Course Information
Term: Summer  
Credits: 1

Class Meetings
Groups A, B, and C meet at different times. Check CourseWeb for your group assignment and the schedule below for meeting times.

Location
All groups meet in Parkvale 222

Instructor(s)
Doug Landsittel, PhD, landsitteldp@upmc.edu

Course Description
The purpose of this course is to provide a concentrated introduction to the use of computers in the analysis of data from patient-oriented research. Specifically, you will learn:

- Principles of database design
- Descriptive statistics and exploratory data analysis
- Graphical display of data
- Methods for data manipulation, transformation, merging, and case selection
- Use of STATA™ software for conducting data analysis

Course Format
This course is offered in a hybrid (partially online/partially face-to-face) format. Aside from the lab, there are no formal class sessions. Rather, you will watch video lectures on your own time then come to lab to apply what you've learned, ask questions, and get help. The hybrid format allows you to:

- Engage with the content at your own pace and on your own schedule
- Rewind, rewatch, or jump ahead as necessary
- Use class time for interaction and clarification
- Spend less total time in class

Required Materials
Readings: There is no required textbook for this course, but you will be asked to read several journal articles. To access these readings, please visit http://www.ncbi.nlm.nih.gov/pubmed/.

Software: I recommend that you purchase a copy of Stata 14™ for this course. Directions on how to purchase Stata through the University of Pittsburgh can be found here: http://technology.pitt.edu/category/software-for-students
Schedule
This class is split into three groups for lab sessions. Check CourseWeb to find your group and the schedule below to see your group’s meeting time.

Daily Responsibilities
In this intensive, four-day course, you will attend a lab session daily at the assigned time. During lab, you will work independently to complete a series of computer-based exercises. Prior to attending the lab, you must complete the following tasks at home on your own time:

- Watch a set of instructional videos
- Take a quiz
- Write down questions you have about the content

Be sure to take notes on videos and readings. I expect you to come to lab fully prepared to apply what you’ve learned, ask for clarification, and seek help when you need it.

Course Requirements
Your final letter grade will be based on the following:

- 4 quizzes: 20%
- 4 lab exercises: 80%

Grading
Final letter grades will be assigned according to the following grading scale:

A = 90-100
B = 80-89
C = 70-79
D = 60-69
F = 0-59

Help
Please don’t hesitate to contact your TA via email if you have any questions about course content. You can generally expect an answer within 24 hours, if not sooner.

If you have any questions about scheduling or technology (CourseWeb, GoToMeeting, the sign-in system for attendance, etc.) please contact the course administrator, Juliana Tambellini at: tambellinijm2@upmc.edu.

Course Policies
You are responsible for knowing and following these course policies. Please read them carefully.

Assignment Policy
You are expected to do the work for this course independently and turn it in by the designated deadline.
Attendance Policy
Please sign in to each class on the computer provided in suite lobby; this records your attendance. If you encounter a problem with the sign-in system, please contact the course instructor(s) immediately.

Recording Policy
ICRE-Produced Recordings: ICRE faculty and/or staff may video and/or audio record this course (hereby referred to as "Recordings"). By enrolling in this course, you hereby give the University of Pittsburgh and the Institute for Clinical Research Education, through its faculty, employees, agents, licenses or assigns, the irrevocable and worldwide right to use your name, voice, likeness and/or image in all forms and media (to include internet websites and online course website). You waive your right to inspect or approve the finished version(s) of the Recordings, including any copy that may be created in connection therewith. You understand that you will not be paid for your participation in the Recording and that you are not entitled to your own copy of the Recording. You understand that the University of Pittsburgh is not responsible for any unauthorized use of the Recording. You have read this syllabus and have no questions about the contents and are an adult over the age of 18.

Student-Produced Recordings: To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without advance written permission of the instructor. Any such recording properly approved in advance can be used solely for the student’s own private use.

