WHO SHOULD TAKE THIS COURSE?

This course is designed for students who are interested in developing skills for working with data and using statistical tools to analyze them. No prior experience with data or statistics is required.

WHAT ELSE SHOULD YOU KNOW?

The approach is “statistics in the service of questions”. As such, the research question that you choose (from data sets made available to you) is of paramount importance to your learning experience. It must interest you enough that you will be willing to spend many hours reading about it, thinking about it and analyzing data having to do with it.

The course will offer a focused hands-on experience in the research process. You will develop skills in 1) generating testable hypotheses; 2) conducting a literature review; 3) understanding large data sets; 4) formatting and managing data; 5) conducting descriptive and inferential statistical tests; and 6) reporting and interpreting results.

SCHEDULE

September 6:  During class:

- Investigate code books

After class:

- Watch course introduction video

September 8:  Before Class:

- Watch video in Codebooks and data architecture folder
- Take Quiz 1: Data architecture

During class:

- Work on Mini-Assignment 1 (Medical records) and submit
- Work on Project Component A: Pick a Data set and Develop a Research Question

September 9  No drop-in hours

September 13:  Before Class:
- Watch videos in Literature review folder (there are 3 of them!)
- Take Quiz 2: Lit. review (due start of class)

**During Class:**
- Research literature on variables of interest
- Work on Project Component B: Literature review

**September 15:**

**Before Class:**
- Watch video in Writing about empirical research folder
- Read iBook Ch 5
- Take Quiz 3: Writing about research (due start of class)

**During class:**
- Discuss research plan, review model research plan
- Work on Project Component C: Research plan outline

**September 16:**

**Drop in hours**

**Due by 6pm:**

Mini-Assignment 1

Journal Entry 1:
- Begin this entry by stating your progress and asking any necessary questions that you may need answered in order to move forward.
- Include Project Component A and B in this entry

**September 20:**

**Before Class:**
- Watch relevant video in Working with data folder
- Take Quiz 4: Working with data (due start of class)

**During class:**
- Work on Mini-Assignment 2 (Introduction to working with data) and submit
- Work on Project Component D: Working with data
September 22: Before Class:
- Watch relevant video in Data management folder
- Read iBook Ch 7
- Take Quiz 5: Data management (due start of class)

During Class:
- Work on Mini-Assignment 3 (Data Management tasks) and submit

Work on Project Component E: Data management

September 23: Drop in hours

Due by 6pm:
Journal Entry 2:
- Begin this entry by stating your progress and asking any necessary questions that you may need answered in order to move forward.
- Include Project Components C and D in this entry

September 27: During Class:
- Briefly discuss upcoming Exam 1
- Discuss research plan outlines and literature review

September 29: Exam 1

September 30: Drop in hours

Due by 6pm:
Mini-Assignment 2
Mini-Assignment 3

Journal Entry 3:
- Begin this entry by stating your progress and asking any necessary questions that you may need answered in order to move forward.
- Include Project Component E
<table>
<thead>
<tr>
<th>Date</th>
<th>Before Class</th>
<th>During Class</th>
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<tbody>
<tr>
<td>October 4</td>
<td>• Watch relevant video in Graphing variables folder</td>
<td>• Work on Project Component F: Univariate graphing</td>
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<td>• Read iBook Ch 8</td>
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<td>• Take Quiz 6: Graphing variables (due start of class)</td>
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<tr>
<td>October 6</td>
<td>• Watch relevant video in Graphing relationships folder</td>
<td>• Work on Mini-Assignment 4 (Graphing) and submit</td>
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<td>• Read iBook Ch 9</td>
<td>• Work on Project Component G: Graphing relationships</td>
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<td>• Take Quiz 7: Graphing relationships (due start of class)</td>
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<td>October 7</td>
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<td>• <strong>Drop in hours</strong></td>
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<td>Due by 6pm:</td>
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<td>Journal Entry 4:</td>
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<td>• Begin this entry by stating your progress and asking any necessary</td>
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<td>questions that you may need answered in order to move forward.</td>
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<td>• Include Project Component F in this entry</td>
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<td>October 11</td>
<td>Before Class:</td>
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<td></td>
<td>• Watch relevant videos in Hypothesis testing and ANOVA folder (there are 2!)</td>
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<td>• Read iBook Ch 10 &amp; Ch 11</td>
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<td>• Take Quiz 8: Hypothesis testing and ANOVA (due start of class)</td>
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</tbody>
</table>
• Work on Mini-Assignment 5 (ANOVA) and submit
• Work on Project Component H

