Applied Research Methods in
Behavioral and Community Health
(Version 1)

HLTH 712       Fall 2014
SECTION 0101

DAYS AND TIMES       Wednesdays 4:00-6:45pm (Plant Sciences, Rm 1159)

INSTRUCTOR:          Bradley O. Boekeloo, Ph.D., M.S.
Department of Behavioral and Community Health
SPH Building
Phone: 301-405-8546
E-mail: boekeloo@umd.edu

Office hours can be arranged by appointment.

PREREQUISITES:      HLTH 710, Methods and Techniques of Research
                    HLTH 711, Advanced Research Methods

REQUIRED READING:
Students are expected to read the material identified in the course schedule before the class.

REQUIRED SOFTWARE:
Students will need access to an up to date version of basic SPSS statistical analysis programs.

COURSE TEXTS:
As this is an advanced course that assimilates and builds on prior course work, multiple texts may be useful in this course. Students are encouraged to review the texts below to supplement their learning.


Research Methods in Health Promotion, Richard A. Crosby (Editor), Ralph J. DiClemente (Editor), Laura F. Salazar (Editor), Jossey-Bass, 2006.


COURSE DESCRIPTION:
This course is designed to build on the research skills obtained in fundamental research methods and statistics courses. This course facilitates an assimilation and application of fundamental research methods with the goal of performance mastery at the doctoral level.

Behavioral and community health research is defined in this course as research on educational and related processes to improve health of individuals and communities. Because both quantitative and qualitative research methods are integral to understanding complex behavioral problems, the course content will be examined through the framework of mixed methods. Nevertheless, quantitative research methods will be the major focus. We will discuss methods and problems that are commonly encountered in Behavioral and Community Health research, and examine related research literature. Students will be made aware of complex behavioral research issues and where to go for further information. Students will also examine an existing research data set, develop an analytic plan, conduct data analysis, and write a report on findings. It will be assumed that students already have basic computer and statistical skills. Students are encouraged to consult with statistical experts during some phases of the data analysis as the instructor is not a statistician. The course
assignments are aimed at helping students gain confidence in their skills regarding research design, data management, data analysis, and reporting on research findings. Oral and written research communication skills will be developed.

**COURSE OBJECTIVES:**
Upon completion of this course, students will be able to:

1. Create a database and code data.
2. Develop an efficient and effective system for managing data and data analysis files that adhere to IRB principles and protocols.
3. Evaluate the appropriateness of survey questions and survey administration techniques.
4. Identify a research question, and choose variables that can be used to examine the question.
5. Review the literature to identify and support the articulation of a behavioral and community health question that warrants an investment in research.
6. Describe, critique, and examine various research study designs, and related limitations and potential biases.
7. Create a construct measure from multiple items and assess its reliability and validity.
8. Articulate Behavioral and Community Health theory both graphically and in text that best captures the phenomenon to be examined.
9. Design and execute the statistical analysis that best answers the research question accounting for the limitations of the data.
10. Provide accurate tables and figures, as well as written text, to describe analytical results.
11. Provide a logical interpretation of the analytical results.
12. Provide an appropriate description of the implications, limitations, and knowledge gaps that remain based the interpretation of findings.
13. Identify appropriate report dissemination outlets and the requirements for reporting through those outlets.

