COURSE INFO

Prerequisites:
EDUC 6116 (Introduction to Educational Statistics) or equivalent, or instructor’s permission. This course builds on topics which were introduced in EDUC 6116 including: descriptive statistics, graphs, SPSS, basic sampling, sampling distributions, hypothesis testing, and two-group mean comparisons (i.e., z-tests and t-tests). **Students who have not had the necessary prerequisite coursework should not take EDUC 8120.**

Course Description:
EDUC 8120 is designed to be a second-level course in quantitative research methodology. We will work on the skills to enable you to become an informed consumer of the research literature, as well as prepare you to be a competent researcher. This class will concentrate on the use of ANOVA as a statistical test, the appropriate use of multiple comparison procedures, and strength of association. We will calculate tests “by hand” as well as with SPSS. In addition to the ANOVA and related procedures we will discuss the use and calculation of the chi-square. These statistical procedures will be taught within the context of the relevant research designs. We will work to develop the appropriate vocabulary to communicate the research results, and work to hone the skills needed to critically evaluate the research literature.

Research Methods Lab Assistant
Who: Megan Shaine
Email: edreslab@gwu.edu
Phone: 202-994-3174
Office Hrs:
Appointments during these times are STRONGLY recommended. The Lab Assistant cannot guarantee availability without an appointment.

What’s in this Syllabus?

Course Materials 2
SPSS 2
Grading Scale 3
Assessments 3
Dropbox 4
Submitting Assessments 4
Late Policy 4
Accommodations 5
Integrity 5
Email 5
Schedule 6
Supplemental Readings 7
Time Management 7
Bloom’s Taxonomy 8
COURSE MATERIALS

Optional Textbooks:
   *(the textbook is not required)*

Additional Optional Textbooks:

Calculator:
You will need a calculator that is capable of calculating square roots for the homework, project, and midterm and final exams. Students are encouraged to bring calculators to class each day.

Supplemental Readings:
In addition to the textbook (listed above), supplemental readings may be assigned periodically. These readings will be posted on Blackboard.

Lecture Materials:
Students are responsible for bringing all lecture materials related to that day’s topics. Materials can be printed, or viewed on a laptop or ipad. Materials will be posted on Blackboard by the morning of the day of class. If they are not posted by the morning of the day of class, then I will bring any necessary materials for that class session to class.

Note: The lecture notes are not meant to be a substitute for engaging in the lectures/exercises. Not all material covered in lectures/exercises is in the lecture notes. I provided you with lecture notes as a favor to you so that you are not spending time copying formulas, graphs, and output. However, it is your responsibility to take notes on other material covered during class lectures/exercises.

SPSS:
This course will use Statistical Package for the Social Sciences (SPSS) computer software. Students are expected to have access to SPSS/PASW to complete homework assignments. There are several options for utilizing this program:
1. GSEHD Technical Services provides a free version of SPSS for current students in GSEHD (gsehdtec@gwu.edu).
2. A 6- or 12-month rental version of the software program can be purchased from the following website (recommended by former students): http://www.onthehub.com/spss/. This software can be installed on the student’s own computer. SPSS software has built-in safeguards to prevent unauthorized copying of software. If you choose to rent a copy of this program, be sure you buy the STANDARD GRADPACK VERSION. The Statistics Base Gradpack is limited and does not do all of the analyses we will be conducting in this course.
3. The student can use SPSS in one of the computer labs on campus. Note: That the basic version of SPSS installed on computers in Foggy Bottom computer labs does not do some of the analyses required for this course.

DISCLAIMER: Be sure you are using THE STANDARD GRADPACK VERSION of SPSS. The Statistics Base Gradpack is limited and does not do all of the analyses we will be conducting in this course.
Your assessments will be combined according to the percentages shown below:

<table>
<thead>
<tr>
<th>Weighted Composite Grade:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework (4)</td>
</tr>
<tr>
<td>Research Proposal</td>
</tr>
<tr>
<td>Midterm</td>
</tr>
<tr>
<td>Final</td>
</tr>
</tbody>
</table>

Final grades will be assigned based on the following scale:

<table>
<thead>
<tr>
<th>Letter Grade Scale:</th>
</tr>
</thead>
<tbody>
<tr>
<td>92% and above</td>
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<tr>
<td>90% - 91.99%</td>
</tr>
<tr>
<td>88% - 89.99%</td>
</tr>
<tr>
<td>82% - 87.99%</td>
</tr>
<tr>
<td>80% - 81.99%</td>
</tr>
<tr>
<td>78% - 79.99%</td>
</tr>
<tr>
<td>72% - 77.99%</td>
</tr>
<tr>
<td>70% - 71.99%</td>
</tr>
<tr>
<td>69.99% and below</td>
</tr>
</tbody>
</table>

If you receive a failing grade (i.e., less than 70%) on BOTH the Midterm & Final exams you will receive a letter grade of F in the course.

