

Course Syllabus

01:750:124 (PHY-124) Synopsis

Course Description: Analytical Physics IB is an introductory physics course which explores three main themes of physics:

(1) rotational motion of objects with constant velocity and constant acceleration, and effectively covers the rotational analogues of physical quantities from Analytical Physics 1A including rotational kinematics, torques, rotational kinetic energy, and angular momentum.

(2) Fluid statics and dynamics including buoyancy force and Bernoulli's equation.












(3) Harmonic Motion including Harmonic Oscillator (mass-on-spring) and Simple Pendulum






(4) Waves including mechanical waves, sound waves, and light waves (mirrors, lenses, applications)

The prerequisite physics coursework required is Analytical Physics 1A, which covers linear kinematics, Newton's Laws, energy, momentum, and gravitation, though this is meant to be your first experience with formal work in the physics quantities of this course. You will be required to apply math skills such as proportional reasoning (for example, ratios), and algebra tactics (manipulating symbols, identifying variables, parameters, constants), derivatives of simple polynomials and trigonometric functions (sines, cosines), and integrals of polynomials and trigonometric functions. We recognize that many of you are taking Calculus 1 this semester, and so in any case where we use such calculus skills we will guide you in how to apply them and give you plenty of opportunities to practice.

We will use the free online textbook, *University Physics* by OpenStax, and we will use [OpenStax University Physics Volume 1](https://openstax.org/details/books/university-physics-volume-1) (<https://openstax.org/details/books/university-physics-volume-1>) for Modules 1 through 11, and [OpenStax University Physics Volume 3](https://openstax.org/details/books/university-physics-volume-3) (<https://openstax.org/details/books/university-physics-volume-3>) for Modules 12-13, and both books are freely available online at the prior links, and you may download a pdf version at that link as well or work with them in your web browser, whichever you prefer. You may order a print copy at a small fee if you prefer paper books, but you are not required to do so; the goal is to reduce costs to students for this course, so I encourage you to try the free web-based or pdf versions first before committing to buying a print copy.

Below you will find the weekly topic schedule, as well as links to the relevant textbook chapter.

 Module	Topic	Textbook Chapter
1	Rotational quantities, kinematics	(Vol. 1) Ch. 10  (https://openstax.org/books/university-physics-volume-1/pages/10-introduction)
2	Torque, Newton's 2nd Law (at rest) Static Equilibrium	(Vol. 1) Ch. 10  (https://openstax.org/books/university-physics-volume-1/pages/10-introduction) and Ch. 12  (https://openstax.org/books/university-physics-volume-1/pages/12-introduction)
3	Moment of Inertia, Newton's 2nd Law with Rotations	(Vol. 1) Ch. 10  (https://openstax.org/books/university-physics-volume-1/pages/10-introduction)
4	Rotational Kinetic Energy	(Vol. 1) Ch. 11  (https://openstax.org/books/university-physics-volume-1/pages/11-introduction)
5	Angular Momentum	(Vol. 1) Ch. 11  (https://openstax.org/books/university-physics-volume-1/pages/11-introduction)
6	Fluid Statics (pressure, buoyancy)	(Vol. 1) Ch. 14  (https://openstax.org/books/university-physics-volume-1/pages/14-introduction)
7	Fluid Dynamics (volume flow rate, Bernoulli's)	(Vol. 1) Ch. 14  (https://openstax.org/books/university-physics-volume-1/pages/14-introduction)
8	Harmonic Oscillator (mass-on-spring, simple pendulum)	(Vol. 1) Ch. 15  (https://openstax.org/books/university-physics-volume-1/pages/15-introduction)
9	Mechanical Waves (Traveling, Standing)	(Vol. 1) Ch. 16  (https://openstax.org/books/university-physics-volume-1/pages/16-introduction)

10	Sound Waves (Standing, Boundary Conditions)	(Vol. 1) Ch. 17  (https://openstax.org/books/university-physics-volume-1/pages/17-introduction)
11	Sound Waves (Intensity level, Doppler)	(Vol. 1) Ch. 17  (https://openstax.org/books/university-physics-volume-1/pages/17-introduction)
12	Light Waves (Properties, plane and spherical mirrors)	(Vol. 3) Ch. 1  (https://openstax.org/books/university-physics-volume-3/pages/1-introduction) and Ch. 2  (https://openstax.org/books/university-physics-volume-3/pages/2-introduction)
13	Light Waves (refraction, thin lenses, vision correction)	(Vol. 3) Ch. 2  (https://openstax.org/books/university-physics-volume-3/pages/2-introduction)

Course Information Page for Analytical Physics IB (01:750:124)

Instructor: Professor Chaz Ruggieri


Email: [chazr AT physics.rutgers.edu](mailto:chazr@physics.rutgers.edu) (<mailto:chazr@physics.rutgers.edu>)


Summary: An introductory calculus-based course in physics, aimed at students majoring in engineering or physics. This is the second part of a two semester sequence (with 01:750:123), which serves as a pre-requisite for 01:750:227.

Pre- or Co-requisite: Calculus I 01:640:151 (that is, it's okay if you're taking Math 151 while you take this course)

Meeting times:

Depending on your registered section, you will have lecture once per week for 80-minutes in one of the slots below:

Lecture A: Wednesday Period 2 - 10:20-11:40am Eastern Standard Time in [Physics Lecture Hall](#)  (<https://maps.rutgers.edu/#/?lat=40.522395&lng=-74.463489&selected=3562&sidebar=true&zoom=19>)


Lecture B: Friday Period 4 - 2:00-3:20pm or Friday Period 5 - 3:50-5:10pm Eastern Standard Time in [Physics Lecture Hall](#)  (<https://maps.rutgers.edu/#/?lat=40.522395&lng=-74.463489&selected=3562&sidebar=true&zoom=19>)

In addition lecture, you will have one weekly 80-minute recitation session during which you'll work with peers, an undergraduate Learning Assistant, and a graduate Teaching Assistant on the relevant concepts and skills.

Recitations: One 80-minute recitation per week, please refer to your section number to which you registered for your recitation location, day, and time.

Text: *University Physics by OpenStax*, available for free online at the following links. You may download a pdf version at those links as well, and/or view the textbook in your web browser.

Volume 1 (for Modules 1-11): <https://openstax.org/details/books/university-physics-volume-1>  (<https://openstax.org/details/books/university-physics-volume-1>).

Volume 3 (for Modules 12-13): <https://openstax.org/details/books/university-physics-volume-3>  (<https://openstax.org/details/books/university-physics-volume-3>).

Learning Management System (LMS): Canvas

Online Homework System: ExpertTA

- to gain access to ExpertTA, follow the instructions given on the [ExpertTA Sign Up Instructions page](#) (<https://rutgers.instructure.com/courses/330609/pages/expertta-sign-up-instructions>), or simply click on the first ExpertTA assignment in Module 1 which is Tutorial 1. You will then be directed to the ExpertTA page and you will see options for payment, including a 2-week grace period free-of-charge.
- IMPORTANT NOTE:** you should only access your ExpertTA assignments by clicking on the links in this Canvas page (that is, Tutorial and Homework links in the Modules) to ensure your work is properly tracked by Canvas. You must always access ExpertTA assignments from the links in Canvas directly; never start ExpertTA assignments from your ExpertTA home page (though you can do that when you review or study after the assignment is complete). ExpertTA is coded in such a way that it only connects individual assignments to Canvas when you click the link in

Canvas to access the given ExpertTA assignment. If you access any ExpertTA assignments without clicking the Canvas link, your grade in ExpertTA will not show up in Canvas which means you'll see a zero.

- For more details on ExpertTA sign-up and general expectations of how to use the system, please visit our [ExpertTA Sign-Up Instructions page found here \(https://rutgers.instructure.com/courses/330609/pages/expertta-sign-up-instructions\)](https://rutgers.instructure.com/courses/330609/pages/expertta-sign-up-instructions).

Technology Requirements:

- You are expected to have regular (weekly or daily) access to a computer, tablet, smartphone, or any device that can visit webpages and watch videos. This course will require you to access Canvas regularly, as well as the ExpertTA webpage, to engage in graded asynchronous activities.
- In lecture, to engage fully in the polling questions we will ask during each lecture session, you will be expected to have a personal computer, tablet, or smartphone to respond to polling questions using the course-provided polling software. Such polling questions are not graded, but if you wish to participate by submitting a response you must have one of the above technological devices handy.
- In recitation, you are not required to bring any of your own technology; all activities will solely require a writing utensil and something to write on. Any technology requirements in recitation, such as a computer interface for mini-lab activities, is provided to you in the form of a desktop computer at your lab desk to share with your group members.

Teaching Team (will be updated at start of each semester in the [Office Hours \(https://rutgers.instructure.com/courses/330609/pages/office-hours-times-and-locations\)](https://rutgers.instructure.com/courses/330609/pages/office-hours-times-and-locations) page)

Instructor	Email	Section Number: Period (given as Busch Campus periods)	Office Hours
Prof. Chaz Ruggieri	chazr AT rutgers.edu	<p>Visit this page (https://rutgers.instructure.com/courses/330609/pages/lecture-slides-and-videos) for lecture slides</p> <p>Lecture is held in-person on Wed. Period 2, Fri. Periods 4 and 5, all in the Physics Lecture Hall https://maps.rutgers.edu/#/?lat=40.522395&lng=-74.463489&selected=3562&sidebar=true&zoom=19</p>	<p>See Office Hours page for details (https://rutgers.instructure.com/courses/330609/pages/office-hours-times-and-locations)</p>

Who to contact?

- If you have questions about Recitation, such as excused absences or grading questions, contact the TA of your section. If you have questions about Homework, go to any Office Hour session.
- If you have questions about Recitation experiences or leadership, such as concerns with your TA or your undergraduate LA, you may contact the lecturer (Prof. Chaz Ruggieri, at [chazr AT physics.rutgers.edu](mailto:chazr@physics.rutgers.edu)) and voice your concerns by email or in office hours.
- If you have questions about Lecture, contact the lecturer (Prof. Chaz Ruggieri, at [chazr AT physics.rutgers.edu](mailto:chazr@physics.rutgers.edu)).
- If you have a letter of accommodation or other course-related questions, please contact the lecturer (Prof. Ruggieri, at chazr@physics.rutgers.edu).

