COLLEGE OF CHARLESTON
PEHD 433: RESEARCH METHODS AND DESIGN IN HEALTH AND EXERCISE SCIENCE
3 Credit Hours
Spring 2015

Class Times: 10:50-12:05-Tu-Th
Class Location: Johnson Center, Room 207
Prerequisites: EXSC 330, 340; MATH 104 or equivalent; or permission of the instructor
Instructor: William R. Barfield, PhD, FACSM
            Professor
Office Location: 213 Silcox Physical Education and Health Center
Office Hours: MWF 9:00-10:00 and Tu-Th-8:30-9:25
Office Phone: 843-953-6746
Email: barfieldw@cofc.edu

Course Description: The class will focus on data collection and interpretation in health and exercise science, including common physiological, biomechanical, anatomical, and health-related variables. Emphasis is placed on the development of a research question and the appropriate procedures to further the body of knowledge in the area of health and exercise science.

Student Learning Outcomes: Upon successful completion of the course, the student should be able to:
1. Define common research designs used in exercise science, health, athletic training, and medicine
2. Determine the positive and negative characteristics of various research designs
3. Assess and optimize validity and reliability of variables used in athletic training, health and exercise science
4. Develop a research question and appropriate experimental hypothesis for the student’s specific sub-discipline of interest
5. Perform a thorough literature search using contemporary search engines
6. Assess the financial cost and level of invasiveness for various research methods
7. Make appropriate ethical decisions in research, including the use of special populations as research participants while involved in physical exertion
8. Understand statistical procedures
   a. Descriptive statistics
   b. Inferential statistics
9. Understand common statistical software packages
10. Interpret statistical evidence and discuss the pertinent implications
11. Write a research proposal using a common style specified by a peer-reviewed journal in his or her sub-discipline

Required Textbook:

Required Technology:
1. Internet
2. Microsoft Powerpoint
3. Microsoft Word

Policies:
College of Charleston Student Handbook: This is a guide to your responsibilities and rights as a student. If you are not familiar with this document, please take the time to review the information contained within the handbook.
**Attendance:** Class attendance is required. If extreme circumstances necessitate an absence, you will be held responsible for the class material covered during your absence. Any assignment missed due to absence must be made up within one week to receive full credit. Excused absences will be considered for the following: serious illness, hospitalization, death of a family member or close friend, attendance at an event representing the College of Charleston. Appropriate documentation must be provided from the Undergraduate Dean's Office for an absence. All absences beyond 1 will result in deduction of points from your final class average. If you miss more than 4 classes you will be dropped for excessive absences (WA).

You will be marked tardy if you arrive after the class has started, but within the first minute. If you are tardy on two occasions, this will equal one unexcused absence.

**Assignment Policy:** All assignments are due at the beginning of class on the day they are due.

**Examination Policies:** You will be notified at least one week in advance if there is a change in a test date. Please note that if you miss a scheduled test you will be awarded no points for that particular examination. Make-up examinations will be given when written documentation is obtained from the Office of Undergraduate Studies. It is the instructor's prerogative to give an alternate exam if deemed necessary. If you know you will be unable to attend an examination due to an excused absence (i.e. athletic participation, religious holiday, etc.) you must notify the instructor at least one week prior to the absence to make alternative arrangements.

**Academic Honesty:** Please refer to the current College of Charleston Student Handbook for the definition of academic dishonesty and the subsequent penalties. Faculty members are required to report violations of the Honor Code to the Office of Student Affairs. If you are found guilty of an honor code violation your grade in the class will be XF and will be so indicated on your transcript.

**Cell Phone/PDA/ Laptop Computer Policy:**
The use of all PDA devices, including cell phones and laptop computers are expressly forbidden in the classroom. Texting, receiving or sending messages, cell phone use, or the use of laptop computers will result in immediate loss of points from your final class average and an absence will be recorded. If there is a 2nd violation of the class policy you will be awarded an F. The first violation will result in a 20 point deduction from your final class average. The 2nd violation is another 20 points, therefore making it impossible to successfully complete the class with a passing grade. Students must keep these devices turned off and out of sight during class. It is a violation of this policy to keep such devices on your lap, in your pocket or on the floor by your desk. Any suspicion of your use on my part will result in loss of points.