**PHD COURSE COMPETENCIES**

<table>
<thead>
<tr>
<th>Core Competencies</th>
<th>How evaluated/measured</th>
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<tbody>
<tr>
<td>Analyze and refine existing health behavior theory.</td>
<td>Students use an existing survey data set to empirically examine health behavior theory.</td>
</tr>
<tr>
<td>Use appropriate theory to describe, explain, predict, and/or change a particular health problem within a given population and context.</td>
<td>Students use an existing survey data set to empirically examine health behavior theory.</td>
</tr>
<tr>
<td>Identify causes of the social and behavioral factors that affect the health of individuals and populations.</td>
<td>Students use an existing survey data set to empirically examine health behavior theory.</td>
</tr>
<tr>
<td>Specify multiple targets and levels of intervention for social and behavioral science programs and/or policies.</td>
<td>Students review recent articles on the state of health behavior theory.</td>
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<td>Activity</td>
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<tr>
<td>Be conversant about current health behavior theories and theory-based research.</td>
<td>Students discuss the theoretical framework for the empirical secondary data analysis.</td>
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<tr>
<td>Conduct univariate and multivariate data analysis including statistical comparisons and predictions.</td>
<td>Students use an existing data set to empirically examine health behavior theory.</td>
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<tr>
<td>Conduct advanced statistical analyses including longitudinal, multilevel and survival data.</td>
<td>Students use an existing data set to empirically examine the psychometrics of multi-item scales.</td>
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<tr>
<td>Create reliable and valid measurement tools.</td>
<td>Students use an existing data set to empirically examine health behavior theory.</td>
</tr>
<tr>
<td>Apply the steps involved in examining a conceptual model.</td>
<td>Students use an existing data set to empirically examine health behavior theory.</td>
</tr>
<tr>
<td>Assess limitations of the internal and external validity of research.</td>
<td>Students describe the limitations of the internal and external validity of their own secondary data analysis.</td>
</tr>
<tr>
<td>Critically appraise reports of research and evaluation.</td>
<td>Students conduct a literature review and critically examine the methods of studies.</td>
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<tr>
<td>Identify sources and processes for research funding.</td>
<td>Students identify potential funders for the topic of their secondary data research.</td>
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<tr>
<td>Develop expertise in an area of independent research interest.</td>
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<tr>
<td>Present clear, engaging, and informative oral research reports.</td>
<td>Students present their secondary data research to the class.</td>
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<tr>
<td>Apply the steps involved in independent research.</td>
<td>Students work through all aspects of a secondary data analysis leading to a draft manuscript.</td>
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**REQUIRED COURSE ASSIGNMENTS:**

All assignments are due at the beginning of class on the due date unless otherwise specified or prearranged with the instructor.

A. **Create a code book, enter data, clean data, create an SPSS database, and code variables** (5 points) This is an in-class assignment.

B. **Describe your key research question, as well as key variables and their distributions.** (5 points) Students will describe at least three variables that they plan to examine to answer a research question. The student will describe the
following about each variable. Note: At least one variable must be measured by more than one item for the purposes of this academic exercise.
1. Independent, mediating/moderating variables/covariates, and dependent variables
2. Items and their level of measurement (nominal, ordinal, continuous)
3. Type of distribution (normal, skewed, bi-modal, etc.)
4. Descriptive statistics
5. Coding of items
6. Missing data

C. Develop an Analysis Plan. (5 points) Students will use the Fink textbook and their favorite biostatistics text to describe how they plan to analyze their variables to address their research question.

D. Create a multi-item scale and analyze its reliability and validity. (5 points) Students will create a scale to measure a construct from multiple items. They will assess the reliability and validity of the measure, and provide the description of how the variable distribution is to be interpreted.
1. Mathematical equations for your multi-item scale score (must be a summative type scale)
2. Item to total correlations
3. Inter-item correlation matrix
4. Cronbach alpha
5. Split-half or Test-Retest analysis
6. Factor analysis
7. Convergent and discriminant validity analysis
8. Univariate statistics (mean and standard deviation, median, mode, possible range, actual range) of your final multi-item scale score
9. Final conceptual description and interpretation of your scale scores

E. Present your theory for your study in a figure and describe it in text. (5 points) Be sure to include the major variables of your analysis in the theory. Be prepared to discuss the difference between a theoretical, conceptual, and analytical framework/model. Also be prepared to discuss the difference between a framework, model, and theory. FYI, consensus as to the meaning of these terms may be lacking.

