**Fall 2010**

**KINE 3020**

**Scientific Foundations of Kinesiology (4 hour credit)**

**Meetings:**
Section 001: Monday, Wednesday 9:00-10:15 & Friday 9:00-9:50 AM (MC 1081)

**Instructors:**
Jay Patel - Biomechanics - 844-1468 pateljh[@auburn.edu](http://www.auburn.edu/~weimawh/weimawh%40auburn.edu)
Mike Urbin - Motor Behavior - 844-1465 mau0003@auburn.edu

David Elmer - Exercise Physiology - 844-1479 elmerdj@auburn.edu

**Recommended Textbook (not required):**
Abernathy, B., Hanrahan, S. J., Kippers, V., Mackinnon, L. T., & Pandy, M. G. (2005). The Biophysical Foundations of Human Movement (2nd ed.). Champaign, IL: Human Kinetics.

**Course Description:**
Overview of the scientific basis of physical activity, including the biomechanical, physiological and psychological foundations of human movement.

**Course Objectives:**
Upon completion of this course, students will understand:
1. The concept of a scientific perspective of physical activity;
2. The historical origins of the scientific study of human movement;
3. The definitions, distinctions and interrelationships of biomechanics, exercise physiology, motor behavior and exercise/sport psychology;
4. The role of kinematic and kinetic factors in human motion (7.a.3);
5. The changes that occur in the musculoskeletal system, physiological capacity and performance over the life span of an individual (7.a.2.i);
6. Basic concepts of exercise metabolism as it relates to the physiological basis of human movement and performance (7.2.a.ii);
7. The physiological and musculoskeletal adaptations that result from training (7.a.ii);
8. The basic psychological principles influencing human performance (7.a.4.i);
9. The specific contributions that motor control, motor development, motor learning and sport and exercise psychology offer to the study of human performance (7.a.4.iii).

**Course Requirements:**
One examination (format to be determined by each instructor) will be given at the end of each unit of study: Biomechanics, Motor Behavior/Sport Psychology, and Exercise Physiology.  Each examination is worth 100 points and counts one third of the course total.

**Grading and Evaluation Procedures:**
Item                                                            Final Grade
Exam 1 - 33 1/3                                     > 90      =   A
Exam 2 - 33 1/3                                     > 80-90  =   B
Exam 3 - 33 1/3                                     > 70-80  =   C
                                                             > 60-70  =   D
                                                              <60     =   F

**Class Policy Statements:**
There are no unannounced quizzes in this course.

"Taking a class" means attending all meetings of that class.  One point for each unexcused absence will be subtracted from the student's final average.  Please refer to the current edition of the Tiger Cub for definition of excused absences.

**Students with Special Needs Who Require Accommodations:**
Students who need accommodations are asked to arrange a meeting during office hours the first week of classes, or as soon as possible if accommodations are needed immediately. If you have a conflict with my office hours, an alternate time can be arranged. To set up this meeting, please contact me by E-mail. Bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have an Accommodation Memo but need accommodations, make an appointment with The Program for Students with Disabilities, 1244 Haley Center, 844-2096 (V/TT).

**Course Content:**

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| Week | Topics |
| 1 | Biomechanics, Introduction  |
| 2 | Mechanical Basis of human movement: The sub discipline of biomechanics |
| 3 | Basic concepts of kinetics/kinematics |
| 4 | Types of machines in the body / Basic concepts of work, power, energy |
| 5 | Biomechanical changes throughout the lifespan/ Biomechanical adaptations during training |
| **Exam 1** |  |
| 7  | Introduction to the neural basis of human movement. Basic concepts of motor control: Neurophysiology perspectives  |
| 8 | Basic concepts of motor control: Psychological perspectives |
| **Break** |  |
| 10 | Motor learning: Control adaptations to training Introduction to the sub discipline of Sport and Exercise Psychology. Basic concepts of Sport Psychology |
| **Exam 2** |  |
| 11 | Basic concepts of Exercise PsychologyHistory and basics of exercise science |
| 12 | Bioenergetics |
| 13 | Human movement studies as a discipline and a profession - Introduction to exercise physiology as a discipline - how is exercise physiology integrated into movement studies? |
| 14 | Structure and function of the musculoskeletal system. Lifespan musculoskeletal changes |
| 15 | Physiological adaptations to trainingChanges in physiological capacity and performance throughout the lifespan  |
| **Final** | **Cumulative exam for section 3** |
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\*\* The instructors reserve the right to change the syllabus as needed during the course of the semester.