



COURSE OUTLINE

1. **Course:** PHYS 221, Mechanics - Fall 2020

Lecture 01: MWF 12:00 - 12:50 - Online

Instructor	Email	Phone	Office	Hours
Dr Philip Langill	pplangil@ucalgary.ca	403 220-5402	SA 101B	Wed 13:00-15:30

Lecture 02: MWF 15:00 - 15:50 - Online

Instructor	Email	Phone	Office	Hours
Svetlana Kuznetsova	TBA	TBA	TBA	TBA

Lecture 03: TR 12:30 - 13:45 - Online

Instructor	Email	Phone	Office	Hours
Dr Rachid Ouyed	rouyed@ucalgary.ca	403 220-8418	SB 515	Tuesdays and Thursdays: 14:00-15:00 (Room: SB 512)

Online Delivery Details:

Some aspects of this course are being offered in real-time via scheduled meeting times. For those aspects you are required to be online at the same time.

Lectures

Synchronous Components:

All PHYS 211/221 classes will meet virtually using Zoom platform on **Mondays** during regularly scheduled classes for interactive lecture/question and answer sessions. This session will be recorded and will include as well as in-real-time questions administered via an online classroom response system (TOP HAT).

The locations and passwords of Zoom sessions for each section will be available on D2L. The session will be accessible through D2L. Students are required to use their actual names and access the session using the Zoom account associated with their @ucalgary e-mail address.

NOTE: There will be additional synchronous meetings on **Wednesday, September 9th (first day of classes) and **Wednesday, December 9th** (last day of classes).**

See Table 1 below for the detailed schedule of synchronous online components.

Table 1. Schedule of synchronous course elements for PHYS 221.

Synchronous Course Elements				
Week	Dates	Lecture	Labs	Quizzes
Week 01	07-Sep - 11-Sep	September 9, 2020		
Week 02	14-Sep - 18-Sep	September 14, 2020		Quiz 1: Sep 16, 2020
Week 03	21-Sep - 25-Sep	September 21, 2020	Laboratory 1 Group Session	
Week 04	28-Sep - 02-Oct	September 28, 2020		Quiz 2: Sep 30, 2020
Week 05	05-Oct - 09-Oct	October 5, 2020	Laboratory 2 Group Session	
	12-Oct	<i>Thanksgiving: Oct 12, 2020. No Lecture</i>		

Week 06	- 16-Oct			Quiz 3: Oct 14, 2020
Week 07	19-Oct -	October 19, 2020		
	23-Oct			
Week 08	26-Oct -	October 26, 2020	Laboratory 3 Group Session	Quiz 4: Oct 28, 2020
	30-Oct			
Week 09	02-Nov -	November 2, 2020		
	06-Nov			
Week 10	09-Nov -	READING WEEK		
	13-Nov			
Week 11	16-Nov -	November 16, 2020	Laboratory 4 Group Session	Quiz 5: Nov 18, 2020
	20-Nov			
Week 12	23-Nov -	November 23, 2020		
	27-Nov			
Week 13	30-Nov -	November 30, 2020	Laboratory 5 Group Session	Quiz 6: Dec 02, 2020
	04-Dec			
Week 14	07-Dec -	December 7, 2020		
	11-Dec	December 9, 2020		

Asynchronous Components:

Recording of all lecture materials for the given week will be released by **12:00 pm** on Wednesdays. Each instructor will record their own lectures that will be placed on D2L in their respective folder. All course materials are available for all students in PHYS 211/221 course.

Laboratories

Laboratory sessions will alternate between asynchronous and synchronous weeks, with the schedule of the synchronous sessions listed in Table 1. The sessions will be held during **the laboratory slot scheduled according to the timetable.**

During the **asynchronous** weeks, students are responsible for completing the individual portion (preliminary questions, designing, and completing an experiment according to the instructions in the laboratory manual). The individual laboratory reports are due at **21:59** on the day of the regularly scheduled laboratory session.

Synchronous sessions are designed for the completion of the group work in real-time - analysis of a selected video, discussion, answering questions posed in the write-up, and submission of the worksheet.

The schedule for all **Laboratory Activities** is shown in Table 2.

Synchronous Assessments

There are **6** synchronous assessments scheduled in the course. Each assessment is designed as a 30-minute quiz available during the Wednesday class slot (9:00 am - 9:50 am). The test needs to be started during the first **15** minutes of class and will remain open for 50 minutes from the moment it was commenced. The detailed schedule of the synchronous quizzes is included in Table 1.