Grading Policies:
- Numerical grades will not be rounded.
- Grades will not be changed unless a computational error has been made.
- No grades will be dropped.
- There will be no extra credit.
- Grades of “Incomplete” will not be given unless the student can demonstrate that near catastrophic events have led to a cause of extreme hardship.

Assessments

Homework/Assignments:
There will be several homework assignments, each designed to give students a chance to apply and practice the concepts learned in class. The possible points for each assignment vary based on the amount of material covered. Students may discuss the homework with other students in the class but you must each turn in your own homework with your own computations and explanations written in your own words. Homework assignments will be posted on Blackboard approximately 2 weeks before the due date.

Research Proposal:
Students will complete a research proposal that utilizes ANOVA for this course. There will be two parts of this research proposal: a presentation, and a paper. You may work alone or with one other student in the course on your project. If you work with another student both students must participate in the oral presentation and both students must participate in writing the paper. Specific details of will be posted on Blackboard as the semester progresses. Students are encouraged to discuss their project topics with the instructor during office hours or during another appointment.

Exams:
The midterm and final exams will cover the topics presented in the first and the second half of the semester, respectively. However, due to the cumulative nature of the course content, key concepts from earlier topics will be used in later parts of the course and thus may appear on both exams.

The midterm will be a take-home exam. The exam will be posted on Blackboard approximately one week prior to the due date. You are allowed to use a calculator and your notes for the midterm. You must turn in your own midterm with your own computations and explanations written in your own words. You are not allowed to work with anyone on the midterm. You are not allowed to discuss the contents of the midterm with anyone until after everyone in the class has turned in the midterm. You are allowed to ask me clarification questions. The final exam will be administered in class. It will be closed-book.

Exams are to be completed independently; students found doing otherwise will be subject to the maximum university penalties. For security purposes you are not allowed to keep your exams. You are welcome to view and discuss your exams with me during office hours. Any student who does not return his/her exam will be given a grade of 0 on the exam.

Note: you have approximately 2 weeks to complete course assessments (more time for the project). Thus, you should grant me the same leniency and expect that it will take approximately 2 weeks to grade your work.
SUBMITTING ASSESSMENTS

All assessments should be submitted via Dropbox: (http://www.dropbox.com/). Dropbox is a method of sharing files from one computer to another. This eliminates the need to email files back and forth. Emailed assignments will NOT be accepted. See the handout on Blackboard for how to download the Dropbox application, create a folder, and share the folder with me.

During the first week of the semester you should:
1) Sign-up for your free Dropbox account, Download and install the software (if you don’t already have it).
2) Create a folder in Dropbox that includes your name on record at GW followed by the course number in parentheses. For example: Sally Student (EDUC 8120)
3) Share the folder with me at weissba@gwu.edu
4) Add a picture of yourself to your Dropbox folder 😊

When submitting ALL assessments please be sure you have followed the guidelines below. Any assignment that has not followed all of these guidelines will NOT be graded.

- The filename includes both your name and the title of the assessment. For example, “Sally Student – Homework #1.doc”
- Your name is included on the first page of the assessment.
- Each assessment should be submitted in a SINGLE file (i.e., do not use multiple files for homework and output). This means that you will need to copy and paste your SPSS output into the appropriate places of your assignment.
- The SPSS output portion of your homework should be edited to only include the relevant information. This means that you should NOT include SPSS syntax, error messages, or extra tables/graphs from additional analyses that you have run.
- Be sure all tables, graphs, and text are visible. If anything is running off of the page that section will be counted as missing and you will be penalized the corresponding number of points.
- The file must be in MS Word format. PDF files will not be accepted. No other file formats will be accepted. I will grade assignments using the comments feature in MS Word and may add typed comments directly into the document.

Note: please ONLY put completed assessments in your Dropbox folder (i.e., do not store files in your Dropbox folder that you do not want graded and do not store personal files in your Dropbox folder.)