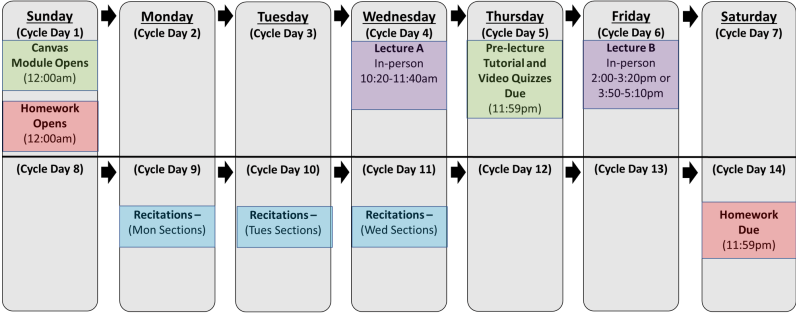
Weekly Cycle (Day-by-Day view)

Each Module is a 2-week cycle, as shown below for one module. The first week of a given module requires you to engage in introductory and foundational activities for that content. The second week involves active-learning problem solving in Recitations, and finally further practice and exploration by way of the Homework.

A Module opens every Sunday, each Module lasts two weeks' time. This means that starting with Module 2, you will be finishing up Module 1 recitations and homework at the same time you start Module 2 pre-lecture videos, video quizzes, and Tutorial.

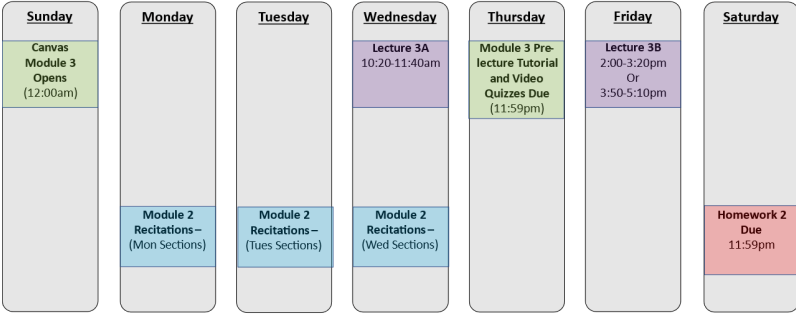
This half-module overlap continues throughout the semester, so please plan your calendar carefully so that you don't miss assignment due dates each week. Please refer to the [Calendar of Activities page \(https://rutgers.instructure.com/courses/330609/pages/calendar-of-activities\)](https://rutgers.instructure.com/courses/330609/pages/calendar-of-activities) to see when everything is due each day to help. Additionally, due dates for most activities are written in the Modules as well (except for recitation work, which is due before you leave your recitation classroom). Note that while the figures below are titled as PHY-123, the same structure applies to PHY-124.

2-Week Course Cycle PHY-123



*Note: the Recitation content covers material from the Homework due the upcoming Saturday.

PHY-123 Module Overlap Example

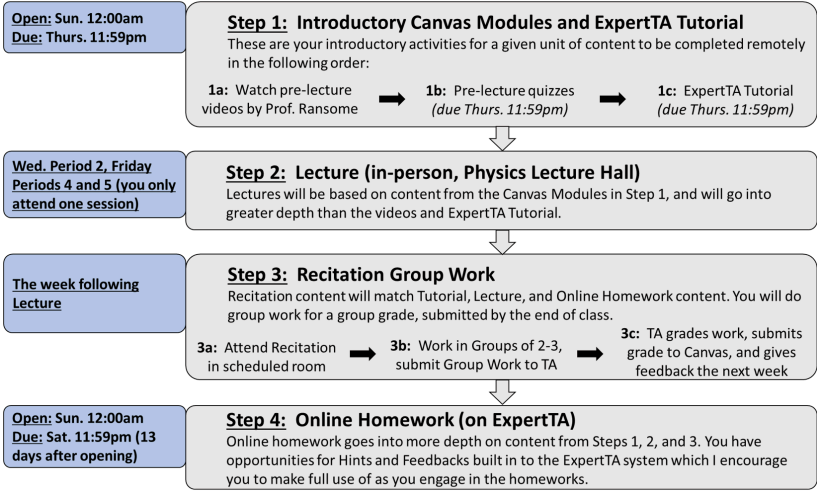


*Note: the Recitation content covers material from the Homework and Mini-Test due the following Saturday.

Weekly Activity Flow (Order of Activities)

The figure below is to give you a sense for how each activity in the module flows into the next activity. We build from low complexity to high complexity as we go along a given module two-week cycle. Please be sure to meaningfully complete all module activities to ensure you get the most out of your time in lecture and recitation, and so that you are prepared to ask and answer questions of your TA and LA during class. Note that while the figure below is titled as PHY-123, the same structure applies to PHY-124.

PHY-123 Weekly Activity Sequence (4 Steps)



Summary of Plans for Instruction (what you should expect to experience in our class this semester)

- Asynchronous Activities in ExpertTA and Canvas, and additional Resources:
 - Introductory videos and video quizzes are graded based on effort, not correctness - if you submit an answer, you earn full credit even if the answer is wrong. Your quiz attempts are added up for the semester to determine your score for that grade category. The videos are related to that week's material and will be posted on Canvas to start each week's activities. The videos are followed by a short quiz, which you must attempt to earn credit.
 - Weekly Tutorials on ExpertTA are graded on correctness and contain approximately 5 questions per week on introductory concepts related to that week's material, and is to be completed before lecture. Tutorials are meant to be your first attempts at problem-solving for that week's content, and you are encouraged to use Hints and Feedback features of ExpertTA. There are no penalties for incorrect guesses, but you have a limit of 5 attempts per problem and you must get the correct answer by the 5th attempt to get full credit for that problem. Full solutions to Tutorial work are available

within ExpertTA after the due date. Click the assignment of interest and then click, "View Assignment Solutions" to view the full solutions; see the image below for guidance.

- **Lecture slides** will be posted in advance of the lecture both in the Files folder and in the Canvas Module for that lecture. Full lecture PlayPosit videos complete with narration and polling questions will be posted after the lecture are complete that week (that is, Friday evenings). All Lecture materials can be found in the [Lecture Slides and Videos \(https://rutgers.instructure.com/courses/330609/pages/lecture-slides-and-videos\)](https://rutgers.instructure.com/courses/330609/pages/lecture-slides-and-videos) page.
- **Video clips of the weekly lecture demos** will be posted in advance of the lecture within the relevant Module, and the lecturer will demonstrate and discuss a subset or all of those videos during in-class lecture time.
- **Weekly Homeworks on ExpertTA are graded on correctness** and have approximately 10-15 questions per week and will be assigned and submitted via Expert TA. There are no penalties for incorrect guesses, but you have a limit of 5 attempts per problem and you must submit a correct answer by the last attempt to earn full credit for the associated part of a given problem. We drop the 2 lowest homework scores for the semester to account for unforeseen emergencies such as acute health issues, computer issues, etc. **Full solutions to ExpertTA Assignments are available within ExpertTA after the due date. Follow these instructions to see solutions:** Go to any ExpertTA assignment, then once you're in the ExpertTA page, click on "Class Management" on the upper left side , that will bring you to the list of current and prior course assignments. Click the assignment of interest and then click, "View Assignment Solutions" to view the full solutions; see the images below for guidance. 
- **Mini-Exams in Canvas are graded on correctness**, and are timed (usually 5 minutes per question), with just 1 attempt, to best mimic an exam-like assessment, but are low-stakes practice activities designed to give you feedback on your current mastery of the concepts and skills. Once you begin the mini-test, you cannot stop the timer, so be sure you can dedicate the allocated time to your efforts. These are meant to be exam-like questions that you might see on the midterm or final exam, based on the content in the immediately preceding recitation, lecture, and pre-lecture materials. The intention is to give you practice in an exam-like setting so that when it comes time for the actual exam you are better equipped to succeed under time pressure, in addition to providing you direct feedback on your current struggles with the concepts and skills so you can better inform your studying for the midterm and final. Towards that end, you should use your equation sheet, calculator, writing utensil and paper (or tablet) and treat it like an exam setting by isolating yourself to get the most out of the experience (that is, do your best on your own because you won't have people helping you during the midterm and final exams).
- **Mini-Exam PlayPosit Reviews are an opportunity to earn back lost credit from the associated Mini-Exam.** You must submit an attempt for a Mini-Exam before the associated PlayPosit opens to allow you to earn back lost credit. Canvas will compare your Mini-Exam score to the associated PlayPosit review score and keep whichever of the two is larger. In this way, if you engage deeply in the PlayPosit Review, you can earn back up to 100% of lost credit from your Mini-Exam attempt, so there's no risk to you trying your best individual, unaided effort on the Mini-Exam.
- **Canvas Discussion Board** will be monitored by the course leadership, and you may post any questions about the weekly activities or the course logistics which will be addressed by course leaders and/or other students. Treat the discussion board as a way to connect with your class peers and as another resource to have your questions answered in a timely manner. Typically students create a group chat of sorts, so ask your classmates if anyone has created a group chat and be sure to join it to connect with your peers!
- **Additional Module Resources:** at the bottom of each Module you'll see additional resources, which include selected extra textbook problems with answers in the back of the book for you to practice, as well as fully done out solutions for you to check your work for select problems, and guided video solutions which explain the "why" behind each problem solving step for select core content problems. Please review those resources for practice or if you have persistent struggles in understanding the concepts or problem solving skills as the semester progresses.
- **Additional Exam Resources:** as you begin to study for Midterm and Final exams, we will post Exam Modules which compile the Module Resources but also provide additional practice worksheets, and a practice multiple choice exam in Canvas which is not graded but is solely for you to assess your mastery level prior to taking the actual exam. Full solutions are provided for all of the exam prep resources so you can compare your attempts with the intended mastery level.
- **Synchronous Activities**
 - **Weekly Lectures (in-person):** The lectures will be held in-person, and detailed slides will be available in the [Lecture Slides and Videos page \(https://rutgers.instructure.com/courses/330609/pages/lecture-slides-and-videos\)](https://rutgers.instructure.com/courses/330609/pages/lecture-slides-and-videos). There will be polling questions through the lecture to aid in your engagement and learning, as well as discussions with your peers; please participate to the best of your ability. There are no graded activities in lecture; all activities are solely to help guide your learning of physics.
 - **Weekly Recitations (in-person):** 80-minutes in duration, all held in Serin Physics Laboratory on Busch Campus, either in room SRN-227 or room SRN-232 depending on your registered class session. Please double check your schedule to ensure you're in the correct room, because we will typically have recitations running in both rooms simultaneously. You will work in groups of 2-3 students, with an undergraduate Learning Assistant and a graduate Teaching Assistant assisting you. You are expected to submit one copy of your group's efforts for a group grade before you leave the class that day. Your TA will grade the work, post the grade to Canvas, and give you graded feedback during the following class. We drop the 2 lowest recitation scores for the semester to account for unforeseen emergencies such as acute health issues, travel issues, etc. Recitations are a mandatory part of the course, the purpose is to provide you real-time feedback on your mastery of physics concepts and problem solving skills, and so this is your time to openly ask questions and work with peers to solidify your understanding and address any questions or struggles you have.
 - **Weekly Office Hours (in-person and/or Zoom):** Every TA and the Lecturer will hold 1-hour office hour sessions weekly starting the second week of classes. This office hour list including instructor name, time, and location will be posted to Canvas in the [Office Hours Times and Information page \(https://rutgers.instructure.com/courses/330609/pages/office-hours-times-and-locations\)](https://rutgers.instructure.com/courses/330609/pages/office-hours-times-and-locations). You may attend any office hour, you do not need to attend your TA's office hour. You are strongly encouraged to attend office hours for questions on the homework. The mode with which the office