* - indicated lectures outside of typical Monday class.

Course Site:

D2L: PHYS 211 L01-L03/PHYS 221 L01-L02-(Fall 2020)-Mechanics

Top Hat: www.tophat.com.

Note: Students must use their U of C account for all course correspondence.

A) LABORATORIES

There will be two types of laboratory sessions - asynchronous ones dedicated to individual work and synchronous ones dedicated to group work.

The detailed laboratory schedule with due dates for individual and group components is listed in Table 2.

Table 2. Laboratory Schedule

Week	Dates	Laboratory	Individual Component Due Date	Group Component Due Date
Week 01	07 Sep - 11 Sep	NO LABORATORIES		
Week 02	14 Sep - 18 Sep	Lab 1 (Asynchronous): Introduction to Measurement and Video Analysis	B01 - B12 B12 - B22 B23 - B34 B35 - B46	Monday, 21:59 Tuesday, 21:59 Wednesday, 21:59 Thursday, 21:59
Week 03	21 Sep - 25 Sep	Lab 1 (Synchronous): Introduction to Measurement and Video Analysis		End of Synchronous Lab Session Dropbox: LAB 1 - GROUP
Week 04	28 Sep - 02 Oct	Lab 2 (Asynchronous): Projectile Motion	B01 - B12 B12 - B22 B23 - B34 B35 - B46	Monday, 21:59 Tuesday, 21:59 Wednesday, 21:59 Thursday, 21:59
Week 05	05 Oct - 09 Oct	Lab 2 (Synchronous): Projectile Motion		End of Synchronous Lab Session Dropbox: LAB 2 - GROUP
Week 06	12 Oct - 16 Oct	NO LABORATORIES		
Week 07	17 Oct - 23 Oct	Lab 3 (Asynchronous): Atwood Machine	B01 - B12 B12 - B22 B23 - B34 B35 - B46	Monday, 21:59 Tuesday, 21:59 Wednesday, 21:59 Thursday, 21:59
Week 08	26 Oct - 30 Oct	Lab 3 (Synchronous): Atwood Machine		End of Synchronous Lab Session Dropbox: LAB 3 - GROUP
Week 09	02 Nov - 06 Nov	Lab 4 (Asynchronous): Torque	B01 - B12 B12 - B22 B23 - B34 B35 - B46	Monday, 21:59 Tuesday, 21:59 Wednesday, 21:59 Thursday, 21:59
Week 10	09 Nov - 13 Nov	READING WEEK		
Week 11	16 Nov - 20 Nov	Lab 4 (Synchronous): Torque		End of Synchronous Lab Session Dropbox: LAB 4 - GROUP
Week 12	23 Nov - 27 Nov	Lab 5 (Asynchronous): Work and Energy	B01 - B12 B12 - B22 B23 - B34 B35 - B46	Monday, 21:59 Tuesday, 21:59 Wednesday, 21:59 Thursday, 21:59
Week 13	30 Nov - 04 Dec	Lab 5 (Synchronous): Work and Energy		End of Synchronous Lab Session Dropbox: LAB 5 - GROUP
Week 14	07 Dec - 11 Dec	NO LABORATORIES		

B) HOMEWORK

Homework will be administered using

<https://www.pearsonmylabandmastering.com/northamerica/> website.

To access/register to the online assignments:

1. Go to <https://www.pearsonmylabandmastering.com/northamerica/>
2. Under "**Register**" select "**STUDENT**"
3. Confirm you have the information needed then select "**OK! Register now**".
4. Enter your instructor's course ID: phys-87512 and "**Continue**".
5. a) If you have an account (you ever used MyLab or Mastering products), enter your existing Pearson account username and password to "**Sign In**".

OR

5. b) If you do not have an account select "**Create**" and complete the required fields.

6. Select an access option:

OPTION 1: If you have purchased the textbook package or Pearson access code, enter the access code that came with your textbook.

OPTION 2: If you would like to request a 14-day free trial, choose the option "**Get temporary access without payment for 14 days**".

NOTE: if you select OPTION 2, at least three days before your subscription expires, email Pearson Representative at ucphysics.mastering@gmail.com and you will be provided an access code that will extend your access to assignment material only (no *Study Area* or *eText*).

