

TEXAS A&M UNIVERSITY-COMMERCE
DEPARTMENT OF HEALTH AND HUMAN PERFORMANCE
HPK 335 Kinesiology and Biomechanics
Summer 2014

Professor: Stacy Bishop, Ph.D., CSCS
Office: Field House 006
Telephone: Office: 903 886 5556
E-mail: Stacy.Bishop@tamuc.edu (preferred method of communication)

REQUIRED TEXT: Lippert, L.S. (2011). *Clinical kinesiology and anatomy* (5th edition). F.A. Davis Company. ISBN – 13 9780803626324.
(online version of the text can be purchased at www.coursesmart.com)

Course Description:

A study of human musculoskeletal anatomy and principles of biomechanics. Prerequisite BSc 251 or consent of instructor. This course emphasizes the effects of joint structures and muscles on movement while providing an introduction to the principles of biomechanics. A portion of this class is web-assisted in eCollege.

Course Objectives:

- 1) Use precise, well-defined terminology to describe motion.
- 2) Describe linear and angular descriptors of human motion (kinematics).
- 3) Describe the relationship between linear and angular characteristics of motion.
- 4) Explore the basic causes of human movement (kinetics).
- 5) Qualitatively analyze movements in sport applications.
- 6) Explore the skeletal system, articular system, arthrokinematics, muscular system, nervous system, and others in relationship to movement.
- 7) Investigate posture and gait and their relationship to movement.

Course Requirements:

Class Participation, Group/ Homework Activities, Quizzes (potentially in eCollege)

The student will participate in several class, group, and homework activities (including quizzes) throughout the semester. Some will be graded, and some will not. Student attendance will be averaged into this category. All attendance and activities will be worth 100 points (or **10% of your final grade**).

Tests:

Students will take 3 tests throughout the semester worth 100 points each. Tests will cover lectures, class activities, and the book. With perfect attendance and a current average of an A or B, students can choose whether or not they want to take the final (Grades will be reweighted accordingly, to accommodate the missing final test grade points). (300 points, **30% of final grade**)

Article Summaries

Each student will be required to write four (4) summaries of kinesiology and biomechanics articles. Articles should be from **Peer-reviewed** journals such as: *The Physician and Sportsmedicine*, *Medicine and Science in Sports & Exercise*, or *Research Quarterly for Exercise and Sport*. Popular magazine articles are unacceptable. Each article summary should be 1.5-2.0 pages typed, Times New Roman Font, with one-inch margins. Reference should be listed at the top of the summary, single-spaced, and in MLA or APA format or

20% will be deducted automatically. Each article summary is worth 25 points. (100 points, **10% of your final grade**)

Sport Skill Analysis:

Students will create a detailed analysis of a sport skill (approved by the instructor). (**20% of your grade**)

Laboratory Experiences:

You must attend all labs. All lab write-ups are required and are due at the beginning of the next lab. Ms. Holly Langford, lab graduate assistant, will conduct labs and collect all lab write-ups from you. Laboratory write-ups will consist of **25% of your final grade.**

Course Grading:

1. Participation (attendance, homework, quizzes)	150 points	15%
2. Tests (3)	300 points	30%
3. Article Summaries (4)	100 points	10%
4. Sport Skill Analysis (1)	200 points	20%
5. Lab	250 points	25%
Total:	1000 points	100%

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

Student Conduct:

This course will cover biomechanics and kinesiology. Students should feel comfortable discussing their individual views and experiences concerning each subject. Students should also respect each other's differences and respect each other as each issue is discussed. **If the instructor deems that individual students are not being respectful toward each other or the instructor, then these students will be asked to leave (and eventually drop the course if the negative conduct continues).** Please refer to pages 42 – 45 of the TAMU-C Student Guidebook's Codes of Conduct for details.

Students with Disabilities:

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Gee Library, Room 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148

StudentDisabilityServices@tamu-commerce.edu

Plagiarism/academic dishonesty---Plagiarism is copying another's work as your own without proper acknowledgment. Be aware that the intent to deceive the reader does not have to be present for plagiarism to occur. Also ignorance of the definition of plagiarism is also not an excuse and will

result in the same consequences as for someone who has knowledge of it. Plagiarism is also not restricted to copying the writings of others, nor to stealing from established authors; it includes the ideas of your fellow students. If you plagiarize in this class (including cheating on tests) you will receive an automatic "F". If you are in any doubt as to whether your work constitutes plagiarism or academic dishonesty, please discuss this with me confidentially.

