

Course Syllabus
HSS 409 and HSS 409 Lab : Kinesiology
HSS 537: Biomechanics
Spring 2009

(Honors Students enrolled in HSS 409 section H1, and Graduate students enrolled in HSS 537,
see XVI on last page)

Professor: Dr. Paul M Vanderburgh
email: vanderburgh@u Dayton.edu
TEL: 937.229.4213
Office: Frericks rm 40
Office hours: T, Th 2-4:30pm

- I. Course Number: HSS 409 + HSS 409L, or HSS 537**
- II. Course Title: Kinesiology + Lab**
- III. Terms Offered: Fall and Winter**
- IV. Catalogue Description:** This course will examine the kinematics and kinetics of the musculoskeletal system, both *in vitro* and *in vivo*, as it relates to the generation and maintenance of human movement. The laboratory portion of the course will concentrate on the mathematical concepts and problem solving associated with human movement.
- V. Academic Credit:**
 - a. Undergraduates: HSS 409: 3 Credit Hour, HSS 409L: 1 Credit Hour
 - b. Graduates: HSS 537: 3 Credit Hour
- VI. Prerequisites (Specific courses or requirements; indicate recommended or required):**
HSS 305: Human Anatomy recommended
- VII. Course Goals:** Students will fulfill two of the School of Education and Allied Professions key student outcomes: Scholarly Practitioner and Reflective Practice. Students who successfully complete the course will be able to:
 - a. Make connections between anatomical concepts, physiology, and human movement
 - b. Think critically and reflectively about the mathematical complexities of static and dynamic principles involving force generation and movement.
 - c. Solve basic biomechanical linear and angular kinetics/kinematics problems involving typical sports and activities of daily living
 - d. “Learn how to learn” when considering all problems of human movement
 - e. Apply the concepts learned to clinical situations
- VIII. Course Objectives:** Apply the basic principles of human anatomy to higher levels of thought involving human movement, both qualitatively and analytically.

IX. Course Topics (Bold = HSS 409L, other = HSS 409 Lecture)

DATE	EVENT	COMMENTS
M 1/5	Course Intro, Scaling	
W 1/7	Course Intro, Scaling	
F 1/9 LAB 1	Scaling I (Dimensional Analysis)	50 points for lab course
M 1/12	Scaling and strength	Quiz 1 (50 pts for lecture course)
W 1/14	Scaling and endurance events	
F 1/16 LAB 2	Scaling II (Fitness Testing A)	50 points for lab course
M 1/19	No Class	MLK Day
W 1/21	Correction Factors	Quiz 2 (50 pts for lecture course)
F 1/23 LAB 3	Scaling III (Fitness Testing B)	50 points for lab course
M 1/26	The Flyer Handicap	
W 1/28	The Flyer Handicap	Quiz 3 (50 pts for lecture course)
F 1/30 LAB 4	Flyer Handicap	50 points for lab course
M 2/2	The Pump and Run	
W 2/4	The Pump and Run	Quiz 4 (50 pts for lecture course)
F 2/6	Lab Exam 1 (material from Labs 1-4)	250 points for lab course
M 2/9	Occupational vs. Health-Related Fitness	
W 2/11	Review Session Mid-Term Exam	
F 2/13	LECTURE EXAM 1 (material from 1/5-2/11)	300 POINTS FOR LECTURE COURSE
M 2/16	Angular Kinematics	
W 2/18	Bicycle Design	
F 2/20 LAB 5	Bicycle Gearing/Design	50 points for lab course
M 2/23	Projectile Motion	Quiz 5 (50 pts for lecture course)
W 2/25	Projectile Motion	
F 2/27	No Class	Mid-Term Break
M 3/2	Projectile Motion	
W 3/4	Running Kinematics	
F 3/6 LAB 6	Projectile Motion	50 points for lab course
M 3/9	Muscular Statics I	Quiz 6 (50 pts for lecture course)
W 3/11	Muscular Statics I	
F 3/13 LAB 7	Muscular Statics I	50 points for lab course
M 3/16	Muscular Statics II	
W 3/18	Muscular Statics II	
F 3/20 LAB 8	Muscular Statics II	50 points for lab course
M 3/23	Eccentric vs. Concentric Dynamics	Quiz 7 (50 pts for lecture course)
W 3/25	Muscular Dynamics	
F 3/27 LAB 9	Muscular Dynamics	50 points for lab course
M 3/30	Energy Expenditure	
W 4/1	Energy Expenditure	Quiz 8 (50 pts for lecture course)
F 4/3 LAB 10	Energy Expenditure	50 points for lab course
M 4/6	No Class	Spring Break
W 4/8	No Class	Spring Break
F 4/10	No Class	Spring Break
M 4/13	No Class	Spring Break
W 4/15	Lab Exam 2 Review Session	
F 4/17	Lab Exam 2(Final; material from Labs 5-10)	250 pts for Lab Course
M 4/20	Honors + Graduate Students Presentations I	
W 4/22	Honors + Graduate Students Presentations II	
F 4/24	Lecture Exam 2 Review Session	
M 4/27 10:10am–12:00pm	LECTURE EXAM 2 (FINAL; material from 2/16-4/24)	300 POINTS FOR LECTURE COURSE

