



Syllabus


9/5/2024







01:750:123 (PHY-123) Synopsis

Course Description: Analytical Physics IA is an introductory physics course which explores motion of objects with constant velocity and constant acceleration, special motions including projectile motion and uniform circular motion, Newton's Laws of motion including forces, Conservation of Energy, Conservation of Momentum, and Universal Gravitation.

There is no prerequisite physics coursework required, this is meant to be your first experience with formal physics work; however, you will be required to apply math skills such as proportional reasoning (for example, ratios), and algebra tactics (manipulating symbols, identifying variables, parameters, constants). Furthermore, this is a calculus-based physics course and you are expected to perform a few calculus skills such as power-law derivatives and integrals of simple polynomial functions, such as what you would have in any Calculus 1 course. We recognize that many of you are taking Calculus 1 this semester or are in pre-calc, and so in any situation 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, [OpenStax University Physics Volume 1](https://openstax.org/details/books/university-physics-volume-1) (<https://openstax.org/details/books/university-physics-volume-1>), which is **freely available online at the prior link (you don't need to pay anything to use this book)**, and you may download a pdf version at that link as well. If you wish to obtain a paper or hard-cover copy of the book, that will cost money due to printing costs (ranging from about \$20-50 for used or new, respectively), but [you can order one from Amazon](https://www.amazon.com/dp/1938168275/ref=as_li_ss_tl?ie=UTF8&linkCode=sl1&tag=openstax00-20&linkId=96d33a408aee4c7a0c46adee524c616e&language=en_US)  (https://www.amazon.com/dp/1938168275/ref=as_li_ss_tl?ie=UTF8&linkCode=sl1&tag=openstax00-20&linkId=96d33a408aee4c7a0c46adee524c616e&language=en_US) if you wish to do so though **you are not required to purchase a physical textbook copy, and my recommendation is to try the free or web-based book first**  and only order a physical copy if you feel you would learn better with the actual book in hand.

Below you will find the provisional weekly topic schedule, as well as links to the relevant textbook chapter. See [Course Calendar page](https://rutgers.instructure.com/courses/290007/pages/calendar-of-activities) (<https://rutgers.instructure.com/courses/290007/pages/calendar-of-activities>) or the [Modules page](https://rutgers.instructure.com/courses/290007/modules) (<https://rutgers.instructure.com/courses/290007/modules>) for more details. For a detailed list of the learning goals of this course, please see the [PHY-123 Learning Goals document](https://rutgers.instructure.com/courses/290007/files/40716139?wrap=1) (<https://rutgers.instructure.com/courses/290007/files/40716139?wrap=1>)  (https://docreader.readspeaker.com/docreader/?cid=8909&lang=en_us&url=https%3A%2F%2Finst-fs-iad-prod.inscloudgate.net%2Ffiles%2F9703206d-d1df-4a09-b2a6-8d5fff094aed%2F123%2520Learning%2520Goals%2520Final%2520Exam%2520%2528all%2520modules%2520

4	2D+3D Kinematics - Describing 2D and 3D motion	Ch. 4  (https://openstax.org/books/university-physics-volume-1/pages/4-introduction)
5	Dynamics - Newtons Laws	Ch. 5  (https://openstax.org/books/university-physics-volume-1/pages/5-introduction)
6	Applications of Newtons Laws: Friction	Ch. 6.1-6.2  (https://openstax.org/books/university-physics-volume-1/pages/6-introduction)
7	Applications of Newtons Laws: Centripetal Force and Circular Motion	Ch. 6.3  (https://openstax.org/books/university-physics-volume-1/pages/6-3-centripetal-force)
8	Kinetic Energy and Work	Ch. 7  (https://openstax.org/books/university-physics-volume-1/pages/7-introduction)
9	Potential Energy and Conservation of Energy	Ch. 8  (https://openstax.org/books/university-physics-volume-1/pages/8-introduction)
10	Linear Momentum and Impulse	Ch. 9.1-9.2  (https://openstax.org/books/university-physics-volume-1/pages/9-introduction)
11	Collisions and Conservation Laws	Ch. 9.3-9.7  (https://openstax.org/books/university-physics-volume-1/pages/9-3-conservation-of-linear-momentum)
12	Gravitation	Ch. 13.1-13.7  (https://openstax.org/books/university-physics-volume-1/pages/13-introduction)
13	Review	

- **We will have four Mini-Exams throughout the semester to act as mock-exams, which will be held online using Canvas and will be open for several days' time.** Please see the [Course Calendar page](#) (<https://rutgers.instructure.com/courses/290007/pages/calendar-of-activities>) for Mini-Exam scheduling.
- **An in-class (during recitation) midterm** will be held to give you an opportunity to have exam-like practice. This in-class midterm will count as recitation credit for that day, and

is graded on completion, not on correctness, so all you need to do is show up and try your best. Be sure to bring a calculator!