October 13: Before Class:
• Watch relevant videos in Chi Square and correlation coefficients folder (there are 2!)
• Read iBook Ch 12 and Ch 13
• Take Quiz 9: Chi Square and correlation coefficients (due start of class)

During Class:
• Work on Mini-Assignment 6 and submit
• Work on Project Component H

October 14: Drop in hours

Due by 6pm:
Mini-Assignment 4
Mini-Assignment 5

Journal Entry 5:
• Begin this entry by stating your progress and asking any necessary questions that you may need answered in order to move forward.
• Include Project Component G in this entry

October 16 (Sunday) Research Plan Paper (due 10pm)

October 18: Before Class:
• Watch video in Exploring Moderation folder
• Read iBook Ch 14
• Take Quiz 10: Exploring moderation (due start of class)
During Class:
  • Work on Mini-Assignment 7 and submit
  • Work on Project Component I

October 20:     Exam 2

October 21:     Drop in hours
Due by 6pm:
Mini-Assignment 6
Journal Entry 6:
  • State your progress and ask any necessary questions that you may need answered in order to move forward.
  • Include Project Component H in this entry

Fall Break (October 22-25)

October 27:     Before Class:
  • Watch video in Regression and study design folder
  • Read iBook Ch 15 and Ch 16
During Class:
  • Continue to work on project

October 28:     Drop in hours
Due by 6pm:
Mini-Assignment 7
Journal Entry 7:
  • Begin this entry by stating your progress and asking any necessary questions that you may need answered in order to move forward.
  • Include Project Component I in this entry
November 1:  
Before Class:  
- Watch video in Confounding and multivariate models folder  
- Read Ch 17  
- Take Quiz 11: Multivariate models (due start of class)  

During Class:  
- Work on Project Component J

November 3:  
During Class:  
- Work on Project Component J

November 4:  
**Drop in hours**

Due by 6pm:  
Journal Entry 8:  
- Begin this entry by stating your progress and asking any necessary questions that you may need answered in order to move forward.

November 8:  
Before Class:  
- Watch making posters videos (there are 2!)  
- Read iBook Ch 18  

During Class:  
- Continue to work on analysis  
- Begin work on poster

November 10:  
Exam 3

November 11:  
**Drop in hours**

Due by 6pm:
Journal Entry 9:

- Submit Project Component J
- State your progress and ask any necessary questions that you may need answered in order to move forward.
- Include any new output or interpretations

November 15:
  During Class:
  • Analysis and poster work

November 17:
  During Class:
  • Analysis and poster work

November 18:
  **Drop in hours**
  **Due by 6pm:**

  Journal Entry 10:
  • State your progress and ask any necessary questions that you may need answered in order to move forward.

November 22:
  During Class:
  • Analysis and poster work

Thanksgiving Break (November 23-27)

November 29
  During Class:
  • Analysis and poster work

December 1:
  During Class:
• Peer review of posters
• Work on oral presentation

Due:
• Final poster by 10pm

December 2:  Drop in hours

Due by 6pm:
Exam 4 practice support

Journal Entry 11 (Last one!):
• This final entry could take many different forms – you might continue and/or conclude your research, you might reflect back on your experiences, you might think about how your experiences will affect you as you move forward, etc.
• Examples of things you may want to reflect on:
  o What would have you liked to do with more time or knowledge?
  o How would you characterize your learning in this course?
  o Did you figure something out that you didn’t think you could?
  o What surprised you about your work in this course?
  o How did journaling contribute to the progression of your project?

December 6:  Before Class:
  Write out oral presentation

During Class:
• Work on oral presentation and share in small groups
December 8: Exam 4

December 9: Final Poster Session (12:00 to 3:00 – Beckham Hall)

COURSE REQUIREMENTS

Weekly Class Sessions: Tuesday and Thursday class sessions include instructor and peer mentor support aimed at helping you to make consistent and meaningful progress on your research project. Put simply, attendance is required. It is the truly exceptional student who can afford to miss more than a session or two without placing undue pressure on peer mentors, instructors and themselves.

Materials: All supporting materials for the course will be made available through Schoology.com. You will need to set up an account and use the following access code to register and join the course 6ZB82-TV4KB

Lessons: Rather than a traditional textbook, this course provides a series of "lessons" aimed at preparing students conceptually and technically for the various steps taken in completing their research project. Lessons are presented in video with corresponding text and content/demonstrations. All lessons should be completed prior to each class session. If you come to class without having engaged with the lessons, you will have the opportunity to spend your time on them during class (in this case, bring ear buds!).

Surveys/Quizzes/Feedback: After reviewing each lesson, you will be asked to complete a brief quiz with additional feedback questions. These must be completed prior to the associated class session to receive credit. Three surveys will also be administered (pre mid and post). Full credit will be given for those who complete them.