hour is held (virtual or in-person) as well as the time and locations will all be listed in the Office Hours page.

• **Exams (5 Mini-Exams, 1 Mock Midterm Exam, 1 cumulative Final Exam)**

- There are 5 mini-exams throughout the semester, meant to be mock-exams with low-stakes grading to give you an accurate assessment of how prepared you are for the Midterm and Final exams without too much of a burden on your grade if you aren't as prepared as you'd hoped. Each mini-exam will be held on Canvas, and will allow just 1 submission attempt.
- The Mock Midterm Exam will be held in-person during your regularly scheduled recitation period.
- The Final Exam will be held in-person at various locations around campus depending on your last name.
- All Exams (including Mini-Exams) are closed-notes, closed-book, but you will be provided with an equation sheet that you may use, and you may also use a calculator.
- All Exams (including Mini-Exams) will be multiple choice, and you will have approximately 5-6 minutes per question for timing (about 15 questions for an 80 minute exam).
- Academic integrity (see below) must always be followed! You may NOT contact anyone or receive/give any assistance via any means or use other resources during the exam. The exam answers must be entirely your own.
- Details about in-person Midterm and Final exam procedures will be announced approximately two weeks ahead of the Midterm and Final Exam dates.

Provisional Grading Plans (subject to edits or adjustments up until the start of the semester):

- 5% Video Quizzes (on Canvas - participation credit)
- 5% Pre-lecture Tutorials (on ExpertTA, based on correctness)
- 10% Recitation Group Work (in-class during recitation)
- 16% Homework (on ExpertTA, based on correctness)
- 24% Mini-Exams (on Canvas, multiple choice, based on correctness)
- 40% Final Exam (in-person, cumulative, multiple choice questions)

What we drop before calculating your grade (here, "drop" means Canvas ignores the grade, but the grade will still appear in your gradebook):

- 2 lowest Recitation Work submissions
- 2 lowest Homeworks

Provisional Grade Cutoffs (these cutoffs may change in students' favor depending on overall class performance):

A	≥90.0%
B+	89.9 to 85.0%
B	84.9 to 75.0%
C+	74.9 to 70.0%
C	69.9 to 60.0%
D	59.9 to 50.0%
F	≤49.9%

Lateness Policy for Tutorials and Homeworks:

For all absence and lateness policies, [see our Absence and Lateness Policy page found here](https://rutgers.instructure.com/courses/330609/pages/absence-and-lateness-policies)

[\(https://rutgers.instructure.com/courses/330609/pages/absence-and-lateness-policies\)](https://rutgers.instructure.com/courses/330609/pages/absence-and-lateness-policies), copied below for your convenience:

If you arrive late to recitation for any reasons:

(1) Arriving 5 to 10 minutes late once or twice due to unforeseen issues (such as buses or travel issues) is okay, do your best to arrive on time in the future by planning ahead, leaving earlier, taking an earlier bus, and so on. Regular lateness of this magnitude may result in the TA inquiring about your lateness, and it's possible the TA may apply grade penalties for frequent lateness occurrences.

(2) Arriving 15-20 minutes late or later means that your group has generally worked through most of the first worksheet without you, and so you will not be able to earn the same credit as your groupmates for that day. **Penalties of at least 2 points out of 10 will be applied depending on the magnitude of your lateness.**

If you missed a recitation for Religious Observance:

(1) **Contact your TA by email** and indicate which religious holiday you are observing; **it must be a holiday within Rutgers' holiday calendar to qualify.**

(2) After you email your TA, they will give you two options to account for the religious conflict: **(a) the TA will either excuse your work** for the days your observation coincides with your recitation, **or (b) the TA will send you the blank materials on the last day of recitation so you may complete the work**

individually for credit. If you choose this second path, you must send the TA your completed work via email no later than Friday morning that week which is when we post recitation solutions to the associated Canvas Module to be eligible for credit.

(3) Arrange with your TA to attend office hours and discuss the recitation work so you have an opportunity to obtain feedback on your methods and mastery. The most helpful part of the recitation is the feedback and discussion you get from your peers, from the LA, and from the TA, and there is no substitute for that feedback, so it's best to meet with your TA to discuss.

If you missed a recitation for illness or simply choose not to attend:

(1) **You cannot make up the work for credit if you miss recitation but we drop the two lowest recitation scores specifically so your grade isn't harmed by these kind of unexpected happenings.** The score in your Grades page will appear as a "0"; however, we drop the two lowest recitation group work grades so missing class up to and including two absences will not harm your grade. The reasons why we do not allow make-up by attending another session is because it is not fair to students who have recitations later in the week who do not have that same opportunity, in addition to the logistics of coordinating a make-up session are considerably difficult.

(2) Contact your TA as soon as possible by email to request a blank copy of the materials for your reference if you wish to work on the materials outside of class, or you can wait until the next recitation to obtain a paper copy from the recitation classroom. (see the Home page table, or the Office Hours page for your TA's contact information)

(3) Arrange with your TA to attend office hours and discuss the recitation work so you have an opportunity to obtain feedback on your methods and mastery. The most helpful part of the recitation is the feedback and discussion you get from your peers, from the LA, and from the TA, and there is no substitute for that feedback, so it's best to meet with your TA to discuss.

(4) If you have a long-term mental or physical health issue resulting in more than 2 absences, you must first verify your long term health issue with the Dean of Students by **contacting them at this webpage** [\(https://studentsupport.rutgers.edu/\)](https://studentsupport.rutgers.edu/), which at the time of this writing instructs you to email their office at deanofstudents@echo.rutgers.edu (<mailto:deanofstudents@echo.rutgers.edu>) as the best mode of contact. If the Dean of Students is able to verify your health claim, they will email me (Prof. Ruggieri), at which point we may be able to excuse the absence(s) which will not count in any way towards your final grade.

Absence Policy for Lecture:

(1) **You do not need to inform any instructor that you have missed or will miss lecture.** There are no graded activities in lecture, you may attend as you wish or miss lecture without any grade penalty. However, I strongly encourage you to attend every lecture, as there are many activities and insights that are critical to your learning of physics in this class.

(2) If you must miss lecture, I post the detailed lecture slides in the **Lecture Slides and Videos page** (<https://rutgers.instructure.com/courses/330609/pages/lecture-slides-and-videos>). You can go through the material at your leisure to catch up on what you missed from the lecture session and attend any instructor's office hours with your questions.

Lateness Policy for Tutorials and Homeworks:

(1) Tutorials and Homeworks both have the following lateness penalty: 10% deduction for every hour late beyond the 11:59pm due time. This means if you submit between 12am and 12:59am, the most you can earn is 90%, and so on, until all points are deducted approximately 10 hours after the original due time. Beyond that point, no credit may be earned, and we cannot grant extensions after the assignment has expired, since the answers are now accessible to students.

(2) Tutorials are available for about 5 full days, and Homeworks are available for about 14 full days; you are strongly encouraged to engage in good planning practices by completing the Tutorial and Homework over the duration of those days and to not wait until the last day to do the work. Education research findings from many fields (including physics) suggest that students who distribute their homework efforts over the entirety of the open time recall the relevant information more quickly and ultimately do better overall in the course than those who wait until the last day to do the work.

(3) We will not drop any of the Tutorial scores; they are sufficiently introductory that all students who engage meaningfully should expect to do quite well each week in that assignment. We do drop the two lowest homework scores to account for life's happenings that might disrupt your school plans.

(4) There will not be any homework assignment extensions except in extreme circumstances. As with the recitation work, if you have a long-term mental or physical health concern, please contact the Dean of Students to verify your claim, after which we can consider other pathways including possibly excusing the work. You may contact the Dean of Students by visiting **this webpage** [\(https://studentsupport.rutgers.edu/\)](https://studentsupport.rutgers.edu/), which at the time of this writing instructs you to email their office at deanofstudents@echo.rutgers.edu (<mailto:deanofstudents@echo.rutgers.edu>) as the best mode of contact.

