PHYSICS 307: CLASSICAL MECHANICS
FALL 2024

Dr. Aileen A. O'Donoghue 220 Bewkes Hall, (315) 267-6397 (iPhone)
Office Hours: Afternoons or Zoom (POSTED ON MY DOOR I'm **not** available before class … prep time!)
Text: *Classical Dynamics of Particles & Systems*, Thornton & Marion 5th Edition, Cengage (TM5)

COURSE PHILOSOPHY:

Classical mechanics is the elegant analysis of extremely ordinary phenomena. Philosophers, mathematicians, and physicists developed the theories of mechanics over centuries of observation of the universe and increasing mathematical sophistication. Its study is not only a means for deepening your understanding of common phenomena and honing your math skills, but a means for constructing mental lenses that allow you to view the universe as physicists view it. To accomplish this, diagrams, notation, presentation of ideas, and methods of solution must conform to the conventions established over centuries of physical thought. There is certainly room for individuality in physics … it's the only way science progresses … but the point of this course is to increase your familiarity and comfort with the conventions of physics as a field and the way the physics community thinks.

GRADING:

HOMEWORK: Homework will be assigned at most class meetings and be due at the beginning of the second following class. Late homework will not receive full credit. Papers you hand in should **present your work in a professional manner** that is neat and well organized. Show *pride* in your work!

PROBLEM SOLVING: The Solution to a Physics Problem is an Essay about the Universe! Hence your homework **solutions must read as an application and explanation of ideas**. Each problem solution will be graded on a 10 - 20 point scale according to the following criteria:

- Statement of the problem … a summary is fine, but explain the physical situation
  - The write ups are for an ***audience***, inform them of the problem you're solving!
- Appropriate diagram(s) for any physical situation or geometry
  - showing the situation or event(s),
  - labeled with symbols for the various physical quantities, and
  - the coordinate axes used.
- Statement of the general physical law to be used (e.g. $\Sigma F_{ext} = ma$)
  - Your job is to ***explain*** how you solve the problem, not just get the final result!
- ***ALGEBRAIC*** solution for the quantity of interest (**NO NUMBERS YET!**)
  - You **lose information** once numbers are substituted for symbols!
- Substitution of numbers and calculation (if appropriate).

Late homework will only be accepted (within a week) if arrangements have been made before it's due.

FRIDAY TALKS: Each Friday one of you will give a 10-minute talk on a physics article of interest.

EXAMS: The exams are intended to intensify your studying, encourage you to review, get you to step back for an overview of the material, and learn something new during the exam. See the syllabus for dates. Grading will be in the style described above. The total number of points available on an exam will vary.

THE FINAL GRADE will be a simple average of all of the above grades, according to the scale

4.0	3.75	3.5	3.25	3.0	2.75	2.5	2.25	2.0	1.75	1.5	1.25	1.0	0.0
>94%	91- 94	88-91	85-88	82-85	79-82	76-79	73-76	70-73	67-70	64-67	61-64	58-61	<58

with the instructor's subjective freedom for the treatment of borderline cases!

Important Resources

Web Site: http://myslu.stlawu.edu/~aodo/SLU/physics/307/index.htm (& Sakai)
Class Documents (syllabus, calendar, texts, information about Aileen)
Assignment lists, copies, due dates, and solutions
Homework will be posted on website and/or Sakai … so check both.

The Peterson Quantitative Resource Center (PQRC): mailto:pqrc@stlawu.edu
Located in Valentine Hall, it offers free, no appointment necessary peer tutoring across a range of courses with quantitative content. The PQRC student staff of mentors is trained to assist students to develop and to improve their quantitative skills and understanding. More information about the PQRC's current hours and modes of operation can be found at the PQRC webpage.

The WORD Studio: mailto:wordstudio@stlawu.edu
Located in Owen D. Young Library, the WORD Studio offers both online and face-to face tutorials for your papers, speeches, posters, and reading assignments. We want to make you the best writer and speaker you can be at SLU. Our tutors are thoroughly trained and friendly peers who can:

- Help you understand an assignment
- Help you build an argument or structure in papers and oral presentations
- Help you expand your vocab and work on sentence structure
- Work with you on a Power Point or poster
- Refine your reading skills
- Help you learn to avoid plagiarism through proper citation

The WORD Studio offers ESL and science writing specialists, but all of our tutors are trained to assist with any communication assignment. The WORD Studio is open until 9pm Sunday-Thursday, and until 2pm on Fridays, but appointments are required. Schedule a tutorial by going to the WORD Studio website.

Student Accessibility Services (SAS): mailto:studentaccessibility@stlawu.edu

Your experience in this class is important to me. It is the policy and practice of St. Lawrence University to create inclusive and accessible learning environments consistent with federal and state law. If you have already established accommodations with the SASs Office, please meet with them to activate your accommodations so we can discuss how they will be implemented in this course.

If you have not yet established services through the SAS Office but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), please contact the SAS Office directly to set up a meeting to discuss establishing with their office. The SAS Office will work with you on the interactive process that establishes reasonable accommodations.

Color-Vision Deficiency:

If you are Color-Vision Deficient, the Student Accessibility Services office has on loan glasses for students who are color vision deficient. Please contact the office to make an appointment.

For more specific information about setting up an appointment with Student Accessibility Services please see the listed options below:

Telephone: (315) 229-5537
Email: studentaccessibility@stlawu.edu
Website: https://www.stlawu.edu/student-accessibility-services