PEHD 439: Advanced Topics in Exercise Physiology
Fall 2011

Instructor: Dr. Tim Scheett
Office: Silcox Rm 214
Office hours: Monday and Wednesday 11:00–1:00 PM
OR email to schedule an individual appointment
Phone: (843) 953-6538 (office)
Email: ScheettT@cofc.edu

Course meeting: Lecture: T & TH 9:25 – 10:40 (Johnson Room 207)

Prerequisite courses: PEHD 340/Lab and permission of the instructor

Course Description: The major objective of this course is to provide students with in-depth application of advanced topics related to exercise biochemistry, cardiorespiratory responses to exercise, and electrocardiography. The contents of this course will build on the foundation of material covered in PEHD 340 Exercise Physiology.

Course Texts:


Lab: Materials will be posted on OAKS prior to labs.

Student Learning Outcomes:
Upon successful completion of the course, the student will be able to:
1. Demonstrate knowledge of exercise physiology as it relates to the pediatric and aging populations.
2. Demonstrate knowledge of exercise physiology as it relates to clinical diseases including: diabetes, obesity, metabolic syndrome, cardiovascular disease, chronic obstructive pulmonary disease and peripheral arterial disease.
3. Describe the physiological adaptations to acute and chronic resistance training.
4. Create and describe the differences in training programs designed to maximize muscular hypertrophy, strength, power, or endurance.
5. Explain the rational for selecting various training modalities for sport specific sport populations.
6. Demonstrate how to be a consumer of evidence-based research.
7. Demonstrate the capacity to collect, analyze, and interpret physiological test data related to muscle soreness/damage and resting metabolic rate.
8. Describe the physiological response to exercise in various environmental conditions.
9. Describe the physiological adaptations associated with detraining, overreaching and overtraining.

**Grade Distribution:** 800 points total - There will be multiple assignments with various deadlines throughout the semester. See below for a description of the assignments. Due dates will be determined during the second class meeting of the semester. A 150 point comprehensive final exam consisting of five essay questions coming from the specific topics covered in class will be administered on **Saturday, December 10th at 8:00 AM**. You will be able to choose the 5 specific topic areas on your final exam from a prepared list of topics.

**Facilitated Discussion (1 x 50 points)** – students may choose to work with a partner or alone. Students will either choose a position stand or a controversial topic from a list provided by the instructor. Students will lead the class through a facilitated discussion of the evidence-based practices that have been documented as creating high impact and are emerging best practices for developing and maintaining community wellness programs, a professional organization position stand, or a current controversial topic. Guidelines for the facilitated discussions will be discussed in class and posted on OAKS.

**Oral Symposium Presentations (2 x 100 points each)** – Students will each work with a partner to prepare and present two oral symposium presentations from the topics listed below. No two symposiums will be on the same topic and each group must choose a different topic for each of their assignments for the entire class. The symposium should last a minimum of 45 min (this will be approximately 35-50 slides) followed by a 20 min question and answer period. The symposiums must be designed towards teaching a professional group new information. The symposium presentations will include 1) a section outlining and discussing the physiological differences and underlying mechanisms; and 2) a section on the evidence-based appropriate exercise training guidelines for the chosen population. Each student will develop and present a physiological differences section for one of their topics and an appropriate exercise training evidence session for their other chosen topic. PDF files of 3-5 key references must be submitted with a single electronic file of the presentation to be posted on OAKS. Guidelines for the oral symposium presentations will be discussed in class and posted on OAKS.

**Multi-media “Webinar” Presentations (1 x 200 points)** – students may choose to work with a partner or alone. Students will use a combination of different media formats (audio, video, photo, text, PowerPoint, etc.) to write, edit, direct and produce 20 different workouts (10 per student in the group) that meet the American College of Sports Medicine (ACSM) exercise guidelines for one of the special populations the students presented on earlier in the semester. The presentation will be geared towards showcasing the workouts you designed for your special population. This may include presenting new workouts and/or reinforcing existing exercise modalities. The presentations will be in the format of 10 minute videos thus you do not have to show the entire workout if the exercises you include are repeated more than once (e.g. walking on a treadmill, repeating a circuit, etc.). In addition to developing the workouts each group will be expected to explain how these workouts fit within a single week of training in order to demonstrate an understanding of exercise programming and progression. References must be included with a single electronic file of all exercises. Each file will be posted to the dropbox on OAKS. Peers will be allowed to download these files to build a resource library.

