

PHY 1510 – INTRODUCTORY PHYSICS I & PHY 1610 – FUNDAMENTALS OF PHYSICS I

COURSE INFORMATION

PHY 1510, CRN 12527 & PHY 1610, CRN 12528

Winter 2021, 4 credit hours

Course format: Online, synchronous

Meeting days/time: TR 1:00-2:47 PM

Final Exam: April 27, 12:00-3:00 PM

Course (catalog) description: Classical mechanics and thermodynamics. For science, mathematics and engineering students.

Prerequisites: Score of 28 or higher on ACT mathematics exam; or score of 660 or higher on SAT mathematics exam; or MTH 1441 or equivalent; or MTH 1331 and MTH 1332; or placement above MTH 1441. MTH 1554 recommended.

Co-requisite for PHY 1510: PHY 1010 – General Physics Lab

PHY 1510 and PHY 1100 together satisfy the university general education requirement in the natural science and technology (NST) knowledge exploration area.

PHY 1610 does not satisfy the university general education requirement in the natural science and technology (NST) knowledge exploration area.

PROFESSOR INFORMATION

Name: Dr. Vasyl Tyberkevych

Office location: HHS 274

My student hours (office hours) are TR 11:00 AM-12:00 PM and by appointment. Office hours and appointments will be held virtually at <https://meet.google.com/jst-phhy-heb>.

You can reach me at tyberkev@oakland.edu or at (248) 370-3421.

Email is the best way to contact me. I will make every effort to return your email within 24 hours. If you would like to make an appointment for a videoconference, please send me email request and state your availability for the next 24 hours.

PROTECTING STUDENTS, FACULTY AND CAMPUS: IMPORTANT INFORMATION

Students must comply with the University mandated health protocols. For face-to-face classes, students must wear face coverings in the class and keep 6 feet apart from each other and from the professor. Students who are unable to wear a face covering should provide documentation of this to the Dean of Students office. If a student refuses to comply with this classroom requirement, the student will be reported to the Dean of Students and not allowed to return to the face-to-face classroom environment until an appropriate face covering is used. See the [Return to Campus](https://www.oakland.edu/return-to-campus/) website for up-to-date information. (URL: <https://www.oakland.edu/return-to-campus/>)

LEARNING OUTCOMES

By the end of the course students will be able to:

- Perform conversion of units, express results of calculations using correct units and correct number of significant figures
- Perform conversion of coordinates between rectangular and polar coordinates, find magnitude of a vector, angle between two vectors, add, subtract, and multiply vectors
- Apply kinematic relations for position, velocity, and acceleration to describe object's motion in one and two dimensions
- Identify forces acting on an object and apply Newton's laws to find the acceleration and trajectory of motion of an object
- Find the work done by a force and find kinetic and potential energy of an object
- Solve problems involving conversion of potential and kinetic energies
- Apply momentum conservation law to find the outcome of collisions
- Describe kinematics and dynamics of rotational motion of objects
- Mathematically describe simple harmonic motion in oscillating systems
- Apply the ideal gas law to find the temperature, pressure, and volume of gas
- Apply laws of thermodynamics to describe simple thermodynamic processes

GENERAL EDUCATION LEARNING OUTCOMES (FOR PHY 1510)

The learning outcomes for NST courses state that the student will demonstrate:

- Knowledge of major concepts from natural science or technology, including developing and testing of hypotheses, drawing conclusions; and reporting of findings and some laboratory experience or an effective substitute.
- How to evaluate sources of information in science and technology.

TEXTBOOKS AND MATERIALS

TEXTBOOK

- Serway/Jewett, Principles of Physics, 5th edition, Hybrid – Cengage
Bundled with WebAssign (mutli-term)
ISBN: 9781305586871 (required)
- *For students who choose just WebAssign and e-book:*
Access Card to Enhanced WebAssign (multi-term)
ISBN: 9781285858418 (required)
- Gordon/McGrew/Serway, Student Solutions Manual with Study Guide, Volume 1
ISBN: 9781133110767 (optional)

MOODLE

The Course Management System for this course is Moodle (moodle.oakland.edu). A lot of essential course materials will be posted on Moodle:

- Pre-recorded lecture blocks
- Lecture notes
- Links to synchronous lecture blocks
- Announcements, additional text and video materials, etc.

