagiarism tool or require students to do so.

Automated text matching software will be made available to all academic staff and students to promote academic integrity and appropriate documentation of sources. Professors may choose to use the college-approved automated text matching detection software in their courses. Students are permitted to submit draft assignments prior to the due date, and to receive the screening report that is also available to professors.

Student Evaluation System

Below is a list of evaluation methods included in this course along with the course learning outcomes (CLO) and essential employability skills (EES) assessed by each. In some cases, program learning outcomes (PLO) assessed may also be indicated.

Test(s) (10%)

Unit 1: Demonstrate mastery of selected topics from stat1013 using HNP web-app and D2L quiz.

Validates Outcomes: CLO 5, EES 3, EES 4

Research Project(s) (25%)

units 2a-d - i.e. in 4 stages.

Validates Outcomes: CLO 1, CLO 5, CLO 6, CLO 7, CLO 8, EES 1, EES 2, EES 3, EES 4, EES 5, EES 6, EES 7

Practical Assessment(s) (10%)

unit 2.1 individual mini research design test

Validates Outcomes: CLO 5

In-class assignment (10%)

unit 3.1 Read and analyse research abstract

Validates Outcomes: CLO 2, CLO 8, EES 2, EES 4

Report (10%)

unit 3.2 Literature Review written report.

Validates Outcomes: CLO 3, EES 1, EES 2, EES 6, EES 7

Test(s) (20%)

unit 4.1 and 4.2 Tests of hypothesis test recognition and Inferential Statistics (using SPSS)

Validates Outcomes: CLO 5, EES 2, EES 3, EES 4, EES 5, EES 6, EES 7

Certificate Completion (5%)

unit 5.1 Online TCPS2 completion certificate.

Validates Outcomes: CLO 4, EES 1, EES 4, EES 7

Test (10%)

units 5.2 (validity) and 6 (qualitative research) tests

Validates Outcomes: CLO 1, CLO 2, CLO 6, CLO 8, CLO 9, EES 1, EES 2, EES 3, EES 4, EES 5, EES 6, EES 7

Prior Learning Assessment and Recognition

Prior learning assessment and recognition (PLAR) is a process that gives students the opportunity to obtain academic credit for one or more courses in a certificate, diploma or degree based on demonstrated prior learning acquired through life experiences before enrollment in a program. More information regarding PLAR can be found on the GBC website at: <http://www.georgebrown.ca/plar/>

- This course is PLAR eligible, please see Program Coordinator/Chair for more information.

Grading System

The passing mark for this course is a "C": 60%

This is a Pass/Not Pass Course. Students who do not successfully meet the requirements of the grading system in this course will be assigned a grade of Not Pass (NP).

Legend

Terms

- ILO: Indigenous Learning Outcome
- Apprenticeship LO: Apprenticeship Learning Outcome
- CLO: Course Learning Outcome
- DPLO: Degree Program Learning Outcome
- EES: Essential Employability Skill
- EOP: Element of Performance
- GELO: General Education Learning Outcome
- LO: Learning Outcome
- APO: Additional Program Outcome
- PLA: Prior Learning Assessment
- PLAR: Prior Learning Assessment and Recognition
- PLO: Program Learning Outcome