Lateness Policy for Video Quizzes and Mini-Exams:

(1) All graded Canvas activities including Video Quizzes and Mini-Exams are due strictly by the assigned dates and times; extensions are only considered in situations verified by the Dean of Students (see above for Dean of Students contact information).

(2) We will not drop any lowest scores from the Video Quizzes or Mini-Exams. The Video Quizzes are graded on participation so you obtain full credit regardless of correctness. The Mini-Exams are meant to be mock-exams, and are graded as such; however, any credit lost during the Mini-Exam can be regained in full by doing the associated PlayPosit Mini-Exam Review activity (see the Mini-Exam module for more details when it opens up).

Academic Integrity


Students are expected to maintain the highest level of academic integrity. You should be familiar with the university policy on academic integrity:

<http://nbacademicintegrity.rutgers.edu/>  [\(http://nbacademicintegrity.rutgers.edu/\)](http://nbacademicintegrity.rutgers.edu/). Violations will be reported and enforced according to this policy.

Use of external sources to obtain solutions to homework assignments or exams is cheating and is a violation of the University Academic Integrity policy. Cheating in the course may result in penalties ranging from a zero on an assignment to an F for the course to expulsion from the University. Posting of homework assignments, exams, recorded lectures, or other lecture materials to external sites without the permission of the instructor is a violation of copyright and constitutes a facilitation of dishonesty, which may result in the same penalties as explicit cheating.

Not only does the use of such sites violate the University's policy on Academic Integrity, using such sites interferes with your achievement of the learning you are paying tuition for. Assignments, quizzes, and exams are given not simply to assign grades, but to promote the active learning that occurs through completing assignments on your own or by discussion with peers and instructors. Getting the right answer is much less important than learning how to get the right answer and the process by which you arrive at the answer. This learning is critical to your success in subsequent courses and your careers.

Recommended by the Office of Student Conduct to promote a culture of academic integrity: Rutgers University takes academic dishonesty very seriously. By enrolling in this course, you assume responsibility for familiarizing yourself with the Academic Integrity Policy and the possible penalties (including suspension and expulsion) for violating the policy. As per the policy, all suspected violations will be reported to the Office of Student Conduct. Academic dishonesty includes (but is not limited to):

- Cheating
- Plagiarism
- Aiding others in committing a violation or allowing others to use your work
- Failure to cite sources correctly
- Fabrication
- Using another person's ideas or words without attribution—re-using a previous assignment (including ideas generated from AI-derived sources or other internet sources (ChatGPT, or any other AI results from search engines))
- Unauthorized collaboration including ideas generated from AI-derived sources or other internet sources (ChatGPT, or any other AI results from search engines)
-  Sabotaging another student's work

If in doubt, please consult the instructor. Please review the [Academic Integrity Policy](http://nbacademicintegrity.rutgers.edu/home-2/academic-integrity-policy/)  [\(http://nbacademicintegrity.rutgers.edu/home-2/academic-integrity-policy/\)](http://nbacademicintegrity.rutgers.edu/home-2/academic-integrity-policy/).

Student Wellness Services

Report a Bias Incident If you experience or witness an act of bias or hate, report it to someone in authority. You may file a report online and you will be contacted within 24 hours. The bias reporting page is [here](http://inclusion.rutgers.edu/report-bias-incident/)  [\(http://inclusion.rutgers.edu/report-bias-incident/\)](http://inclusion.rutgers.edu/report-bias-incident/).

[Click here to report a bias incident](https://cm.maxient.com/reportingform.php?RutgersUniv&layout_id=25)  [\(https://cm.maxient.com/reportingform.php?RutgersUniv&layout_id=25\)](https://cm.maxient.com/reportingform.php?RutgersUniv&layout_id=25)

Bias is defined by the University as an act, verbal, written, physical, psychological, that threatens, or harms a person or group on the basis of race, religion, color, sex, age, sexual orientation, gender identity or expression, national origin, ancestry, disability, marital status, civil union status, domestic partnership status, atypical heredity or cellular blood trait, military service or veteran status.

Counseling, ADAP & Psychiatric Services (CAPS)



(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ <http://health.rutgers.edu/medical-counseling-services/counseling> 
[\(http://health.rutgers.edu/medical-counseling-services/counseling\)](http://health.rutgers.edu/medical-counseling-services/counseling)


CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professionals within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community, and consultation and collaboration with campus partners.

Report a Concern: <http://health.rutgers.edu/do-something-to-help/>  [\(http://health.rutgers.edu/do-something-to-help/\)](http://health.rutgers.edu/do-something-to-help/)

Disability Services



(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/> 
(<https://ods.rutgers.edu/>)

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>  (<https://ods.rutgers.edu/students/documentation-guidelines>). If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>  (<https://webapps.rutgers.edu/student-ods/forms/registration>)


Peer Educators for discussions with Rutgers peers on health and wellness, (848) 932-1965,
<http://health.rutgers.edu/education/hope/peer-educators>  (<http://health.rutgers.edu/education/hope/peer-educators>)


For additional assistance in your learning experiences at Rutgers, please use the following resources:


Learning Centers: <https://rlc.rutgers.edu/>  (<https://rlc.rutgers.edu/>)

The Learning Centers have free services such as [Academic Coaching](https://rlc.rutgers.edu/student-services/academic-coaching)  (<https://rlc.rutgers.edu/student-services/academic-coaching>), where you are paired with a peer advisor who can help you identify barriers to your learning experiences and suggest improvements, as well as [Peer Tutoring](https://rlc.rutgers.edu/student-services/peer-tutoring-program)  (<https://rlc.rutgers.edu/student-services/peer-tutoring-program>) which is available for many introductory courses.








Student Success resources: <https://success.rutgers.edu/>  (<https://success.rutgers.edu/>)
























For those of you in School of Arts and Sciences (SAS), you may find additional assistance through SAS advising at the following link: <https://sasundergrad.rutgers.edu/advising/advising>  (<https://sasundergrad.rutgers.edu/advising/advising>)























For those of you in Engineering (SOE), you may find additional assistance through School of Engineering Advising at the following link: <https://soe.rutgers.edu/academic-advising-and-policies/advising-resources>  (<https://soe.rutgers.edu/academic-advising-and-policies/advising-resources>)























For those of you in Environmental and Biological Sciences (SEBS), you may find additional assistance through School of Environmental and Biological Sciences Advising at the following link: <https://sebs.rutgers.edu/advising>  (<https://sebs.rutgers.edu/advising>)























Course Summary:






















Date	Details	Due
Thu Jan 23, 2025	 Intro to ExpertTA Assignment (no credit, this is for practice only) (https://rutgers.instructure.com/courses/330609/assignments/3470826)	due by 11:59pm
	 Module 1 Quiz 1 - Polar Coordinates (https://rutgers.instructure.com/courses/330609/assignments/3470802)	due by 11:59pm
	 Module 1 Quiz 2 - Rotational Kinematics (https://rutgers.instructure.com/courses/330609/assignments/3470793)	due by 11:59pm
	 PlayPosit Lecture 0.1 - Course Leaders and Teaching Philosophy (https://rutgers.instructure.com/courses/330609/assignments/3470854)	due by 11:59pm
	 PlayPosit Lecture 0.2 - Course Structure and ExpertTA (https://rutgers.instructure.com/courses/330609/assignments/3470855)	due by 11:59pm
	 PlayPosit Lecture 0.3 - Lecture and Recitation Expectations (https://rutgers.instructure.com/courses/330609/assignments/3470856)	due by 11:59pm
	 PlayPosit Lecture 0.4 - Attendance, Lateness, Exams, and Grades (https://rutgers.instructure.com/courses/330609/assignments/3470857)	due by 11:59pm























Date	Details	Due
	 Rutgers Introductory Physics Assessment Spring 2025 (80-min, timed, 16 question, ungraded) (https://rutgers.instructure.com/courses/330609/assignments/3470766)	due by 11:59pm
	 W0 Quiz 1 - Weekly Course Cycle (https://rutgers.instructure.com/courses/330609/assignments/3470776)	due by 11:59pm
	 Absence And Lateness Policies	to do: 11:59pm
	 Calendar of Activities	to do: 11:59pm
	 Equation Sheet	to do: 11:59pm
	 ExpertTA Sign Up Instructions	to do: 11:59pm
	 Math Objectives for PHY-123 and PHY-124	to do: 11:59pm
	 Module 1 Video 1 - Radians, Coordinates	to do: 11:59pm
	 Module 1 Video 2 - Cross Product, Angular Variables	to do: 11:59pm
	 Recitation Expectations of Students (starts Monday Jan. 27)	to do: 11:59pm
	 Syllabus	to do: 11:59pm
	 Weekly Course Activity Steps	to do: 11:59pm
	 Weekly Course Schedule Day-by-Day and Overlap	to do: 11:59pm
	 Welcome!	to do: 11:59pm
	 Mini-Exam Instructions (please watch/read!)	to do: 10am
Fri Jan 24, 2025	 Intro to ExpertTA Assignment (complete by 1/28 at 11:59pm - not for credit) (https://rutgers.instructure.com/courses/330609/assignments/3470825)	due by 11:59pm
Wed Jan 29, 2025	 Tutorial 1 - Rotational Motion (https://rutgers.instructure.com/courses/330609/assignments/3471023)	due by 11:59pm
	 Module 2 Quiz 1 - Torque (https://rutgers.instructure.com/courses/330609/assignments/3470785)	due by 11:59pm
	 Module 2 Quiz 2 - Static Equilibrium (https://rutgers.instructure.com/courses/330609/assignments/3470797)	due by 11:59pm
Thu Jan 30, 2025	 Module 2 Video 1 - Torque, Rotational Energy, Newton's 2nd Law, Moment of Inertia Intro	to do: 11:59pm
	 Module 2 Video 2 - Static Equilibrium	to do: 11:59pm
	 Tutorial 2 - Static Equilibrium (https://rutgers.instructure.com/courses/330609/assignments/3471028)	due by 11:59pm
Sat Feb 1, 2025	 Homework 1 - Rotational Motion (https://rutgers.instructure.com/courses/330609/assignments/3470812)	due by 11:59pm






















