Ball State University
Course Syllabus for Mechanics (PHYC 330)
Fall 2025

Lecture: MWF 4:00 PM – 4:50 PM, Cooper Science Building 401

Instructor: Dr. Michael J. Skoby
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Office: CS 430B

Office Hours (subject to change):

Tuesday 4:00 PM – 5:00 PM
Wednesday 10:00 AM – 11:00 AM
Friday 1:00 PM – 2:00 PM
Or by appointment

Catalog Description:

Basic concepts of mechanics, general motion of particles in three dimensions. Simple and damped harmonic motion. Particle dynamics in noninertial frames of reference, central forces. Dynamics of systems of particles. Motion of rigid bodies in three dimensions. Dynamics of oscillation systems. Prerequisite: PHYC 120 and MATH 166.

Required Materials:

Classical Mechanics, by John R. Taylor.

Course Grading:

Your final grade will be weighted as follows:

In-class Exercises:	10%
Homework:	40%
Exam 1:	15%
Exam 2:	15%
Final Exam:	20%

Below is the grading scale. The letter grade thresholds may be lowered at the instructor’s discretion, but the thresholds will not be raised. For example, if you get at least 90% you will be guaranteed to receive an A- or possibly better.

A	93-100%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	63-66%
D-	60-62%
F	Below 60%

In-class Exercises:

You will be given time to attempt to solve physics problems or complete other exercises during class. Please bring paper and a pencil to class to show your work for in-class exercises and be prepared to hand it in at the end of class. See the Attendance section for more information.

Homework:

Homework problems will generally be assigned for each lecture and the due date will be given once all the problems for a homework set have been assigned. You are encouraged to discuss the homework with others, but each student must do their own work. Solutions copied from any source (online, classmates, etc.) will not be accepted. Late homework will not be accepted.

Please follow these guidelines when writing your homework solutions:

- Solutions must be legible, organized, and logical. No scratch work, nothing scribbled out or crossed out. Please don't try to cram everything into as little space as possible. Don't be afraid to use lots of paper.
- You must cite or show how you got an equation (please don't just say "the notes", include the date and context). You don't have to cite general equations (e.g. Newton's Laws, conservation of energy, conservation of momentum, etc.), but you should label them in your solutions.
- Always show the equation(s) you are using in terms of variables. Solve for the unknown(s) and wait until the end to plug in the numbers. Exception: if a variable is zero you can apply it before doing the algebra.
- Show all steps to the solution including the algebra. Students that show the fewest number of steps tend to be the ones that make the most mistakes.
- Don't assume that I'll assume you understand what you're doing. Include concise explanations of your solution.
- Draw a box around your final answer(s) and don't forget the UNITS!!!

Exams:

The date and material covered on exams will be confirmed a week before the exam.

Final Exam: Friday, December 12 at 2:15 PM to 4:15 PM

Attendance:

Students are expected to be present for the entirety of every lecture. Only exceptional cases (e.g. illness), *for which you notify the instructor before missing class*, will be considered excused. You may be required to provide the instructor with documentation for an excused absence. Students who miss class are still responsible for homework assigned and all material covered in class.

University Statement:

We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse. If you need course adaptations or accommodations because of a disability, please contact the instructor of record as soon as possible. Ball State's Disability Services Office coordinates services for students with disabilities; documentation of a disability needs to be on file in that office before any accommodations can be provided. Disability Services can be contacted at 765-285-5293 or dsd@bsu.edu.

Freedom of Expression:

In this course, we are committed to fostering a learning environment that values intellectual diversity, encourages free expression, and promotes open inquiry. As members of the Ball State Community, we treat each person in the Ball State community with civility, courtesy, compassion, and dignity and respect and learn from differences in people, ideas, and opinions. Please review Ball State University's Statement on Freedom of Expression, the resources on Ball State's Freedom of Expression webpage, and Ball State's Beneficence Pledge.

Academic Dishonesty:

"To maintain its credibility and reputation, and to equitably assign evaluations of scholastic and creative performance, Ball State University is committed to maintaining a climate that upholds and values the highest standards of academic integrity." Refer to the following BSU web site for more information: https://www.bsu.edu/about/administrativeoffices/vice-provost/student-services/academic-integrity

Disclaimer:

This syllabus is subject to change.

Tentative Course Schedule

Week	Dates	Lecture
1	Aug 18-22	Ch. 1: Newton's Laws of Motion
2	Aug 25-29	Ch. 2: Projectiles and Charged Particles
3	Sep 1-5	Ch. 3: Momentum and Angular Momentum **No class on Monday (Labor Day)**
4	Sep 8-12	Ch. 4: Energy
5	Sep 15-19	Ch. 5: Oscillations
6	Sep 22-26	Ch. 6: Calculus of Variations
7	Sep 29-Oct 3	Review **Exam 1**
8	Oct 6-10	Ch. 7: Lagrange's Equations **No class on Monday (Fall Break)**
9	Oct 13-17	Ch. 8: Two-Body Central-Force Problems
10	Oct 20-24	Ch. 9: Mechanics in Noninertial Frames
11	Oct 27-31	Ch. 10: Rotational Motion of Rigid Bodies
12	Nov 3-7	Ch. 11: Coupled Oscillations and Normal Modes
13	Nov 10-14	Review **Exam 2**
14	Nov 17-21	Ch. 13: Hamiltonian Mechanics
15	Nov 24-28	Ch. 13: Hamiltonian Mechanics **No class Wed-Fri (Thanksgiving Break)**
16	Dec 1-5	Review
17	Dec 8-12	Review on Monday **Final Exam: Friday, Dec. 12 @ 2:15-4:15 PM**