POLICY ON LATE WORK:

Due dates for each assessment are listed on the course schedule. Assessments must be submitted by midnight. Anything submitted after this time on the due date will be considered late. If assessments are handed in late, they will be penalized 20% of the total possible credit if handed in within one week of the due date. Assessments handed in one week or more late will not be graded and will not receive any credit. Requests for time extensions must be submitted and approved in writing prior to the due date. Time extensions for assessments will not be given except in cases of approved medical or family emergencies where accompanying written documentation is provided by the student.

The Dropbox website tracks when files are added and updated in Dropbox. It is your responsibility to ensure assessments have been properly uploaded.

Karl Pearson developed the Pearson Correlation Coefficient, Pearson χ², and many other important statistics.
Accommodations

Missed Exams:
Due to the need for equity and classroom management, I must guard the security of all tests. No make-up examinations will be given without written documentation of a medical emergency or other excused University absence. If you wish to make-up work, you should provide me with a written note stating the date(s) of your absence, the reason for your absence, and the work that you are requesting to make-up. You should attach documentation of a university-approved reason for your absence and submit the note and the documentation to your instructor within one week of your return to class. Make-up exams may differ from the in-class exam.

Religious Accommodations:
It is the policy of The George Washington University that students not be penalized for participation in religious observances. Students shall be allowed, whenever practicable, to make up academic assignments that are missed due to such absences. It is the student's responsibility to contact the instructor for each course in which work is missed, and make arrangements for make-up work or examinations. Students are responsible for information and material missed on the day(s) of absence. The student is responsible for providing written notification to the professor within the two weeks of the semester. The notification must identify the religious holiday(s) and the date(s). The student shall hand the written notification to the instructor personally to avoid problems with collecting mail from mailboxes or e-mail. The process should be confidential. Since the final exam for this course will not yet be scheduled within the first week of class, please include any religious observances during final exam week in your written request. Work missed for any excused absence (i.e. due to religious observance, illness, etc.) must be made up within a timely manner. Any work missed should be made up within one week of the student's return to class, unless otherwise specified by the instructor.

Academic Accommodations:
If you need academic accommodation by virtue of a documented disability, please contact the course instructor as soon as possible to discuss your needs. Students with documented needs for an accommodation must meet the same achievement standards required of all other students, although the exact way in which achievement is demonstrated may be altered. All requests for academic accommodations should be made during the first two weeks of the semester. Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: http://gwired.gwu.edu/dss/

Integrity

The George Washington University has a nationally recognized Code of Academic Integrity. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. Please review the University’s policy on academic integrity, located at www.gwu.edu/~ntegrity/code.html All graded work must be completed in accordance with The George Washington University Code of Academic Integrity. Any student caught with unauthorized materials, or cheating in any other manner during exams or on assignments will be referred to the Academic Integrity Office, the student will be recommended for the maximum sanction which is to receive a grade of F on his or her transcript. In accordance with the Code of Academic Integrity, all sanctions shall be marked on the respondent's permanent record (i.e., transcript) with the phrase “Academic Dishonesty”.

Emails

I receive a plethora of emails on a daily basis from students. I try to respond to emails within 48 hours during the workweek, but this is not always possible. Please be aware that the number of emails I receive tends to increase exponentially before an assessment is due and as the end of the semester approaches. Thus expect that it could take longer for me to respond to emails at those times.

FYI - I respond to course content emails most Mon-Thur mornings (i.e., not on the weekends; not in the evenings). Please do not email me on Friday afternoon and then email me the same question on Monday morning.

I do not respond to emails that do not include a salutation, your name, and the course number and section (e.g, EDUC 8120, Wednesday nights). I teach multiple large classes a semester and work with many other students at the University, and I can’t always remember what class you are in.

Attendance

Class attendance is not a requirement for this course, except on exam and presentation dates. However, participation is crucial to your success in this course. Students are responsible for all course material presented in class and indicated in the course lecture notes or text. Some material presented in class may not be in the textbook, and vice versa. Additionally, handouts may be distributed during class which may not be posted on Blackboard.

If you miss class it is your responsibility to learn the material on your own, and it is your responsibility to acquire handouts from classmates. I will not hold private class sessions in my office for students who miss class, and I may not post all handouts on Blackboard.
**Tentative Course Schedule**

The topics listed for each class meeting on the schedule are tentative and subject to change. The topics will most likely be covered in this order. *However, depending on class time we may cover topics slightly earlier or later than the dates shown below. The due dates are also tentative and subject to change.* The chapters and page numbers for the readings correspond with the Lomax textbook.

