KINE 3343 001 Biomechanics Fall 2025

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Lecturer - Kinesiology

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Office Hours: By appointment (email to set an appointment) **Meeting:**
Required Text: **Basic Biomechanics 9th Edition – Susan Hall**
Available through Sully Shelf. Do not purchase separately ISBN: 978-1-260-83698-1

COURSE DESCRIPTION

This course will equip participants with knowledge of the essential mechanical concepts and principles that govern human movement within a context of physical education and sports science. Through lecture, laboratory experience, problem-solving activities, and other forms of learning in and outside the classroom, students will acquire practical biomechanical knowledge through the integration between the mechanical principles and the efficiency of human movement and interrelationships of biomechanics, musculoskeletal anatomy, and neuromuscular physiology Recommended Prerequisite: BIOL 2401 and/or BIOL 2402.

EXPECTATION OF STUDENTS

Students are responsible for keeping up with the reading and are expected to read the assigned chapters and/or other posted readings prior to class in order to contribute to online discussion. Handouts distributed through Blackboard should be kept in a notebook in order to be referred to as necessary.

MARKETABLE SKILLS – The following marketable skills are met in this course:

- **Collaboration – students will interact with one another through a multitude of class discussions and activities**
- **Communication –**

- **Critical Thinking – students will be asked to critically decipher a multitude of real-world scenarios**
- **Career Management – students will develop the skills necessary to train athletes by understanding proper motor learning and motor development**

STUDENT LEARNING OUTCOMES

Upon successful completion of this course, students should be able to:

- Describe the terms biomechanics, statics, dynamics, kinematics, and kinetics and the scope of scientific inquiry addressed by biomechanists.
- Explain kinematics and kinetics for analyzing human motion
- Describe biomechanics concepts in musculoskeletal system
- Apply biomechanics concepts for analyzing human motion using 2D video analysis

COURSE OBJECTIVES: Students will be able to:

- Demonstrate knowledge of the history of biomechanics and its implementation in our world.
- Lists and defines directional terms and cardinal planes used to describe the body and the relationship of its parts.
- Defines the principles and concepts of body movement including functional classification of joints, joint biomechanics, and normal ranges of joint motion, joint action terminology, muscular structures responsible for joint actions (prime movers, synergists), skeletal muscle contraction, and kinesthesis/proprioception.
- Describes the mechanical principles applied to the analysis of movement.
- Describe Newton's laws of motion and how they apply to exercise and sport.
- Detail the factors that affect technique improvement and injury development in human movement.
- Compare and contrast qualitative and quantitative techniques for analyzing human movement.
- Apply the biomechanical principles that are essential to improving performance and reducing injury.
- Describe how improper technique limits the ability of the human body to produce effective movement.
- Demonstrate knowledge of various equipment utilized to make a biomechanical analysis.
- Perform an analysis of human movement including all principles learned in class.

PROGRAM LEARNING OUTCOMES:

- The student will demonstrate understanding of structural and mechanical properties of the musculoskeletal system, functional and movement characteristics, and analysis of movement by synthesizing principles acquired in the coursework as demonstrated in projects defining sport and exercise science skills.
- The student will demonstrate knowledge of treatment planning for athletic injuries and illnesses by recommending appropriate treatment and rehabilitative plans to include administering appropriate emergency care, applying suitable therapeutic modalities, implementing comprehensive rehabilitation programs, acknowledging the effective use of pharmacological agents, developing sound nutritional practices, and providing for appropriate medical referral.
- The student will demonstrate the ability to combine personal fitness and corresponding exercise adoptions for lifetime wellness. This includes the ability to assess a person’s health and fitness status utilizing skill and fitness test administration, subsequent data collection, and corresponding evaluation and decision making.
- The student will demonstrate understanding of physiological adaptations made by the human body in adjusting to various sport and exercise activities by measuring and analyzing human response during various aerobic and anaerobic challenges.

- The student will demonstrate the ability to assess individual and community sport and health/fitness status by obtaining physiological data about current health and fitness state and developing a program/ prescription to improve an individual's health and fitness status according to American College of Sports Medicine (ACSM) guidelines.
- The student will demonstrate the ability to combine personal fitness and corresponding exercise adoptions for lifetime wellness. This includes the ability to assess a person's health and fitness status utilizing skill and fitness test administration, subsequent data collection, and corresponding evaluation and decision making.
- The student will demonstrate the ability to develop and deliver fitness, wellness, strength training programming to individuals with differing levels of fitness, skill, and health or physical needs.

