

HBIO 408L Syllabus – Fall 2019

<https://dornsife.usc.edu/labs/biomech/education-408/>

Laboratory Schedule:

Wk	Dates	Lab Work	Due
1	8/27-29	Introduction Lab 1: Computer Skills	-----
2	9/3-5	Lab 2: Introduction to Motion Analysis: Linear Kinematics and Total Body Center of Mass (TBCM)	Post-Lab 1 Pre-Lab 2 Slide 1
3	9/10-13	Lab 3: Angular Kinematics	Post-Lab 2 Slide 2
4	9/17-19	Lab 4: Linear Impulse & Momentum	Post-Lab 3 Pre-Lab 4 Slide 3
5	9/24-26	Lab 5: Angular Impulse & Momentum	Post-Lab 4 Slide 4
6	10/1-3	LAB PRACTICAL	-----
7	10/8-10	Lab 6: Total Body Kinetics, $\sum F=ma$	Post-Lab 5 Pre-Lab 6 Slide 5
8	10/15-17	Project Data Collection – Force, kinematics, digital video capture * Thursday labs will schedule time during the week for collection	-----
9	10/22-24	Lab 7: Joint Kinetics	Post-Lab 6 Pre-Lab 7 Slide 6
10	10/29-31	Project: Analysis #1 – Linear and Angular Kinematics (How to interpret and present)	Post-Lab 7 <i>Project Results 1</i>
11	11/5-7	Project: Analysis #2 – Impulse/Momentum (How to interpret and present)	<i>Project Results 2</i>
12	11/12-14	Project: Analysis #3 – Joint Kinetics (How to interpret and present)	<i>Project Results 3</i>
13	11/19-21	Final report .ppt / prezi	<i>Project Results 4</i>
14	11/26-28	<i>Thanksgiving</i>	-----
15	12/3-5	ORAL PROJECT PRESENTATIONS	Written Report

**Will modify as needed

Lab Evaluation:

1. Pre/Post Lab Activities (50%)
2. Quizzes (6) (25%)
3. Lab Practical Exam (25%)
4. Final Laboratory Project (15% of total course grade)

**** Lab Grade = 20% of Total Course Grade ****

TA Office Hours

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Tu 12-2p
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Pre/Post Lab Activities: *Lab reports (30%), Intro/Demo (20%), Lit Review (30%), Prelabs (20%)*

One of the following will be assigned for each lab so that students in the group will have the opportunity to work together and share their knowledge using different forms of communication.

DEMO: Physically demonstrate the concepts emphasized in this week's lab

- Demonstrate examples of how the concepts can be applied to life, sports, activities, etc.
- Length: 5 minutes (1 minute each)
- Feedback from rest of students: I liked, I wished to improve demonstration skills
- ***Due the following week by the start of class:*** a video/voice over presentation submitted on Blackboard

LIT REVIEW: Synthesize what is known about the concept using peer-reviewed literature

- Each group member chooses a different article that highlights the variable of interest of the lab that week (i.e. impulse, center of mass)
- Group synthesizes the key take-home messages from set of articles reviewed
- Length: 5 minutes total (1 minute each, 1 minute implications for class project)
- ***Due the week assigned:*** Oral presentation/review of this article during lab (be succinct)
- Critical review of each article: state rationale for study (who cares?) and intent of authors (what they wanted to learn), hypothesis being tested, experimental design, variable of interest (how it was measured and in what context), results generated specific to hypothesis
- Note: limitations, ways to improve study, relation to other articles

INTRODUCTION: Clarify how the lab experience will assist in solidifying the understanding of the concepts emphasized in the lab

- Highlight important steps pre, during, and post lab
- Length: 5 minutes
- *Due the week assigned:* presentation outlining the introduction, to be presented at beginning of class

LAB REPORTS: report findings using scientific reporting approaches

- See attachment on website: "Lab Report Guidelines"
- Lab reports will be completed individually within the assigned group. Members may work together; however, the report **must be written in your own words**.
- *Due the following week by the start of class.*

Final Project Slides (developed over the course of the semester):

1. Specify movement of interest; provide critical review of related literature "What is known/unknown?"
2. How can analysis of human motion contribute to solving significant problems?
3. Develop Hypotheses/Experimental design to test hypotheses
4. Identify key variables to test hypothesis
5. Finalize data collection plan for analysis of goal directed tasks
6. Title, Significance
7. *Project Results 1:* Test hypothesis using linear and angular kinematics
8. *Project Results 2:* Test hypothesis using impulse/momentum relationship
9. *Project Results 3:* Test hypothesis using joint kinetics analysis

** Slides 7-9 (*Project Results*) will be based on your project analysis completed during that day's lab. They will be due at the END of that week's lab section. These will serve as checkpoints to make sure that you are on track with your project. **