Tuesday dates refer to CRN 27750 (Tuesday class). Thursday dates refer to CRN 21259.

<table>
<thead>
<tr>
<th>Week</th>
<th>Tues</th>
<th>Thurs</th>
<th>Topics</th>
<th>Readings</th>
<th>Assessment Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/15</td>
<td>1/17</td>
<td>Introduction/Review One-Way ANOVA</td>
<td>Cha 11</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1/22</td>
<td>1/24</td>
<td>One-Way ANOVA (continued) Multiple Comparisons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1/29</td>
<td>1/31</td>
<td>Multiple Comparisons (continued)</td>
<td>Cha 12</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2/5</td>
<td>2/7</td>
<td>(catch-up, if needed) Class Exercises</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2/12</td>
<td>2/14</td>
<td>Effect Sizes Power Weiss Olejnik</td>
<td>HW 1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2/19</td>
<td>2/21</td>
<td>Factorial ANOVA</td>
<td>Cha 13</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2/26</td>
<td>2/28</td>
<td>Multiple Comparisons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>3/5</td>
<td>3/7</td>
<td>NO CLASS – WORK ON MIDTERM *Midterm will be posted online this day</td>
<td>HW 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3/12</td>
<td>3/14</td>
<td>SPRING BREAK - NO CLASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>3/19</td>
<td>3/21</td>
<td>Within-Groups ANOVA</td>
<td>pg 493-499</td>
<td>Midterm</td>
</tr>
<tr>
<td>10</td>
<td>3/26</td>
<td>3/28</td>
<td>Mixed Designs ANOVA</td>
<td>pg 500-507</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>4/2</td>
<td>4/4</td>
<td>ANCOVA</td>
<td>Cha 14</td>
<td>HW 3</td>
</tr>
<tr>
<td>12</td>
<td>4/9</td>
<td>4/11</td>
<td>Chi-Square Goodness-of-Fit Chi-Square Test of Independence Begin Presentations</td>
<td>pg 217-235</td>
<td>Kline</td>
</tr>
<tr>
<td>13</td>
<td>4/16</td>
<td>4/18</td>
<td>What Type of Hypothesis Test Review Presentations</td>
<td>Klockars Lix &amp; Keselman</td>
<td>HW 4</td>
</tr>
<tr>
<td>14</td>
<td>4/23</td>
<td>4/25</td>
<td>FINAL EXAM</td>
<td></td>
<td>Final Exam</td>
</tr>
</tbody>
</table>
SUPPLEMENTAL READINGS


Note: Other supplemental readings may be assigned periodically. These readings will be posted on Blackboard.

TIME MANAGEMENT

The traditional credit hour is based on the Carnegie unit of measurement in which 1 credit hour equates to 3-hours of work per week in that course (including both in-class and out-of-class time), over a 15-week period. Thus, under this unit of measurement a 3-credit hour course equates to 9 hours of work per week in that course over a 15-week period of time. Some students taking this course report spending less time than this for my courses, but this rule-of-thumb should help you plan and schedule appropriate amounts of time for completing assignments in courses.

The assessments in this course necessitate more than one evening to complete them. Thus, I recommend you begin working on these as soon as possible so that you have time to complete them to the best of your ability and ask clarification questions if necessary.

Summer Courses: The nature of Summer courses is such that you have approximately 2.5-weeks of material covered in a single week. This means that for a 3-credit 6-week Summer course, you should expect to spend approximately 22.5 hours per week with course material.
Bloom’s Taxonomy

Bloom’s taxonomy is a tool for classifying subject matter learning objectives. The taxonomy is a guide used to classify objectives according to their level of cognitive complexity. The lowest level of cognitive complexity is the Knowledge level, while the highest level is Evaluation. Learning objectives for this course (and other courses) can be classified using Bloom’s Taxonomy.

Types of Assessments:
- Article Critique
- Project
- Blog
- Exam/Test
- Homework
- Quiz
- Practice Exercises

Evaluation - Make judgments about the extent to which material satisfies criteria

Synthesis – Combine elements to form a new original entity

Analysis – Understand organizational structure of material; draw comparisons and relationships between elements

Application – relate previously learned material to new situations

Comprehension – Explain or summarize in one’s own words

Knowledge – Recognize facts, terms, and principles