Course Format

The format for this course will include, but is not limited to – face to face delivery and on-line components.

Attendance

Attendance for class is mandatory. Every class day is a grade. You will receive 100% credit for being on time, 75% credit for being tardy. **One letter grade will be deducted for every absence after four (4). Students with zero (0) absences (not including athletic related absences) and with no missing assignments will be exempt from the final exam.FINAL GRADE DISTRIBUTION IS SUBJECT TO CHANGE**

GRADING POLICIES/TESTING/ASSIGNMENTS/ATTENDANCE/EXPECTATIONS

Grade calculation	% of Grade	Grading Scale	
Attendance/quizzes	200 (20%)	900 or more	A
Connect SmartBook Assignments (12)	14 @ 25 = 350 points (35%)	800-899	B
Exams (4)	400 points (40%)	700-799	C
Final Project	100 points (10%)	600-699	D
		Less than 599	F
		Total Points = 1050	

Course Schedule

		Connect / BlackBoard Assignment
Week 1	Syllabus/Intro/Math Refresher	
Week 2	CHAPTER 1: What is Biomechanics?	
Week 3	CHAPTER 2: Kinematic Concepts for Analyzing Human Motion	
Week 4	CHAPTER 3: Kinetic Concepts for Analyzing Human Motion	
Week 5	CHAPTER 4: The Biomechanics of Human Bone Growth and Development	
Week 6	CHAPTER 5: The Biomechanics of Human Skeletal Articulations	
Week 7	CHAPTER 6: The Biomechanics of Human Skeletal Muscle	**SmartBook 1-8 Due 10/13**
Week 8	CHAPTER 7: The Biomechanics of the Human Upper Extremity	
Week 9	CHAPTER 8: The Biomechanics of the Human Lower	**Midterm 10/13 TBA** Columbus day on 10/13
Week 10	CHAPTER 9: The Biomechanics of the Human Spine	
Week 11	CHAPTER 10: Linear Kinematics of Human Movement CHAPTER 11: Angular Kinematics of Human Movement	**SmartBook 9-14 Due 12/1/2024**
Week 12	CHAPTER 12: Linear Kinetics of Human Movement CHAPTER 13: Equilibrium and Human Movement	
Week 13	CHAPTER 14: Angular Kinetics of Human Movement	**Final Project DUE tentative**

Week 14	Thanksgiving Break
Week 15	Final Project
Week 16	**Final Exam TBA**

Final Exam
tentative

ALL COURSE REQUIREMENTS DEADLINE

Distance Education Statement

Students enrolled in distance education courses have equal access to the university's academic support services, such as Smarthinking, library resources, online databases, and instructional technology support. For more information about accessing these resources, visit the SRSU website. Students should correspond using Sul Ross email accounts and submit online assignments through Blackboard, which requires secure login information to verify students' identities and to protect students' information. The procedures for filing a student complaint are included in the student handbook. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and appropriate student conduct, as described in the student handbook. Students in web-based courses must maintain appropriate equipment and software, according to the needs and requirements of the course, as outlined on the SRSU website.

Accidents & Injuries

In the case of bodily or personal property damage, the Kinesiology Department will not be held responsible. The student must report any field experience related injury or illness to the Instructor immediately. Any expense incurred due to injury or illness will be the student's responsibility.

Academic Integrity Statement

Students in this class are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. A scholar is expected to be punctual, prepared, and focused; meaningful and pertinent participation is appreciated. Examples of academic dishonesty include but are not limited to: Turning in work as original that was used in whole or part for another course and/or professor; turning in another person's work as one's own; copying from professional works or internet sites without citation; collaborating on a course assignment, examination, or quiz when collaboration is forbidden. The Student Handbook can be found at: https://www.sulross.edu/catalog/undergraduate-academic-regulations-2/#1605412215143-c8b265dc-3e01
In addition, please note that plagiarism detection software will be used in this class for written assignments.