- **Final Exam (cumulative - all course content) will be held in-person** during the final exam period in December (a date has yet to be determined). Please see the Final Exam Prep Module (published in December) for details and on-campus location(s).

Course Information Page for Analytical Physics IA (01:750:123) Fall 2024

Instructor: Professor Charles ("Chaz") Ruggieri

Email: chazr AT physics.rutgers.edu

Summary of our Course:

An introductory calculus-based course in physics, aimed at students majoring in engineering or physics. This is the first part of a two semester sequence (with 01:750:124), which serve as a pre-requisite for 01:750:227.


Co-requisite: Precalc 115 (01:640:115) with ALEKS score of 76-84, **or** Calculus I (01:640:151). Note: If you are a School of Engineering student who placed into Precalc 115 with an ALEKS score of 75 or below, then the best physics course for you to take is PHY-115 (01:750:115) "Extended Analytical Physics 1A". This course (PHY-123) will primarily use basic arithmetic, algebra, and trigonometry. However, we will develop one or two calculus tools as if you have not seen those tools before, so even if you are not placed in calculus, you will still have the resources and guidance to learn the few calculus tools we will employ.

Class Meeting times (1 Weekly Lecture and 1 Weekly Recitation):

You will have lecture once per week for 80-minutes in one of the slots below depending on your registered course section:

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)  (<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.

Mask Requirements and COVID-19 protocol (as of August, 2024 - subject to change based on University policy updates): Masking policy is at the discretion of the class leader. For lecture sessions, masking is optional. For recitations, masking is optional unless your recitation leader sets an expectation of masking.


For more information on Rutgers' Covid-19 protocol, [please see this webpage](https://coronavirus.rutgers.edu/)  (<https://coronavirus.rutgers.edu/>).

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.

OpenStax University Physics Volume 1: <https://openstax.org/details/books/university-physics-volume-1>  (<https://openstax.org/details/books/university-physics-volume-1>)

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/290007/pages/expertta-sign-up-instructions) (<https://rutgers.instructure.com/courses/290007/pages/expertta-sign-up-instructions>), or  simply click on the first ExpertTA assignment in Module 0 (Introduction to ExpertTA) or the first graded ExpertTA assignment which is Tutorial 1 within Module 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 must always access ExpertTA assignments from the Tutorial or Homework links in Canvas Modules page 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.

Technology Requirements:

- A scientific or graphing calculator is needed for this class. You may use either type of calculator on the exam(s) as long as the calculator is NOT connected to internet.
- 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 except for a calculator; 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 [Welcome](https://rutgers.instructure.com/courses/290007/pages/welcome) (<https://rutgers.instructure.com/courses/290007/pages/welcome>) page and the [Office Hours](https://rutgers.instructure.com/courses/290007/pages/office-hours-times-and-information) (<https://rutgers.instructure.com/courses/290007/pages/office-hours-times-and-information>)_page)

 Instructor	Email	Section Number: Period (given as Busch Campus periods)
Prof. Chaz Ruggieri	chazr AT rutgers.edu	<p>Visit this page</p> <p>(https://rutgers.instructure.com/courses/290007/pages/slides-and-videos) for lecture slides</p>

Lecture is held in-person on Wed. Period 2, Fri. Periods 4 and 5, all in the Lecture Hall  [_ \(https://maps.rutgers.edu/#/?lat=40.522395&lng=-74.463489&selected=3562&sidebar=true&zoom=19\)](https://maps.rutgers.edu/#/?lat=40.522395&lng=-74.463489&selected=3562&sidebar=true&zoom=19)

Who to contact?

