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| BIOS 2500 (3-0-3) **INTRODUCTION TO SPORT SCIENCE**  Tues, Thurs 12:30 -1:45 pm **Course Director: Mindy Millard-Stafford, PhD Location: Lecture Hall 1253, School of Applied Physiology, 555 14th St. (as currently scheduled)Email**: mm6@gatech.edu **Office**: 1309A 555 14th St. **Office Hours**: T/R 1:45 – 2:30 and by appointment

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| **REQUIRED Textbooks: ACSM Intro to Exercise Science by Jeffrey Potteiger, 3rd edition, 2018 Publisher: Wolters Kluwer ISBN: 978-1-4963-3961-4** **Epstein, David (2014) *The sports gene: inside the science of extraordinary athletic performance.* Penguin Random House. New York, New York. 1st edition. ISBN 978-1-61723-012-7**  |
| Selected Readings Uploaded to Canvas. |

**Course Description:** Students will apply scientific principles to human performance related to sport and human movement across an array of topics (e.g., rehabilitation, sports medicine, locomotion biomechanics, prosthetics). Students will formulate research questions to probe current interests.**Learning Objectives:**By the end of this course students should be able to:* Recognize fundamental principles in science (e.g. physics, chemistry, biology) applied to sport and human performance
* Demonstrate how various sub-disciplines within science and technology play a role in enhancing sport and human performance
* Discuss how sports and sport participation improve health and well-being and the necessary role of empirical research in addressing questions needed to improve sport performance and sports health

**Evaluation:** QUESTION HOMEWORK for SPEAKERSQuiz 1 (Sept 23) 15% Sports Science Research- Written Abstract 15% Mid Term 20% Group Research - Written submission of debate 15% Presentation of Group project (debate) 15% Final Exam 20% (Exam Period) Total 100% A: 90-100%, B: 80 - 89%, C: 70 - 79%,D: 60 - 69%,F: 59% and belowThere is NO extra credit in this class other than announced opportunities during the semester. Do NOT request extra credit at the end of the semester! We will be in “in person” residential mode. This means classes will not be delivered remotely unless otherwise announced (on days when a guest speaker may elect to present remotely). All quizzes and tests will be held in person (unless otherwise announced). *Assignments will be submitted online.***Group Research /Debate Project**: Time will be devoted during some class meetings for groups to work on the projects. Each assigned topic will be divided up into groups of two “teams” that will debate the Pro and Con of the issue presented. Written scientific evidence will be summarized by each team to support their position as a referenced, science-based White paper. The debate will take place during the designated class time. The aim is to discuss a controversial issue in sports science in order to present “two sides of the debate “or “point-counterpoint” argument. Example: Youth Sport- Should children “specialize” in a sport at an early age versus later age in order to achieve elite performance? Students will identify pros and cons based on data-driven, peer-reviewed research.**Written Sports Science Research Paper**– Students will conduct a brief systematic review using the Library Search Engines to develop an extensive reference list that is based on refereed journal publications to support their side of the issue (but also that recognizes the counterpoint arguments supported in the literature). The written paper should be referenced, and present the main points to be presented that support their position along with potential counter-arguments anticipated. The narrative section should be no more than 5 pages double spaced (excluding references). **Individual RESEARCH ABSTRACT**: **Topic and article should be approved by 9/2- DUE 9/9**1. Identify an Original Experimental Research Paper using Human Subjects published in a Peer-Reviewed Journal (verify journal is appropriate, a single experiment, not a review paper)
2. Present a brief Overview of the topic and Purpose of the study and Hypothesis
3. Provide key details of the Methods (Characteristics of the subjects, what was the experiment and measures performed, statistical analysis)
4. Report the Main Results of the study in your own words (you can summarize the table or Figure but do not include in your write-up)
5. What were the major Conclusions of the study?
6. What are your original comments about the study (recommendations how it might have been improved, what was significant to you, what did the study really do well).
7. MAX LENGTH (3 pages, double spaced).
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| **Note: Include the entire research article (pdf) with your written abstract.**  |
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| **Accommodations for Students with Disabilities**If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or <http://disabilityservices.gatech.edu/>, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs. |

Students are reminded of **The Honor Agreement** they signed and assumed for completing requirements of this course: “Having read the Georgia Institute of Technology Academic Honor code, I understand and accept my responsibility as a member of the Georgia Tech community to uphold the Honor Code at all times. In addition, I understand my options for reporting honor violations as detailed in the code.

For information on Georgia Tech's Academic Honor Code, please visit <http://www.catalog.gatech.edu/policies/honor-code/> or <http://www.catalog.gatech.edu/rules/18/>.

