# KINE 7620 –Principles of Biomechanics

# in Human Movement (3 cr.)

Jaimie Roper, PhD

**Office**: 107 Kinesiology Building **Office Hours**: By appointment **Phone**: TBD

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# Course Meetings:

MWF 12:00 PM-12:50 PM STACT 253

**General Information**

This syllabus is intended to give the student guidance in what may be covered during the semester and will be followed as closely as possible. However the professor reserves the right to modify, supplement and make changes as the course needs arise. This includes **quiz dates** and **lecture topics** that may change depending on class progress.

**Recommended Text(s):** Nordin, M. & Frankel, V.H. (2012). Basic Biomechanics of the Musculoskeletal System (4th Edition). Baltimore, Maryland. Lippincott Williams & Wilkins

**Course Description:** This course will cover the application of the principles of kinematics and kinetics to the human body during movement with regard to injury prevention and performance enhancement.

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# Course Obje ctive s:

At the end of the course, the student should:

Understand the principles and methods of mechanics related to the quantification of human motion.

Understand the basics of gait analysis and the related movements of the body.

# Cours e Re quire me nts:

1. Each student is expected to read all text assignments, as well as, other assignments or materials made in lab or in lectures.

2. Performance on quizzes and assignments will be the only criterion used in grade calculation. NO EXTRA CREDIT. Grades will not be rounded. For example, a 90.99% is a “B”, not an “A”.

3. If you need help, see your instructor. Be prepared. Read assignments before attending lectures or labs.

4. Inquiries concerning quiz grades must be made in writing within one week after the lecture day that quizzes are handed back. Inquiries will subject your quiz to complete re-evaluation, which could result in an increase or decrease in your quiz grade.

Grading and Evaluation Procedure:

Quizzes………………..…..44% 91.00%-100% --- A

Article Presentation………10% 80.00%-90.99% --- B

Discussion Leader………….06% 70.00%-79.99% --- C

Research Poster.....................10% 65.00%-69.00% --- D

Debate....................................10% less than 65.00% --- F

3MT…………………….....10%

Joint Lecture…………….....10%

**Class Policy Statements**

Participation: Students are expected to participate in all class discussions and participate in all coursework and 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:

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://sites.auburn.edu/admin/universitypolicies/Policies/PolicyonClassAttendance.pdf>

Unexcused/inappropriate absences on quiz days, or other days where an assignment is due, will result in a zero on the quiz/assignment.

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).

PERSONAL CONDUCT POLICY: You are expected to treat your fellow classmates, TAs, and the instructor with respect and politeness. Things that will not be tolerated include (1) inappropriate use of technology during class or lab, (2) disrespectful language or actions, and (3) honor code violations. Academic honesty and integrity are fundamental values of the University community.

Honesty Code: The University Academic Honesty Code and the **Student Policy e-Handbook** pertaining to cheating and plagiarism will apply to this class. Any requests for extra credit or special exceptions to these grading policies will be interpreted as an honor code violation (i.e., asking for preferential treatment) and will be handled accordingly.

Email: Tiger Mail is the official means of communication for Auburn University. The instructor will communicate with the class through Tiger Mail. You are responsible for this information, so please check your account regularly.

Contingency Plan: If normal classes are disrupted due to a high number of students experiencing illness or an emergency or crisis situation (such as a widespread H1N1 flu outbreak), the syllabus and other course plans and assignments may be modified to allow completion of the course. If this occurs, an addendum to your syllabus and/or course assignments will replace the original materials. Additionally, course content and assignments may be made available to you via Canvas.

Questions/ Help: Students are encouraged to ask questions and seek extra help on a regular basis. Please do not wait until the day before an exam.

Classroom Policies:

* Recording lectures: Lectures may be recorded for the use of students in this class only.

Permission must be obtained from the instructor prior to recording any class lectures.

* All electronic devices must be turned off during classroom or laboratory periods, with the exception of laptops, which may be used for note taking only. NO phones or text messaging during class is allowed. All phones and electronic devices must be put away prior to the start of class. If these are found out – The student will be asked to leave the class.
  + Students are expected to arrive to class on time. Those arriving late will not be permitted to hand in assignments nor will be provided additional time to any in-class assignments. Likewise, classes will end promptly at the scheduled time.
  + Students are expected to come to class having completed the reading and prepared to discuss them.