You are expected to be familiar with Moodle. To check how to login to Moodle, the Technical Requirements, and how to obtain Support, please go to <https://oakland.edu/online/resources/online-student-orientation/>.

WEBASSIGN

- The online program WebAssign (www.webassign.net) will be used for all homework assignments, tests, and the final exam
- Use of WebAssign requires the Access Card (purchased with the textbook)
- WebAssign Class Key: **oakland 1525 3106**
- Last page of this syllabus provides detailed WebAssign access instructions

SUPPLEMENTAL INSTRUCTION (TR, 12:00-12:55 PM; ONLINE)

Supplemental Instruction (SI) is provided by the Academic Skills Center on [eSpace](https://espace.oakland.edu/login/index.php) (<https://espace.oakland.edu/login/index.php>). The SI leader is a student who will review difficult concepts, discuss extra problems, and answer questions about the course material.

SI Leader: Katherine Harris (katherineharris@oakland.edu)

Participation in SI is not mandatory, but is strongly encouraged.

LABS

Students registered for PHY 1510 must also register for the General Physics Lab course PHY 1100. The labs are coordinated by Prof. K.C. Castoldi (castoldi@oakland.edu, HHS 162, (248) 370-4870). PHY 1100 is a completely independent course and all questions regarding the labs should be addressed to Prof. Castoldi.

TEACHING METHOD

Each lecture will consist of asynchronous and synchronous parts.

Asynchronous (pre-recorded) lecture block will mostly explain theoretical concepts with only a few examples of problem solutions. The duration of pre-recorded block will be approximately 1 hour. You are required to watch the pre-recorded part of a lecture, answer in-lecture quiz questions, and read the corresponding sections in the textbook before the beginning of the live lecture session. If you have any questions regarding the concepts explained in the lecture or problem solution methods, please ask me questions by e-mail.

During the synchronous (live) sessions I will answer the questions I received by e-mail and will go over several problem examples. You can also ask questions during the live sessions (“raise a hand” or post them in chat), but, given the size of the class and virtual nature of our communication, I may simply miss them. The duration of the synchronous part will be 30-45 minutes, but I can stay longer if there will be a lot of questions or difficult problems. The synchronous block will always start at 1:00 PM on Tuesdays and Thursdays. You are not required to participate in live sessions, I will not check attendance and there is no penalty for missing them (although you can get a small extra credit for active participation).

If you have questions about homework problems or anything else you want to discuss privately – send me an e-mail and I will make every effort to return it within 24 hours or sooner. If your question is about a homework problem, please attach your work notes to the e-mail – it will help me to understand what went wrong. We can also arrange a virtual meeting (videoconference), which is usually a much better way for explaining thing than “e-mail ping pong”. All videoconferences will use Google Meet <https://meet.google.com/jst-phhy-heb>. During my office hours (TR 11:00 AM – 12:00 PM) I will always be around my computer, so if you want to meet at these times, simply send me an e-mail 5-10 minutes ahead. If you want to meet outside the office hours, send me e-mail with your availability during the next 24 hours, I will try to find a time slot that fits us both.

ASSIGNMENTS

The grades will be based on the following types of assignments:

- In-Lecture Quizzes – 15 %
- Homework – 20 %
- Tests – 35 %
- Final Exam – 30 %
- Extra Credit – up to 5 %

IN-LECTURE QUIZZES (15 %)

- All pre-recorded lecture blocks will contain several conceptual multiple-choice and/or multiple-select quiz questions
- The in-lecture quizzes must be completed before the beginning of the live lecture session

HOMEWORK (20 %)