ACADEMIC HONOR CODE

***Cheating off of another person’s test or quiz is unethical and unacceptable. Cheating off of anyone else’s work is a direct violation of the GT Academic Honor Code, and will be dealt with accordingly.***

***Use of any published materials is allowed for this course; however, I remind you that while they may serve as examples, you must observe copyright laws and not plagiarize works attributed to other authors when submitting any coursework that may be assigned during the semester.***

***I consider the following behaviors to be cheating:***

 ***Using a cell phone or other device during a quiz/test to access internet or class-related resources***

 ***Attempting to ask other students help (when not a cooperative project)***

\*using false excuse to delay taking test/quiz

 \*false claims for work submitted by a student

 \*Deliberate Falsification of written or verbal statement of fact to Faculty member

 \*learning what is on a test from someone who has already taken it

 \*copying from another student on a test/quiz with or without their knowledge

 \*helping someone else cheat on a test/quiz

 \*using unauthorized notes on a test/quiz

 \*using unauthorized electronic device to obtain information during test/quiz

\*Unauthorized Collaboration: working with others on an assignment when asked for individual work

 \*paraphrasing/copying from written or internet source without footnoting it

 \*fabricating/falsifying a bibliography

 \* copying material almost word for word from a written source without citation

Plagiarisim: Submission of written material wholly or substantially identical to that published by another person without adequate credit notations (YOUR WRITTEN REPORTS WILL BE CHECKED FOR THIS- DO NOT USE VERBATIM LANGUAGE FROM PUBLICATIONS).

 \*turning in work copied from/done by another

 \*obtaining paper from term paper mill

 \*fabricating or falsifying research data

 \* any act of forgery or distortion of academic records or grades

***For any questions involving these or any other Academic Honor Code issues, please consult me or the policy library at:*** [***https://osi.gatech.edu/content/honor-code***](https://osi.gatech.edu/content/honor-code)

Suggestions for getting the most from this class:

1. Notes and additional class readings will be posted on Canvas. Suggestion: print or download them and take additional notes during class.

2. Although some class outlines may be provided (not all speakers will provide these), you will need to read assigned articles, the text and study the Figures to fully understand the material. You are expected to read the chapter **before** class, using the assigned reading to guide you to the material we will cover. Consider this pre-class reading homework. **Active** class participation (meaningful, insightful comments based on knowledge obtained from pre-class readings) will enhance your learning. **USE the CHAT function to ask questions in BlueJeans (when a speaker presents virtually)**!

**COURSE OUTLINE –** The hybrid format of the class will be predominantly synchronous with the exception of some external speakers who may need to pre-record their lecture. Students are expected to be “in class” to discuss or prepare questions during the class time block. These will be announced in Canvas.

**Assigned reading: BOLDED Chapters** are in Potteiger text. Other chapters are in Epstein\*

**Date TOPIC Chapter**

8/24 Introduction to Sport Science: Definition and Importance **1,** 1 Epstein

8/26 Scientific Evidence: Credible Sources, Lit Search

8/31 The Scientific Method and Research Design **2** 9/2 Exercise Science: A systems approach 3 Abstract Approved! Practice Quiz

9/7 Dan TAYLOR

 **9/9** Lewis Wheaton Motor Behavior: The Brain  **9**

 **Research Abstract Written due 9/9**

9/14 Exercise and the Brain: Sports Psychology Kayla Balcom 8 9/16 Dr. Michelle LaPlaca – Concussion

9/21 Athletic Training/Sports Medicine - Paul Wolkoff **6** 9/23 **QUIZ 1** Careers in Sport Science /exercise Epidemiology **12/13 ?**

9/28 Clinical and Sports Biomechanics **10** 9/30 Regulation of technology to aid locomotion for competition: Ethical issues (readings)

10/5 Rehabilitation restore function for health, performance: Prosthetics, orthotics (K Herrin) 10/7 Overview of Sport Biomechanics: Basic Concepts Human Movement (YH Chang)

10/12 FALL BREAK

10/14 Sports Cardiology- Jonathan Kim

 Strength and Conditioning: Wearable Technology 2-Epstein A tale of 2 High Jumpers 10/19 Exercise Physiology **4**,5 Epstein 10/21 **Midterm**

10/26 Assessment in Exercise Science **11**  10/28 Sports Nutrition: Are athlete needs really different? **7**

11/2Ergogenic Aids to Performance (readings)

11/4 Sociological impacts on performance and gender- Mary McDonaldSchultz, J. "Question of Too": Sex Testing in Elite Women's Sport and the Issue of Advantage. Quest, 63(2):228-243. May 2011

11/9Biological differences impacting sport performance, WR 4-Epstein Why Men Have Nipples

11/11 Anti-Doping: History and Perspectives for USADA and Drug-Free Sport 13,16 EpsteinGold Medal Mutation, Worlds Greatest Talent Sieve 11/16 **Group Debate presentations: Should Football be Banned for Youth?** 11/18 **Group Debate presentation: Is exercise bad for the heart?**

11/23 **Group Debates presentations: Barefoot Running: advantage vs. shoes?**

11/30 **Group debate presentations: Anti-DOPING**: can it be adjudicated fairly and accurately?

12/2 Group Debate: **The 10,000 hr rule: Does it apply to Youth Specialization in Sport?**

 12/7 FINAL DAY OF CLASS- Make up date for debates

 **Written Research Paper due for all GROUPS Nov 23**

Final Exam- Scheduled Exam period - Monday Dec 13 11:20