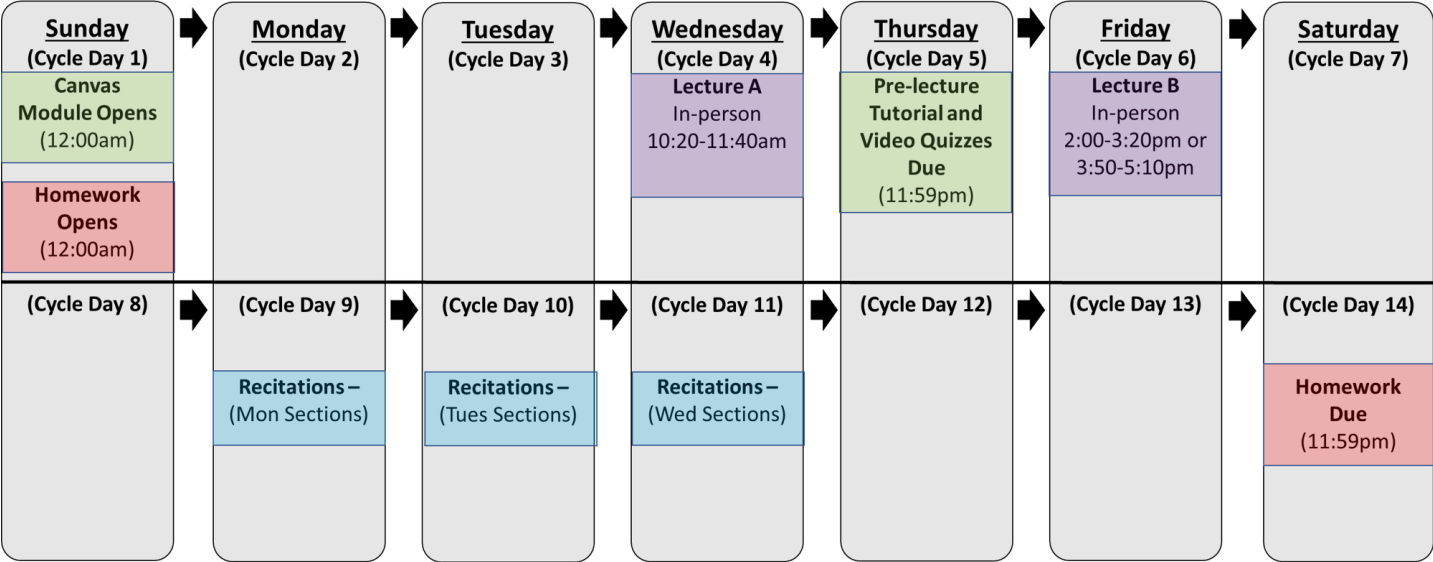
- If you have questions about Recitation, such as excused absences or grading questions, contact the TA of your section. If you have questions about Homework, go to any Office Hour session.
- If you have questions about Recitation experiences or leadership, such as concerns with your TA or your undergraduate LA, you may contact the lecturer (Prof. Chaz Ruggieri, at chazr@physics.rutgers.edu) [_ \(mailto:chazr@physics.rutgers.edu\)](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@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.