Academic Integrity
You are expected to comply with the University of Pittsburgh’s Policy on Academic Integrity detailed here: http://www.provost.pitt.edu/info/ai1.html. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

Disabilities
If you have a disability for which you are requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 216 William Pitt Union, 412-648-7890 / 412-3837355 (TTY), as early as possible in the term. Disability Resources and Services will verify your disability and determine reasonable accommodations for this course.
## Competencies addressed in this course

<table>
<thead>
<tr>
<th>Competency</th>
<th>Module 1</th>
<th>Module 2</th>
<th>Module 3</th>
<th>Module 4</th>
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<tbody>
<tr>
<td><em>Data Management and Biomedical Informatics:</em> Identify pertinent issues in the construction of effective data security and management plans for various research designs.</td>
<td>X</td>
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<td><em>Data Management and Biomedical Informatics:</em> Organize datasets (variable display and structure) appropriately for given statistical techniques.</td>
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<tr>
<td><em>Applied Analytic Techniques:</em> Describe appropriate data analysis plans for addressing specific research questions.</td>
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<tr>
<td><em>Applied Analytic Techniques:</em> Determine and apply a range of appropriate statistical techniques to answer research questions and explain the implications of missing data on conclusions drawn from statistical results.</td>
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Module 1: Principles of databases, data acquisition, and storage

Group A
Group B
Group C

At the conclusion of this session, you should be able to:

- Create a simple flat-file in Stata with keyboard entry
- Input an existing dataset with delimiters to create a Stata dataset
- Create data labels for variables and codes
- List datasets and check for errors
- Use file transfer programs and change from one file format to another

Before coming to lab, complete the following online materials:

<table>
<thead>
<tr>
<th>Watch</th>
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<tbody>
<tr>
<td>Lecture 1: Data Types</td>
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<tr>
<td>Lecture 2: Relational Databases</td>
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<td>Lecture 3: Data Collection Methods</td>
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<td>Lecture 4: Error</td>
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<td>Lecture 5: Stata</td>
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<tr>
<th>Do</th>
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<tr>
<td>Take Quiz 1</td>
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Due at the end of lab: Lab 1
Module 2: Descriptive statistics: summarizing variables

At the conclusion of this session, you should be able to:

- Use Stata to produce measures of central tendency (mean, median, mode), spread (range, standard deviation, standard error), and shape (skewness, kurtosis).
- Produce tabular output in Stata using multiple methods.
- Use graphics available in Stata to display data and check for errors

Before coming to lab, complete the following online materials:

Watch
- Lecture 1: Descriptive Statistics
- Lecture 2: Measures of Spread, Shape, and Symmetry
- Lecture 3: Graphs

Do
- Take Quiz 2

Due at the end of lab: Lab 2
Module 3: Data transformation and manipulation
Group A
Group B
Group C

At the conclusion of this session, you should be able to:

- Perform simple transformations
- Dichotomize or polychotomize continuous data
- Calculate time between events
- Change string variables into numeric variables
- Create more complex graphics

Before coming to lab, complete the following online materials:

<table>
<thead>
<tr>
<th>Watch</th>
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<tbody>
<tr>
<td>• Lecture 1: Tables</td>
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<tr>
<td>• Lecture 2: Transformations</td>
</tr>
<tr>
<td>• Lecture 3: Transforming: An Example</td>
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<tbody>
<tr>
<td>• Take Quiz 3</td>
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</table>

Due at the end of lab: Lab 3
Module 4: Levels of analysis, merging, appending, and reshaping data files
Group A
Group B
Group C

At the conclusion of this session, you should be able to:

- Merge data files to add variables, add cases, and use keyed files (look-up tables) to add variables
- Change file structures to facilitate analysis
- Write and save command files in Stata
- Link to word processing of graphs and output files from Stata

Before coming to lab, complete the following online materials:

<table>
<thead>
<tr>
<th>Watch</th>
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<tbody>
<tr>
<td></td>
<td>Lecture 1: Append and Merge</td>
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<td>Lecture 2: Matching and Reshape</td>
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<td></td>
<td>Take Quiz 4</td>
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Due at the end of lab: Lab 4