**Service Learning Activities (200 points)** – students will participate in two service learning activities. Activity 1: Students will work with faculty mentors to plan, organize and run a fund-raising activity to support the Charleston-Physically Active Residential Communities and
Schools (C-PARCS) program. Activity 2: Students will work with faculty mentors to organize and run C-PARCS, a community wellness program for underserved populations in peninsular Charleston. C-PARCS will tentatively be conducted for 8 weeks during October and November on Mondays and Wednesdays from 11:00 AM – 1:00 PM and Tuesdays from 6:00 – 8:00 PM. (Exact dates, times and days of the week may change before being finalized. You will be notified ASAP once the final schedule has been set.) Students that have an approved conflict with the C-PARCS schedule will work with the course instructor to develop an on-campus exercise class that will be offered to faculty, staff or students. Guidelines and requirements for the service learning activities will be discussed in class. Each student will be required to keep a journal where a summary paragraph of each meeting is recorded followed by your own reflection of each meeting. Service learning activities will be conducted outside of class time and each student is required to alter work or any other potential conflicts to accommodate the service learning activities as they are scheduled. Other classes will not be affected by the Service Learning Activities.

A list of all reference used for the specific assignment will be provided at the end of each project. All references will be listed in National Library of Medicine format.

All assignments will be typed and follow NLM (United States National Library of Medicine) format. All assignments require a reference section. All information must be from peer-reviewed professional journals. Examples of journals available in our library are Physician and Sports Medicine, Journal of Sports Medicine, Research Quarterly, Athletic Training, Journal of Nutrition Education, and Nutrition Reviews. Additional journals are available at the MUSC library and my office. (Other journals that are appropriate: Journal of Strength and Conditioning Research, Medicine and Science in Sports and Exercise, Journal of Applied Physiology, European Journal of Applied Physiology, International Journal of Sport Nutrition and Exercise Metabolism, etc. You must receive my approval for each of your articles.

No student will be allowed to use information gathered by another student for their own presentation (current or previous semester). Doing so will be deemed as a violation of the College of Charleston Honor Code.

Grade Scale:

Course letter grades will be determined on the basis of overall performance. Earned points will be divided by 650 total points and the following will be used to determine final grades:

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<thead>
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<th>Grade</th>
<th>Range</th>
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<tbody>
<tr>
<td>A</td>
<td>90 – 100</td>
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<td>A-</td>
<td>88 – 89</td>
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<tr>
<td>B+</td>
<td>85 – 87</td>
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<tr>
<td>B</td>
<td>80 – 84</td>
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<tr>
<td>B-</td>
<td>78 – 79</td>
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<td>C+</td>
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<td>C</td>
<td>70 – 74</td>
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<tr>
<td>C-</td>
<td>68 – 69</td>
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<td>D+</td>
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<tr>
<td>D</td>
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<td>D-</td>
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<td>F</td>
<td>Below 62</td>
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Attendance:

While it is recognized that certain unforeseen events may prevent you from attending a certain class, due to the lecture and discussion nature of this class it is vital that you attend and participate. If you miss more than 25% of the class, you will be assigned a grade of WA. If extreme circumstances necessitate an absence, you will be held responsible for the class material covered during your absence. 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 to be considered excused. If a student has more than four unexcused absences that student may be removed from the class roster. In addition, promptness is required as being tardy will count as an unexcused absence.

Multi-media:

The use of any multi-media device during class is strictly prohibited!! It is recommended that you bring a stand alone calculator to regular class meetings as well as exams. If your cell phone rings you will be asked to leave class. If you have a dire family emergency where you are expecting a call during class – you will be expected to take the seat next to the door and quietly exit the class if your phone vibrates. The possession of any multi-media device during examination will automatically result in a zero for that exam.

Final grades will not be given out or posted at the end of the semester. You will have to wait until you can access your grades via Cougar Trail or when the University sends out the official grade records.

Honor System: Review the current Student Handbook: A Guide to Civil and Honorable Conduct, especially the section pertaining to the classroom code of conduct.

You are expected to do your own work in this course. If you are caught cheating or plagiarizing another individual’s work you will be reported to the appropriate University office and you will receive an “F” for a grade in the course. You need to do any and all writing on your own and in your own words. Simply re-arranging a paragraph or changing one or two words of another individual’s work is still considered plagiarism. The 1, 2, or 10 points you cheat for are not worth risking your ENTIRE academic career. DO NOT put me in a situation where I have to act accordingly.

General Notes:

- It is strongly recommended that you read “ahead” of the presentations in order to allow for a group discussion following the presentations. The pace of the lecture presentations is approximately 1 topic every week, however, some are quicker or longer than others. On a regular basis I will try to make you aware of where we are at in the course so that you can prepare accordingly. I strongly recommend that you read the text BEFORE and again after the lectures on that material.

- The large volume of material presented in this class will necessitate frequent and consistent study. What you do the first week is as important as what you do the last week. Don’t put off studying for quizzes and exams until the last minute. Quite simply – 20 min of studying EVERYDAY will prepare you to do well on the quizzes and thus the subsequent exams will not be as difficult to prepare for. Exams and quizzes will be demanding and difficult; you must be thoroughly familiar with the information to the point of being able to interpret and apply it. This is an upper level class and I fully expect each of you to think about the basic information you already know, interpret it and apply it to various situations.

