

Physics 105 Fall 2021

Elementary Mechanics and Heat

Syllabus

*The governance of this course, including policies, dates, assessment, and grading, may be modified if circumstances beyond our control impose significant changes to the operation of this course.

Instructors

Mr. Sean Nolan

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Dr. Eric Edlund

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Dr. David Kornreich

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*The preferred contact methods for all faculty are email and Microsoft Teams.

Meeting times

Lecture 1:	MWF 11:30 am – 12:20 pm	Sperry 106	CRN: 90387
Lecture 2:	MWF 12:40 pm – 1:30 pm	Sperry 106	CRN: 95851
Lecture 3:	MWF 1:50 pm – 2:40 pm	Sperry 304	CRN: 95852

Organization of this course

PHY 105 will be divided into three Modules. These are:

1. Kinematics and fundamentals of mechanics (Kornreich)
2. Forces and momentum (Nolan)
3. Energy and thermodynamics (Edlund)

Each module will be taught by a single instructor who will teach all three lecture sections (as stated parenthetically above). When you have questions about the course you are free to contact any of the three instructors, though specific questions about lecture content will be better directed to whomever is teaching the relevant module. All instructors will continue to hold office hours throughout the semester, and you are free (and encouraged!) to make use of all of these resources.

Final exam

We are going to try to schedule a common final exam for all three sections of PHY 105. This has yet to be scheduled (must be coordinated through the Dean's office), and will be announced later in the term as soon as this is resolved.

Attendance

Your attendance is required at all of the following:

1. Your scheduled lecture section – in class work will be given daily
2. Your scheduled recitation section – graded group activities
3. Your scheduled lab section – additional instructions will be given in lab

Completion of all labs is required to pass this course. Graded in-class exercises will be given in lecture and recitation. No make-ups will be given for in-class exercises.

Office hours Note that you may attend office hours of any of the instructors for PHY 105. Given the limited capacity to serve you, we suggest that you try to schedule your visits in advance. Office hours can be held either in person or virtually using Microsoft Teams.

Nolan:	Wed. & Fri.	3:00 pm – 4:00 pm
	Thurs.	1:00 pm – 3:00 pm
Edlund:	Monday.	4:00 pm – 5:00 pm
	Wednesday	9:00 am – 10:00 am
	Thursday	1:00 pm – 4:00 pm
Kornreich:	Tuesday	1:00 pm – 2:00 pm
	Wednesday	3:00 pm – 4:00 pm
	Thursday	10:40 am – 11:40 am
	Friday	9:00 am – 11:00 am

Note: You may also contact any instructor to schedule a special appointment.

Required apps for this course

- **Microsoft Teams** will be used for course organization. The desktop app for Teams is more stable than the browser version, so we highly recommend you download and use that:
<https://www.microsoft.com/en-us/microsoft-365/microsoft-teams/download-app>
To join the PHY 105 class, select “Join or create a team” in Microsoft Teams, then “Join a team with a code” and enter access code: **4mo4h06**
- We will be using the **WooClap** app for in-class responses and work. We will be asking you to make an account with your Cortland email address. Please bookmark this link:
<https://www.wooclap.com/>
- You will need the **Tracker** app for use in lab:
<https://physlets.org/tracker/>
- **CamScanner** or **Genius Scan** apps for scanning and uploading images quickly from any mobile device.

Required course materials

- Textbook: “*Physics 5th Edition*” by James Walker
- PHY 105 Lab Manual - purchase through Bookstore
- My Lab and Mastering Physics Access Code - Available for purchase through the *Course Materials* icon found in the “Content” section on Blackboard. This access code is valid for 24 months. If you are required to take a year of physics, you will not need to purchase another access code for the 2nd course. You should also receive an email from the book store on how to “opt-in” for the course materials as well.

Additional resources

- <http://phet.colorado.edu/en/simulations/category/physics>
- <http://physics.info>
- <http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html>
- <https://www.khanacademy.org/>
- <https://www.wolframalpha.com/>

Grading categories	Homeworks	10%	Assigned Mon, Wed, Fri - <u>No late work will be accepted</u>
	Lab sheets	25%	Further details will be provided in lab
	Lecture activities	20%	Individual/Group activities
	Recitation activities	10%	Group activities
	Module Assessments	20%	Two assessments, one for each of Modules 1 & 2
	Final Assessment	15%	Comprehensive, but focusing on Module 3 content