AI policy

The University does not recommend or endorse any specific AI tools or resources. Students should be aware that many generative AI tools (e.g., ChatGPT, Google Gemini, Microsoft Copilot) store user input and may use this data to train future models. For this reason, students should never upload or share personal, confidential, or identifiable information—such as names, ID numbers, health data, or assignment submissions containing such details—into any generative AI platform. When using AI tools, students should verify whether the tool complies with student privacy standards as indicated by the University. Faculty may recommend specific tools that better align with institutional data privacy policies, but ultimate responsibility for data protection rests with

users. Students are encouraged to use faculty-recommended platforms when engaging in coursework involving generative AI. The University is not liable for any adverse experience or impact when students interact with these tools.

In this course, students shall give credit to AI tools whenever used, even if only to generate ideas rather than usable text or illustrations. When using AI tools on assignments, add an appendix showing (a) the entire exchange, highlighting the most relevant sections; (b) a description of precisely which AI tools were used (e.g. ChatGPT private subscription version or DALL-E free version), (c) an explanation of how the AI tools were used (e.g. to generate ideas, turns of phrase, elements of text, long stretches of text, lines of argument, pieces of evidence, maps of the conceptual territory, illustrations of key concepts, etc.); (d) an account of why AI tools were used (e.g. to save time, to surmount writer's block, to stimulate thinking, to handle mounting stress, to clarify prose, to translate text, to experiment for fun, etc.). Students shall not use AI tools during in-class examinations, or assignments unless explicitly permitted and instructed. Overall, AI tools should be used wisely and reflectively with an aim to deepen understanding of subject matter.

It is a violation of university policy to misrepresent work that you submit or exchange with your instructor by characterizing it as your own, such as submitting responses to assignments that do not acknowledge the use of generative AI tools. Please feel free to reach out to me with any questions you may have about the use of generative AI tools before submitting any content that has been substantially informed by these tools.

In this course, we may use generative AI tools (such as ChatGPT) to examine the ways in which these kinds of tools may inform our exploration of the topics of the class. You will be informed as to when and how these tools will be used, along with guidance for attribution if/as needed. Any use of generative AI tools outside of these parameters constitutes plagiarism and will be treated as such.

Understanding how and when to use generative AI tools (such as ChatGPT, DALL-E) is quickly emerging as an important skill for future professions. To that end, you are welcome to use generative AI tools in this class as long as it aligns with the learning outcomes or goals associated with assignments. You are fully responsible for the information you submit based on a generative AI query (such that it does not violate academic honesty standards, intellectual property laws, or standards of non-public research you are conducting through coursework). Your use of generative AI tools must be properly documented and cited for any work submitted in this course.

To ensure all students have an equal opportunity to succeed and to preserve the integrity of the course, students are not permitted to submit text that is generated by artificial intelligence (AI) systems such as ChatGPT, Bing Chat, Claude, Google Bard, or any other automated assistance for any classwork or assessments. This includes using AI to generate answers to assignments, exams, or projects, or using AI to complete any other course-related tasks. Using AI in this way undermines your ability to develop critical thinking, writing, or research skills that are essential for this course and your academic success. Students may use AI as part of their research and preparation for assignments, or as a text editor, but text that is submitted must be written by the student. For example, students may use AI to generate ideas, questions, or summaries that they then revise, expand, or cite properly. Students should also be aware of the potential benefits and limitations of using AI as a tool for learning and research. AI systems can provide helpful information or suggestions, but they are not always reliable or accurate. Students should critically evaluate the sources, methods, and outputs of AI systems. Violations of this policy will be treated as academic misconduct. If you have any questions about this policy or if you are unsure whether a particular use of AI is acceptable, please do not hesitate to ask for clarification.

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Academic Civility Statement

Students are expected to interact with professors and peers in a respectful manner that enhances the learning environment. Professors may require a student who deviates from this expectation to leave the face-to-face (or virtual) classroom learning environment for that particular class session (and potentially subsequent class sessions) for a specific amount of time. In addition, the professor might consider the university disciplinary process (for Academic Affairs/Student Life) for egregious or continued disruptive behavior.

Academic Affairs Service Statement

Sul Ross faculty, staff, and students are expected to model responsible citizenship through service activities that promote personal and academic growth while enhancing the university, local, regional, national, and global communities. These activities will foster a culture of academic/public engagement that contributes to the achievement of the university's mission and core values.

Libraries

The Bryan Wildenthal Memorial Library in Alpine.
Offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, library.sulross.edu. Off-campus access requires logging in with your LobolD and password. Librarians are a tremendous resource for your coursework and can be reached in person, by email (srsulibrary@sulross.edu), or phone (432-837-8123).

