KINE 3301 Biomechanics of Human Movement
Fall 2012

Instructor: Dr. Mark Ricard
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Lab Phone: (817) 272-9185

Location & Time: Lecture – MAC 206, Tue & Thr 12:30 – 1:50 PM
Labs -- In Class Lab Assignments

Office Hours: By appointment

Prerequisites: KINE 1400, 3300, BIOL 2457 and MATH 1302, or permission of instructor.


Other Requirements: Scientific calculator with tan, tan⁻¹, sin, cos, x², √x

Course Description: KINE 3301 BIOMECHANICS OF HUMAN MOVEMENT (2-2) Quantitative and qualitative analyses of human movement. Emphasis on the application of the principles of human movement, with consideration of functional anatomy, kinesiology and mechanical concepts to exercise, sport, and activities of daily living.

Student Learning Outcomes:
The student should be able to:
1. Visually recognize movements (when demonstrated by your instructor) and write the specific movement, the plane of movement, and the axis of movement.
2. Systematically analyze sports skills and common exercises used in conditioning programs and rehabilitation.
3. Write mechanical principles and give examples of their application to several different sports and human movement situations.
4. Write a detailed descriptive and mechanical analysis of a sport skill, including the major muscle groups used in executing the skill.
5. Solve basic mechanics problems related to human movement.
6. Identify, analyze and evaluate the mechanics of fundamental motor skills such as kicking, throwing, walking, running and jumping.
7. Identify the biomechanical factors that discriminate between mature and immature movement patterns.
8. Identify and explain the role of body organs in human movement.
9. Identify how the bone, muscle, ligament and tendons respond to mechanical stress.
10. Demonstrate knowledge of how the muscular and nervous systems relate to the mechanics of movement.
11. Demonstrate the ability to analyze the mechanics of fundamental movement patterns and sport movement patterns.
Athletic Training Competencies

The following Athletic Training Educational Competencies are addressed in this course:
- Orthopedic Clinical Examination and Diagnosis: C4, C5
- Conditioning and Rehabilitative Exercise: C2

Grading

Grades in this course will be based on the following percentages:
- Exams (3): 60%
- Homework & Quizzes: 20%
- Comprehensive Final Exam: 20%

Grading Scale:
- 90 - 100%  A
- 80 - 89 %  B
- 70 - 79 %  C
- 60 - 69 %  D
- 0 - 59 %  F

Attendance Policy: Attendance is required.

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<td>Aug 23 - 28</td>
<td>Chapter 2: Vectors and Scalars</td>
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<td>Aug 28 - 30</td>
<td>Chapter 3: Linear Kinematics</td>
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<td>Sept 4</td>
<td>Chapter 4: Linear Kinematics Applications</td>
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<td>Sept 6 - 11</td>
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<td>Sept 25</td>
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<td>Oct 2</td>
<td>Chapter 9: Linear Impulse – Momentum Applications</td>
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<td>Chapter 10: Work, Power and Energy</td>
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<td>Chapter 11: Torque</td>
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<td>Chapter 12: Center of Mass</td>
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<td>Chapter 14: Mechanical Responses of Biological Materials</td>
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<td>Chapter 15: Exercise Adaptations to Biological Materials</td>
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<td>Chapter 16: Muscle Excitation – Contraction Coupling</td>
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<td>Nov 8</td>
<td>Chapter 18: Motor Neurons and Electromyography</td>
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<td>Nov 13 - 15</td>
<td>Chapter 19: Sensory Receptors and Reflexes</td>
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<td>Nov 29</td>
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<td>Dec 3</td>
<td>Shoe Biomechanics</td>
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<td>Dec 5</td>
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<td>Dec 6</td>
<td>Final Exam 11:00 AM – 1:30 PM</td>
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Expectations for Out-of-Class Study: Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 9 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.
**Make-up Exams:** If you miss an exam due to illness or a planned trip, it is your responsibility to arrange a make-up exam.

**Drop Policy:** Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/ses/fao).

**Grade Grievances:** Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current undergraduate catalog. For undergraduate courses, see http://wweb.uta.edu/catalog/content/general/academic_regulations.aspx#10.

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete a Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

**Academic Integrity:** All students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

> I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

> I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

Instructors may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System Regents’ Rule 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University.

**Student Support Services:** UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.
Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the Americans with Disabilities Act (ADA). All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity: At UT Arlington, academic dishonesty is completely unacceptable and will not be tolerated in any form, including (but not limited to) “cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts” (UT System Regents’ Rule 50101, §2.2). Suspected violations of academic integrity standards will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University.

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The University of Texas at Arlington College of Education and Health Professions Mission, Core Values and Professional Dispositions

MISSION: To develop and deliver an educational program that ensures the highest teacher, administrator and allied health science preparation and performance and to be a recognized contributor in the field of educational and allied health science research and practice through effective teaching, quality research and meaningful service. The Educator and Administrator Preparation units’ collaboratively developed shared vision is based on these CORE VALUES, dispositions and commitments to:
• Excellence ▪ Diversity
• Learner-centered environment ▪ Technology
• Research-based ▪ Field Experiences
• Collaboration ▪ Life-long Learning

Each candidate in the Educator and Administrator Unit of the College of Education and Health Professions of UT-Arlington will be evaluated on PROFESSIONAL DISPOSITIONS by faculty and staff. These dispositions have been identified as essential for a highly-qualified educator. Instructors and program directors will work with candidates
rated as “unacceptable” in one or more stated criteria. The candidate will have an opportunity to develop a plan to remediate any deficiencies.

Demonstrates excellence
- Meets stated expectations of student performance.
- Keeps timelines and arrives on time for class and other activities.
- Produces significant artifacts of practitioner evidence.
- Possesses a willingness to set goals.
- Attends all classes/trainings and practicum experiences.
- Completes activities as assigned.
- Has appropriate personal appearance and/or hygiene for professional setting.

Participates in a learner centered environment and shows respect for self and others
- Uses appropriate and professional language and conduct.
- Supports a “high quality” learning environment.
- Shows respect and consideration for the thoughts and feelings of others.

Research-based pedagogy
- Has an awareness of and willingness to accept research-based concepts.
- Identifies important trends in education.
- Demonstrates interests in learning new ideas and strategies.
- Relates class discussions and issues to current events in education.

Participates in on-going collaboration with peers and professionals
- Demonstrates kindness, fairness, patience, dignity and respect in working with peers, staff and instructors.
- Works effectively with others.
- Assists others in the university classroom or practicum setting.
- Demonstrates openness to assistance from others.
- Receives feedback in a positive manner and makes necessary adjustment.

Exhibits stewardship of diversity
- Shows appropriate stewardship and tolerance to diverse people, environments, and situations.

Advocates use of technology
- Uses and applies existing technologies sufficiently in work.
- Shows a willingness to use and apply emerging technologies in work.

Shows interest in the learner and the learning-process
- Demonstrates significant learning improvement over time.
- Shows interest in the learning process and demonstrates the necessary amount of time, energy, and enthusiasm for becoming better learners, teachers, and practitioners.