F. Construct an integrative literature review to introduce your research question and analysis. (5 points) Be prepared to describe the purpose, organization, and approach to a strong literature review in a manuscript. In your literature review, provide the background needed to understand the issue being addressed in the paper and its significance. Clearly articulate your research question and if appropriate, your hypothesis to be analyzed. Also, appropriately cite your references and create a references listing. Be prepared to describe your method for reviewing articles, including articles in your literature review, citing your articles, and creating your reference list.

G. Describe the methods of your study. (5 points)
Describe the following in text format: Site and participant eligibility criteria and recruitment, study design, data collection, key variables, and analysis plan. In your analysis plan, describe the steps involved in coding and analyzing your variables, the statistics and statistical software you are using at each step, the statistical parameters that you are examining and reporting, and the significance level you are using.

H. Describe how you are handling missing data. (5 points)
Be sure to describe: a) How much of which type of data is missing, b) the reasons for the missing data (skipped, uninterpretable, outlier, loss to follow-up, illogical, questionable for a particular reason, etc.), c) how you will determine the appropriate way to handle the data in your analyses, d) how you will ultimately handle the data, and e) the strengths and limitations of your approach.

I. Analyze a data set to answer a research question regarding your scale, and interpret the results (5 points)
1. A hypothesis regarding a multivariate model
2. Selection of statistics
3. Univariate analysis results
4. Bivariate analysis results
5. Multivariate analysis results
6. Interpretation of results

J. Describe your study’s limitations (5 points)
Be sure to address the internal validity and any potential internal validity concerns. This would refer to limitations of your measurements, study design, data collection, intervention, participation, missing data, etc. Be sure to address the external validity and any potential external validity issues. This would refer to your sampling and sample, the setting of your study, feasibility, repeatability, acceptability, etc.

K. Describe your approach to data management. (5 points)
Be sure to address file organization, approach to naming placing files during the period of use, short-term storage, back-up, sharing, and long-term archiving of your study data. Be sure your practices conform to IRB protocols.

L. Present your results in tables and figures. (5 points)
Using examples and following the guidelines for authors for tables and figures in reputable journals, present a table showing your sample’s demographic characteristics and other characteristics key to your study, and the results of your univariate, bivariate, and multivariate statistical analyses.

M. Describe your results in text format. (5 points)
Using examples and following the author guidelines for reputable journals, present your results, appropriately referring to your tables and figures.

N. Describe your findings and conclusions. (5 points)
Be sure to address the following: general summary of findings, limitations, recommendations for future research, implications if the study for future
research or practice, and conclusions.

O. Describe considerations regarding the best venue for disseminating your findings to academic and other audiences. (5 points)
Be sure to address: a) Criteria for choosing the best peer reviewed journals for your study, b) your top three choices of peer reviewed journals for your study, c) the steps you will need to take to publish your article, d) other audiences besides academic researchers who might benefit from your study, and e) how you might disseminate your findings to these other audiences.

P. Develop a manuscript following publication guidelines. (25 points)
Following the guidelines for authors of a specified journal of your choice, compile your prior assignments into a referenced paper as if you were going to submit the paper for publication. Please note: Your manuscript must include all the appropriate components of a publishable paper but need not be deemed “publishable” in terms of length or significance.
1. Title page
2. Abstract
3. Introduction
4. Methods
5. Results
6. Discussion and Conclusions
7. References

COURSE POLICIES

Email – The Official University Correspondence:
Verify your email address by going to www.my.umd.edu.

All enrolled students are provided access to the University’s email system and an email account. All official University email communication will be sent to this email address (or an alternate address if provided by the student). Email has been adopted as the primary means for sending official communications to students, so email must be checked on a regular basis. Academic advisors, faculty, and campus administrative offices use email to communicate important and time-sensitive notices.

Students are responsible for keeping their email address up to date or for redirecting or forwarding email to another address. Failure to check email, errors in forwarding email, and returned email (from “full mailbox” or “unknown user” errors for example), will not excuse a student from missing University announcement, messages, deadlines, etc. Email addresses can be quickly and easily updated at www.my.umd.edu or in-person at the Student Service Counter on the first floor of the Mitchell Building.

