



PHY 121.90: Physics for the Life Sciences I
Physics and Astronomy

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Course Information

Course Title: Physics for the Life Sciences I

Course Designator, Section: PHY 121.90

SBC Designation: SNW

Credits: 4

Pre-requisites: MAT 125 or MAT 131 or MAT 141 or AMS 151

Semester, Year: Fall 2025

Modality: In-person, “studio setting”

Meeting Times:

Lecture: MW 8:00 am – 9:20 am

Lab: F 8:00 am – 9:50 am

Midterm #1: W September 17, 8:15 - 9:35 pm

Midterm #2: T November 4, 8:15 - 9:35 pm

Final exam: R December 11, 2:15 - 5:00 pm

Classroom Location: Physics P-118

Instructor Information

Instructor Name: Gillian Winters

Instructor Email: gillian.winters@stonybrook.edu

Office Hours: to be announced on Brightspace

Office Location: Physics A-138B

TA Contact Info: to be announced on Brightspace

TA Office Hours: to be announced on Brightspace

Physics Help Room: Physics rooms A-129 and A-131, daily 9:00 am – 6:00 pm

Required Course Materials

Mastering Physics and Electronic Textbook: You must have a Mastering Physics license for the course. This is obtained via the “MasteringPhysics” link from the “Table of Contents” of the Brightspace course. This semester, we will be following the textbook “College Physics, a Strategic Approach”, 4th edition, by Knight, Jones, and Field.

Homework: Homework is required and will be assigned via the online “Mastering Physics”, above, through Brightspace.

Scientific calculator: required for classwork, homework, labs, and exams. Must have trig functions (sin, cos, tan). Calculators and other devices that can access the internet are not permitted during tests and are discouraged during class and lab exercises.

In-Class Clicker questions via Vevox: Vevox replaces past clicker question formats and is free for all students. Vevox clicker questions are available via Brightspace and are accessed via vevox.app which is linked on Brightspace.

Course Description

First part of an introduction to physics with applications to biology, primarily for students majoring in biological sciences or pre-clinical programs. Topics include mechanics, fluid mechanics, and thermodynamics. Strong algebra skills and knowledge of the ideas of calculus are required. Three lecture hours and two laboratory hours per week.

This course is structured in the “Studio Physics” format, whereby lecture and group problem solving are integrated throughout class sessions. Students will be asked to work in problem-solving groups at the whiteboards at the perimeter of the room at various times during lectures. Your active participation is a critical part of the learning process.

Learning Objectives

By the end of the semester, students will be able to:

- LO1: analyze one- and two-dimensional motion using kinematic equations, graphs, and vectors to solve problems involving displacement, velocity, and acceleration.
- LO2: apply Newton's laws and conservation principles to predict object behavior in mechanical systems, including collisions, oscillations, and rotational motion.
- LO3: analyze thermodynamic processes using the first and second laws to calculate internal energy, work, and heat transfer changes in gas systems.
- LO4: apply fluid statics and dynamics principles (Pascal's, Archimedes', Bernoulli's) to solve problems involving pressure, buoyancy, and flow.
- LO5: design experiments, analyze data using mathematical and graphical techniques, and communicate findings while evaluating experimental uncertainty.

Stony Brook Curriculum (SBC) Learning Objective: SNW (Study the Natural World)

- Explain the methods scientists use to explore natural phenomena including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of data analysis or mathematical modeling.
- Explain the application of scientific data, concepts, and models in one of the natural sciences.

What If You Have a Question?

- **When To Email the Instructor**

Email the Instructor to notify that you are addressing an emotional, physical, or medical challenge via the [Student Support Team](#) and may need accommodations.

- **When To Email the Teaching Assistant**

Email the Teaching Assistant regarding making up a lab. Labs are a required component of this course. All lab grades count; none are dropped. If you have an excused absence for missing your lab (emotional, physical, or medical, and verified via the [Student Support Team](#)) you must arrange to make up the lab with the course TAs. Make-ups will then be scheduled in one of the two weeks marked as “Make-up” in the lab schedule. A maximum of one lab may be completed per make-up lab date.

Attending Office/Student Hours

Attending office hours in the Physics Help Room is strongly encouraged, and you may come alone or with fellow students. The Physics Help Rooms are located on the A-level of the Physics Building (A-129 and A-131). The hours are approximately 9:00am–6:00pm, Monday to Friday. Teaching assistants, teaching staff, and faculty will be available for extra help.