Academic Excellence Statement

Sul Ross holds high expectations for students to assume responsibility for their own individual learning. Students are also expected to achieve academic excellence by:

- Honoring the core values of Sul Ross.
- Upholding high standards of habit and behavior.
- Maintaining excellence through class attendance and punctuality.
- Preparing for active participation in all learning experiences.
- Putting forth their best individual effort.
- Continually improving as independent learners.
- Engaging in extracurricular opportunities that encourage personal and academic growth.
- Reflecting critically upon feedback and applying these lessons to meet future challenges.

ADA Statement

SRSU Disability Services. Sul Ross State University (SRSU) is committed to equal access in compliance with Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility/accommodations services must contact Rebecca Greathouse Wren, LPC-S, SRSU's Accessibility Services Coordinator at 432-837-8203 (please leave a message and we'll get back to you as soon as we can during working hours), or email rebecca.wren@sulross.edu. Our office is located on the first floor of Ferguson Hall (Suite 112), and our mailing address is P.O. Box C-122, SUI Ross State University, Alpine. Texas, 79832.

Additionally, please find attached instructions you may wish to provide to students in your Blackboard course on how they access these materials through Follett's system BryteWave. Below, you can also see

steps on how to add BryteWave as a tile on your Blackboard shell through the Content Market. Please let me know if you have any questions. Thanks!

1. Hit the + button under Course Content
2. Click Content Market
3. Find BryteWave, but do not click on the tile. Only click on the + sign on the bottom right.
4. This adds the content to the top of your BB page:

Addendum: Personal Behavior & Responsibility in Dr. Renshaw's Class

Expectations for Conduct

• Do your own work. Academic honesty matters.
• Turn work in on time. I absolutely, positively, never accept late work.
• Communicate with me. If you're struggling, busy, or need help, let me know.

Classroom Behavior

• No headphones, no hoods, no phones. Stay present in class.
• Don't take pictures without asking. Respect class content and privacy.
• Come to class. Ask questions. Don't be shy. Your learning depends on it.
• Be respectful to classmates. Someone, somewhere is paying for you to be here—treat the class, yourself, and others with respect.
• Recognize that you own your education. Take responsibility for your actions and effort.

Professional Interaction

• Coaches and colleagues: I do talk to them about students. Don't lie to me—it will come back around.
• Come by my office. Make sure I know your name. (I'm not great with names, but if I learn yours, it usually means we've been working through something together.)
• Addressing me: In class, I don't care if you call me Doc, Doug, Dr. Renshaw, or even something less polite—as long as it's in good humor.
• Around other faculty or university staff: Please stick to "Doc" or "Dr. Renshaw."

Email & Blackboard Communication

• Check your email daily. I communicate often via Blackboard announcements.
• Make sure Blackboard is linked to your email. If I need to cancel class suddenly, I will post it there. I'll do my best to post in time so you don't waste a trip to campus.
• Subject line: Only include your full name and the class you are emailing about (e.g., "Jane Smith – KIN 3305").
• Compose emails professionally: use good grammar, run a spell check, and keep it short and to the point.
• Examples of acceptable emails:
• • Athletics: "I will be away this Thursday for basketball. Thanks."
• • Family matters: "I will miss class due to a family issue."
• What NOT to do: Don't overshare unnecessary details. Example of what I do not need:
• > "My cat named Jeffrey has hemorrhoids and my ex-sister-in-law overdosed on bath salts, so I need to go take care of my Tío in El Paso while Jeffrey recovers…"

Grades

• Stay on top of your own grades in Blackboard.
• If you see an error, let me know right away—I'll fix it ASAP.

Attendance Policy

• I expect you in class. Attendance matters for your success.
• If you are more than 5 minutes late, do not come in.

• If the door is shut, you cannot come in. Class has started.
• I do not take roll. Instead, I give 10 random quizzes throughout the semester.
• Quizzes cannot be made up unless you have an approved, documented excuse.

Approved Reasons to Miss Class

• Athletics (official university event, must be documented).
• Illness with a doctor's note.
• Documented car problems or accidents.
• Family emergency with documentation.
• Not approved: oversleeping, not feeling like coming to class, or other personal choices. You're an adult—you can make that choice, but you accept the consequences. Just be honest with me.

Final Note

• I do have a doctorate, and I expect the same level of respect you would give any other professor.
• If you show up, work hard, check your email, and communicate, we'll get along just fine.