7. From **You're Done!** page, select **"Go to My Courses."**

8. On the **My Courses** page, select the course name **PHYS211211_F20** to start your work.

Assignments are available for approximately two weeks from the time they open. They are designed to be completed within the first week, with the second week used as a buffer/extension. The submission before the **closing date** grants full credit for the assignment, the due date is an orientational date by which the assignment **should be** completed for it to serve as the most beneficial formative assessment tool.

Table 3. Assignment Schedule

Week	Assignment	Available	Covering	Due Date	Closing Date
Week 01	Assignment 0	September 9, 2020	Intro to MyLab	September 16, 2020	September 23, 2020
	Assignment 1	September 9, 2020	Week 1	September 16, 2020	September 23, 2020
Week 02	Assignment 2	September 16, 2020	Week 2	September 23, 2020	September 30, 2020
Week 03	Assignment 3	September 23, 2020	Week 3	September 30, 2020	October 7, 2020
Week 04	Assignment 4	September 30, 2020	Week 4	October 7, 2020	October 14, 2020
Week 05	Assignment 5	October 7, 2020	Week 5	October 14, 2020	October 21, 2020
Week 06	Assignment 6	October 14, 2020	Week 6	October 21, 2020	October 28, 2020
Week 07	Assignment 7	October 21, 2020	Week 7	October 28, 2020	November 4, 2020
Week 08	Assignment 8	October 28, 2020	Week 8	November 4, 2020	November 11, 2020
Week 09	Assignment 9	November 4, 2020	Week 9	November 18, 2020	November 25, 2020
Week 10	READING WEEK				
Week 11	Assignment 10	November 18, 2020	Week 11	November 25, 2020	December 2, 2020
Week 12	Assignment 11	November 25, 2020	Week 12	December 2, 2020	December 9, 2020
Week 13	Assignment 12	December 2, 2020	Week 13	December 9, 2020	December 9, 2020
Week 14	Final Exam Practice	December 9, 2020	Review	N/A	N/A

C) ACTIVITIES

There will be two types of activities in this course.

i) **Asynchronous Top Hat Worksheets** designed to help in understanding the material presented in a given chapter. The worksheets will be designed to provide feedback and can be attempted an infinite number of times before their due dates. The worksheets will remain open until **16:59** on the last day of classes, but it is recommended to complete them along with the videos for a given chapter.

ii) **Synchronous Top Hat Questions** administered by each instructor and related to the material covered in the synchronous class.

D) ASSESSMENTS

a) **Weekly Quizzes.** 6 bi-weekly synchronous quizzes will be administered during the Wednesday lecture slot, according to the schedule in Table 1. The quizzes will be administered on "Quizzes" on D2L. Each quiz will consist of **6** questions of various formats (written problems, multiple-choice, matching), including both conceptual and arithmetic problems. Each quiz will be designed to be completed in 30 minutes, but it will be accessible for 50 minutes from the time it is opened. The quizzes are open-resource exams and will not be proctored, but they are designed to be completed individually, without any collaboration with fellow classmates or aid from others.

The quiz has to be accessed during the first 15 minutes of class time. Failure to start the quiz during that time interval will result in a zero in this component of the course. The weight of the missed quiz will be automatically added to the Final Exam.

If all of the quizzes are completed, the weight of the lowest quiz may be replaced by the Final Exam **if the Final Exam grade is higher.**

b) **Final Exam** will be administered during the exam time slot scheduled by the Registrar Office. The exam will be designed for 2 hours but will be accessible for 3 hours from the time it is opened.

2. Requisites:

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Physics 30; and Mathematics 30-1 or Mathematics 2 (offered by Continuing Education); and Mathematics 31.

Antirequisite(s):

Credit for more than one of Physics 211, 221, or 227 will not be allowed.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

PHYS 211/221 Course Components

Course Component	[%]	Notes
Quizzes [6]	30	6 quizzes worth 5% each. Administered on D2L, during the Wednesday class, according to the schedule provided in Table 1. See "Assessment" for details.
Final Exam	25	Cumulative, synchronous 2h exam scheduled by the registrar (3h writing time allowed)
Laboratories [5]	20	5 laboratories; Each consisting of an individual and a group component, due in alternating weeks. No Laboratories during weeks of October 12th and November 9th.
Assignments [12]	10	Completed on MyLab Pearson platform, due on Wednesday of almost every week. See Table 3 for the schedule.
Activities	10	"Synchronous" Top Hat related to the lectures (5%) + "Asynchronous" Top Hat worksheets (5%)
Reflections	5	Submission based D2L quizzes asking students to reflect on upcoming and covered material.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	50 %	45 %

The course grade expressed as a percentage is calculated from the percentage grades of the separate course components with weights indicated above. A table for the conversion of percentage grades for the course to letter grades is provided above. The percentage grade for the course must be **equal to or larger** than the stated value to obtain a certain letter grade, without rounding.