Overall score to letter grade conversion table	93.4% ≤ A
	90.0% ≤ A- ≤ 93.3%
	86.7% ≤ B+ ≤ 89.9%
	83.4% ≤ B ≤ 86.6%
	80.0% ≤ B- ≤ 83.3%
	76.7% ≤ C+ ≤ 79.9%
	73.4% ≤ C ≤ 76.7%
	70.0% ≤ C- ≤ 73.3%
	66.7% ≤ D+ ≤ 69.9%
	63.4% ≤ D ≤ 66.6%
60.0% ≤ D- ≤ 63.3%	
E ≤ 59.9%	

Lecture and recitation activities In lecture, you will be asked conceptual and computational questions. We will be using the platform **Wooclap** to ask and GRADE these questions. A smartphone or tablet will be required to submit this work. If you are absent from lecture, you will receive a zero for that day's questions. However, we will drop your lowest three lecture activity and lowest one lowest recitation grades to account for absences in general. You will work on group activities in recitation that will require one computer per group. If you have a laptop that you can bring to recitation, please do. Again, you will receive a zero for being absent but we drop your lowest grade.

Homeworks Following every lecture you will be assigned 3-4 problems via **Mastering Physics**, which is accessed through the Blackboard site for PHY 105 lecture. All HW assignments will be due by 11:00 AM of the following lecture day.

Module Assessments A module assessment (midterm) will be given at the end of Modules 1 and 2. The dates of these assessments are specified below in the *Important Dates* section. The assessments will be a mixture of conceptual and computational questions that will require you to show your work in order to receive full credit.

Labs	Labs will be held in Bowers 1110 or 1112. Make sure you bring your calculator and the lab manual to every lab. Attendance at labs is REQUIRED . The lab schedule will be posted on the lab doors, on Blackboard, and in our Microsoft Team.
Recitations	Attendance for your in-person recitation is REQUIRED . Recitations will offer you the opportunity to ask questions, work a range of group activity problems, and earn points toward your grade. A smartphone or laptop is required to receive credit.
Checking your grade	At the end of each module, your current grade in the class will be posted on Blackboard. If you have a specific question about your grade, please contact your one of the lecture instructors.
Public health requirements	This class will be taught in person. This means that you must abide by all state, local, and College policies regarding social distancing, precautionary measures (such as masking), and vaccination. Failure to abide by these policies will result in a warning on the first offense, followed by a request to remove yourself from the class on the second offense, and academic misconduct violation on subsequent offenses.

Student learning objectives (SLOs):

1. Recall the core principles of classical Newtonian mechanics and thermodynamics at the introductory level.
2. Apply the core principles of classical Newtonian mechanics and thermodynamics to solve problems pertaining to the motion and/or energy of a system.
3. Interpret the core principles of classical Newtonian mechanics and thermodynamics to make predictions regarding the motion and/or energy of a system.
4. Collect, analyze, and interpret experimental data related to the aforementioned topics and concepts.
5. Recall and apply the basic mathematical theorems, strategies, concepts and applications commonly used in algebra-based physics such as vector analysis, algebraic manipulation of equations, trigonometry and geometry.

This course also satisfies General Education Category 2: Natural Science

The goal of this category is to provide students with an understanding of the process of scientific inquiry, some of the major scientific theories and their application to modern life. Students will practice the methods of science in a laboratory experience.

GE learning outcomes: Students will demonstrate...

- an understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of mathematical analysis;
- knowledge of the principles of one or more of the natural sciences;
- the ability to apply scientific data, concepts and models in one or more of the natural sciences, and relate the relevant technology and principles they have studied to modern life.

*Special note: general education courses require a minimum of 5 pages of writing. This requirement will be met with the your cumulative work in recitation and lab.

Important dates

- Start of classes August 30
- End of add/drop period September 3
- Labor Day September 6
- Module #1 assessment October 8
- Fall Break October 18-19
- Module #2 assessment November 12
- Thanksgiving break November 24-16
- Last day of lecture December 10
- Final assessment December 15, 1:30-3:30 in Sperry 105

Course Schedule

This is a tentative schedule and is subject to change as necessary. Any changes to the schedule or topics will be shared with the class through Teams.

