

<p><b>Fall 2021</b>  <b>Course Number: GS11 1152</b>  <b>Approaches to Research II</b>  Credit Hours: <u>  2  </u>  Meeting Location: MSB.610</p>	Program Required Course: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Approval Code <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Audit Permitted: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Classes Begin: September 2, 2021 Classes End: December 9, 2021 Final Exam Week: December 9, 2021
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**Class Meeting Schedule:**

Day	Time
Thursdays	2:00 pm – 4:00 pm

<p><b>Course Director:</b>  Dr. Syed S. Hashmi, MD, MPH, PhD  Associate Professor, Department of Pediatrics  McGovern Medical School, UTHealth  Email Address: Syed.S.Hasmi.1@uth.tmc.edu  Contact Number: 713-500-5709</p> <p><b>Course Co-Director:</b>  Meagan Choates, MS, CGC  Clinical Instructor, Department of Obstetrics, Gynecology,  and Reproductive Sciences  McGovern Medical School, UTHealth  Email Address: Meagan.giles@uth.tmc.edu  Contact Number: 713-486-2296</p> <p><b>NOTE:</b> Office hours are available on request. Please email me to arrange a time to meet.</p>	<p><b>Instructor/s:</b>  <b>Dr. Hashmi, MD, MPH, PhD</b>  <b>Meagan Choates, MS, CGC</b></p>
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**Course description:**  
This course is the second part of a two-part course that is offered to second year genetic counseling students in the GSBS Genetic Counseling Program. This course will focus on data analysis through the use of statistical software (Stata v.13) moving towards the goal of student-led analysis of their own thesis project.

**Textbook/Supplemental Reading Materials:**

- MacFarlane et al., Genetic Counseling Research: A Practical Guide, 1<sup>st</sup> Ed. 2014
- Fletcher and Fletcher, Clinical epidemiology – The Essentials, 4<sup>th</sup> Ed. 2005
- Hulley et al., Designing Clinical Research, 3<sup>rd</sup> Ed. 2006

**Course Objective/s:**

Upon successful completion of this course, students will have an understanding of common concepts in analytic processes to use in the review of literature and so that they can start analyzing data from their own thesis research projects.

**Specific Learning Objectives:**

1. To become familiar with STATA and be able to do data cleaning, modification, and simple analysis
2. To become familiar with the analytic concepts behind univariable tests such as t-test, ANOVA, Mann-Whitney, Kruskal-Wallis, and contingency tests
3. To be able to identify which test should be used for which data type and study question
4. To understand the concepts behind multivariable testing, including regression modeling
5. To become familiar with data presentation

**Student responsibilities and expectations:**

Students enrolled in this course will be expected to perform the following activities each week.

1. Complete two Stata assignments during the term, see course schedule for due dates.
2. Prepare for and take course quizzes based on course lectures/ readings.
3. Participate in and contribute to course discussions during lecture, review sessions.
4. Prepare for and take two examinations based on lecture and some reading material.

Students are expected to complete all assigned reading material (reviews and research literature) prior to class. While you may work and discuss all course materials and assignments in groups, all writing assignments must be your own. Plagiarism and failure to properly cite scientific literature and other sources will not be tolerated and are grounds for dismissal from the course and further GSBS disciplinary action. Cheating or engaging in unethical behavior during examinations (quizzes and final) will be grounds for dismissal from the course without credit and further GSBS disciplinary action.

<p><b>Grading System:</b> Letter Grade (A-F)</p> <p>A – 90-100%</p> <p>B – 80-89%</p> <p>C – 65-79%</p> <p>F – &lt;65%</p>	
<p><b>Student Assessment and Grading Criteria :</b></p>	
Assignments (30%)	<p>The goal of the assignments are to familiarize students to Stata. The first assignment will involve data cleaning, descriptive analysis, and univariable comparative analyses. The second test will involve multivariable comparative analyses. Datasets will be provided with associated exercises. Students will have to perform the analysis and provide the “.do” files as well as answers to the questions.</p>
Quiz (20%)	<p>The goal of these exercises will be to assess if students are following the material as the class progresses. The assessments will include no more than 10 questions on material that has been covered over the previous two lectures.</p>
Midterm Exam (22%)	<p>Each test will include multiple choice, multiple answer and true/false questions evaluating the understanding of theoretical concepts in epidemiology and statistics. Tests will not require the use of Stata or any other statistical software. However, simple questions requiring some mathematical formulae may be present. These questions will not require anything more than a simple calculator.</p>
Final Exam (22%)	
Participation and/or Attendance (5%)	<p>Attendance is mandatory for all assigned classes. Missing more than one class for <b>any reason</b> (excused or unexcused) will result in a reduction in the student’s final letter grade by one full letter grade. Only extreme extenuating circumstances, such as illness with a doctor’s note, will be considered for exceptions to this rule. Make-up work will be required for any missed class. Two tardies (5 minutes late or more) will be considered one unexcused absence.</p>

## ASSIGNMENT DESCRIPTIONS

- **Stats with Dataset 1: Baseline statistics**

This assignment will involve data cleaning, descriptive analysis, and univariable comparative analyses in STATA with a provided data set and exercises to complete.

- **Stats with Dataset 2: Multivariable comparisons**

The second test set will involve multivariable comparative analyses. Datasets will be provided with associated exercises. Students will have to perform the analysis and provide the “.do” files as well as answers to the questions

## CLASS SCHEDULE

Day/Date	Duration (Hr)	Lecture Topic	Assignment	Lecturer/s
Sept 2	2-4 pm	Syllabus review/Thesis Updates		Meagan Choates
Sept-9	2-4 pm	Central limit theorem; P values		Dr. Hashmi
Sept - 16	2-4 pm	Defining data, choosing the right test		Dr. Hashmi
Sept - 23	N/A	<b>NSGC - No Class</b>		
Sept-30	2-4 pm	Parametric vs. Nonparametric and Univerariable tests	Quiz 1: In Class	Dr. Hashmi
Oct-7	2-4 pm	Multivariable tests: Part One	Quiz 2: In Class	Dr. Hashmi
Oct-14	2-4 pm	Multivariable tests: Part Two		Dr. Hashmi
Oct-21	2-4 pm	WORKSHOP: Stata tutorial One	Quiz 3: In Class	Dr. Hashmi
Oct-28	2-4 pm	WORKSHOP: Stata tutorial Two <i>Provide Stata 1 Assignment</i>		Dr. Hashmi
Nov-4	2-4 pm	<b>MIDTERM</b>		
Nov-11	2-4 pm	Survival/Factor Analysis	Stata 1 Assignment Due	Dr. Hashmi
Nov-18	2-4 pm	WORKSHOP: Stata tutorial Three <i>Provide Stata 2 Assignment</i>		Dr. Hashmi
Nov-25	N/A	<b>Thanksgiving Break – No Class</b>		
Dec-2	2-4 pm	Course Review, Thesis Check In	Stata 2 Assignment Due	Dr. Hashmi
Dec-9	2-4 pm	<b>Final Exam</b>		