

Physics 105 Fall 2020

Elementary Mechanics and Heat (Web)

Syllabus (subject to change)

Instructors :

Mr. Sean Nolan

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Dr. Eric Edlund

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Dr. David Kornreich

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*Preferred contact method for all faculty is email and/or Microsoft Teams.

Meeting times:

Lecture 01 (Kornreich): MWF 11:30 am – 12:20 pm CRN: 90387

Lecture 02 (Edlund): MWF 12:40 pm – 1:30 pm CRN: 95851

Lecture 03 (Nolan): MWF 1:50 pm – 2:40 pm CRN: 95852

The lectures will be web-based, live streamed at the regularly scheduled days and time. You can find them on *Microsoft Teams*.

Attendance:

Your attendance is required at all of the following:

1. Your scheduled lecture section (**web**) – in class work will be given daily.
2. Your scheduled recitation section (**in person**) – weekly quizzes will be administered.
3. Your scheduled lab section (**in person, alternate weeks**) – additional instructions will be given.

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. For in-person visits, limit one student at a time and a mask **MUST** be worn. You may also schedule online meetings through Microsoft Teams.

Nolan: Tuesday 1:00 pm – 2:30 pm
Friday 11:30 am – 12:30 pm

Edlund: Mon. & Wed. 2:00 pm – 3:30 pm
Thursday 2:00 pm – 4:00 pm

Kornreich: Monday 9:00 am – 10:30 am all sessions on Microsoft Teams
(web only) Friday 1:00 pm – 2:00 pm

*You may also contact your lecture instructor to schedule a special appointment.

Required apps for this course:

- Lectures will be held live at the scheduled time using **Microsoft Teams**. 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: **ffvo9s3**

Note about online attendance: During a live lecture, please have yourself on mute, but don’t forget to unmute yourself when you want to talk. Also, your webcams **MUST** be on during lecture. If you are hesitant to speak during lecture, then you can always type in a question or comment in the lecture’s chat.

- We will be using the **WooClap** app for in-class responses and work. Please bookmark this link: <https://www.wooclap.com/>
- You will need the **Tracker** app for use in lab: <https://physlets.org/tracker/>

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.

Online 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 :

Homeworks	10 %	weekly on Fridays - <i>No late accepted</i>
Labs	25 %	Schedule on Teams
Quizzes	25 %	Weekly in your recitation section
Lecture Activities	25 %	Every lecture
Final (cummulative)	15 %	Examination period

Lecture Activities: At each lecture meeting, you will asked conceptual and computational questions. We will be using the platform ***Wooclap*** to ask and GRADE these questions. It is essential that you attend all virtual lectures on Teams in order to have your lecture activities grade.

If you have an unexcused absence you will receive a zero for that day's questions. If you have a valid excuse for missing a lecture, contact your lecture instructor to arrange a make-up. In order to participate it is important to have a reliable internet connection and at least 2 electronic devices

Homeworks: Every Friday you will be assigned 10 problems via *MyLab and Mastering*, which is accessed through the lecture class' Blackboard. You will have a week to complete these problems. All HW assignments are due by **8 pm** on Fridays. If you need an extension due to a valid excuse, please email your lecture instructor.

Quizzes: Weekly quizzes will be given during the 2nd half of your recitation section. You **MUST** attend your recitation section in order to take the quiz. Show all work on your quiz. If you have a valid excuse for missing a recitation, please contact your lecture instructor to schedule a make-up.

Labs: Will be a mix of in-person and online labs. In-person labs will be held in Bowers 1110 throughout the semester. Make sure you bring your mask, pens, pencils, scrap paper, calculator, and the lab manual to every in-person lab. Masks **MUST** be worn at all times while in lab. If you forget your mask, you must go back to get it. Wash your hands with soap prior to and after the lab at the designated washing stations. Only 12 students + the lab instructor will be allowed in the lab room. You will be working in pairs and will sit diagonally across from one another at the lab table. Only one person can touch the equipment, and only one person can touch the computer.

Recitations: Attendance for your in-person recitation is **REQUIRED**. Make sure you bring and wear your masks! They will be broken down into two halves: 1st half will be a review of the previous week's quiz. 2nd half will be for the current week's quiz. You will get back your graded quizzes, but they must be returned to the instructor after they have been reviewed.

Checking Your Grade: Every 3 weeks, your current grade in the class will be posted on Blackboard. If you have a specific question about your grade, please contact your lecture instructor.

Student Learning Objectives:

- Understand, recall and apply the core principles, theories, and laws of Classical Mechanics and thermodynamics.
- Collect, evaluate, and interpret experimental data related to the aforementioned topics and concepts.
- Understand, 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.

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 lab reports you will submit.

Syllabus : We will be discussing the following topics: Newtonian Mechanics & Thermodynamics. If you are following the textbook chapters (which I HIGHLY recommend that you do; we will be covering chapters: 1-11, 16,17).

**However, be advised that your main source of material is the lecture.
Concepts that will be covered in this class include:**

- Linear Kinematics- the study of the translational motion of rigid bodies in 1-D and 2-D without mention to the forces that caused the said motion. *Topics include:* Displacement, velocity, acceleration, motion with constant acceleration (Chapters 2 – 4)
- Rotational Kinematics- the study of the rotational motion of rigid bodies without mention to the torques that caused the said motion. *Topics include:* Angular position, velocity and acceleration, motion with constant angular acceleration. (Chapter 10)
- Linear Dynamics- the study of the translational motion of rigid bodies with emphasis on the forces that caused the said motion. *Topics include:* Newton's Laws of Motion, friction, drag, weight, Hooke's Law. (Chapters 5 – 6)
- Rotational Dynamics- the study of the rotational motion of rigid bodies with emphasis on the torques that caused the said motion. *Topics include:* Torque, angular momentum, center of mass, moment of inertia. (Chapters 10 – 11)
- Conservation laws- If a system does not interact with its environment in any way, then certain mechanical properties of the system cannot change. This includes linear momentum, angular momentum and energy. *Topics include:* momentum, work, power, energy, conservation of energy. (Chapters 7 – 9, 11)
- Thermodynamics- the study of heat and temperature, and their relationship to energy and work. *Topics include:* specific heat, linear expansion, heat current, phase changes. (Chapters 16 – 17)

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. (College Handbook, Chapter 745)

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. (College Handbook, Chapter 340)

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. (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. (IEIO <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 [cortland.edu/titleix](http://www2.cortland.edu/titleix) to learn about all reporting options and resources. (Updated by SUNY Legal Feb. 1, 2018). (Title IX <http://www2.cortland.edu/titleix>)