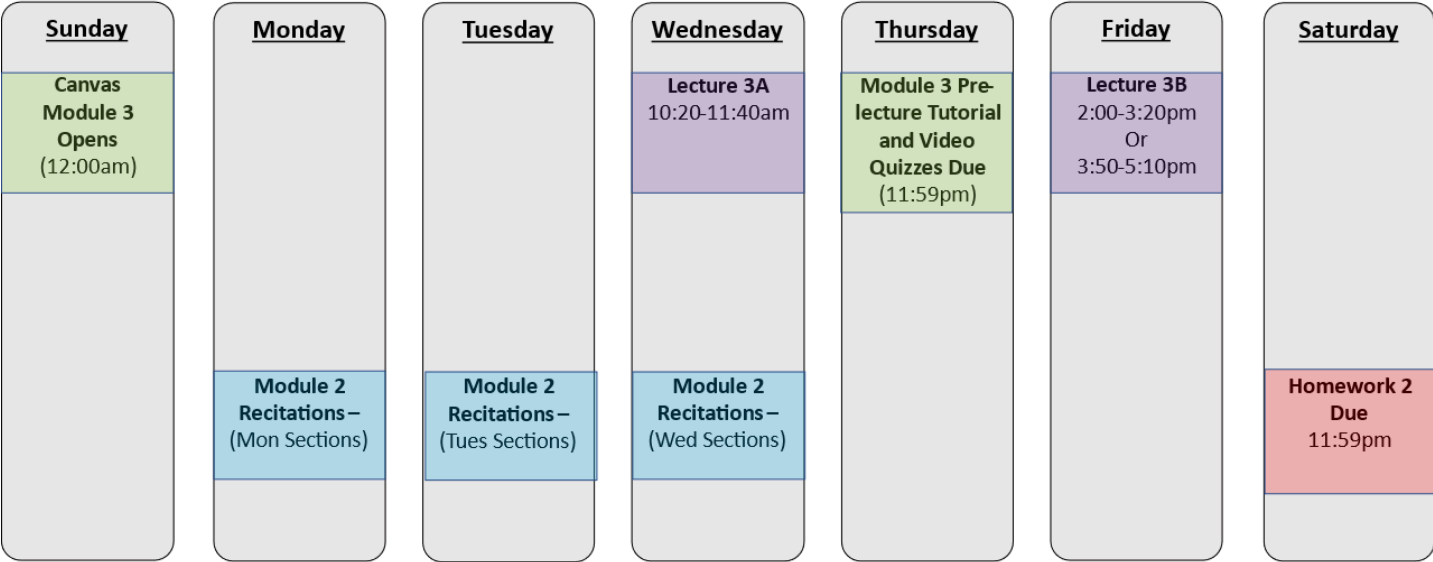
A Module opens every Sunday, each Module lasts two weeks' time. This means that starting with Module 2, you will be finishing up Module 1 recitations and homework at the same time you start Module 2 pre-lecture videos, video quizzes, and Tutorial. This half-module overlap continues throughout the semester, and the second image below shows what this overlap looks like as you finish Module 2 and start Module 3, 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/290007/pages/calendar-of-activities) [_ \(https://rutgers.instructure.com/courses/290007/pages/calendar-of-activities\)](https://rutgers.instructure.com/courses/290007/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).

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.

PHY-123 Weekly Activity Sequence (4 Steps)

Open: Sun. 12:00am
Due: Thurs. 11:59pm

Step 1: Introductory Canvas Modules and ExpertTA Tutorial

These are your introductory activities for a given unit of content to be completed remotely in the following order:

1a: Watch pre-lecture videos by Prof. Ransome



1b: Pre-lecture quizzes (due Thurs. 11:59pm)



1c: ExpertTA Tutorial (due Thurs. 11:59pm)



Wed. Period 2, Friday
Periods 4 and 5 (you only
attend one session)

Step 2: Lecture (in-person, Physics Lecture Hall)

Lectures will be based on content from the Canvas Modules in Step 1, and will go into greater depth than the videos and ExpertTA Tutorial.



The week following
Lecture

Step 3: Recitation Group Work

Recitation content will match Tutorial, Lecture, and Online Homework content. You will do group work for a group grade, submitted by the end of class.

3a: Attend Recitation in scheduled room



3b: Work in Groups of 2-3, submit Group Work to TA



3c: TA grades work, submits grade to Canvas, and gives feedback the next week



Open: Sun. 12:00am
Due: Sat. 11:59pm (13
days after opening)

Step 4: Online Homework (on ExpertTA)


Online homework goes into more depth on content from Steps 1, 2, and 3. You have opportunities for Hints and Feedbacks built in to the ExpertTA system which I encourage you to make full use of as you engage in the homeworks.