**Disability:** In compliance with the Americans with Disabilities Act (ADA), all qualified students enrolled in this course are entitled to “reasonable accommodations.” Please notify the instructor during the first week of class of any accommodations needed for the course.

**Grading:**

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<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>Examination #1</td>
<td>100 (Chapters 1-6)</td>
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<tr>
<td>Examination #2</td>
<td>100 (Chapters 7-12)</td>
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<tr>
<td>Examination #3</td>
<td>100 (Chapters 13-19)</td>
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<tr>
<td>Final Exam</td>
<td>100 (Comprehensive)</td>
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<td>Research Proposal</td>
<td>100 points</td>
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<tr>
<td>Presentation</td>
<td>100 points</td>
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<td><strong>TOTAL POINTS</strong></td>
<td><strong>600 points</strong></td>
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Research Proposal: Students are encouraged to engage in research at the College of Charleston. Not all students will be involved in research. Other activities students can be involved with include: fitness assessment, Autism Project, Louie’s Kids, Franke Home at Seaside and others. Required components for research will include: introduction, materials and methods, and references. By the end of the spring semester, 2015, researchers must have completed CITI training. The proposal includes:

- Introduction (25 points)
- Materials & Methods (25 points)
- Oral presentation (50 points)
- Written proposal of 3-5 double-spaced pages, including references (100 points)

Evaluation Scale:

<table>
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<tr>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
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<tr>
<td>88-89%</td>
<td>A-</td>
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<tr>
<td>85-87%</td>
<td>B+</td>
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<tr>
<td>80-84%</td>
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<td>78-79%</td>
<td>B-</td>
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<td>75-77%</td>
<td>C+</td>
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<td>70-74%</td>
<td>C</td>
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<tr>
<td>68-69%</td>
<td>C-</td>
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<td>66-67%</td>
<td>D+</td>
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<td>64-65%</td>
<td>D</td>
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<tr>
<td>62-63%</td>
<td>D-</td>
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<td>&lt;62%</td>
<td>F</td>
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Graded items:

Examinations: The format of the examinations will vary with the content which is being tested.

PROJECTED CLASS SCHEDULE

January 13  Introduction to EXSC 433
January 15  Chapters 1 & 2-Introduction to Research and Ethics in Research
January 20  Chapter 3-Information Retrieval
January 22  Chapter 4-The Research Paper and Proposal
January 27  Chapter 5-Results, Discussion, Conclusions and References
January 29  Chapter 6-Scientific Research Writing
February 3  Review Chapter 1-6 and Test #1 Preparation
February 5  Test #1-Chapter 1-6
February 10  Chapter 7-Basic Statistical Concepts
February 12  IRB Application and Process-Eileen Callahan
February 17  Chapter 8-Central Tendency and Data Variability
February 19  Chapter 9-Probability and Hypothesis Testing
February 24  Chapter 10-Relationships and Predictions
February 26  Chapter 11-t-tests, ANOVA and ANCOVA
March 1-8    Spring Break
March 10     Chapter 11-t-tests, ANOVA and ANCOVA
March 12     Chapter 12-Nonparametric Statistical Tests
March 17     Review Chapters 7-12 and Test #2 Preparation
March 19     Test #2- Chapters 7-12
March 24     Chapter 13-Validity, Reliability and Measurement Error
March 26     Chapter 14-Internal and External Validity
March 31     Chapter 15-Experimental Designs
April 2      Chapter 16-Nonexperimental and Descriptive Research
April 7      Chapter 17-Qualitative Research Methods
April 9      Chapters 18 & 19-Quality Control & Research Assessment
April 14     Review Chapters13-19 and Test #3 Preparation
April 16     Test #3-Chapters 13-19
April 21 &23 In-Class Presentations
Last Class Day-Spring 2015
Students Will Be Asked to Bring Phones, iPads, laptops or other
Electronic devices to complete Instructor Evaluation (15-20 minutes)
and Review for Final Exam