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

COURSE MATERIALS WILL BE POSTED ON CANVAS: It is expected that you check the course on CANVAS regularly as well as your email. Announcements will be sent via canvas to your email.

Tentative Schedule of Topics –**timing may change**

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| --- | --- | --- | --- |
| Week | Date | Topic | Activity |
| 1 | 21-Aug | Introduction |  |
| 23-Aug | History, kinematics |  |
| 25-Aug | Linear Kinematics |  |
| 2 | 28-Aug | Linear Kinematics | article 1A/B |
| 30-Aug | Angular Kinematics | ***QUIZ*** *1*= Linear Kinematics |
| 1-Sep | Angular Kinematics | article 2A/B |
| 3 | **4-Sep** | **Labor day** |  |
| 6-Sep | Body Motion | **QUIZ** 2= Angular Kinematics |
| 8-Sep | Body Motion | article 3A/B |
| 4 | 11-Sep | Equilibrium | **QUIZ** 3= Body Motion |
| 13-Sep | Equilibrium and Inverse Dynamics | article 4A/B |
| 15-Sep | Inverse Dynamics | Debate 1 |
| 5 | 18-Sep | Linear Kinetics | **QUIZ** 4= Equilibrium and Inverse Dynamics |
| 20-Sep | Linear Kinetics | article 5A/B |
| 22-Sep | Biomechanics of Gait | Debate 2 |
| 6 | 25-Sep | Biomechanics of Gait | **QUIZ** 5= Linear Kinetics |
| 27-Sep | Biomechanics of Gait | article 6A/B |
| 29-Sep | Energetics of Gait | Debate 3 |
| 7 | 2-Oct | Energetics of Gait | **QUIZ** 6= Biomechanics of Gait |
| 4-Oct | Joint Lecture 1/10 | article 7A/B |
| 6-Oct | Joint Lecture 1/10 | Debate 4 |
| 8 | 9-Oct | Joint Lecture 2/10 | **QUIZ** 7= Energetics of Gait |
| 11-Oct | Joint Lecture 2/10 | article 8A/B |
| **13-Oct** | **Fall break (TR/F)** |  |
| 9 | 16-Oct | Joint Lecture 3/10 | **QUIZ** 8= Joint lectures 1-2 |
| 18-Oct | Joint Lecture 3/10 | article 9A/B |
| 20-Oct | Joint Lecture 4/10 | Debate 5 |
| 10 | 23-Oct | Joint Lecture 4/10 | **QUIZ** 9= Joint Lectures 3-4 |
| 25-Oct | Joint Lecture 5/10 | article 10A/B |
| 27-Oct | Joint lecture 5/10 |  |
| 11 | 30-Oct | Joint Lecture 6/10 |  |
| 1-Nov | Joint Lecture 7/10 |  |
| 3-Nov | Joint Lecture 8/10 |  |
| 12 | 6-Nov | Joint Lecture 9/10 | **QUIZ** 10 = Joint Lecture 5-8 |
| 8-Nov | Joint Lecture 9/10 |  |
| 10-Nov | Joint Lecture 10 |  |
| 13 | 13-Nov | Poster Presentations | **QUIZ** 11= Joint Lecture 9-10 |
| 15-Nov | Poster Presentations |  |
| 17-Nov | Poster Presentations |  |
| 14 | **20-Nov** | **Fall Break** |  |
| **22-Nov** |  |
| **24-Nov** |  |
| 15 | 27-Nov | Special Topic/Guest Lecture |  |
| 29-Nov | Special Topic/Guest Lecture |  |
| 1-Dec | 3MT |  |
| 16 | 7-Dec | 3MT |  |
| *Dec 9-10* | *Reading days* |  |
| *Dec 11-15* | *Final Exam Period* |  |
|  | *16-Dec* | *Commencement* |  |

**PERSONAL NOTE FROM INSTRUCTOR**: If you are totally overwhelmed by the stresses of your semester and feel like you just can’t handle the pressure, please contact me or someone at “Auburn Cares”. I truly care for your wellbeing and am committed to your academic and personal success.

<http://www.auburn.edu/auburncares>