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

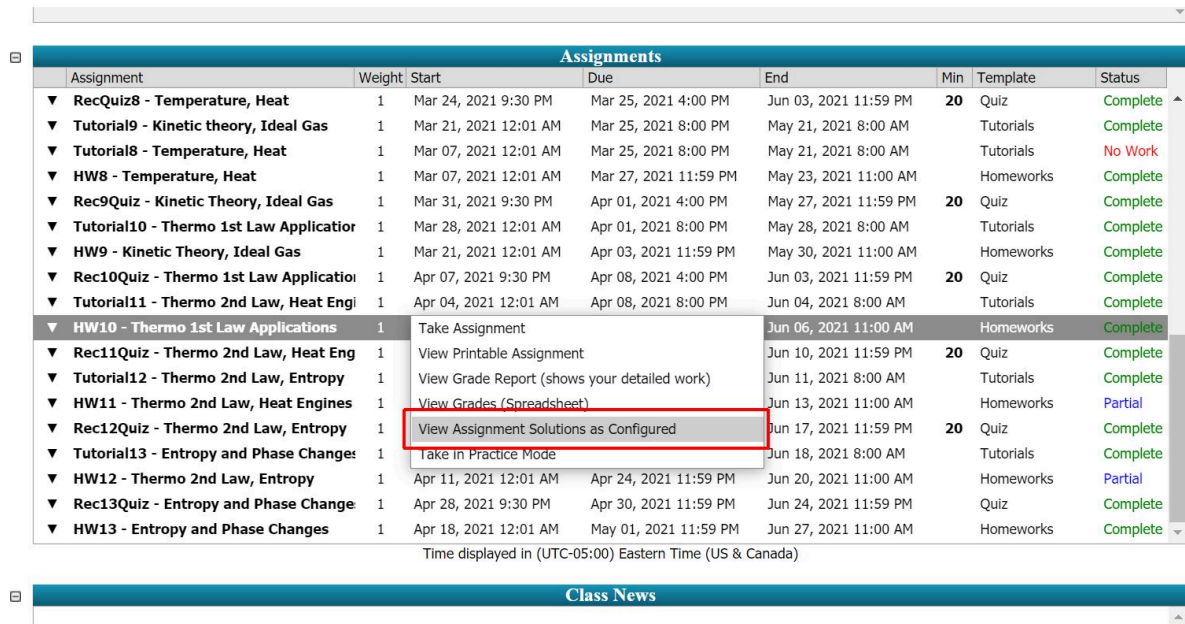
• Asynchronous Activities in ExpertTA and Canvas, and additional Resources:

- **Introductory videos and video quizzes** related to that week's material will be posted on Canvas to start each week's activities. The videos are followed by a short quiz, which you must attempt to get credit. These video quizzes are 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.
- **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/290007/pages/lecture-slides-and-videos) (<https://rutgers.instructure.com/courses/290007/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.



Assignments							
Assignment	Weight	Start	Due	End	Min	Template	Status
▼ RecQuiz8 - Temperature, Heat	1	Mar 24, 2021 9:30 PM	Mar 25, 2021 4:00 PM	Jun 03, 2021 11:59 PM	20	Quiz	Complete
▼ Tutorial9 - Kinetic theory, Ideal Gas	1	Mar 21, 2021 12:01 AM	Mar 25, 2021 8:00 PM	May 21, 2021 8:00 AM		Tutorials	Complete
▼ Tutorial8 - Temperature, Heat	1	Mar 07, 2021 12:01 AM	Mar 25, 2021 8:00 PM	May 21, 2021 8:00 AM		Tutorials	No Work
▼ HW8 - Temperature, Heat	1	Mar 07, 2021 12:01 AM	Mar 27, 2021 11:59 PM	May 23, 2021 11:00 AM		Homeworks	Complete
▼ Rec9Quiz - Kinetic Theory, Ideal Gas	1	Mar 31, 2021 9:30 PM	Apr 01, 2021 4:00 PM	May 27, 2021 11:59 PM	20	Quiz	Complete
▼ Tutorial10 - Thermo 1st Law Applicatio	1	Mar 28, 2021 12:01 AM	Apr 01, 2021 8:00 PM	May 28, 2021 8:00 AM		Tutorials	Complete
▼ HW9 - Kinetic Theory, Ideal Gas	1	Mar 21, 2021 12:01 AM	Apr 03, 2021 11:59 PM	May 30, 2021 11:00 AM		Homeworks	Complete
▼ Rec10Quiz - Thermo 1st Law Applicatio	1	Apr 07, 2021 9:30 PM	Apr 08, 2021 4:00 PM	Jun 03, 2021 11:59 PM	20	Quiz	Complete
▼ Tutorial11 - Thermo 2nd Law, Heat Engi	1	Apr 04, 2021 12:01 AM	Apr 08, 2021 8:00 PM	Jun 04, 2021 8:00 AM		Tutorials	Complete
▼ HW10 - Thermo 1st Law Applications	1	Take Assignment		Jun 06, 2021 11:00 AM		Homeworks	Complete
▼ Rec11Quiz - Thermo 2nd Law, Heat Eng	1	View Printable Assignment		Jun 10, 2021 11:59 PM	20	Quiz	Complete
▼ Tutorial12 - Thermo 2nd Law, Entropy	1	View Grade Report (shows your detailed work)		Jun 11, 2021 8:00 AM		Tutorials	Complete
▼ HW11 - Thermo 2nd Law, Heat Engines	1	View Grades (Spreadsheet)		Jun 13, 2021 11:00 AM		Homeworks	Partial
▼ Rec12Quiz - Thermo 2nd Law, Entropy	1	View Assignment Solutions as Configured		Jun 17, 2021 11:59 PM	20	Quiz	Complete
▼ Tutorial13 - Entropy and Phase Change	1	Take in Practice Mode		Jun 18, 2021 8:00 AM		Tutorials	Complete
▼ HW12 - Thermo 2nd Law, Entropy	1	Apr 11, 2021 12:01 AM	Apr 24, 2021 11:59 PM	Jun 20, 2021 11:00 AM		Homeworks	Partial
▼ Rec13Quiz - Entropy and Phase Change	1	Apr 28, 2021 9:30 PM	Apr 30, 2021 11:59 PM	Jun 24, 2021 11:59 PM		Quiz	Complete
▼ HW13 - Entropy and Phase Changes	1	Apr 18, 2021 12:01 AM	May 01, 2021 11:59 PM	Jun 27, 2021 11:00 AM		Homeworks	Complete

