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| APPH 2500 (3-0-3) **INTRODUCTION TO SPORT SCIENCE**  T, Thurs 12:00 noon-1:30 pm  **Course Director: Mindy Millard-Stafford, PhD School of Applied Physiology, 555 14th St.**  **Email**: mm6@mail.gatech.edu  **Office**: 1309A 555 14th St.  **Office Hours**: T/R 2:00 – 3:30  **REQUIRED Textbook: The Biophysical Foundations of Human Movement-2nd Edition,**  **Human Kinetics Publisher, 2005 ( or 3rd EDITION, 2013).** ISBN-13: 9780736042765   |  | | --- | | By [Bruce Abernethy](http://www.humankinetics.com/hksearch?parentCode=0&letter=Bruce%20Abernethy), [Stephanie Hanrahan](http://www.humankinetics.com/hksearch?parentCode=0&letter=Stephanie%20Hanrahan), [Vaughan Kippers](http://www.humankinetics.com/hksearch?parentCode=0&letter=Vaughan%20Kippers), [Laurel Mackinnon](http://www.humankinetics.com/hksearch?parentCode=0&letter=Laurel%20Mackinnon), Marcus Pandy | | Selected Readings in 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:**  Attendance, Participation (1 pt per class) 10%  Sports Science Abstract Presentation 15%  Sports Science Research Paper - Individual 15%  Group Research Project- Checkpoint 1,2  Presentation of Group project 35%  Final Exam (take home) 25%  Total 100%  A: 90-100%  B: 80 - 89%  C: 70 - 79%  D: 60 - 69%  F: 59% and below  **Group Research Project**: Based on the Atlanta Science Festival Class Projects, students will develop a “hands on” learning module to be presented at a level for the lay public (i.e. as if utilized in a public K-12 Community Service event). Time will be devoted during each class for groups to work on the projects. Attendance therefore is vital.  **Sports Science Research Paper**– Students will conduct a brief systematic review using the Library Search Engines to develop an extensive reference list that is current (within the last 5 years) and based on refereed journal publications. Research topic must be approved by instructor and the aim is to select a controversial issue in sports science in order to present to class “two sides of the issue “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? Identify pros and cons based on data-driven research papers.  **RESEARCH ABSTRACT PRESENTATION** (see sheet):   1. Identify an Original Experimental Research Paper using Human Subjects published in a Peer-Reviewed Journal (verify journal) 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 project the table or Figure but do not include in your write-up)   **Academic Honesty**  Students in this class will be expected to abide by the Georgia Tech honor code. Academic misconduct of any kind will not be tolerated. All students are responsible for understanding and complying with Georgia Tech rules. For information see **http://www.honor.gatech.edu.** |
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| **COURSE OUTLINE – NOTE: during selected class there will be time devoted for “hands on” or group activities to build toward a research paper and group project (Allow last portion of class for group work). Attendance is therefore mandatory in order to contribute to the group project grade.**  **Date TOPIC Presenter**  Week 1: Introduction to Sport Science: Definition and Importance Millard-Stafford  Overview as a of Field of Study, Scientific Evidence Skinner **Assigned Reading: Chapter 1,2 , Part VII, pp. 337-339**  Week 2 and 3: Physiology of human sport performance: Adaptation to Training Wittbrodt  **Assigned Reading: Chapter 11 and 14**  Week 4: Anatomical Bases of Human Movement: Basic Concepts, Anthropometry Millard-Stafford  **Abstract Presentations- During Class (see hand out for details), Assigned Reading: Chapter 3,4,6**  Week 5 : Overview of Sport Biomechanics: Basic Concepts Human Movement Young Hui Chang  **Assigned Reading: Chapter 7,8,9**  Week 6: Regulation of technology to aid locomotion for competition: Ethical issues Megan Toney  **Check Point 1 of Science Fair Project Due**, **Assigned Reading (Point-CounterPoint):**  Week 7, 8: Rehabilitation to restore function for health and sport performance: Prosthetics  Introduction to Clinical Lower Extremity Biomechanics: Orthotics Ben Lucas  **CHECK POINT 2 of SCIENCE FESTIVAL PROJECT due 7/16**  Week 9: Future of Sports Science Technology Joe Nocera  Week 10: The Sports Medicine Umbrella: From Prevention to Treatment Millard-Stafford  Week 11 Sport Psychology and Biofeedback Dana Wyner  **Assigned Reading: Chapter 12 (Nutrition),19 (Psychology)**  Week 12: Sport Nutrition Millard-Stafford  Week 13: Epidemiology of Physical Activity : CDC, IOM Federal Guidelines Millard-Stafford  Week 14: Group FINAL Presentations – Project demos  Week 15: Policy for Concussion Management based on Scientific Evidence Michelle LaPlaca   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **Final Exam**: Final Exam Period Above you said exam is take home….is this when exam is due in class? | |  | |  | |  | |  | |  | | | | |
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