	Week	Date		Topic	Chapter	Lab
Module 1 (Kornreich)	1	8/30 to 9/3		Intro to kinematics	-	#1
	2	9/6 to 9/10		Free-fall and 1D kinematics (Labor Day)	1-2	-
	3	9/13 to 9/17		2D kinematics and projectiles	4	#2
	4	9/20 to 9/24		Using vectors	3	#3
	5	9/27 to 10/1		Introduction to forces	5	#4
Module 2 (Nolan)	6	10/4 to 10/8		More forces (Midterm #1)	5-6	#6
	7	10/11 to 10/15		Application of Newton's laws	6	#7
	8	10/18 to 10/22		Center of mass & momentum (Fall Break)	9	-
	9	10/25 to 10/29		Momentum Conservation	10	#7
	10	11/1 to 11/5		Rotational Kinematics	11	#8
Module 3 (Edlund)	11	11/8 to 11/12		Static equilibrium (Midterm #2)	11	#9
	12	11/15 to 11/19		Work, power, work-energy theorem	7	#10
	13	11/22 to 11/26		Conservation of energy (Thanksgiving)	8	-
	14	11/29 to 12/3		More conservation of energy	8	#11
	15	12/6 to 12/10		Intro to thermodynamics	18	#12
	16	12/13 to 12/17		Wednesday December 15, 1:30-3:30 pm		

Notes about reading assignments and lab dates

- The chapter heading indicates which chapter you should have read prior to the start of lecture that week (e.g. you should read chapters 1 and 2 prior to the start of week #2).
- The Lab indicates which lab you will be conducting that week (e.g. you will be conducting lab #1 on week #1, and will have no lab on week #2).

SUNY Cortland Policies and Statements

Academic Integrity Statement: All students are expected to uphold academic integrity standards. Plagiarism is defined as taking the ideas of others and using them as one's own without due credit. Students who cheat in examinations, course assignments, or plagiarize in this course may be disciplined in accordance with university rules and regulations. SUNY Cortland College Handbook, Chapter 340.

Disability Statement: As part of SUNY Cortland's commitment to a diverse, equitable, and inclusive environment, we strive to provide students with equal access to all courses. If you believe you will require accommodations in this course, please place a request with the Disability Resources Office at disability.resources@cortland.edu or call 607-753-2967. Please note that accommodations are generally not provided retroactively so timely contact with the Disability Resources Office is important. All students should consider meeting with their course instructor who may be helpful in other ways. SUNY Cortland College Handbook, Chapter 745.

Diversity Statement: SUNY Cortland is dedicated to the premise that every individual is important in a unique way and contributes to the overall quality of the institution. We define diversity broadly to include all aspects of human difference. The College is committed to inclusion, equity, and access and thus committed to creating and sustaining a climate that is equitable, respectful and free from prejudice for students, faculty and staff. We value diversity in the learning environment and know that it enhances our ability to inspire students to learn, lead and serve in a changing world. We are committed to promoting a diverse and inclusive campus through the recruitment and retention of faculty, staff and students. As a community, we hold important the democracy of ideas, tempered by a commitment to free speech and the standards of inquiry and debate. To this end, we are dedicated to developing and sustaining a learning environment where it is safe to explore our differences and celebrate the richness inherent in our pluralistic society. SUNY Cortland College Handbook, Chapter 130.

Inclusive Learning Environment Statement: SUNY Cortland is committed to a diverse, equitable and inclusive environment. The course instructor honors this commitment and respects and values differences. All students enrolled in this course are expected to be considerate of others, promote a collaborative and supportive educational environment, and demonstrate respect for individuals with regard to ability or disability, age, ethnicity, gender, gender identity/expression, race, religion, sex, sexual orientation, socio-economic status or other aspects of identity. In an environment that fosters inclusion, students have the opportunity to bring their various identities into conversation as they find helpful, but are not expected to represent or speak for an entire group of people who share aspects of an identity. If you have any questions or concerns about this statement, contact the Institutional Equity and Inclusion Office at 607-753-2263. <http://www2.cortland.edu/about/diversity/>

Title IX Statement: Title IX, when combined with New York Human Rights Law and the New York Education Law 129-B, prohibits discrimination, harassment and violence based on sex, gender, gender identity/expression, and/or sexual orientation in the education setting. The federal Clery Act and NY Education Law 129-B provide certain rights and responsibilities after an incident of sexual or interpersonal violence. When a violation occurs, victims and survivors are eligible for campus and community resources. Where the College has jurisdiction, it may investigate and take action in accordance with College policy. If you or someone you know wishes to report discrimination based in sex, gender, gender identity/expression, and/or sexual orientation, or wishes to report sexual harassment, sexual violence, stalking or relationship violence, please contact the Title IX Coordinator at 607-753-4550, or visit <http://www2.cortland.edu/titleix> to learn about all reporting options and resources.

Updated by SUNY Legal on February 1, 2018.