For technical support for University email: www.helpdesk.umd.edu or call 301-405-1400.

Absence Policy:
In accordance with University policy if you are absent for a single (1) lecture due to illness or some form of personal or family emergency, this absence will be considered "excused" and the instructor will accept a note from you attesting to the date of the illness/incident, along with an acknowledgement that the information is true. Whenever feasible, you should try to contact the instructor in advance.
Multiple or prolonged absences, and absences that prevent attendance at a major scheduled grading event (like an exam or test) will require written documentation from an appropriate health care provider/organization.

A link to pull information on the new policy covering absences from class can be found at http://wwwpresident.umd.edu/policies/v100g.html

**Late work and incomplete assignments:**
Work is due as assigned. Prior written (e-mail) approval is needed for work to be accepted after the due date and time.

**Special needs:**
If you follow religious observances, have a documented disability, or have some other important commitments for which you need special academic accommodations, please contact the instructor in advance. Accommodations must be prearranged. If you have a documented disability and wish to discuss academic accommodations for test taking or other needs, you will need documentation from Disability Support Service (314-7782). If you are ill or encountering personal difficulties, please let the instructor know as soon as possible as accommodations after the fact may not be allowed. You can also contact Learning Assistance Services (301-314-7693) and/or the Counseling Center (301-314-7651) for assistance.

**Religious Observances:**
The University System of Maryland policy provides that students should not be penalized because of observances of their religious beliefs; students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances. **It is the student’s responsibility to inform the instructor in advance of any intended absences for religious observance.**

**Special Accommodations / Disability Support Services:**
If you have a documented disability and wish to discuss academic accommodations for test taking or other needs, you will need documentation from Disability Support Service (301-314-7682). If you are ill or encountering personal difficulties, please let the instructor know as soon as possible. You can also contact Learning Assistance Services (301-314-7693) and/or the Counseling Center (301-314-7651) for assistance.

**Academic Integrity:**
The University’s code of academic integrity is designed to ensure that the principle of academic honesty is upheld. Any of the following acts, when committed by a student, constitutes academic dishonesty:

- **CHEATING:** intentionally using or attempting to use unauthorized materials, information, or study aids in an academic exercise.
- **FABRICATION:** intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
- **FACILITATING ACADEMIC DISHONESTY:** intentionally or knowingly helping or attempting to help another to violate any provision of this code.
- **PLAGIARISM:** intentionally or knowingly representing the words or ideas of another as one’s own in any academic exercise.

For more information see: http://www.shc.umd.edu/code.html.

The Honor Pledge is a statement undergraduate and graduate students should be asked to write by hand and sign on examinations, papers, or other academic assignments. The Pledge reads:

*I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination.*

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. 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. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.shc.umd.edu.
**Inclement Weather / University Closings:**
In the event that the University is closed for an emergency or extended period of time, the instructor will communicate to students regarding schedule adjustments, including rescheduling of examinations and assignments due to inclement weather and campus emergencies. Official closures and delays are announced on the campus website (http://www.umd.edu) and snow phone line (301-405-SNOW), as well as local radio and TV stations.

**Course Evaluations**
The University, the School of Public Health is committed to the use of student course evaluations for improving the student experience, course and curriculum delivery, and faculty instruction. Your evaluations help instructors improve their courses; help deans and department chairs decide on merit pay for faculty, renewal of contracts, and support tenure and promotion decisions; and help current and future students decide on classes. The system (www.CourseEvalUM.umd.edu) will open Tuesday, April 24th and close on Friday, May 11th for Spring 2012 courses.

**Copyright Notice:**
Class lectures and other materials are copyrighted by me, the course instructor. This includes all tangible course materials, including but not limited to written or recorded lecture, PowerPoint presentations, handouts, tests, and other assignments. These materials may not be reproduced (e.g. students may not copy and distribute these materials) for anything other than personal use without my explicit written permission.