Journal and Mini and Component Assignments: Students will submit journal entries through Schoology. The purpose of the journal is to encourage you to reflect on the research process, both in terms of concept and execution. You should describe your decisions, observations, learning and experiences as precisely as possible, paying attention to details (e.g. what you accomplished, what the process was like, how you felt about it, what you hope to accomplish next, what you wish you would have known, etc.). Component assignments will also be submitted as part of your journal entries as a way of building your story around results and next steps. Mini assignments with a different data set will also be assigned throughout the semester to help support student learning at each step. To receive credit, journal entries and mini and component assignments are due on time. No exceptions.

Drop in Hours: Additional support will be available on Fridays. These meetings provide an opportunity for you to share your work with others throughout the semester and to seek additional support and clarification. Each student must attend a minimum of 4 Friday drop-in sessions during the semester and attend additional sessions if instructed by professor or TA. This will be counted as part of your course attendance grade.

Research Plan: Students will prepare and submit a research plan that includes a literature review on their research topic, a description of the study method and an
evaluation of the potential implications of the research. Outlines are due and should be posted as part of your journal entry. The final paper is due October 16. [This assignment will be penalized one grade step for each day that it is late (e.g. - to +)]. For example, a B+ paper submitted after 10:00 pm on the due date and before 10:00 pm the following day will receive a B.

**Exams:** Four quarterly on-line exams will be given during class sessions and will include questions in objective format (i.e. multiple-choice). In each exam, you will be asked to apply your knowledge and integrate material from lessons and class experiences. These exams are “closed-book”; however, you are permitted to bring ONE standard 8.5x11 sheet of paper including anything that you think will help you in the exam (your notes may be written on both sides).

**Research Poster/Oral Presentation:** Journal entries and assignments will build to the completion of an individual project that will be presented at the end of the semester as a research poster and oral presentation. The poster session will be scheduled Friday, December 9 from 12:00 to 3:00 (you must clear your schedule in order to be able to attend the entire session – no exceptions!). A 5-minute oral presentation followed by a question and answer session is required of each student. **All posters must be submitted for printing by 10:00 pm on December 1st**. Students who miss this deadline will be responsible for finding a way to print their poster off campus, on their own time, and at their own cost.

**Additional Support:** Additional tutors are available in the Quantitative Analysis Center (ALLB108) throughout the week. **Monday–Thursday 3:00-5:30 pm and 7-10:30 pm, Friday 3:00-5:30 pm, Sunday 6-10:30 pm.** You can also use the two computing work areas adjacent to the tutoring office (rooms 107 and 110) to do your work.

**Commitment to the Course:** Students are expected to make marked progress each week and to come to class sessions and drop in hours prepared with questions and planned next steps. It is important to note that to really learn the material and skills presented in this course, students will need to devote a substantial amount of time and that a significant portion of that time will likely require support from instructors, mentors, tutors and classmates. Everyone should be taking advantage of one-on-one support throughout the semester.

**Scientific Integrity:** The rules of science should be carefully upheld in everything that you do. The following behavior is absolutely unacceptable: Data fabrication, selective reporting, omission, suppression or distortion. Please be mindful that there is no such thing as a “little scientific misdemeanor”.

**Accommodations:** It is the policy of Wesleyan to provide reasonable accommodations to students with documented disabilities. Students are responsible for registering with Disabilities Services, in addition to making requests known to their instructor. If you require accommodations in this class, please make an appointment with your instructor during the 1st week of the semester, so that appropriate arrangements can be made.

**Grades:** Course grades will be based on

- a. Mini-Assignments and Journal (20%)
- b. Surveys/quizzes/feedback (5%)
- c. Exams (40%)
d. Research Plan (15%)
e. Regular and punctual attendance at all class sessions and required Friday drop-in hours. Students missing no more than 3 total required meetings will receive full credit. Those missing more than 5 class meetings will receive a zero for this portion of the grade. Three times late for class will be considered one absence. (5%).
f. Research Poster/Oral presentation (15%)

Grade Reappraisal: Students seeking reappraisal of graded assignments, exams or feedback/attendance records must discuss his/her work with their instructor within two weeks of the assignment, exam, or feedback/attendance having been recorded. **No reappraisal will be considered after this two-week period.**

Passing Letter Grades/Percentages: A 95-100%; A- 91-94%; B+ 88-90%; B 85-87%; B- 81-84%; C+ 78-80%; C 75-77%; C- 71-74%; D+ 68-70%; D 65-67%; D- 60-64%