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| BIOS 2500 (3-0-3) **INTRODUCTION TO SPORT SCIENCE**  Tues, Thurs 12:00 noon-1:15 pm  **Course Director: Mindy Millard-Stafford, PhD Location: Lecture Hall 1357, School of Applied Physiology, 555 14th St.**  **Email**: mm6@mail.gatech.edu  **Office**: 1309A 555 14th St. **Office Phone** (404) 894-6274  **Office Hours**: T/R 1:25 – 2:30   |  | | --- | | **REQUIRED Textbook: ACSM Intro to Exercise Science by Jeffrey Potteiger, 2nd edition Publisher: Wolters Kluwer ISBN: 978-1-4511-7672-8, 2017** | | Selected Readings Uploaded and On-line Peer reviewed Journal: http://www.sportsci.org/ |   **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 work to formulate research questions to probe current areas of interest.  **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:**  Quiz 1 15%  Sports Science Written Abstract 15%  Mid Term 20%  Group Research - Written submission 15%  Presentation of Group project 15%  Final Exam 20% (Exam Period)  Total 100% A: 90-100%, B: 80 - 89%, C: 70 - 79%,D: 60 - 69%,F: 59% and below  **Group Research /Debate Project**: Time will be devoted during some class meetings for groups to work on the projects. Attendance therefore is vital. The class will be divided up into groups of two “teams” each 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 research papers.  **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. 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 paper should be no more than 5 pages double spaced.  **Individual RESEARCH ABSTRACT** (see rubric): **Topic and article should be approved by the instructor**   1. Identify an Original Experimental Research Paper using Human Subjects published in a Peer-Reviewed Journal (verify journal is appropriate and is single experiment and 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). |
| Note: Include the entire research article (pdf) with your written abstract. |
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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.

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 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:*** <http://policylibrary.gatech.edu/student-affairs/academic-honor-code>

***Absences during tests or quizzes will follow the Dean of Students and Registrar policy*** *<http://studentlife.gatech.edu/content/class-attendance>*

***Test Accommodations are handled by students registering with Disability Services. Please*** alert the instructor with sufficient time to upload exams to Disability Services. <https://disabilityservices.gatech.edu/content/contact-us>

**COURSE OUTLINE**

**Date TOPIC Chapter**

1/10 Introduction to Sport Science: Definition and Importance **1**

1/12 The Scientific Method and Research Design Assigned Reading

1/17 Scientific Evidence: Credible Sources, Lit Search- **LAPTOP REQUIRED** 1/19 Athletic Training-  **5**

1/24 Dr. Michelle LaPlaca – Helmet design and Concussion assessment 1/26 Motor Behavior: The Brain **8**

**Research Abstract Written due 1/31** 1/31 Exercise Science: A systems approach **2** 2/2 **Quiz 1**

2/7 Clinical and Sports Biomechanics **9** 2/9 Regulation of technology to aid locomotion for competition: Ethical issues

2/14 Materials in Sport Engineering

2/16 Overview of Sport Biomechanics: Basic Concepts Human Movement

2/21 Laboratory measurements in Clinical and Sports Biomechanics - 2/23 Rehabilitation to restore function for health, performance: Prosthetics

2/28 Mid- Term 3/2 Exercise Physiology **3**

3/7 Assessment in Exercise Science **10 3/9** Sports Nutrition: Are athlete needs really different? **6**

**3/14** Ergogenic Aids to Performance: **3/16 Anti-Doping:** History and Perspectives for USADA and Drug-Free Sport

**Spring** break 3/20-24

3/28  Clinical issues in Sport Science- Physical Therapy  **12** (149-168)

3/30 Exercise Epidemiology **12** Exercise Is Medicine (Surgeon General Report 1996, 2008 PA Guidelines)

**4/4** Biological differences impacting sport performance, WR Reading

4/6 Sociological impacts on performance and gender Schultz, J. "Question of Too": Sex Testing in Elite Women's Sport and the Issue of Advantage. Quest, 63(2):228-243. May 2011

4/11 Careers in the Field **11**  DEBATE ASSIGNMENT 1 DUE

4/13 Sport Psychology **7**

4/18  **Group Debate presentations: Should Football be Banned for Youth? Should Youth Specialize in Sport?**

4/**20 Group Debates presentations: Barefoot Running: Risks/Benefits, Gender Testing/Classification in Sport: Time to Eliminate?**

4/**25 Group debate presentations: Energy Drinks: Ban or Aid to Performance? Anti-DOPING** testing: Ineffective/unfair vs. Maintain testing

**Written Research Paper due for all GROUPS 4/25**

Final Exam Scheduled Exam period 13 Thurs May 4 (8:00 am)