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**Evaluated Assignments**

<table>
<thead>
<tr>
<th>Assignment Points</th>
<th>A through 0</th>
<th>5 pts each, 75 pts total</th>
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<tbody>
<tr>
<td>P: Final Paper</td>
<td>25 pts</td>
<td>TOTAL 100 pts</td>
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</table>

**Grading Rubric for Assignments A-O**
5 pts=Was done on time, included all requested components, and all components were logical and thoughtful/thorough (not overly simple, superficial, illogical)

**Grading Rubric for Final Paper**
Actual significance and length of the paper will not be considered in the grading of the paper. The paper need not be significant or of a particular length.
5 pts=Format consistent with chosen journal
5 pts=Introduction includes components of a publishable paper
5 pts=Methods include components of a publishable paper
5 pts=Results include components of a publishable paper
5 pts=Conclusions include components of a publishable paper

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**Grading**

<table>
<thead>
<tr>
<th>Approximate Grading - Interpretation</th>
<th>Subject to Change</th>
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<tbody>
<tr>
<td>97% A+</td>
<td>93% A</td>
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<tr>
<td>90% A-</td>
<td>87% B+</td>
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<tr>
<td>83% B</td>
<td>80% B-</td>
</tr>
<tr>
<td>77% C+</td>
<td>73% C</td>
</tr>
<tr>
<td>70% C-</td>
<td>67% D+</td>
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<tr>
<td>63% D</td>
<td>60% D-</td>
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<tr>
<td>Below 60% F</td>
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**COURSE SCHEDULE:**