Time displayed in (UTC-05:00) Eastern Time (US & Canada)

Class News

- **Mini-Exams in Canvas** are timed (5 minutes per question), with just 1 attempt, graded on correctness, 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 in Canvas** are linked to a given Mini-Exam. These PlayPosit videos open up after you submit your one Mini-Exam attempt and are a way for you to earn back any lost credit from that Mini-Exam. I ask Canvas to compare the score on your PlayPosit to the score on the Mini-Exam and keep whichever one is higher (that is, drop the lower of the two scores), so even if you earn a low score on the Mini-Exam, you can still earn back all credit just by completing the PlayPosit. In that way, there's no risk to you trying your very best individual effort on the Mini-Exam, so please treat the Mini-Exams like actual exams and you'll get the most feedback possible from the experience on your current mastery level, which you can then use to inform your studying for the final 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. 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 Canvas Conferences 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/290007/pages/office-hours-times-and-information) (<https://rutgers.instructure.com/courses/290007/pages/office-hours-times-and-information>). 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 (4 Mini-Exams, 1 Mock Midterm Exam, 1 cumulative Final Exam)

- There are 4 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. Each Mini-Exam has an associated PlayPosit activity in which you can earn back any lost credit.
- Each in-person exam (mock midterm and final) will be held in-person at various locations around campus. The mock midterm is intended to be completed during one of the recitations, whereas the final exam is typically held in one of the gymnasiums, but that detailed information will be posted as the exams get closer.

- 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.
- Exams will be multiple choice, and you will have approximately 5-6 minutes per question for timing (about 15 questions for an 80 minute mock midterm exam, and about 30 questions for the 180 minute final exam).
- There will be 1 mock Midterm and 1 Final exam (cumulative)
- 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 exam procedures will be announced approximately two weeks ahead of each exam date.

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:

- 2 lowest Recitation Work submissions
- 2 lowest Homeworks

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



A	$\geq 90.0\%$
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	$\leq 49.9\%$

For all absence and lateness policies, [see our Absence and Lateness Policy page found here](https://rutgers.instructure.com/courses/290007/pages/absence-and-lateness-policies) (<https://rutgers.instructure.com/courses/290007/pages/absence-and-lateness-policies>), copied below for your convenience:

Absence and Lateness Policy for Recitations:

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](http://deanofstudents.rutgers.edu/)  (<http://deanofstudents.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/290007/pages/lecture-slides-and-videos)  (<https://rutgers.instructure.com/courses/290007/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) Other than the two homework extensions advertised in the Calendar of Activities page around our two midterm exams, there will not be any other homework assignment extensions. 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](http://deanofstudents.rutgers.edu/)  (<http://deanofstudents.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/>). 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
- Unauthorized collaboration
- 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/>).



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/>).

Click here to report a bias incident (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/>)

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.

Crisis Intervention : <http://health.rutgers.edu/medical-counseling-services/counseling/crisis-intervention/> ↗ (<http://health.rutgers.edu/medical-counseling-services/counseling/crisis-intervention/>)

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

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/ ↗ (<http://www.vpva.rutgers.edu/>)

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

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/>)