Classical Dynamics
PHY 321

Professor Info ——

- Dr. Dylan McNamara
- Office Hrs: Tues & Thur 3:15-4:15am
- CE 1110 / DL 206
- people.uncw.edu/mcnamarad/
- mcnamarad@uncw.edu

Course Info ———

- Prereq: MAT 261
- T/W/R
- 2:00-3:15 & 2:00-2:50(W)
- DL 213

Problem Sesh ——

- W
- 2:00
- DL 206

Overview

In this course you will learn the Newtonian, Lagrangian, and Hamiltonian formulations of mechanics. Applications of these techniques will include oscillations, central forces, and rotating frames of reference.

Material

Texts
John R. Taylor. *Classical Mechanics*. Get your hands on it as cheaply as you can.
Jakob Schwichtenberg *No-nonsense Classical Mechanics*. This one is not required but worth it.

Grading Scheme

25%	Quizzes
25%	HW
25%	Paper
25%	Final Exam

Grades will follow the standard scale: A = 89.5-100; B = 79.5-89.4; C = 69.5-79.4; D = 60-69.4; F <60. Curving is at the discretion of the professor.

Late HW and Missed Quiz Policy

Late HW or a make up Quiz will only be allowed for students who have a substantiated excuse approved by the instructor *before the due date*. Leaving a phone message or sending an e-mail without confirmation is not acceptable.

Paper

This semester I am requiring each student to write a paper under the umbrella topic of classical mechanics. The objective is to a) explore scientific literature regarding topics in the field of classical mechanics, b) synthesize the acquired knowledge in the form of a peer-reviewed style publication, c)write peer-review comments for other papers, d) respond to peer-review comments for your own paper, e) summarize the main points of your work in a short presentation. I will show you how to search the literature, give you possible topics for papers, and a provide a few style pointers on how to write a scientific paper. The dates for

FAQs

❓ Do I need to know differential equations?

❗ Nope. Or not yet at least! I'll assume nobody knows anything about DEs. So we will start slow.

❓ Is there HW?

❗ Yep. Problem solving is critical. I'll help and we'll use Wed class to work on HW.

❓ Is there an attendance policy?

❗ Nope. If you miss class, the penalty will take care of itself. Come to class!

UNCW Discrimination Policy

In this classroom, we respect and understand that all people are welcome here. We have a no tolerance policy for discrimination of any kind. Everyone has a right to be here without regard to race, color, religion, language, pregnancy, ancestry, age, gender, national origin, sexual orientation, gender identity, gender expression, mental or physical disability, genetic information, marital or veteran status.

Discrimination constitutes any unlawful distinction, preference, or detriment to an individual as compared to others that is based on one of the characteristics protected by federal law, state law or university policy, as listed in Policy 02.230 Equal Opportunity and Affirmative Action.

Those protected characteristics include race, sex (such as gender, gender identity, marital status and pregnancy), age, color, national origin (including ethnicity), religion, disability, sexual orientation, political affiliation, veteran status, military service member status, genetic information or relationship to other university constituents – except where sex, age or ability represent bona fide educational or occupational qualifications or where marital status is a statutorily established eligibility criterion for State funded employee benefit programs.

Seahawk Respect Compact

In the pursuit of excellence, UNC Wilmington actively fosters, encourages, and promotes inclusiveness, mutual respect, acceptance, and open-mindedness among students, faculty, staff and the broader community.

We affirm the dignity of all persons.

We promote the right of every person to participate in the free exchange of thoughts and opinions within a climate of civility and mutual respect.

We strive for openness and mutual understanding to learn from differences in people, ideas and opinions.

We foster an environment of respect for each individual, even where differences exist, by eliminating prejudice and discrimination through education and interaction with others.

Therefore, we expect members of the campus community to honor these principles as fundamental to our ongoing efforts to increase access to and inclusion in a community that nurtures learning and growth for all.

Statement Regarding Violence and Harassment

UNCW practices a zero tolerance policy for any kind of violent or harassing behavior. Students who experience an emergency of this type should contact the police at 911 or UNCW CARE at (910) 962-2273. Resources for students concerned with a violent or harassing situation can be located at the UNCW Crisis Resources page.

Students should be aware that all university employees, including instructors, are obligated to communicate any report of alleged sexual misconduct, on or off-campus, to the Dean of Students. Three university entities are confidential resources exempt from this obligation. They are CARE, the Counseling Center, and the Abrons Student Health Center.

Class Schedule

Dates	Topic Ch	HW	Video
MODULE 1: Newtonian Mechanics			
Week 1: 8/21 8/22	Intro, Ch 1 (T)		Newton 8/22
Week 2: 8/27 8/28 8/29	Ch 2 (T)	2.7, 2.11	Projectile 8/27
Week 3: 9/3 9/4 9/5	Ch 3 and 4 (T)	3.11b, 3.22, 3.31	Momentum 9/3 Energy 9/5
Week 4: 9/10 9/11 9/12	Ch 4 and 5 (T)	4.23, 4.28, 4.34	SHM 9/12
Week 5: 9/17 9/18 9/19	CH 5 (T)	5.21, 5.22, 5.30	
Week 6: 9/24 9/25 9/26	CH 9 (T)	9.10, 9.28, 9.33	Noninertial 9/24
Week 7: 10/1 10/2 10/3	CH 9 (T) CH 2 (S)		
MODULE 2: Lagrangian and Hamiltonian Mechanics			
Week 8: 10/8 10/9	Ch 4 (S)	Paper Topic Due 10/9	
Week 9: 10/15 10/16 10/17	Generalized Forces/Virtual Work	TBD	
Week 10: 10/22 10/23 10/24	CH 5 (S)	7.1 7.2 7.3 Paper Outline Due 10/22	
Week 11: 10/29 10/30 10/31	Lagrangian Examples	7.8, 7.15, 7.23	
Week 12: 11/5 11/6 11/7	CH 8 (T)	8.3 8.10	
Week 13: 11/12 11/13 11/14	CH 7 (S)	Rough Draft Due 11/12	
Week 14: 11/19 11/20 11/21	CH 7 (S)	Peer Review Due 11/20	
Week 15: 11/26	No Class		Will Record
Week 16: 12/3	CH 11 (S)	Final Paper Due	
Dec 12 3-6pm	FINAL EXAM	Final Presentation Due	