This course has a registrar scheduled final exam.

4. **Missed Components Of Term Work:**

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course.

If a student misses a synchronous course component (weekly quizzes, group laboratories) a form (available on D2L) needs to be submitted to the appropriate dropbox **within 48 hours** of the date and time of the component.

For reported absences, the following accommodations will be implemented:

- The weight of the missed Weekly Quizzes (5% each) will be added to the Final Exam.
- Missed Group Laboratories need to be submitted individually by 23:59 on Sunday on that week to "Missed Laboratory" Dropbox. The files need to be clearly captioned indicating the number of the laboratory experiment, section, and group number.
- Questions administered during synchronous activities will be done using an online platform (TopHat) and can be accessed from any location. These questions will be graded 50% for participation and 50% for correctness. Only 80% of the questions need to be completed for 100% of the grade (the grade will be prorated by taking the score, dividing it by 0.8 and capping the result at 100%), accommodating for missing approximately two synchronous classes.

If an extension is needed on an asynchronous component (assignments, reflective questions, individual labs), it needs to be requested by e-mail (phys211221@ucalgary.ca) **24 hours before the due date**. The requests will be considered and extensions will be granted on a case-by-case basis.

No extensions or exemptions on Top Hat worksheets will be available, as the assignments will be opened throughout the entire semester.

5. **Scheduled Out-of-Class Activities:**

There are no scheduled out of class activities for this course.

6. **Course Materials:**

Recommended Textbook(s):

Randall A. Knight, *Physics of Scientists and Engineers, 4th Edition* Pearson.

Online Course Components:

MyLabandMastering (<https://www.pearsonmylabandmastering.com>)- used for additional practice materials. Sets of questions related to each chapter are set up for practice only.

Students must register in <https://www.pearsonmylabandmastering.com> portal to access the additional resources. Access to MyLabandMastering is included with the purchase of a new textbook. You may already have access if you used the portal within last year. Please check this before proceeding. If you choose to just access the Pearson assignments without purchasing access to the study material please email Pearson at ucphysics.mastering@gmail.com to get an access code and registration instructions. You will be able to access only the assignments. If you have a Pearson account, Sign In at <https://www.pearsonmylabandmastering.com> and enter your **Username** and **Password**. If you cannot remember your username or your password, click "**Forgot your username or password?**" and enter the email address you used to register.

Your login name and password will be sent to your email.

Top Hat (www.tophat.com) - used for collecting responses synchronous and asynchronous components of the formative assessment in the course.

All lecture recordings and supplementary materials will be available on D2L under appropriate section.

7. **Examination Policy:**

Exams are open-resource exams and students can use any and all available resources that will help them to complete the exams **INDIVIDUALLY**.

Collaboration on the weekly quizzes and exams is not permitted. Any suspicious activities will be reported and investigated according to Section K, "Integrity and Conduct" of the "Academic Regulations" section of the University of Calgary Calendar.

<https://www.ucalgary.ca/pubs/calendar/current/k.html>

By taking the exam student declares that they are completing their work by themselves, with the aid of notes, textbooks, lectures, and other course approved online resources, with no third party involved in their evaluation. This includes no use of file sharing websites and services that are not affiliated with the University of Calgary.

Students should also read the Calendar, [Section G](#), on Examinations.

8. **Approved Mandatory And Optional Course Supplemental Fees:**

There are no mandatory or optional course supplemental fees for this course.