Date	Details	Due
Wed Feb 5, 2025	 Recitation 1 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471006)	due by 11:59pm
	 Module 3 Quiz 1 - Moment of Inertia (https://rutgers.instructure.com/courses/330609/assignments/3470778)	due by 11:59pm
	 Module 3 Quiz 2 - Newton's 2nd Law for Rotations (https://rutgers.instructure.com/courses/330609/assignments/3470771)	due by 11:59pm
Thu Feb 6, 2025	 Module 3 Video 1 - Moment of Inertia of Rigid Bodies	to do: 11:59pm
	 Module 3 Video 2 - Newton's 2nd Law for Rotation	to do: 11:59pm
	 Tutorial 3 - Newton's 2nd Law for Rotation (https://rutgers.instructure.com/courses/330609/assignments/3471029)	due by 11:59pm
Sat Feb 8, 2025	 Homework 2 - Static Equilibrium (https://rutgers.instructure.com/courses/330609/assignments/3470817)	due by 11:59pm
Mon Feb 10, 2025	 Mini-Exam 1 (Modules 1,2) - 6 questions, 30 minutes (https://rutgers.instructure.com/courses/330609/assignments/3470801)	due by 11:59pm
Wed Feb 12, 2025	 Recitation 2 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471011)	due by 11:59pm
	 Module 4 Quiz 1 - Rolling (https://rutgers.instructure.com/courses/330609/assignments/3470798)	due by 11:59pm
	 Module 4 Quiz 2 - Rolling Down Incline (https://rutgers.instructure.com/courses/330609/assignments/3470796)	due by 11:59pm
Thu Feb 13, 2025	 Module 4 Video 1 - Rolling Motion	to do: 11:59pm
	 Module 4 Video 2 - Rolling with Torque	to do: 11:59pm
	 Tutorial 4 - Rotational Kinetic Energy (https://rutgers.instructure.com/courses/330609/assignments/3471030)	due by 11:59pm
Sat Feb 15, 2025	 Homework 3 - Newton's 2nd Law for Rotations (https://rutgers.instructure.com/courses/330609/assignments/3470818)	due by 11:59pm
Wed Feb 19, 2025	 Recitation 3 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471012)	due by 11:59pm
	 Module 5 Quiz 1 - Angular Momentum (https://rutgers.instructure.com/courses/330609/assignments/3470767)	due by 11:59pm
	 Module 5 Quiz 2 - Rotational Collisions (https://rutgers.instructure.com/courses/330609/assignments/3470769)	due by 11:59pm
Thu Feb 20, 2025	 Module 5 Video 1 - Angular Momentum	to do: 11:59pm
	 Tutorial 5 - Angular Momentum (https://rutgers.instructure.com/courses/330609/assignments/3471031)	due by 11:59pm
Sat Feb 22, 2025	 Homework 4 - Rotational Kinetic Energy (https://rutgers.instructure.com/courses/330609/assignments/3470819)	due by 11:59pm

















Date	Details	Due
Wed Feb 26, 2025	 Recitation 4 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471013)	due by 11:59pm
	 Module 6 Quiz 1 - Fluid Pressure (https://rutgers.instructure.com/courses/330609/assignments/3470795)	due by 11:59pm
	 Module 6 Quiz 2 - Pascal's Principle (https://rutgers.instructure.com/courses/330609/assignments/3470791)	due by 11:59pm
	 Module 6 Quiz 3 - Archimedes' Principle (https://rutgers.instructure.com/courses/330609/assignments/3470786)	due by 11:59pm
Thu Feb 27, 2025	 Module 6 Video 1 - Pressure	to do: 11:59pm
	 Module 6 Video 2 - Pascal's Principle	to do: 11:59pm
	 Module 6 Video 3 - Archimedes' Principle	to do: 11:59pm
	 Tutorial 6 - Fluid Statics (https://rutgers.instructure.com/courses/330609/assignments/3471032)	due by 11:59pm
Sat Mar 1, 2025	 Homework 5 - Angular Momentum (https://rutgers.instructure.com/courses/330609/assignments/3470820)	due by 11:59pm
Wed Mar 5, 2025	 Recitation 5 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471014)	due by 11:59pm
	 Module 7 Quiz 1 - Flow Rate and Bernoulli's Equation (https://rutgers.instructure.com/courses/330609/assignments/3470804)	due by 11:59pm
Thu Mar 6, 2025	 Module 7 Video 1 - Continuity Equation and Bernoulli's Equation	to do: 11:59pm
	 Tutorial 7 - Fluid Dynamics (https://rutgers.instructure.com/courses/330609/assignments/3471033)	due by 11:59pm
Sat Mar 8, 2025	 Homework 6 - Fluid Statics (https://rutgers.instructure.com/courses/330609/assignments/3470821)	due by 11:59pm
Mon Mar 10, 2025	 Mini-Exam 2 (Modules 3,4,5) - 9 questions, 50 minutes (https://rutgers.instructure.com/courses/330609/assignments/3470779)	due by 11:59pm
Wed Mar 12, 2025	 Recitation 6 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471015)	due by 11:59pm
Thu Mar 13, 2025	 Module 8 Quiz 1 - Simple Harmonic Motion (https://rutgers.instructure.com/courses/330609/assignments/3470768)	due by 11:59pm
	 Module 8 Quiz 2 - SHM frequency, period, speed, acceleration (https://rutgers.instructure.com/courses/330609/assignments/3470807)	due by 11:59pm
	 Module 8 Quiz 3 - SHM energy (https://rutgers.instructure.com/courses/330609/assignments/3470781)	due by 11:59pm
	 Module 8 Quiz 4 - Simple Harmonic Pendulum (https://rutgers.instructure.com/courses/330609/assignments/3470784)	due by 11:59pm
	 Module 8 Video 1 - Simple Harmonic Motion Definition	to do: 11:59pm


















Date	Details	Due
	 Module 8 Video 2 - SHM frequency, period, speed, and accel.	to do: 11:59pm
	 Module 8 Video 3 - SHM Energy	to do: 11:59pm
	 Module 8 Video 4 - Simple Pendulum	to do: 11:59pm
	 Tutorial 8 - Harmonic Oscillator (https://rutgers.instructure.com/courses/330609/assignments/3471034)	due by 11:59pm
Wed Mar 26, 2025	 Homework 7 - Fluid Dynamics (https://rutgers.instructure.com/courses/330609/assignments/3470822)	due by 11:59pm
	 Recitation 7 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471016)	due by 11:59pm
	 Module 9 Quiz 1 - Wave Properties (https://rutgers.instructure.com/courses/330609/assignments/3470799)	due by 11:59pm
	 Module 9 Quiz 2 - Transverse and Longitudinal Waves (https://rutgers.instructure.com/courses/330609/assignments/3470780)	due by 11:59pm
	 Module 9 Quiz 3 - Wave Equation and Derivatives (https://rutgers.instructure.com/courses/330609/assignments/3470770)	due by 11:59pm
	 Module 9 Quiz 4 - Energy and Power of Waves (https://rutgers.instructure.com/courses/330609/assignments/3470788)	due by 11:59pm
	 Module 9 Quiz 5 - Superposition and Interference of Waves (https://rutgers.instructure.com/courses/330609/assignments/3470775)	due by 11:59pm
	 Module 9 Quiz 6 - Reflection of Waves and Standing Waves (https://rutgers.instructure.com/courses/330609/assignments/3470794)	due by 11:59pm
Thu Mar 27, 2025	 Module 9 Video 1 - Basic Properties of Waves	to do: 11:59pm
	 Module 9 Video 2 - Longitudinal and Surface Waves	to do: 11:59pm
	 Module 9 Video 3 - the Wave Equation	to do: 11:59pm
	 Module 9 Video 4 - Energy and Power of Waves	to do: 11:59pm
	 Module 9 Video 5 - Superposition and Interference of Waves	to do: 11:59pm
	 Module 9 Video 6 - Reflection of Waves and Standing Waves	to do: 11:59pm
Fri Mar 28, 2025	 Tutorial 9 - Mechanical Waves (https://rutgers.instructure.com/courses/330609/assignments/3471035)	due by 11:59pm
	 Mini-Exam 3 (Modules 6,7) - 4 questions, 20 minutes (https://rutgers.instructure.com/courses/330609/assignments/3470765)	due by 11:59pm
Sat Mar 29, 2025	 Homework 8 - Harmonic Oscillator (https://rutgers.instructure.com/courses/330609/assignments/3470823)	due by 11:59pm



