- There will be **12 homework assignments** (approximately one assignment per textbook chapter) consisting of conceptual questions (multiple choice and multiple select) and numerical problems
- The online program **WebAssign** (www.webassign.net) will be utilized for entering and automatic grading of the homework. This requires the Access Card to be found inside the textbook. See the last page of the syllabus for detailed instructions on WebAssign access
- Answers to numerical problems can be submitted a **maximum of 5 times**. Answers to conceptual questions can be entered only **once**
- The assignments are due **at 11:59 PM** on the dates indicated in the tentative course schedule at the end of the syllabus
- No e-mailed homework is accepted
- I would strongly recommend to start the assignments early, preferably right after the corresponding lectures. It gives you time to seek for help if something goes wrong or is unclear. Early submission of homework assignments will give you an additional extra credit

TESTS (35 %)

- There will be **6 online tests**, each covering one of the main parts of the course (Kinematics; Newton's laws; Energy and momentum; Rotational motion; Oscillations and Waves; Thermodynamics)
- The test dates are provided in the course schedule
- The tests will utilize the same **WebAssign** program that is used for homework assignments. However, the tests will be given in the "**exam**" mode, which has several important differences:
 - You can **start** the tests only **from 2:00 PM to 3:00 PM** on the day of the tests
 - Once started, you will have **30-45 minutes** (depending on the test) to finish the assignment. You cannot save your work and finish later – your timer will run out
 - Answers to numerical questions can be submitted a **maximum of 2 times**
- Each test will have a few conceptual questions and numerical problems that cover a small part of the course. If you follow the lectures, read the textbook, and finish the homework early, you should perform well on tests without any special preparation and study
- The tests are open-book
- A practice test will be given on Jan 19. This test will not be counted in grade calculations, but will follow the same rules as regular tests. I encourage you to try it, especially if you are not particularly familiar with WebAssign. The practice test results will be counted in extra credit calculations

FINAL EXAM (30 %)

- The final exam is on **April 27, from 12:00 PM to 3:00 PM**
- The final exam will follow the same rules as the midterm tests. It will utilize the **WebAssign** program in the "**exam**" mode
- The duration of the final exam is **3 hours** and it is **cumulative**

EXTRA CREDIT (UP TO 5 %)

- Up to 5 % of extra credit can be added to the final score for active participation
- The factors that will be considered in extra credit calculations:
 - Active participation in synchronous lectures (ask me questions, answer my questions)
 - Completion of extra assignments like the abovementioned practice test
 - Early submission of homework assignments

GRADING

S/U Grading Option Available Winter 2021: Due to the unprecedented challenges many students face as they continue with their courses during the COVID-19 pandemic, you can choose whether your transcript will record the final letter grade you receive from me or whether to select a simple S (Satisfactory) or U (unsatisfactory) grade. Please consult with your adviser if you think you should consider the S/U option. See the [Modification to Grading Policy](#) page for more information.

For the S/U grading option, letter grades C and above are converted to S; grades C- and below are converted to U.

- **A:** Comprehensive, thorough coverage of all objectives, required content, critical and higher-level thinking, original and creative, sound use of English skills, both written and oral
- **B:** Competent, mastery of basic content and concept, adequate use of English
- **C:** Slightly below average work, has met minimum requirements but with difficulty
- **D:** Has not met requirements of assignment/course, has significant difficulties in many areas
- **F:** Has not completed requirements; has not officially withdrawn from course before drop date

GRADING SCALE

LETTER GRADE	MINIMUM %	NUMERICAL EQUIVALENT
A	95	4.0
A-	90	3.7
B+	85	3.3
B	80	3.0
B-	75	2.7
C+	70	2.3
C	65	2.0
C-	60	1.7
D+	55	1.3
D	50	1.0
F	< 50	0.0

USING MOODLE AND OTHER TECHNOLOGIES

ONLINE TECHNOLOGIES TO BE USED IN THE COURSE

- [Moodle](#) – Course Management System, links to pre-recorded and synchronous lecture blocks, lecture notes, announcements, etc.
- [WebAssign](#) – homework assignments, tests, final exam, gradebook
- [Panopto](#) – lecture capture system
- [Google Meet](#) – videoconference system for individual appointments and office hours meetings

RESPECT RULES OF [NETIQUETTE](#)

- Respect your peers and their privacy.
- Use constructive criticism.
- Refrain from engaging in inflammatory comments.