HHPK 335: Kinesiology and Biomechanics
Spring Term 2014
Tentative Itinerary: subject to change (does not include labs)

Date	Chapters	Topics and Page Numbers	Assignments Due
Week 1	Course Overview	Chapter 1: Basic Information (Clinical Kinesiology and Anatomy), 3 Descriptive Terminology, 4 Segments of the Body, 5 Types of Motion, 6 Joint Movements (Osteokinematics), 7	
	8	Chapter 8: Basic Biomechanics Laws of Motion, 94 Force, 95 Torque, 97 Stability, 99 Simple Machines, 102 Basic Biomechanics continued Levers, 102 Pulleys, 108 Wheel and Axle, 109 Inclined Plane, 109	
	2	Chapter 2: Skeletal System Functions of the Skeleton, 13 Types of Skeletons, 13 Composition of Bone, 13 Structure of Bone, 14 Types of Bones, 16 Common Skeletal Pathologies, 17	
	3	Chapter 5: Muscular System Muscle Attachments, 39 Muscle Names, 40 Muscle Fiber Arrangement, 41 Functional Characteristics of Muscle Tissue, 42 Length-Tension Relationship in Muscle Tissue, 42	Article 1
		Review-Test 1	
Week 2	4	Chapter 4: Arthrokinematics Osteokinematic Motion, 31 End Feel, 31 Arthrokinematic Motion, 32 Accessory Motion Terminology, 32 Joint Surface Shape, 32 Types of Arthrokinematic Motion, 33 Convex-Concave Rule, 34 Joint Surface Positions (Joint Congruency), 35 Accessory Motion Forces, 36	
		Active and Passive Insufficiency, 43	

		Types of Muscle Contraction, 45 Roles of Muscles, 48 Angle of Pull, 48 Kinetic Chains, 49	
	3	Chapter 3: Articular System Types of Joints, 21 Joint Structure, 24 Planes and Axes, 27 Degrees of Freedom, 28 Common Pathological Terms, 28	
	9	Chapters 9: Shoulder Girdle Clarification of Terms, 115 Bones and Landmarks, 116 Joints and Ligaments, 117 Joint Motions, 119 Companion Motions of the Shoulder Joint and Shoulder Girdle, 120 Scapulohumeral Rhythm, 120 Angle of Pull, 121 Anatomical Relationships, 125 Force Couples, 126 Reversal of Muscle Action, 126	
	10	Chapter 10: Shoulder Joint Joint Motions, 131 Bones and Landmarks, 132 Ligaments and Other Structures, 134 Muscles of the Shoulder Joint, 135 Anatomical Relationships, 140 Glenohumeral Movement, 141 Summary of Muscle Innervation, 142 Summary of Muscle Action, 142	
	11	Chapter 11 Elbow (Wrist/Hand) Joint Motions Bones and Landmarks Ligaments and Other Structures Muscles of the Shoulder Joint Anatomical Relationships Glenohumeral Movement Summary of Muscle Innervation Summary of Muscle Action	Article 2
		Review- Test 2	
	15	Chapter 15: Neck and Trunk Vertebral Curves, 211 Clarification of Terms, 211 Joint Motions, 212 Bones and Landmarks, 213 Joints and Ligaments, 217 Muscles of the Neck and Trunk, 219 Muscles of the Cervical Spine, 219 Muscles of the Trunk, 222	

		Anatomical Relationships, 227	
Week 3	17	Chapter 17: Pelvic Girdle Structure and Function, 247 False and True Pelvis, 248 Sacroiliac Joint, 248 Pubic Symphysis, 252 Lumbosacral Joint, 252 Pelvic Girdle Motions, 253 Muscle Control, 256 Joint Structure and Motions, 262	
	18	Chapter 18: Hip Joint Bones and Landmarks, 262 Ligaments and Other Structures, 265 Muscles of the Hip, 267 Anatomical Relationships, 274 Common Hip Pathologies, 275	Article Summary 3 <i>Sign up for Sport Skill to Analyze</i>
	19	Chapter 19: Knee Joint Joint Structure and Motions, 283 Bones and Landmarks, 286 Ligaments and Other Structures, 287 Muscles of the Knee, 289 Anterior Muscles, 290 Posterior Muscles, 291 Anatomical Relationships, 293 Summary of Muscle Action, 294 Summary of Muscle Innervation, 294 Common Knee Pathologies, 294	
	20	Chapter 20: Ankle Joint and Foot Functional Aspects of the Foot, 303 Joints and Motions, 304 Ankle Motions, 304 Ankle Joints, 305 Foot Joints, 307 Ligaments and Other Structures, 308 Arches, 308 Muscles of the Ankle and Foot, 310 Extrinsic Muscles, 310 Anatomical Relationships, 317 Intrinsic Muscles, 317	
Week 4	21	Chapter 21: Posture And Motion through a Fluid Vertebral Alignment, 329 Development of Postural Curves, 330 Standing Posture, 332 Lateral View, 332	

		Anterior View, 333 Posterior View, 333 Sitting Posture, 334 Supine Posture, 336 Common Postural Deviations, 336	
	22	Chapter 22: Gait And Projectile Motion Analysis of Stance Phase, 342 Analysis of Swing Phase, 346 Additional Determinants of Gait, 347 Age-Related Gait Patterns, 348 Abnormal (Atypical) Gait, 349 Muscular Weakness/Paralysis, 349 Joint/Muscle Range-of-Motion Limitation, 351 Neurological Involvement, 352 Pain, 353 Leg Length Discrepancy, 354	Article 4
Week 5		Sport Skill Analysis Presentations	Presentation
		Sport Skill Analysis Presentations	Presentation
		Review: Final Exam	