X. Teaching Methods: HSS 409 will be primarily a lecture course with emphasis on problem solving in biomechanical problems. The lab course is student group problem solving of biomechanical math problems.

XI. Instructional technology that will be integrated into the course: Computer projection with internet as the primary presentation medium

XII. Student Evaluation Criteria (honors students enrolled in HSS 409 section H1, see XVII below as well):

HSS 409 Lecture Course:		
Quizzes	8 @ 50 pts ea	= 400 pts
Lecture Exam 1	1 @ 300 pts ea	= 300 pts
Lecture Exam 2 (Final)	1 @ 300 pts	= 300 pts
Total		= 1000 pts
HSS 409 Lab Course:		
Lab Exercises	10 @ 50 pts each	= 500 pts
Lab Exam I	1 @ 250 pts	= 250 pts
Lab Exam II (Final)	1 @ 250 pts	= 250 pts
Total		= 1000 pts

Grading Scale: A; $\geq 93\%$, A-; 90-92%, B+; 87-89%, B; 83-86%, B-; 80-82%, C+; 79-77%, C; 76-73, C-; 72-70, D; 60-69%, F; $<60\%$

XIII. Field-Based Experiences: none

XIV. Text (s): Zip Publishing – available in bookstore under course name/number

XV. Disability Statement: To request academic accommodations due to a disability, please contact the office of Professional Support Services in the Department of Learning Enhancement and Academic Development (LEAD) (937) 229-3684. If you have a self-identification form from the Professional Support Services indicating that you have a disability, which requires accommodation, please present it to Dr. Vanderburgh so we can discuss the accommodations you might need in the class.

XVI. Honors Students and Graduate Students: Student enrolled in HSS 409, section H1 (honors students) and graduate students enrolled in HSS 537 (Biomechanics), will have an additional course requirement of a class presentation (Apr 20 or Apr 22) on a topic relevant to kinesiology. Dr. Vanderburgh will meet with these students individually to discuss. This presentation will be worth an additional 200 points for their lecture course grade. As such, undergraduate honors students' total points possible will be 1200, not 1000. The same percentages in XII above apply for final grades. *This presentation material will be testable to all other HSS 409/537 students taking the lecture final on Apr 27.* Graduate students, who get a grade for HSS 537 only (no lab grade), will have their points computed as follows: The lecture final points will be multiplied by 3 and added to the lab final points. Total possible points = 4600 (1200*3 + 1000). Same percentages apply as in XII above for final grades.

XVII. Date of Syllabus Development or Revision: December 28, 2008

