# Auburn University

# College of Education

# School of Kinesiology

# Course Syllabus

## Syllabus for KINE 7620 (Fall 2019)

### Course Information:

Course Number: KINE 7620

Course Title: Principles of Biomechanics in Human Movement

Course Hours: 3 semester hours (Lecture 3)

Prerequisites: HLHP 3620 or equivalent

### Faculty Information:

Instructor: Dr Weimar

Office Location: KINE Building 020

Office Hours: MW 10-11:30, TH 3:30-4:30

Email**:**weimawh@auburn.edu

Phone number: 334-844-1468

### Course Description:

Study of biomechanical principles and laws, and applications of these principles in human movement including sports techniques and daily activities, demonstration of how biomechanics principles and laws being used to advantages in human movement.

### Student Learning Outcomes:

The students will be able to:

1. look to biomechanics for a scientific basis for the analysis of human movement;

2. understand the description, the cause and effect of human movement;

3. use biomechanical principles and law to analyze, evaluate human movement in terms of efficiency and effectiveness

### Course Overview

Week 1. Introduction to Biomechanics and Kinesiology & Terms used in Biomechanics - prepared by instructor

Week 2. Review Planes, Axis & Jt Actions, Vectors

Week 3 Gait and Graphical Relationships

Week 4. Angular Kinematics: Angular motion vector, θ, Ώ, α

Week 5. Graphical Relationships

Week 6. Linear Kinetics: Newton’s three laws and law of gravity

Week 7. Linear Kinetics: Impulse, friction, work, power & energy

Week 8. Angular Kinetics: Couple, moment, lever, & center of gravity

Week 9. Angular Kinetics: Analogues of Newton’s laws of motion

Week 10. Static model: One and two segments

Week 11. Dynamic model: One and two segments

Week 12. Inverse Dynamics

Week 13. Project

Week 14. Escape Room

Week 15. Review

### EVALUATION METHODS:

#### Course Requirements:

Homework, project, midterm and final exam will be given during this course.

#### Grading and Evaluation Procedure:

Homework......25%

Project………25%

Mid Exam......20%

Final Exam....30%

90 - 100 --- A

80 - 89 --- B

70 - 79 --- C

60 - 69 --- D

Under 60 --- F

### Class Policy Statements:

Participation: Students are expected to participate in all class discussions and participate in all homework and laboratory exercises. It is the student’s responsibility to contact the instructor if assignment deadlines are not met. Students are responsible for initiating arrangements for missed work.

Attendance/Absences: Attendance is required at each class meeting. If an exam is missed, a make-up exam will be given only for University-approved excuses as outlined in the student ebook. Arrangement to take the make-up exam must be made in advance. Students who miss an exam because of illness need a doctor’s statement for verification of sickness and should clear the absence with the instructor the day they return to class. Other unavoidable absences from campus must be documented and cleared with the instructor **in advance**.

Unannounced quizzes: There will be no unannounced quizzes.

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 alternative 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 at 1244 Haley Center, 844-2096 (V/TT).

Honesty Code: The University Academic Honesty Code and the student e-book Rules and Regulations pertaining to Cheating will apply to this class.

Professionalism: As faculty, staff, and students interact in professional settings, we are expected to demonstrate professional behaviors as defined in the College’s conceptual framework. These professional commitments or dispositions are listed below:

* + - Engage in responsible and ethical professional practices
    - Contribute to collaborative learning communities
    - Demonstrate a commitment to diversity
    - Model and nurture intellectual vitality