TECHNOLOGY BACK-UP PLAN

- In the event that your computer crashes or internet goes down, it is essential to have a “backup plan” in place where you are able to log in using a different computer or travel another location that has working internet.
- Any files you intend to use for your course should be saved to a cloud solution (Google Drive, Dropbox, etc.) and not to a local hard drive, USB stick or external disk. Saving files this way guarantees your files are not dependent on computer hardware that could fail.

TECHNOLOGY HELP

- For help using Moodle, use the Get Help link at the top of the Moodle page (moodle.oakland.edu).
- For access to technology and in-person assistance, call or visit the [Student Technology Center](#) (Link to Student Technology Center: <https://www.oakland.edu/stc/>).
- For general technology assistance, consult the [OU Help Desk](#) (Link to Help Desk: <https://www.oakland.edu/helpdesk/>).

CLASSROOM AND UNIVERSITY POLICIES

ACADEMIC INTEGRITY PLEDGE

In order to uphold academic conduct standards at Oakland University, all students must act according to the pledge below.

I pledge that all my work in the course, including, but not limited to, my assignments, tests and examinations, are my own work and I have received no unauthorized assistance or collaboration.

I understand that if I am unclear about the appropriate or allowable use of any support materials to complete my required coursework, I will contact the faculty for clarification before using said materials.

I understand that all alleged violations of Academic Misconduct will be reported to the Academic Conduct Committee. If found responsible for violations of Academic Misconduct I will be subject to disciplinary measures by the University up to and possibly including expulsion (permanent separation) from the University.

NON-DISCRIMINATION STATEMENT

Oakland University is an inclusive and diverse community that respects the rights, viewpoints and lifestyles of all of our community members. We strive to maintain a learning and working environment free from discrimination and harassment on any basis and to create an environment where students feel respected and included. Discrimination is differential treatment, or unfair treatment, towards an individual or group, because of one's identity. Harassment includes actions that create an offensive, demeaning, intimidating or hostile environment.

Students experiencing or witnessing discrimination from a fellow student can reach out to the professor for resolving the matter. If students prefer not to reach out to their professor or are experiencing discrimination not related to a class, reach out to your academic adviser or the Dean of Students.] If you are experiencing discrimination from a faculty or staff member, you can contact the Dean of Students Office directly at (248) 370-3352.

These offices are available to provide additional support:

- [Center for Multicultural Initiatives](#) (CMI)
- [Gender and Sexuality Center](#) (GSC)
- [Disability Support Services](#) (DSS)
- [Veteran Support Services](#) (VSS)
- [Oakland University Counseling Center](#) (OUCC)

CLASSROOM BEHAVIOR

1. **ACADEMIC CONDUCT POLICY.** All members of the academic community at Oakland University are expected to practice and uphold standards of academic integrity and honesty. Academic integrity means representing oneself and one's work honestly. Misrepresentation is cheating since it means students are claiming credit for ideas or work not actually theirs and are thereby seeking a grade that is not actually earned. Following are some examples of academic dishonesty:
 - a. **Cheating.** This includes using materials such as books and/or notes when not authorized by the instructor, copying from someone else's paper, helping someone else copy work, substituting another's work as one's own, theft of exam copies, falsifying data or submitting data not based on the student's own work on assignments or lab reports, or other forms of misconduct on exams.
 - b. **Plagiarizing the work of others.** Plagiarism is using someone else's work or ideas without giving that person credit; by doing this, students are, in effect, claiming credit for someone else's thinking. Both direct quotations and paraphrases must be documented. Even if students rephrase, condense or select from another person's work, the ideas are still the other person's, and failure to give credit constitutes misrepresentation of the student's actual work and plagiarism of another's ideas. Buying a paper or using information from the World Wide Web or Internet without attribution and handing it in as one's own work is plagiarism.
 - c. **Falsifying records** or providing misinformation regarding one's credentials.
 - d. **Unauthorized collaboration** on computer assignments and unauthorized access to and use of computer programs, including modifying computer files created by others and representing that work as one's own.