Date	Details	Due
Wed Apr 2, 2025	 Recitation 8 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471017)	due by 11:59pm
	 Mock Midterm Participation (https://rutgers.instructure.com/courses/330609/assignments/3475686)	due by 11:59pm
	 Module 10 Quiz 1 - Standing Sound Waves (https://rutgers.instructure.com/courses/330609/assignments/3470805)	due by 11:59pm
	 Module 10 Quiz 2 - Interference (path length difference) (https://rutgers.instructure.com/courses/330609/assignments/3470763)	due by 11:59pm
Thu Apr 3, 2025	 Module 10 Video 1 - Sound Origins and Properties	to do: 11:59pm
	 Module 10 Video 2 - Spherical Waves and Interference	to do: 11:59pm
	 Tutorial 10 - Standing Sound Waves (https://rutgers.instructure.com/courses/330609/assignments/3471024)	due by 11:59pm
	 Homework 9 - Mechanical Waves (https://rutgers.instructure.com/courses/330609/assignments/3470824)	due by 11:59pm
Sat Apr 5, 2025	 Rec 9 PlayPosit Worksheet 1 (video 1 of 4) (https://rutgers.instructure.com/courses/330609/assignments/3475478)	due by 11:59pm
	 Rec 9 PlayPosit Worksheet 4 (video 3 of 4) (https://rutgers.instructure.com/courses/330609/assignments/3479776)	due by 11:59pm
	 Rec 9 PlayPosit Worksheet 5 (video 4 of 4) (https://rutgers.instructure.com/courses/330609/assignments/3479778)	due by 11:59pm
	 Rec 9 PlayPosit Worksheets 2+3 (video 2 of 4) (https://rutgers.instructure.com/courses/330609/assignments/3479775)	due by 11:59pm
Thu Apr 10, 2025	 Module 11 Quiz 1 - Sound Intensity and Intensity Level (dB) (https://rutgers.instructure.com/courses/330609/assignments/3470787)	due by 11:59pm
	 Module 11 Quiz 2 - Doppler Effect (https://rutgers.instructure.com/courses/330609/assignments/3470782)	due by 11:59pm
	 Module 11 Video 1 - Intensity, Decibels (dB)	to do: 11:59pm
	 Module 11 Video 2 - Doppler Effect	to do: 11:59pm
Sat Apr 12, 2025	 Tutorial 11 - Sound Intensity, Doppler Effect (https://rutgers.instructure.com/courses/330609/assignments/3471025)	due by 11:59pm
	 Homework 10 - Standing Sound Waves (https://rutgers.instructure.com/courses/330609/assignments/3470813)	due by 11:59pm
Wed Apr 16, 2025	 Recitation 10 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471007)	due by 11:59pm
Thu Apr 17, 2025	 Module 12 Quiz 1 - Light (https://rutgers.instructure.com/courses/330609/assignments/3470800)	due by 11:59pm
	 Module 12 Quiz 2 - Mirrors and Images (https://rutgers.instructure.com/courses/330609/assignments/3470789)	due by 11:59pm


















Date	Details	Due
	 Module 12 Quiz 3 - Spherical Mirrors (https://rutgers.instructure.com/courses/330609/assignments/3470806)	due by 11:59pm
	 Module 12 Video 1 - Light	to do: 11:59pm
	 Module 12 Video 2 - Mirrors and Images	to do: 11:59pm
	 Module 12 Video 3 - Spherical Mirrors, focal point, magnification	to do: 11:59pm
	 Tutorial 12 - Light Reflection, Mirrors (https://rutgers.instructure.com/courses/330609/assignments/3471026)	due by 11:59pm
Sat Apr 19, 2025	 Homework 11 - Sound Intensity, Doppler Effect (https://rutgers.instructure.com/courses/330609/assignments/3470814)	due by 11:59pm
Mon Apr 21, 2025	 Mini-Exam 4 (Modules 8,9,10,11) - 8 questions, 40 minutes (https://rutgers.instructure.com/courses/330609/assignments/3470777)	due by 11:59pm
Wed Apr 23, 2025	 Recitation 11 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471008)	due by 11:59pm
	 Module 13 Quiz 1 - Refraction (https://rutgers.instructure.com/courses/330609/assignments/3470774)	due by 11:59pm
	 Module 13 Quiz 2 - Thin Lenses (https://rutgers.instructure.com/courses/330609/assignments/3470792)	due by 11:59pm
	 Module 13 Quiz 3 - Images from Lenses (https://rutgers.instructure.com/courses/330609/assignments/3470773)	due by 11:59pm
	 Module 13 Quiz 4 - Multiple Lenses and the Eye (https://rutgers.instructure.com/courses/330609/assignments/3470803)	due by 11:59pm
Thu Apr 24, 2025	 Module 13 Video 1 - Refraction	to do: 11:59pm
	 Module 13 Video 2 - Thin Lenses	to do: 11:59pm
	 Module 13 Video 3 - Images from Lenses	to do: 11:59pm
	 Module 13 Video 4 - Multiple Lenses and the Eye	to do: 11:59pm
	 Tutorial 13 - Light Refraction, Lenses, Vision (https://rutgers.instructure.com/courses/330609/assignments/3471027)	due by 11:59pm
Sat Apr 26, 2025	 Homework 12 - Light Reflection, Mirrors (https://rutgers.instructure.com/courses/330609/assignments/3470815)	due by 11:59pm
Wed Apr 30, 2025	 Recitation 12 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471009)	due by 11:59pm
Sat May 3, 2025	 Homework 13 - Light Refraction, Lenses, Vision (https://rutgers.instructure.com/courses/330609/assignments/3470816)	due by 11:59pm
Wed May 7, 2025	 Mini-Exam 5 (Modules 12,13) - 5 questions, 30 minutes (https://rutgers.instructure.com/courses/330609/assignments/3470783)	due by 11:59pm
	 Recitation 13 Grade (for TAs only) (https://rutgers.instructure.com/courses/330609/assignments/3471010)	due by 11:59pm


















Date	Details	Due
Mon May 12, 2025	 Mini-Exam 1 PlayPosit Review (https://rutgers.instructure.com/courses/330609/assignments/3470829)	due by 11:59pm
	 Mini-Exam 2 PlayPosit Review (https://rutgers.instructure.com/courses/330609/assignments/3470831)	due by 11:59pm
	 Mini-Exam 3 PlayPosit Review (https://rutgers.instructure.com/courses/330609/assignments/3470833)	due by 11:59pm
	 Mini-Exam 4 PlayPosit Review (https://rutgers.instructure.com/courses/330609/assignments/3470835)	due by 11:59pm
	 Mini-Exam 5 PlayPosit Review (https://rutgers.instructure.com/courses/330609/assignments/3470837)	due by 11:59pm
Tue May 13, 2025	 Practice Final Exam (44 questions, no time limit, unlimited attempts. NOT FOR CREDIT) (https://rutgers.instructure.com/courses/330609/assignments/3470790)	due by 11:59pm
Thu May 15, 2025	 ExamFin Score (out of 31) (https://rutgers.instructure.com/courses/330609/assignments/3470811)	due by 11:59pm
	 124 Mock Midterm PlayPosit Q1-4 (https://rutgers.instructure.com/courses/330609/assignments/3493601)	
	 124 Mock Midterm PlayPosit Q12-15 (https://rutgers.instructure.com/courses/330609/assignments/3493616)	
	 124 Mock Midterm PlayPosit Q5-7 (https://rutgers.instructure.com/courses/330609/assignments/3493602)	
	 124 Mock Midterm PlayPosit Q8-11 (https://rutgers.instructure.com/courses/330609/assignments/3493607)	
	 Lecture and PlayPosit Survey 0.5% (https://rutgers.instructure.com/courses/330609/assignments/3686360)	
	 Mini-Exam 1 PlayPosit Review NO CREDIT (https://rutgers.instructure.com/courses/330609/assignments/3470830)	
	 Mini-Exam 2 PlayPosit Review NO CREDIT (https://rutgers.instructure.com/courses/330609/assignments/3470832)	
	 Mini-Exam 3 PlayPosit Review NO CREDIT (https://rutgers.instructure.com/courses/330609/assignments/3470834)	
	 Mini-Exam 4 PlayPosit Review NO CREDIT (https://rutgers.instructure.com/courses/330609/assignments/3470836)	
	 Mini-Exam 5 PlayPosit Review NO CREDIT (https://rutgers.instructure.com/courses/330609/assignments/3470838)	
	 Mock Midterm Score (not for credit) (https://rutgers.instructure.com/courses/330609/assignments/3646501)	
	 PHY-123 Practice Final (Mod. 8-12) - 18 questions, Unlimited attempts (https://rutgers.instructure.com/courses/330609/assignments/3470853)	
	 PlayPosit Lecture 1.1 - Rotational Quantities and Sign Conventions (https://rutgers.instructure.com/courses/330609/assignments/3470858)	


















Date	Details	Due
	 PlayPosit Lecture 1.1 - Units and Orders of Magnitude (https://rutgers.instructure.com/courses/330609/assignments/3470859)	
	 PlayPosit Lecture 1.2 - Cross Product Review (https://rutgers.instructure.com/courses/330609/assignments/3470860)	
	 PlayPosit Lecture 1.2 - Measurement, Accuracy, and Precision (https://rutgers.instructure.com/courses/330609/assignments/3470861)	
	 PlayPosit Lecture 1.3 - Right Hand Rule and Cross Products (https://rutgers.instructure.com/courses/330609/assignments/3470862)	
	 PlayPosit Lecture 1.3 - Sig Fig Counting and Operations (https://rutgers.instructure.com/courses/330609/assignments/3470863)	
	 PlayPosit Lecture 1.3+1.4 - Rotational Vectors, Right Hand Rule, Signs Revisited (https://rutgers.instructure.com/courses/330609/assignments/3470864)	
	 PlayPosit Lecture 1.4 - Units, Dimensional Analysis, and Conversions (https://rutgers.instructure.com/courses/330609/assignments/3470865)	
	 PlayPosit Lecture 1.5 - Advanced Topics: Polar Coordinates and Unit Vectors (https://rutgers.instructure.com/courses/330609/assignments/3470866)	
	 PlayPosit Lecture 10.1 - Intro to Momentum and Impulse (https://rutgers.instructure.com/courses/330609/assignments/3470867)	
	 PlayPosit Lecture 10.1 - Sound and Interference Intro (https://rutgers.instructure.com/courses/330609/assignments/3470868)	
	 PlayPosit Lecture 10.2 - Impulse Examples (air bags, crumple zones) (https://rutgers.instructure.com/courses/330609/assignments/3470869)	
	 PlayPosit Lecture 10.2 - Interference by Path Length Difference (https://rutgers.instructure.com/courses/330609/assignments/3470870)	
	 PlayPosit Lecture 10.3 - Single Object Collisions (Bouncing Balls Demo) (https://rutgers.instructure.com/courses/330609/assignments/3470871)	
	 PlayPosit Lecture 10.3 - Standing Wave on String and Harmonics (https://rutgers.instructure.com/courses/330609/assignments/3470872)	
	 PlayPosit Lecture 10.4 - Air Column Resonance and Boundary Conditions (https://rutgers.instructure.com/courses/330609/assignments/3470873)	
	 PlayPosit Lecture 10.4 - Impulse with Varying Force (https://rutgers.instructure.com/courses/330609/assignments/3470874)	

