

# Physics 231 General University Physics I

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## Course Outline

This is the first part of the two-semester [General University Physics Course](#) taught at [NOVA](#).

The class is intended for students who plan to major in physics, engineering, chemistry, or computer science. If your major is different from those mentioned above, or you are not sure whether the class is for you, please, contact the physics department.

**Prerequisites.** [MTH 173](#) and a satisfactory placement score for [ENG 111](#)

### Additional Requirements.

- Students are required to have access to a computer with fast internet connection.
- Students are expected to have working knowledge of some form of Editing Software, such as Microsoft Office, Open Office, Google Documents, etc.
- Students may be required to participate in virtual classes through [Blackboard Collaborate](#).

### Course Objectives and Learning Outcomes.

- [Course Content Summary and Objectives](#) as published on the NVCC web site.
- By the end of the semester students are expected to know how to apply the following concepts to topics of Mechanics, Fluids, Oscillations, and Thermodynamics:
  - Kinematics: Motion in one and more dimensions, including Rotational Motion
  - Dynamics: Forces, Newton's Three Laws and their applications.
  - Energy and the Laws of its Conservation.
  - Linear and Angular Momentum and their conservation.

### Textbooks

- [University Physics](#) by Hugh Young and Roger Freedman

### Honors Option.

Some course sections offer Honors Option. Contact your instructor to find out whether your section offers Honors Option. For more information on the qualifications and requirements to receive Honors Credit, visit the [Physics Honors Option Page](#).

### Laboratory Safety Rules

- Only students officially enrolled in the class are allowed in the physics laboratory.
- Open-toe shoes such as sandals and flip-flops are prohibited in the laboratory. All shoes must provide adequate foot protection.
- All students must be acquainted and abide by the safety rules as published on [the Physics Laboratory Webpage](#).
- Students in violation of the safety rules will be asked to leave the laboratory.

### Course Organization and Policies

- **Assignments, Grading, and Make-up Policy**
  - The course grade is comprised of labs and lab assignments, weekly homework, class tests and a final exam. For more details, contact directly the course instructor.
  - Grading Scale: A: 90-100% B: 80-89% C: 70-79% D: 60-69% F: <60%
  - One lab will be dropped from the lab grade.
  - The lowest test score will be dropped from the exam grade.
  - No lab or test make-ups are allowed.
- **Attendance**
  - Students are expected to attend all scheduled classes. If an online meeting is scheduled, due to an emergency or other reason, student participation in those meetings counts towards their attendance
  - Students are responsible to know all the material covered in class regardless of whether they have attended class or not.
- **Withdrawal/Incomplete/Audit**
  - Last day to drop the class with Tuition Refund is [Census Date](#). No Audit will be permitted after the [Census Date](#). Students who have not attended class by the [Census Date](#) will be administratively withdrawn from the class.
  - No withdrawals will be permitted after [the Last Day to Withdraw Without Grade Penalty](#). Students are responsible for withdrawing themselves from the class.
  - Incomplete Grade may be given only to students who have earned already 70% of the class grade and have documented special circumstances that preclude them from finishing the class in time. In such cases, they must complete the class by the end of the following semester, or their grade will automatically revert to the earned grade.
- **Academic Dishonesty**

## Resource:

[Academics](#)

[Testing Cen](#)

[Library](#)

[Student Ser](#)

[Disability S](#)

[Academic S](#)

[Technology](#)

[FAQ](#)

[IT Help De](#)

[NOVA Stud](#)

[Network an Access](#)

[Blackboard](#)

[Graphing C](#)

[Science](#)

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Students are expected to abide by the [College's Rules on Academic Dishonesty](#). Be advised that:

- Cheating will not be tolerated in any form. Copying and using someone else's work to obtain credit, as well as letting someone else copy your work, is considered cheating. Any cheating incident will be reported to the Dean of Students and may then become part of your official student record.
- Cheating on any assignment will result in failing that assignment. A second instance of cheating will result in automatic failing of the class!
- All assignments are individual unless otherwise specified.
- The use of unauthorized electronic devices during an exam is considered cheating.
- Students who show a discrepancy greater than a full letter grade between their performance on two separate class assignments (in-class or outside class), may be required to take an additional exam. In that case, the instructor will decide how the additional exam grade will be factored into the overall course grade.

- **Disability Accommodations**

No disability accommodations will be provided unless a Disability Data Sheet is provided to the instructor. Those seeking accommodations based on disabilities should obtain a Disability Data Sheet through [the Counselor for Special Needs](#).

- **Classroom Etiquette**

- Please express yourself freely during class discussions; however, always be respectful and polite to your fellow classmates. Address your instructor by their last name.
- Smart phones and other communications devices have no place in a college classroom. During class, students may not use cell phones and other electronics devices except for direct and immediate classwork.
- In their emails, posts and any other form of electronic communication, students are expected to address their recipient properly and courteously, include the course title and number in the subject line, and to sign their full name at the end of their message.