For more information, review OU's [Academic Conduct Regulations](https://www.oakland.edu/deanofstudents/policies/). (Link to Academic Conduct Regulations: <https://www.oakland.edu/deanofstudents/policies/>)

2. **BEHAVIORAL CODE OF CONDUCT.** Appropriate behavior is required in class and on campus. Disrespectful, disruptive and dangerous behavior are not conducive to a positive learning environment and may result in consequences. Core Standards for Student Conduct at OU includes
 - a. **Integrity.** See academic conduct policy points above.
 - b. **Community.** Policies regarding disruptive behavior, damage and destruction, weapons, and animals.
 - c. **Respect.** Policies regarding harassment, hazing, and [sexual misconduct](https://www.oakland.edu/policies/health-and-safety/625/) (Link to Sexual Misconduct policy: <https://www.oakland.edu/policies/health-and-safety/625/>)
 - d. **Responsibility.** Policies regarding alcohol, drugs, and other substances

See the [Student Code of Conduct](https://www.oakland.edu/deanofstudents/student-code-of-conduct/) for details. (Link to Student Code of Conduct: <https://www.oakland.edu/deanofstudents/student-code-of-conduct/>)

ACCOMMODATION AND SPECIAL CONSIDERATIONS

Oakland University is committed to providing everyone the support and services needed to participate in their courses, including any additional support needed during remote or online learning. Students with disabilities who may require special accommodations should make an appointment with campus [Disability Support Services](#) (DSS). If you qualify for accommodations because of a disability, please submit to your professor a letter from Disability Support Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. DSS determines accommodations based on documented disabilities. Contact DSS at 248-370-3266 or by e-mail at dss@oakland.edu.

For information on additional academic support services and equipment, visit the [Study Aids](#) webpage of Disability Support Services website. (Link to Disability Support Services website: <https://www.oakland.edu/dss/>)

MENTAL HEALTH AND WELL-BEING

Oakland University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, contact The OU Counseling Center at Graham Health at (248) 370-3465. Student resources can also be found at the [Dean of Students](#) website by clicking on Student Health & Safety Resources. (URL: <http://www.oakland.edu/deanofstudents>)

ATTENDANCE POLICY

Attendance of synchronous lecture blocks is expected but not required. There are no scheduled makeup exams and no makeup assignments will be given. If you must miss a class or assignment due to an emergency, notify me as soon as possible, but not later than 24 hours after the missed class.

EXCUSED ABSENCE POLICY

This policy for university excused absences applies to any student participating in a University Sponsored Event as an official representative of Oakland University. University Sponsored Events include academic, artistic, athletic and scholarly endeavors, as well as participation in student organizations, including club sports, approved by the Provost or designee. A student must fill out the [Excused Absence form](#) and submit it to the professor in advance. For responsibilities and procedures see [Academic Policies and Procedures](#), which includes other considerations such as a new **Bereavement Leave Policy**. (Link to Academic Policies and Procedures: <https://www.oakland.edu/provost/policies-and-procedures/>)

RELIGIOUS OBSERVANCES

Student should discuss with professor at the beginning of the semester to make appropriate arrangements. Although Oakland University, as a public institution, does not observe religious holidays, it will continue to make every reasonable effort to help students avoid negative academic consequences when their religious obligations conflict with academic requirements. See The [OU Diversity Calendar](https://www.oakland.edu/diversity/calendar/) for more information. (Link to calendar: <https://www.oakland.edu/diversity/calendar/>)

PREFERRED NAME AND PRONOUN

If you do not identify with the name that is listed with the registrar's office, please notify me so that I may appropriately amend my records. In addition, if you prefer to go by a different pronoun, please inform me. When you go to [MySail](#), just above My Courses and Grades you will see "Display or edit your personal information," which allows you to edit your preferred first name. For more name change options and information, visit the [Name Services page](#). (Link to Name Services and Preferred Name Policy: <https://oakland.edu/uts/common-good-core-resources/name-services/>)