9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

10. Human Studies Statement:

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Center:** For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (syasa@ucalgary.ca) or phone at [403-220-2208](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>)
- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**
- e. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head of the Department of Physics & Astronomy, Dr. David Feder by email phas.ahugrd@ucalgary.ca or phone [403-220-8127](tel:403-220-8127). Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](#) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](#) Email: sciencerep@su.ucalgary.ca. [Student Ombudsman](#), Email: ombuds@ucalgary.ca.
- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- i. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

PHYS 211/221 Tentative Weekly Schedule

Week	Dates	Lectures	
		Topic	Textbook Sections
Week 01	08 Sep - 11 Sep	Introductory Class	
		Units and Significant Figures,	1.8
		Scalars and Vectors, Using Vectors	3.1
		Using Vectors	
Week 02	14 Sep - 18 Sep	Coordinate Systems and Vector Components.	3.2
		Unit Vectors and Vector Algebra.	3.4
		Dot and Cross Products	3.4
		Motion Diagrams.	1.1
Week 03	21 Sep - 25 Sep	Models and Modeling	1.2
		Position, Time and Displacement	1.3
		Velocity	1.4
		Linear Acceleration	1.5
		Motion in One Dimension.	1.6
		Solving Problems in Physics.	1.7
Week 04	28 Sep - 02 Oct	Uniform Motion.	2.1
		Instantaneous Velocity.	2.2
		Finding Position from Velocity	2.3
		Motion With Constant Acceleration,	2.4
Week 05	05 Oct - 09 Oct	Free Fall	2.5
		Motion on an Inclined Plane	2.6
		Motion in 2D	4.1
		Projectile Motion	4.2
		Uniform Circular Motion	4.4
		Centripetal Acceleration	4.5
Week 06	12 Oct - 16 Oct	Non-Uniform Circular motion	4.6
		Force	5.1
		Catalog of Forces	5.2
		Identifying Forces	5.3
Week 07	19 Oct - 23 Oct	What do Forces Do?	5.4
		Newton's Second Law	5.5
		Newton's First Law	5.6
		Free Body Diagram.	5.7
Week 07	19 Oct - 23 Oct	Equilibrium Model	6.1
		Using Newton's Second Law	6.2
		Mass, Weight and Gravity	6.3
		Friction	6.4
		Drag	6.5
		Examples of Newton's Second Law	6.6

		Interacting Objects	7.1
		Analyzing Interacting Objects	7.2
		Newton's Third Law	7.3
Week 08	26 Oct - 30 Oct	Ropes and Pulleys	7.4
		Examples of Newton's Third Law	7.5
		Dynamics in 2D	8.1
		Uniform Circular Motion	8.2
		Circular Orbits	8.3
Week 09	02 Nov - 06 Nov	Reasoning about Circular Motion	8.4
		Non-Uniform Circular motion	8.5
		Rotational Motion	12.1
		Torque	12.5
		The Vector Description of Rotational Motion.	12.10
		Static Equilibrium	12.8
Week 10	09 Nov - 13 Nov	READING BREAK	
Week 11	16 Nov - 20 Nov	Energy Overview	9.1
		Work and KE of for Single Particle	9.2
		Calculating the Work	9.3
		Restoring forces and work done by a spring	9.4
		Dissipative Forces and Thermal Energy. Power	9.5
		Power	9.6
Week 12	23 Nov - 27 Nov	Potential Energy	10.1
		Gravitational Potential Energy	10.2
		Elastic Potential Energy	10.3
		Conservation of Energy	10.4
Week 13	30 Nov - 04 Dec	Energy Diagrams	10.5
		Force and Potential Energy	10.6
		Conservative and Non-conservative Forces	10.7
		The Energy Principle Revisited	10.8
Week 14	07 Dec - 09 Dec	Momentum and Impulse	11.1
		Conservation of Momentum	11.2
		Collisions	11.3
		Explosions	11.4
		Review	

COURSE INCOMES:

Students coming into Physics 211 should be able to:

- Demonstrate the ability to solve linear and quadratic equations and sets of equations
- Use trigonometry and basic geometry to solve problems
- Employ basic algebraic manipulations
- Perform derivatives of simple functions
- Recognize the elementary principles of kinematics and dynamics.

Course Outcomes:

- Upon completion of the course students should be able to: apply vector notation and algebra in kinematics and dynamics problems in one and two dimensions;
- Develop mathematical models of physical situations;
- Exploit and use principle of conservation of energy and momentum;
- Carry out calculations symbolically (in terms of physical variables) and numerically (using appropriate values and their units);
- Obtain and analyze experimental data, and relate them to physical laws governing kinematics and dynamics;
- Communicate and collaborate effectively within a team environment.

Electronically Approved - Aug 23 2020 19:45

Department Approval