

ME 467 / BME 567 Engineering Biomechanics of Human Motion: Syllabus

Dr. Bob, 259 Stocker, 3-1096 williar4@ohio.edu www.ent.ohiou.edu/~bobw	Spring 2009 Call # 04573 (ME 467) Call # 01280 (BME 567)
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Textbook:

None; optional recommended texts:

S.J. Hall, 2007, Basic Biomechanics, 5th edition, McGraw-Hill, Boston, MA.

N. Hamilton, W. Weimar, and K. Luttgens, 2008, Kinesiology: Scientific Basis of Human Motion, 11th edition, McGraw-Hill, Boston, MA.

Course notes:

www.ent.ohiou.edu/~bobw; Teaching; Ohio U Courses; [ME 467 / BME 567 Course Notes](#)

Week	Topic	Notes Chapters	Lab Due	Matlab Due
3/30	Introduction, Engineering Mechanics Overview	1.1-1.3		
4/6	Conventions, Human Skeletal Anatomy	1.4, 2.1	1	
4/13	Human Skeletal Physiology, Human Muscular Anatomy, Human Muscular Physiology	2.2-2.4	2	
4/20	Human Muscular Physiology, Muscle Model, Kinematics	2.4-2.5, 3.1	3	
4/27	Kinematics, Graduate Student Journal Article Presentations	3.1	4	
5/4	Statics	3.2	5	1
5/11	Dynamics	3.3	6	2
5/18	Metrology, Software, Humanoid Robots	4.1-4.3	7	3
5/25	Bipedal Locomotion	4.4	8	
6/1	Journal Article and Graduate Student Project Presentations		9	

ME 467 / BME 567 Engineering Biomechanics of Human Motion: Policy

Time & Venue: 9:10-10:00 am M T Th F Stocker 104 4 credit hours

Prerequisites: Phys 251

Description: Overview of human skeletal and muscular anatomy and physiology. Application of engineering mechanics to the human musculoskeletal system. Kinematics, statics, and dynamics of human motions. Human motion metrology.

Office Hours:

8 – 9 a.m. M T Th F 11 a.m. – noon T Th
1:00-3 p.m. M and by appointment

Weekly Quizzes: A quiz will be given every Thursday, covering the week’s material. The low quiz grade will be dropped, only if the last quiz is taken. Quizzes are closed notes (and closed book).

Lab Experiments: A weekly lab experiment report is due each week on Tuesday (see schedule; also see policy). The labs are to be done outside of class with a partner. A memo must be the first page of each report. An extra assignment will be assigned and completed in this category for OpenSIM.

Matlab Assignments: Three Matlab assignments are due, on Fridays according to the schedule shown. A memo must be the first page of each assignment. No late assignments will be accepted.

Journal Article Presentation(s): Each individual must read a current journal article on biomechanics of human motion and give an oral presentation to the class. Graduate students must do two.

Graduate Students: As required by Ohio University, graduate students must complete extra work in a dual-listed course. 1. An additional journal paper presentation (see above) at midterm; and 2. A quarter-long term project must be completed by each individual graduate student. You must define your own biomechanics project (from your research interests if possible).

Memo: The first page of each lab report, Matlab assignment, and journal article report must be a one-page memo giving the highlights, methods, bottom line results, and a short discussion. Reference may be given to ensuing sections of your report. Assume that I am your boss and you are communicating the results of your recent work to me through this memo. Your reports will not be graded without a memo!

Attendance: Attendance is required. Poor attendance *will* affect your grade.

Grading: Each weekly quiz and lab report are equally weighted. The single low grade will be dropped from each category (*You cannot use this rule unless you take the last quiz and turn in the last lab report*). You cannot drop any of the three Matlab assignments, journal article presentation(s), or term project (for grad students). The overall grade weighting and letter grade mapping are given below:

Undergrad	Quizzes 40%	Labs 40%	Matlab 15%	Journal 5%	
Grad	Quizzes 30%	Labs 30%	Matlab 10%	Journals 5%	Project 25%

93.3-100	90-93.3	86.7-90	83.3-86.7	80-83.3	76.7-80	73.3-76.7	70-73.3	66.7-70	63.3-66.7	60-63.3	< 60
A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

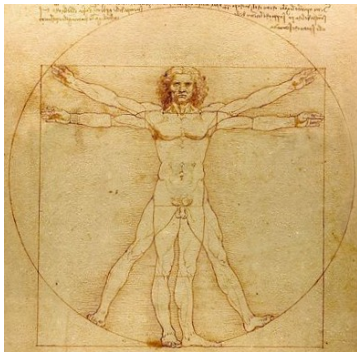
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Lab Experiments Policy

Dr. Bob

The weekly lab experiments are assigned on my website. Each is to be completed with one partner (choose the same partner all quarter) outside of class – we have no formal biomechanics lab, do your best. The low lab grade will be dropped (ONLY IF YOU MAKE A GOOD-FAITH EFFORT TO COMPLETE THE FINAL ASSIGNMENT – if you do not turn in the last assignment or just give me a memo saying you want to drop the last one, you will get a zero for that last assignment that cannot be dropped and then you will also be unable to drop your other lowest HW score!). A *MEMO* summarizing the week's assignments must be the first page of each submission.

1. No late assignments will be accepted. Due 9:10 a.m. on each Tuesday.
2. No computer excuses will alter deadlines. In the event of problems, do your best. Don't e-mail your lab to me or ask me to print it out.
3. Your work must be neat, with answers clearly noted and supporting information provided.
4. The cover sheet must be a 1-page memo, carefully and thoughtfully written to summarize what you did and what you learned. An example memo is given on the next page.
5. Turn in one report with both names – both partners earn the same grade.
6. Do NOT separate the writing between partners week-by-week. Instead, all partners must contribute equally to each weekly assignment.
7. For many labs, you may have to look ahead in the notes since we may not have reached those topics in the class yet. You may use any other valid sources to help with labs (reference your sources).
8. There may often be multiple ways to answer many of the lab questions. Think in terms of primary effects and secondary (even tertiary?) effects. Justify all responses.
9. Grading – For full marks, you must certainly answer everything and correctly; in addition:
 - a. Include significant, meaningful discussion – this is where a lot of learning occurs.
 - b. Use concise yet complete technical writing.
 - c. Type it up unless your handwriting is better than most padawan engineers.
 - d. Liberally include graphics, diagrams, and sketches, etc.
 - e. Connect the lab to what we are learning in class, when possible (sometimes the lab comes prior to the lecture on certain subjects).
 - f. Go the extra mile for full marks.



OHIO UNIVERSITY

Russ College of Engineering & Technology
Biomedical Engineering Program

DATE: April 1, 2009
TO: Dr. Bob
FROM: Humans in Motion
SUBJECT: Lab Experiment #1 Results

Dr. Bob,

The purpose of this memo is to present the basic experimental results for Lab #1. The assignment was (*briefly summarize here*).

Some sample results are given here: (*give results; not always appropriate or possible here*). My sketches and equation derivations appear on p. 2 (*if appropriate*). For a complete set of results, following the suggested Lab #1 report format, please see pp. 3-7. The discussion follows on page 8.

(*Summary of roadblocks, issues, or learning here, if appropriate*).

If you have any questions on my work, please contact me.

Sincerely,

Humans in Motion
thing1@ohio.edu
thing2@ohio.edu