Last modified on: 09/11/20

## **Grading Policies:**

Grading Scale: A: 90% or above; B: 80 – 89%; C: 70 – 79%; D: 60 – 69%

The course grade is comprised of laboratory (20%), online quizzes (10%); class participation and team-work (10%); and exams (60%).

**In additions, reading assignments using Perusall will provide you extra credit points. Each assignment is worth 3 extra credit points and they will be added to your total number of points by end of the course.**

Total of **440 points**.

### **Lab Grade - total of 100 points:**

- All labs and assignments are worth 5 points each.
- The grade will be a combination of your ability to work with your team during the lab and, to keep a lab notebook, and how you leave your lab station after the lab is finished.
  - The lab notebook should have for each lab an abstract (will go over this in class); a sketch of your lab instrumentation (including a description of how you will conduct the lab set-up); a results section that will include depending on the lab, tables, graphs, calculations. Then you will write a brief conclusion.
  - The lab notebook is not a formal lab report, and you can choose how you want to structure it beyond this overall framework I just described.
  - It is supposed to be a journal that lets you keep an account of your lab procedures.
- The abstract and sketch should be completed before the Lab, the remaining work should be completed during the Lab.
- Two formal Lab reports will be submitted. You can choose which two you would like to write-up and will add 5 additional points to that Lab.
- A missed lab will result in a score of 0 points.

### **Lab Quizzes – total of 100 points:**

- There will be weekly quizzes, a total of 16. The quizzes must be submitted by 11:59 pm the day of our class. So for example, quizzes 1 and 2 the week of September 9<sup>th</sup> in your schedule of classes must be submitted by 11: 59 pm on September 9<sup>th</sup>.
- The total number of points for all quizzes is 130 but only 100 points will count toward your final grade.
- No late quizzes will be accepted. Due dates will also be announced in Blackboard.

### **Exams – total of 240 points:**

- There will be 5 regular exams, each worth 40 points.

- The final exam on the last day of class (December 16th) will be worth 80 points.
- Your lowest exam grade will be dropped.
- A formula sheet will be provided for use during the exam.
- You may use an approved calculator during the exam, all other electronic devices should remain in your school bag.
- No late or make-up exams will be given. If you know that you will have to miss an exam, then under certain circumstances you will be allowed to take that exam on a day preceding the exam date.

## PHY 231 Schedule - 14 Week

### Fall 2017

Week	Reading Assignment	Quizzes	Lecture - 1st Half 8:00 am - 9:20 am	Lecture - 2nd Half 9:30 am - 11:00 am
1 - Sept. 9	Ch. 1 - 2	1. Introduction 2. Vectors	Ch. 1 Introduction Ch. 2 Vectors	Ch. 2 Motion 1D Math Review
2 - Sept. 16	Ch. 3	Kinematics 1D	Ch. 2 Motion 1D	Workbook B - Velocity and Acceleration
3 - Sept. 23	Ch. 4	Kinematics 2D	<b>Exam 1: Ch. 1-2</b> Ch. 3 Motion 2-3D	Ch. 3 Motion 2-3D Workbook B - Velocity and Acceleration
4 - Sept. 30	Ch. 5	Force I	Ch. 4 Newton's Laws	Ch. 4 Newton's Laws Workbook B - Newton's Second Law
5 - Oct. 7	Ch. 6	Force II	Ch. 5 Applications	Ch. 6 Work and Energy
6 - Oct. 14	Ch. 7		Ch. 6 Work and Energy Ch. 7 Potential Energy	<b>Exam 2: Ch. 3 - 5</b> Workbook B - Energy
7 - Oct. 21	Ch. 8	1. Kinetic Energy 2. Energy	Ch. 7 Potential Energy Workbook B - Momentum	Ch. 8 Center of Mass CM of Ring and Disk

8 - Oct. 28	Ch. 9 - 10	Momentum and CM	Ch. 8 Momentum Rocket Propulsion	Ch. 10 Rotation
9 - Nov. 4	Ch. 11	Rotation	<b>Exam 3: Ch. 6 - 9</b> Workbook B - Torque	Ch. 10 Rotation Ch. 11 Statics
10 - Nov. 11	Ch. 12 - 13	1. Rolling and Torque 2. Statics	Ch. 11 Statics Workbook B - Simple Harmonic Motion	Ch. 13 Fluids
11 - Nov. 18	Ch. 14	Fluids	<b>Exam 4: Ch. 10 - 11</b> Ch. 13 Fluids Workbook B - Buoyancy	Ch. 14 Oscillation SHM Damped Oscillations
<b>Thanksgiving Holidays</b>				
12 - Dec. 2	Ch. 17 - 18	Oscillations	Ch. 14 Oscillations Ch. 17 Temperature Workbook B - Simple Pendulum	Ch. 18 Kinetic Theory
13 - Dec. 9	Ch. 19	Temperature	<b>Exam 5: Ch. 12 - 14</b> Ch. 19 First Law of Thermodynamics	Ch. 19 First Law Workbook B - Gas Laws
14 - Dec. 16	Ch. 20		Ch. 20 Second Law of Thermodynamics Workbook B - Specific Heat	<b>Final Exam</b>