SEXUAL MISCONDUCT

Faculty and staff are responsible for creating a safe learning environment for our students, and that includes a mandatory reporting responsibility if students share information regarding sexual misconduct/harassment, relationship violence, or information about a crime that may have occurred on campus with the University. In such cases, the professor will report information to the campus' Title IX Coordinator (Chad Martinez, chadmartinez@oakland.edu or 248-370-3496). You can report such incidents to the Dean of Students Office directly. Students who wish to speak to someone confidentially can contact the OU Counseling Center at 248-370-3465. Additionally, students can speak to a confidential source off-campus 24 hours a day by contacting Haven at 248-334-1274. The [Dean of Students website](#) provides more information on your options and support services. (<https://www.oakland.edu/deanofstudents/sexual-assault-and-violence-initiative/students/>)

ADD/DROPS

As a student, university policy officially gives you the responsibility to add and drop courses. Put in your calendar [deadline dates for dropping courses](#) (even if you think it won't be necessary), and consult the [Drop or Not Guide](#) to make a well-informed decision before dropping a course. (<https://www.oakland.edu/registrar/registration/dropornot/>)

FACULTY FEEDBACK: OU EARLY ALERT SYSTEM

As a student in this class, you may receive “[Faculty Feedback](#)” in your OU e-mail if your professor identifies areas of concern that may impede your success in the class. Faculty Feedback typically occurs during weeks 2-5 of the Fall and Winter terms, but may also be given later in the semester and more than once a semester. A “Faculty Feedback” e-mail will specify the area(s) of concern and recommend action(s) you should take. Please remember to check your OU email account regularly as that is where it will appear. This system is to provide early feedback and intervention to support your success. (Link to Faculty Feedback for students: <https://www.oakland.edu/advising/faculty-feedback/>)

EMERGENCY PREPAREDNESS

In the event of an emergency arising on campus, the Oakland University Police Department (OUPD) will notify the campus community via the emergency notification system. The professor of your class is not responsible for your personal safety, so therefore it is the responsibility of each student to understand the evacuation and “lockdown” guidelines to follow when an emergency is declared. These simple steps are a good place to start:

- OU uses an emergency notification system through text, email, and landline. These notifications include campus closures, evacuations, lockdowns and other emergencies. Register for these notifications at oupolice.com.
- Based on the class cellphone policy, ensure that one cellphone is on in order to receive and share emergency notifications with the professor in class.
- If an emergency arises on campus, call the OUPD at (248) 370-3331. Save this number in your phone, and put it in an easy-to-find spot in your contacts.
- Review protocol for evacuation, lockdown, and other emergencies via the classroom’s red books (hanging on the wall) and oupolice.com/emergencies.
- Review with the professor and class what to do in an emergency (evacuation, lockdown, snow emergency).

Violence/Active Shooter: If an active shooter is in the vicinity, call the OUPD at (248) 370-3331 or 911 when it is safe to do so and provide information, including the location and number of shooter(s), description of shooter(s), weapons used and number of potential victims. Consider your options: [Run, Hide, or Fight](#).