<table>
<thead>
<tr>
<th>Date Topic</th>
<th>Preparatory Readings for Class</th>
<th>Assignments Due at Class Time</th>
<th>Class Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/3/14</td>
<td>--Syllabus</td>
<td></td>
<td>--Introductions</td>
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<tr>
<td>Orientation to Class and</td>
<td>--Competency Self-Assessment</td>
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<td>--Syllabus</td>
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<td>--Discuss Authorship</td>
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</table>
*• Study Design*  
*• Study Questionnaire*  
*• IRB protocols*  
Please inform the instructor if you cannot bring a laptop to the next class with a current version of SPSS. |
Fink Textbook, Chapters 1 and Chapter 2 | Identify 3 interesting topics for discussion from readings 4-4:50  
--Discuss readings 5-5:50  
Assignment A:  
--Develop a codebook, and input and clean data  
--Practice coding and recoding variables 6-6:45  
--Discuss derivation of research questions, and identification of key study variables  
--Discuss basic variable distribution statistics |
Assignment A:  
Create a code book, enter data, clean data, create an SPSS database, and code variables (Final due 9/14/14) 4-4:50  
--Discuss readings 5-5:50  
Assignment B:  
Describe your research question and key study variables and their distributions (Final Due 9/24/14) 6-6:45  
--Discuss data analysis plans |
<table>
<thead>
<tr>
<th>Date</th>
<th>Assignment</th>
<th>Reading/Resource</th>
<th>Identify 3 interesting topics for discussion from readings</th>
<th>Time</th>
<th>Additional Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/24/14</td>
<td>Developing a data</td>
<td>Mandara, Jelani. &quot;The typological approach in child and family psychology: A review of theory, methods, and research.&quot; <em>Clinical Child and Family Psychology Review</em> 6.2 (2003): 129-146.</td>
<td>Assignment C: Describe your analysis plan (Final due 10/1/14)</td>
<td>4-4:50</td>
<td>-- Discuss readings 5-5:50 -- Present your data analysis plan 6-6:45 -- Discuss assessment of composite scale reliability and validity, as well as index and Guttman measures</td>
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<td>Your favorite biostatistics textbook</td>
<td>Assignment C: Describe your analysis plan (Final due 10/1/14)</td>
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<td></td>
<td>item scale</td>
<td>Di Iorio Textbook</td>
<td>Assignment D: Describe your multi-item composite scale (Final due 10/8/14)</td>
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<td><em>Psychometric Theory, Third Edition</em>, Nunnally JC, Bernstein IH.</td>
<td>Assignment D: Describe your multi-item composite scale (Final due 10/8/14)</td>
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<tr>
<td>10/8/14</td>
<td>Understanding and</td>
<td>Glanz, Karen, and Donald B. Bishop. &quot;The role of behavioral science theory in development and implementation of public health interventions.&quot; <em>Annual Review of Public Health</em> 31 (2010): 399-418.</td>
<td>Assignment E: Describe the theory you are examining in your analysis (Final due 10/15/14)</td>
<td>4-4:50</td>
<td>-- Discuss readings 5-5:50 -- Present your theory 6-6:45 -- Discuss writing a literature review</td>
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<td>references</td>
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<td>Assignment F: Provide an integrative</td>
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<tr>
<td>Date</td>
<td>Topic</td>
<td>Literature</td>
<td>Methods Section</td>
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<tr>
<td>10/22/14</td>
<td>Writing a strong methods research</td>
<td>Chapter 7, Review of the Literature and Appendix B, Research Worksheets. Introduction to Research and Medical Literature for Health Professionals, Third Edition, Blessing JD and Forister JG (Editors). Jones and Bartlett Learning, 2013.</td>
<td>methods section</td>
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<td>Literature review and list of references for your paper (Final due 10/22/14)</td>
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<td>4-4:50 --Discuss readings 5-5:50 --Present your study methods 6-6:45 --Discuss the possible causes and potential biases of your missing data</td>
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<td>4-4:50 --Discuss readings 5-5:50 --Present your analysis 6-6:45 --Discuss what might be included in study limitations</td>
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<tr>
<td>Date</td>
<td>Topic</td>
<td>Reading</td>
<td>Time</td>
<td>Notes</td>
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<td>11/26/14</td>
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<td>NO CLASS MEETING—PREPARATION AND TRAVEL FOR THANKSGIVING</td>
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<tr>
<td>Date</td>
<td>Event</td>
<td>Textbook/Reference</td>
<td>Assignment/Due Date</td>
<td>Time</td>
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| 12/3/14    | Results tables and figures Writing results in the text                 | Blessing and Forister Textbook, Chapter 15, The Results Section  
- Tables and figures  
Crozby Text, Appendix A  
Writing Research Reports  
- Discussion of the Results  
Chapter 15, The Results Section and Appendix B, Research Worksheets. Introduction to Research and Medical Literature for Health Professionals, Third Edition, Blessing JD and Forister JG (Editors). Jones and Bartlett Learning, 2013. | Assignment L: Results tables and figures (Final due 12/10/14)  
Assignment M: Text for results tables and figures (Final due 12/10/14) | 4-4:50  
--Present your tables and figures  
5-5:50  
--Group discussion of your tables and figures  
6-6:45  
--Discuss writing results, discussion, and conclusions text to go along with tables and figures |
| 12/10/14   | Writing the discussion and conclusions of your study Publishing your paper | Blessing JD and Forister JG Text, Chapter 16 The Discussion Section and Appendix B:  
- Implications  
- Limitations  
- Discussion  
- Recommendations  
- Conclusions  
Blessing and Forister Textbook, Chapter 18, Writing and Publishing | Identify 3 interesting topics for discussion from readings  
Assignment N: Write your discussion and conclusions (Final due 12/17/14)  
Assignment O: Describe publication venues and formatting requirements for your study (Final due 12/17/14) | 4-6:00  
--10 minute presentations and 10 minute group discussion or your results, discussion, and conclusions  
6-6:45  
--Review, summary, final thoughts about course |
| 12/17/14   | Final Exam  
Final paper due by Close of Business in Dept of B&CH                   | Assignment P: Final paper                                |                                             | 6-6:45  
--Review, summary, final thoughts about course |


| mailbox(4:30pm) |   |   |