You may also request one-on-one or small group tutoring from the Academic Success and Tutoring Center in the Stony Brook Union, starting the week of September 2: [https://www.stonybrook.edu/commcms/academic_success/students/index.php#APPOINTMENTS\(ASTC\)](https://www.stonybrook.edu/commcms/academic_success/students/index.php#APPOINTMENTS(ASTC)).

Assessments

Assessment/Assignment/Exam	Percentage	Due Date
Homework	10	Weekly, 11:59 pm Sunday night
Clickers	10	In class
Lab	25	In class, by end of lab class
Midterm #1	15	8:15 pm 9/17/25
Midterm #2	15	8:15 pm 11/4/25
Final	25	2:15 pm 12/11/25
Total	100	

Response Time and Feedback on Assignments

Response time and feedback for all assignments is expected to be one week.

Grade Scale

The grading scale is outlined in the table below. This scale may be adjusted/curved downward depending on cumulative student performance in the course. For example, the threshold for a final A grade may be lower than 90%.

Letter Grade	Percentage/Points
A	90- 100
A-	86 - 89
B+	82 - 85
B	78 - 81
B-	74 - 77
C+	70 - 73
C	66 - 69
C-	62 - 65
D+	56 - 61
D	50 - 55
F	< 50

These letter grades are threshold scores only. Actual final scores needed to earn a certain letter grade may be lowered if warranted based on the difficulty of the exams. In other words, if your final total points in the course equal a 90%, you will not earn less than an A; however, the threshold for an A may be lower.

Additional information

- [Undergraduate Grading System](#)

Course Schedule

The possibility exists that unforeseen events will make schedule changes necessary. Any changes will be clearly noted in Brightspace Announcements or through Stony Brook email.

Monday	Wednesday	Friday
August 25 Ch 1: Representing Motion	August 27 Ch 2: Motion in One Dimension	August 29 Ch 3: Vectors
September 1 NO CLASS	September 3 Ch 3: Motion in Two Dimensions	September 5 LAB #1: Acceleration – Picket Fence
September 8 Ch 4: Newton's Laws of Motion	September 10 Ch 4: Newton's Laws of Motion	September 12 LAB #2: Projectile Motion
September 15 Ch 5: Applying Newton's Laws	September 17 Review chap 1-5 Midterm (Chapters 1-5): Wednesday 9/17 8:15 - 9:35 pm	September 19 LAB #3: Newton's Laws – Atwood's Machine
September 22 Ch 6: Circular Motion, Orbits, Gravity	September 24 Ch 7: Rotational Motion	September 26 LAB #4: Centripetal Force
September 29 Ch 7: Torque	October 1 Ch 8: Equilibrium & Elasticity	October 3, 2025 LAB #5: Rotation/Torque Simulations
October 6 Ch 9: Momentum	October 8 Ch 9: Angular Momentum	October 10 LAB #6: Conservation of Momentum
October 13 No CLASS	October 15 Ch 10: Energy & Work	October 17 LAB #7: Angular Momentum
October 20 Ch 10: Energy & Work	October 22 Ch 11: Using Energy	October 24 LAB #8: Conservation of Energy
October 27 Ch 12: Thermal Properties of Matter	October 29 Ch 12: Thermal Properties of Matter	October 31 LAB #9: Thermodynamics Simulations (OR SHM)
November 3 Ch 6-12 Review Midterm (Chapters 6-12): Tuesday 11/4 8:15 - 9:35pm	November 5 Ch 13: Fluids	November 7 Lab make-up date #1
November 10 Ch 13: Fluids	November 12 Ch 14: Oscillations	November 14 LAB #10: Sound
November 17 Ch 14: Oscillations	November 19 Ch 15: Sound	November 21 Final Lab make-up date #2
November 24 Ch 15: Sound	November 26 NO CLASS	November 28 NO CLASS
November 30 Ch 16: Superposition	December 2 Ch 16: Standing Waves	December 4 Ch 1-16 Review
December 8: last day of classes Ch 1-16 Review		
FINAL EXAM: Thursday December 11, 2:15 - 5:00 pm		

Student Success Resources: How to Be a Successful Student in This Course

There are multiple resources, university offices, and help desks that are available to assist you with everything from advising, tutoring, accessibility and much more.

Review some [Academic Success Strategies](#) and visit the [Student Resources](#) page for links to resources on campus.