TENTATIVE COURSE SCHEDULE

Week	Day	Date	Lecture Topics	Assignments
1	R	Jan 07	Overview of the course	
2	T	Jan 12	Dimensions and units. Significant figures (Chapter 1.1-1.3, 1.5)	
	R	Jan 14	Cartesian and polar coordinates. Vectors (Chapter 1.6-1.9)	
3	T	Jan 19	Kinematics. Motion in one dimension (Chapter 2.1-2.4, 2.6-2.7)	Practice Test HW 1 (Ch. 1)
	R	Jan 21	Motion in two dimensions. Projectile motion (Chapter 3.1-3.3)	HW 2 (Ch. 2)
4	T	Jan 26	Circular motion. Relative motion (Chapter 3.4-3.6)	
	R	Jan 28	Force and mass. Newton's laws (Chapter 4.1-4.4, 4.6)	Test 1 HW 3 (Ch. 3)
5	T	Feb 02	Simple mechanical systems (Chapter 4.5, 4.7)	
	R	Feb 04	Friction forces (Chapter 5.1, 5.4)	HW 4 (Ch. 4)
6	T	Feb 09	Dynamics of circular motion. Fundamental forces of nature (Chapter 5.2-5.3, 5.5)	
	R	Feb 11	Energy of a system. Work and kinetic energy (Chapter 6.1-6.5)	Test 2 HW 5 (Ch. 5)
7	T	Feb 16	Potential energy (Chapter 6.6-6.10)	
	R	Feb 18	Conservation of energy (Chapter 7.1-7.6)	HW 6 (Ch. 6)
8	T	Feb 23	No classes – Winter recess	
	R	Feb 25		
9	T	Mar 02	Linear momentum. Collisions in one dimension (Chapter 8.1-8.4)	HW 7 (Ch. 7)
	R	Mar 04	Collisions in two dimensions. Motion of center of mass (Chapter 8.5-8.7)	
10	T	Mar 09	Kinematics of rotational motion (Chapter 10.1-10.4)	Test 3 HW 8 (Ch. 8)
	R	Mar 11	Dynamics of rotational motion (Chapter 10.5-10.8)	
11	T	Mar 16	Angular momentum. Precessional and rolling motion (Chapter 10.9-10.12)	
	R	Mar 18	Gravity and planetary orbits (Chapter 11.1-11.4)	Test 4 HW 9 (Ch. 10)

Week	Day	Date	Lecture Topics	Assignments
12	T	Mar 23	Oscillations (Chapter 12.1-12.7)	
	R	Mar 25	Waves (Chapters 13.1-13.3, 13.5-13.6, and 14.1, 14.5)	
13	T	Mar 30	Pressure and temperature. Zeroth law of thermodynamics (Chapters 15.1-15.3 and 16.1-16.3)	Test 5 HW 10 (Ch. 11-14)
	R	Apr 01	Ideal gas. Kinetic theory of gases (Chapter 16.4-16.6)	
14	T	Apr 06	Heat and internal energy (Chapter 17.1-17.4)	HW 11 (Ch. 15-16)
	R	Apr 08	First law of thermodynamics. Thermodynamic processes (Chapter 17.5-17.10)	
15	T	Apr 13	Heat engines. Second law of thermodynamics (Chapter 18.1-18.4)	
	R	Apr 15	Thermodynamic irreversibility. Entropy (Chapter 18.5-18.8)	Test 6 HW 12 (Ch. 17-18)
	T	Apr 27	Final Exam	

WebAssign: How to Get Started

- **Day One: Register**

1. Go to <https://webassign.net> and click on **LOG IN**
2. Click on 'Enter Class Key'
3. Enter the Class Key: **oakland 1525 3106**
4. Enter your chosen Login name and the required information
5. Click on 'Create my Account'
 - A review screen will appear with your Username, Institution code & Password. Print and retain a copy of this information
6. Once you Login, you need to enter the **WebAssign Access Code**
 - If you purchased a new textbook, the Access Code card is inside the book.
 - If you purchased a used book, you may choose to purchase the Access Code online
 - **Notice: there is a 14-day grace period in Web Assign during which you may do the homework even if you do not have an Access Code**
7. Once you have logged in, you will see the **Homepage**
 - I suggest you click on **Guide** (upper right corner) and read the **Student Guide**
 - For **Technical Support** call **800-354-9706** or go to <https://www.webassign.com/support/student-support/>

- **To access the Homework/Test/Final Exam:**

1. Go to <https://www.webassign.net/wa-auth/login>
2. After you Login, click on 'My Assignments'
3. **Please notice:**
 - You may save your work without grading by clicking on '**Save Work**' at the end of the question. Next time you access the assignment, your work will still be available
 - Web Assign will not automatically submit your answer if you only 'Save' your work. Make sure you '**Submit**' it before the due date and time
 - You may also choose to '**Submit New Answers to Question ##**' or '**Submit All New Answers**'
 - Maximum number of submissions of your answers:
 - Homework problems: **5 submissions**
 - Test and exam problems: **2 submissions**
 - Multiple choice and multiple select questions: **1 submission**