Date	Details	Due
	 PlayPosit Lecture 10.5 - Momentum Conservation and 1D Collisions (https://rutgers.instructure.com/courses/330609/assignments/3470875)	
	 PlayPosit Lecture 10.6 - Center of Mass Position and Velocity in 1D (https://rutgers.instructure.com/courses/330609/assignments/3470876)	
	 PlayPosit Lecture 11.1 - Center of Mass Position in 2D (https://rutgers.instructure.com/courses/330609/assignments/3470877)	
	 PlayPosit Lecture 11.1 - Sound Intensity (https://rutgers.instructure.com/courses/330609/assignments/3470878)	
	 PlayPosit Lecture 11.2 - Collisions and Momentum Conservation in 2D (https://rutgers.instructure.com/courses/330609/assignments/3470879)	
	 PlayPosit Lecture 11.2 - Decibel Scale for Loudness (https://rutgers.instructure.com/courses/330609/assignments/3470880)	
	 PlayPosit Lecture 11.3 - Conservation of Energy and Momentum Applications (https://rutgers.instructure.com/courses/330609/assignments/3470881)	
	 PlayPosit Lecture 11.3 - Doppler Effect (https://rutgers.instructure.com/courses/330609/assignments/3470882)	
	 PlayPosit Lecture 11.4 - Conservation Laws of Explosions! (https://rutgers.instructure.com/courses/330609/assignments/3470883)	
	 PlayPosit Lecture 11.4 - Doppler Effect Usage and Innovations (not on exam) (https://rutgers.instructure.com/courses/330609/assignments/3470884)	
	 PlayPosit Lecture 11.5 - Rocket Propulsion Cart Demo (https://rutgers.instructure.com/courses/330609/assignments/3470885)	
	 PlayPosit Lecture 12.1 - Light Intro (https://rutgers.instructure.com/courses/330609/assignments/3470886)	
	 PlayPosit Lecture 12.1 - Universal Gravitation Intro (https://rutgers.instructure.com/courses/330609/assignments/3470887)	
	 PlayPosit Lecture 12.2 - Gravitational Force in 1D and 2D (https://rutgers.instructure.com/courses/330609/assignments/3470888)	
	 PlayPosit Lecture 12.2 - Plane Mirrors and Images (https://rutgers.instructure.com/courses/330609/assignments/3470889)	
	 PlayPosit Lecture 12.3 - Concave and Convex Mirrors (https://rutgers.instructure.com/courses/330609/assignments/3470890)	
	 PlayPosit Lecture 12.3 - Gravity for Circular Orbits (https://rutgers.instructure.com/courses/330609/assignments/3470891)	


















Date	Details	Due
	 PlayPosit Lecture 12.4 - Gravitational Potential Energy Revisited (https://rutgers.instructure.com/courses/330609/assignments/3470892)	
	 PlayPosit Lecture 12.4 - Magnification (https://rutgers.instructure.com/courses/330609/assignments/3470893)	
	 PlayPosit Lecture 12.5 - Escape Velocity (https://rutgers.instructure.com/courses/330609/assignments/3470894)	
	 PlayPosit Lecture 12.5 - Ray Tracing Diagrams, Note about Assumptions (https://rutgers.instructure.com/courses/330609/assignments/3470895)	
	 PlayPosit Lecture 12.6 - Advanced Topics in Gravitation (not on exams) (https://rutgers.instructure.com/courses/330609/assignments/3470896)	
	 PlayPosit Lecture 13.1 - Refraction, Snell's Law (https://rutgers.instructure.com/courses/330609/assignments/3470897)	
	 PlayPosit Lecture 13.2 - Total Internal Reflection and Fiber Optics (https://rutgers.instructure.com/courses/330609/assignments/3470898)	
	 PlayPosit Lecture 13.3 - Thin Lens Concepts and Ray Tracing (https://rutgers.instructure.com/courses/330609/assignments/3470899)	
	 PlayPosit Lecture 13.4 - Image Formation by 1 or 2 Lenses (https://rutgers.instructure.com/courses/330609/assignments/3470900)	
	 PlayPosit Lecture 13.5 - Eye Function and Optical Power (https://rutgers.instructure.com/courses/330609/assignments/3470901)	
	 PlayPosit Lecture 13.6 - Vision Correction Analysis (https://rutgers.instructure.com/courses/330609/assignments/3470902)	
	 PlayPosit Lecture 2.1 - Position, Distance, and Displacement (https://rutgers.instructure.com/courses/330609/assignments/3470903)	
	 PlayPosit Lecture 2.1 - Torque intro and sign convention (https://rutgers.instructure.com/courses/330609/assignments/3470904)	
	 PlayPosit Lecture 2.2 - Lever Arm (https://rutgers.instructure.com/courses/330609/assignments/3470905)	
	 PlayPosit Lecture 2.2 - Speed and Velocity (https://rutgers.instructure.com/courses/330609/assignments/3470906)	
	 PlayPosit Lecture 2.3 - Speed and Velocity: Graphical Interpretation (https://rutgers.instructure.com/courses/330609/assignments/3470907)	
	 PlayPosit Lecture 2.3 - Static Equilibrium Conditions (https://rutgers.instructure.com/courses/330609/assignments/3470908)	
	 PlayPosit Lecture 2.4 - Acceleration Intro (https://rutgers.instructure.com/courses/330609/assignments/3470909)	

















Date	Details	Due
	 PlayPosit Lecture 2.4 - Static Equilibrium See-Saw https://rutgers.instructure.com/courses/330609/assignments/3470910	
	 PlayPosit Lecture 2.5 - Acceleration: Speeding Up and Slowing Down https://rutgers.instructure.com/courses/330609/assignments/3470911	
	 PlayPosit Lecture 2.5 - Static Equilibrium Ladder Problem https://rutgers.instructure.com/courses/330609/assignments/3470912	
	 PlayPosit Lecture 2.6 - Acceleration Walk-Thru Question https://rutgers.instructure.com/courses/330609/assignments/3470913	
	 PlayPosit Lecture 2.6 - Static Equilibrium Hinges and Tensions https://rutgers.instructure.com/courses/330609/assignments/3470914	
	 PlayPosit Lecture 2.7 - Rates of Change using Derivatives https://rutgers.instructure.com/courses/330609/assignments/3470915	
	 PlayPosit Lecture 2.8 - Integrals and Area Under the Curve https://rutgers.instructure.com/courses/330609/assignments/3470916	
	 PlayPosit Lecture 3.1 - Moment of Inertia https://rutgers.instructure.com/courses/330609/assignments/3470917	
	 PlayPosit Lecture 3.1 - Scalar and Vector Properties https://rutgers.instructure.com/courses/330609/assignments/3470918	
	 PlayPosit Lecture 3.2 - Newton's Laws for Rotation Intro https://rutgers.instructure.com/courses/330609/assignments/3470919	
	 PlayPosit Lecture 3.2 - Vector Multiplication by Scalars https://rutgers.instructure.com/courses/330609/assignments/3470920	
	 PlayPosit Lecture 3.3 - Atwood's Machine and Rotational Acceleration https://rutgers.instructure.com/courses/330609/assignments/3470921	
	 PlayPosit Lecture 3.3 - Unit Vectors and Vector Sums https://rutgers.instructure.com/courses/330609/assignments/3470922	
	 PlayPosit Lecture 3.4 - Freely Moving Objects https://rutgers.instructure.com/courses/330609/assignments/3470923	
	 PlayPosit Lecture 3.4 - Graphical Addition of Vectors Walk-Thru https://rutgers.instructure.com/courses/330609/assignments/3470924	
	 PlayPosit Lecture 3.5 - Dot Product of Two Vectors https://rutgers.instructure.com/courses/330609/assignments/3470925	
	 PlayPosit Lecture 3.6 - Vector Cross Products https://rutgers.instructure.com/courses/330609/assignments/3470926	









Date	Details	Due
	 PlayPosit Lecture 4.1 - Intro Rotational KE, Work, Power (https://rutgers.instructure.com/courses/330609/assignments/3470927)	
	 PlayPosit Lecture 4.1 - Motion in Multiple Dimensions (https://rutgers.instructure.com/courses/330609/assignments/3470928)	
	 PlayPosit Lecture 4.2 - Cons. of Energy with Rotations (https://rutgers.instructure.com/courses/330609/assignments/3470929)	
	 PlayPosit Lecture 4.2 - Free Fall and Projectile Motion Observations (https://rutgers.instructure.com/courses/330609/assignments/3470930)	
	 PlayPosit Lecture 4.3 - Projectile Motion Horizontal Launch Practice (https://rutgers.instructure.com/courses/330609/assignments/3470931)	
	 PlayPosit Lecture 4.3 - Rolling Conditions (https://rutgers.instructure.com/courses/330609/assignments/3470932)	
	 PlayPosit Lecture 4.4 (updated) - Projectile Motion Launching at Angle (https://rutgers.instructure.com/courses/330609/assignments/3470933)	
	 PlayPosit Lecture 4.4 - Kinetic Energy Distribution for Rolling (https://rutgers.instructure.com/courses/330609/assignments/3470934)	
	 PlayPosit Lecture 4.5 - Automobile Tires and Kinetic Energy (https://rutgers.instructure.com/courses/330609/assignments/3470935)	
	 PlayPosit Lecture 4.5 - Projectile Motion Golf Problem Walk-Thru (https://rutgers.instructure.com/courses/330609/assignments/3470936)	
	 PlayPosit Lecture 4.6 - Relative Velocity in 1D (https://rutgers.instructure.com/courses/330609/assignments/3470937)	
	 PlayPosit Lecture 4.7 - Relative Velocity in 2D (boat on river) (https://rutgers.instructure.com/courses/330609/assignments/3470938)	
	 PlayPosit Lecture 5.1 - Angular Momentum and Impulse (https://rutgers.instructure.com/courses/330609/assignments/3470939)	
	 PlayPosit Lecture 5.1 - Intro to Forces (https://rutgers.instructure.com/courses/330609/assignments/3470940)	
	 PlayPosit Lecture 5.2 - Angular Momentum of 1- and 2-Object Systems (https://rutgers.instructure.com/courses/330609/assignments/3470941)	
	 PlayPosit Lecture 5.2 - Newton's 1st and 2nd Law: Observations (https://rutgers.instructure.com/courses/330609/assignments/3470942)	
	 PlayPosit Lecture 5.3 - Newton's 2nd Law Vector Sum and Normal Force Practice (https://rutgers.instructure.com/courses/330609/assignments/3470943)	