Wellness & Support Statement

Stony Brook values student well-being, including mental health, and recognizes that a variety of factors can impact emotional wellness and academic success including stress, anxiety, depression, substance use, sexual violence, family or relationship concerns, and political conflict. [Resources are available](#) if you experience challenges or wellness concerns that affect your ability to be successful in class, and you are encouraged to reach out for help when you need it.

In the event of a short-term absence from class, students are encouraged to communicate immediately and work directly with instructors. However, if a student is struggling with an extended absence due a hospitalization, family illness or death, they are encouraged to reach out to the Student Support Team.

Technical Requirements and Assistance

[D2L Brightspace](#) is Stony Brook University's digital learning environment. It is used for the facilitation of communications between faculty and students, submission of assignments, and secure posting of grades and feedback in your courses. To [access Brightspace](#), go to mycourses.stonybrook.edu and use your SBU NetID and password. If you are unsure of your NetID, visit [Finding Your NetID and Password](#) for more information.

Sometimes submitting coursework via a tablet and/or mobile device can be challenging. Computers equipped with the appropriate software are available for use at the various [SINC site computer labs](#). Both physical and virtual labs are available. You can also borrow a computer through [SBU's Laptop Loan Program](#).

Visit the [Technical Requirements page](#) for additional information regarding hardware and software options.

Please use the following information if you need technical assistance at any time during the course or to report a problem with Brightspace:

Brightspace Support via SUNY Helpdesk

- Phone: 1-844-673-6786
- Submit a [ticket or chat online](#)

Stony Brook University: Academic Technology Services

- Phone: 631-632-9800
- Email: AcademicTechnologies@stonybrook.edu

Privacy Policies

This course utilizes various educational technologies to enhance the learning experience. You can access links to the [privacy policies](#) of the tools and platforms used at Stony Brook University on the Syllabus Addendum webpage.

Course Policies

Late Work Policy

Late work will not be accepted for any reason. One homework grade will be dropped, and one clicker grade will be dropped.

All lab reports are due at the end of each lab session.

Up to two labs that are missed for valid reasons and verified via the [Student Support Team](#) may be made up during the scheduled lab make-up dates. Missing (and not making up) one lab will result in your letter grade for PHY 121 being dropped by 1 full letter grade. Missing (and not making up) two labs will result in your letter grade for PHY 121 being dropped by 2 full letter grades. Missing (and not making up) more than 2 labs will result in failing the course.

The registrar's policy is that students are responsible for avoiding exam conflicts, and exceptions will not be granted in this course. If you cannot take a midterm due to exceptional circumstances (documented illness or death in the immediate family verified via the [Student Support Team](#)), discuss this with the instructor as soon as possible. Generally, the weights of the other exams will be increased to compensate for the missing midterm but there will not be make-up midterm exams. If you miss the final exam with a valid excuse, you will receive an Incomplete in the course and a makeup final will be scheduled as promptly as possible after the end of the semester.

Attendance Policy

Attendance is required for credit for the Clicker questions during each lecture. Attendance is required to complete and receive credit for labs.

University Policies

Student Accessibility Support Center Statement

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and the Student Accessibility Support Center. For procedures and information go to the following website:

<https://ehs.stonybrook.edu/programs/fire-safety/emergency-evacuation/evacuation-guide-disabilities> and search Fire Safety and Evacuation and Disabilities.

Academic Integrity Statement

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Professions, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Understand When You May Drop This Course

If you need to drop or withdraw from the course, it is your responsibility to be aware of the tuition liability deadlines listed on the registrar's [Academic Calendar](#). Before making the decision to drop/withdraw you may want to [contact me or] refer to the University's policies:

- [Undergraduate Course Load and Course Withdrawal Policy](#)

Incomplete Policy

Under emergency/special circumstances, students may petition for an incomplete grade. Circumstances must be documented and significant enough to merit an incomplete. If you need to request an incomplete for this course, contact me for approval as far in advance as possible. You should also read the University's policies that apply to you: [Undergraduate Bulletin](#)

Course Materials and Copyright Statement

Course material accessed from Brightspace, Zoom, Echo 360, VoiceThread, etc. is for the exclusive use of students who are currently enrolled in the course. Content from these systems cannot be reused or distributed without written permission of the instructor and/or the copyright holder. Duplication of materials protected by copyright, without permission of the copyright holder is a violation of the Federal copyright law, as well as a violation of Stony Brook's Academic Integrity.