- If you miss a class when handouts are provided it is your responsibility to get a copy of the handouts from another student. You are also responsible for obtaining the missed notes from another student. DO NOT COME TO THE PROFESSOR AND ASK FOR HANDOUTS AND/OR NOTES FOR THE LECTURE(S) YOU MISSED.
• **If there is a student in this class who has a documented disability and has been approved to receive accommodations through SNAP Services, please feel free to come and discuss this with me during my office hours.**

• Any student eligible for and needing academic adjustments or accommodations because of a disability is requested to speak with the professor in a timely manner so that your needs can be addressed.

• The College will make reasonable accommodations for persons with documented disabilities. Students should apply for services at the Center for Disability Services located on the first floor of the Lightsey Center, Suite 104. Students approved for accommodations should notify their professors as quickly as possible.

• This College abides by section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act that stipulates no student shall be denied access to an education “solely by reason of a handicap.” Disabilities covered by law include, but are not limited to, learning disabilities and hearing, sight or mobility impairments. If you have a documented disability that may have some impact on your work in this class and for which you may require accommodations, please see an administrator at the Center of Disability Services, (843) 953-1431 or me so that such accommodation may be arranged.

**Tentative Schedule for class topics and assignments:**

Week 1 (Aug 23 & 25) Introduction & Pick Topics for Assignments  
Week 2 (Aug 30 & Sept 1) Facilitated Discussions  
Week 3 (Sept 6 & 8) Facilitated Discussions  
Week 4 (Sept 13 & 15) Facilitated Discussions  
Week 5 (Sept 20 & 22) Dr. Scheett Symposium and Oral Symposium  
Week 6 (Sept 27 & Sept 29) Oral Symposums  
Week 7 (Oct 4 & 6) Oral Symposums  
Week 8 (Oct 11 & 13) Oral Symposums  
Week 9 (Oct 20) Oral Symposium  
Week 10 (Oct 25 & 27) Oral Symposums  
Week 11 (Nov 1 & 3) Oral Symposums  
Week 12 (Nov 8 & 10) Oral Symposums  
Week 13 (Nov 15 & 17) Oral Symposums  
Week 14 (Nov 22) Multi-media videos  
Week 15 (Nov 29 & Dec 1) Multi-media videos  
Comprehensive Essay Final Exam: Saturday, December 10 @ 8:00 am
**Example Assignment Topics:**

1. Exercise Immunology
2. Exercise Physiology and Aging
3. Hormone Replacement Therapy and Exercise
4. Exercise Physiology and Pediatrics
5. Exercise Physiology and Pregnancy
6. Exercise Physiology and Post-Partum
7. Clinical Exercise Physiology
   a. Diabetes and Exercise
   b. Obesity and Exercise
   c. Metabolic Syndrome and Exercise
   d. Insulin Resistance and Exercise
   e. Cardiovascular Disease and Exercise
   f. Chronic Obstructive Pulmonary Disease and Exercise
   g. Peripheral Arterial Disease and Exercise
   h. Hypertension and Exercise
   i. HIV and Exercise
   j. Cancer and Exercise
   k. Celiac Disease and Exercise
   l. Multiple Sclerosis and Exercise
8. Detraining
9. Overreaching and Overtraining
10. Delayed Onset of Muscle Soreness
11. Resting Metabolic Rate Assessment and related Physiology
12. Resistance to Exercise and Motivation to be Physically Active
13. Exercise Physiology and Heat
   a. Adaptations and Recommendations
   b. Physical performance in Extreme Heat
14. Exercise Physiology and Cold
15. Exercise Physiology and Altitude
16. Exercise Physiology and Hyperbaric Environments
17. Exercise Molecular Biology
18. Additional topics may be added to the list pending prior approval by instructor.

If there is a topic you would like to do that is not on the list you may propose the topic to Dr. Scheett for his approval.
### My Assignments

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<tr>
<th>Assignment</th>
<th>Points</th>
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<tr>
<td>Facilitated Discussion</td>
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<tr>
<td>Oral Symposium Physiological Differences</td>
<td>100</td>
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<tr>
<td>Oral Symposium Exercise Training Evidence</td>
<td>100</td>
</tr>
<tr>
<td>Multi-media “Webinar” Workout Presentation</td>
<td>200</td>
</tr>
<tr>
<td>Service Learning Activities</td>
<td>200</td>
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</tbody>
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No duplication of topics will be allowed by a single student for any assignments. No duplication of topics will be allowed for either oral symposium or the multimedia projects.

Topics will be assigned by the end of the second day of class. Switching of topics between students is allowed with prior permission of instructor.

Final Exam – Five Essay Questions                                           | 150    |