Date	Details	Due
	 PlayPosit Lecture 5.3 - Rotational Collisions Intro (https://rutgers.instructure.com/courses/330609/assignments/3470944)	
	 PlayPosit Lecture 5.4 - Linear and Rotational Collisions (https://rutgers.instructure.com/courses/330609/assignments/3470945)	
	 PlayPosit Lecture 5.4 - Newton's 3rd Law and Force Diagrams (https://rutgers.instructure.com/courses/330609/assignments/3470946)	
	 PlayPosit Lecture 5.5 - Newton's Laws Problem Solving Steps (https://rutgers.instructure.com/courses/330609/assignments/3470947)	
	 PlayPosit Lecture 5.5 - Stability, Gyroscope, and Hubble Positioning (https://rutgers.instructure.com/courses/330609/assignments/3470948)	
	 PlayPosit Lecture 5.6 - Newton's Laws Walk-Thru Example and More Practice (https://rutgers.instructure.com/courses/330609/assignments/3470949)	
	 PlayPosit Lecture 5.7 - Inertial and Non-Inertial Reference Frames (https://rutgers.instructure.com/courses/330609/assignments/3470950)	
	 PlayPosit Lecture 6.1 - Force Diagram Review (https://rutgers.instructure.com/courses/330609/assignments/3470951)	
	 PlayPosit Lecture 6.1 - Intro to Fluids and Pressure (https://rutgers.instructure.com/courses/330609/assignments/3470952)	
	 PlayPosit Lecture 6.2 - Pressure and Human Physiology (https://rutgers.instructure.com/courses/330609/assignments/3470953)	
	 PlayPosit Lecture 6.2 - Tension Force (https://rutgers.instructure.com/courses/330609/assignments/3470954)	
	 PlayPosit Lecture 6.3 - Friction Introduction (https://rutgers.instructure.com/courses/330609/assignments/3470955)	
	 PlayPosit Lecture 6.3 - Hydraulic Lifts (https://rutgers.instructure.com/courses/330609/assignments/3470956)	
	 PlayPosit Lecture 6.4 - Buoyancy Force, Density, Sinking, and Floating (https://rutgers.instructure.com/courses/330609/assignments/3470957)	
	 PlayPosit Lecture 6.4 - Inclined Planes Coordinates and Geometry (https://rutgers.instructure.com/courses/330609/assignments/3470958)	
	 PlayPosit Lecture 6.5 - Buoyancy Force Conceptual Questions (https://rutgers.instructure.com/courses/330609/assignments/3470959)	
	 PlayPosit Lecture 6.5 - Inclined Plane with Friction Stationary Object Walk-Thru (https://rutgers.instructure.com/courses/330609/assignments/3470960)	



Date	Details	Due
	 PlayPosit Lecture 6.6 - Inclined Plane with Friction Accelerating Object Walk-Thru (https://rutgers.instructure.com/courses/330609/assignments/3470961)	
	 PlayPosit Lecture 7.1 - Laminar and Turbulent Flows (https://rutgers.instructure.com/courses/330609/assignments/3470962)	
	 PlayPosit Lecture 7.1 - Rotational Vectors and Formal Definitions (https://rutgers.instructure.com/courses/330609/assignments/3470963)	
	 PlayPosit Lecture 7.2 - Continuity Equation and Volume Flow Rate (https://rutgers.instructure.com/courses/330609/assignments/3470964)	
	 PlayPosit Lecture 7.2 - UCM Position, Velocity, and Acceleration (https://rutgers.instructure.com/courses/330609/assignments/3470965)	
	 PlayPosit Lecture 7.3 - Observations of Bernoulli's Principle (https://rutgers.instructure.com/courses/330609/assignments/3470966)	
	 PlayPosit Lecture 7.3 - Uniform Circular Motion: Centripetal Force (https://rutgers.instructure.com/courses/330609/assignments/3470967)	
	 PlayPosit Lecture 7.4 - Bernoulli's Equation Applications (https://rutgers.instructure.com/courses/330609/assignments/3470968)	
	 PlayPosit Lecture 7.4 - UCM Applications: Vertical Circles and Rollercoasters (https://rutgers.instructure.com/courses/330609/assignments/3470969)	
	 PlayPosit Lecture 7.5 - Bernoulli's and Continuity Equations Combined (https://rutgers.instructure.com/courses/330609/assignments/3470970)	
	 PlayPosit Lecture 7.5 - UCM Applications: Banked Curves (https://rutgers.instructure.com/courses/330609/assignments/3470971)	
	 PlayPosit Lecture 8.1 - Harmonic Oscillator Differential Equation (https://rutgers.instructure.com/courses/330609/assignments/3470972)	
	 PlayPosit Lecture 8.1 - Intro to Energy and Work (https://rutgers.instructure.com/courses/330609/assignments/3470973)	
	 PlayPosit Lecture 8.2 - Angular Frequency (ω) (https://rutgers.instructure.com/courses/330609/assignments/3470974)	
	 PlayPosit Lecture 8.2 - Definition of Work and Guided Examples (https://rutgers.instructure.com/courses/330609/assignments/3470975)	
	 PlayPosit Lecture 8.3 - Lifting a Box, Area under Curve, and Circular Motion (https://rutgers.instructure.com/courses/330609/assignments/3470976)	
	 PlayPosit Lecture 8.3 - Phase Shift (ϕ) (https://rutgers.instructure.com/courses/330609/assignments/3470977)	

Date	Details	Due
	 PlayPosit Lecture 8.4 - Choice of System and Surroundings (https://rutgers.instructure.com/courses/330609/assignments/3470978)	
	 PlayPosit Lecture 8.4 - Math and Graph Representations of Oscillators (https://rutgers.instructure.com/courses/330609/assignments/3470979)	
	 PlayPosit Lecture 8.5 - Work done by Friction Guided Walk-Thru Problem (https://rutgers.instructure.com/courses/330609/assignments/3470980)	
	 PlayPosit Lecture 8.5 - x, v, and a for harmonic oscillator (https://rutgers.instructure.com/courses/330609/assignments/3470981)	
	 PlayPosit Lecture 8.6 - Energy of Harmonic Oscillators (https://rutgers.instructure.com/courses/330609/assignments/3470982)	
	 PlayPosit Lecture 8.6 - Work and Kinetic Energy in 3D (https://rutgers.instructure.com/courses/330609/assignments/3470983)	
	 PlayPosit Lecture 8.7 - Power (https://rutgers.instructure.com/courses/330609/assignments/3470984)	
	 PlayPosit Lecture 8.7 - Simple Pendulum and Other Pendula (https://rutgers.instructure.com/courses/330609/assignments/3470985)	
	 PlayPosit Lecture 8.8 - Work and Energy. Conceptual Question Walk-Thru (https://rutgers.instructure.com/courses/330609/assignments/3470986)	
	 PlayPosit Lecture 9.1 - Gravitational Potential Energy (https://rutgers.instructure.com/courses/330609/assignments/3470987)	
	 PlayPosit Lecture 9.1 - Traveling Wave on String Intro and Speed (https://rutgers.instructure.com/courses/330609/assignments/3470988)	
	 PlayPosit Lecture 9.2 - Conservation of Energy. Intro (Dog Skate Park) (https://rutgers.instructure.com/courses/330609/assignments/3470989)	
	 PlayPosit Lecture 9.2 - Wave $y(x,t)$ interpretation and applications (https://rutgers.instructure.com/courses/330609/assignments/3470990)	
	 PlayPosit Lecture 9.3 - Potential Energy Calculus and Graphical Connections (https://rutgers.instructure.com/courses/330609/assignments/3470991)	
	 PlayPosit Lecture 9.3 - Wave Behavior at Loose or Fixed Ends (https://rutgers.instructure.com/courses/330609/assignments/3470992)	
	 PlayPosit Lecture 9.4 - Energy and Power of Wave on String (https://rutgers.instructure.com/courses/330609/assignments/3470993)	

Date	Details	Due
	<div><div></div><div>PlayPosit Lecture 9.4 - Spring Force (Hooke's Law) (https://rutgers.instructure.com/courses/330609/assignments/3470994)</div></div>	
	<div><div></div><div>PlayPosit Lecture 9.5 - Spring Force Question Guided Walk-Thru (https://rutgers.instructure.com/courses/330609/assignments/3470995)</div></div>	
	<div><div></div><div>PlayPosit Lecture 9.6 - Elastic Potential Energy (https://rutgers.instructure.com/courses/330609/assignments/3470996)</div></div>	
	<div><div></div><div>PlayPosit Lecture 9.7 - Conservative and Non-Conservative Forces Guided Example with Friction (https://rutgers.instructure.com/courses/330609/assignments/3470997)</div></div>	
	<div><div></div><div>PlayPosit Lecture 9.8 - Total Energy Demos and Extra Practice (https://rutgers.instructure.com/courses/330609/assignments/3470998)</div></div>	
	<div><div></div><div>Post-Survey 0.5% (https://rutgers.instructure.com/courses/330609/assignments/3471000)</div></div>	
	<div><div></div><div>Practice Midterm Exam (22 questions, no time limit, unlimited attempts, not for credit) (https://rutgers.instructure.com/courses/330609/assignments/3471003)</div></div>	
	<div><div></div><div>Pre-Survey 0.5% (https://rutgers.instructure.com/courses/330609/assignments/3471004)</div></div>	

