



Conceptual Physics with Lab (4 units)

Unit of Study Outline

1. Unit of study information

This course is a descriptive level of physics. Classical Mechanics, Properties of Light, and Special Theory of Relativity are main subjects of this course. Topics cover laws of Newton, Momentum and energy, light, atoms etc. Students will be surprised that all principles involved can be demonstrated by easy ways. The Teacher will concentrate more on how those physics principles effect man's daily life.

2. Pre-requisite units and assumed knowledge

Students should have basic skills in numeracy and Microsoft Excel.

3. Learning aims and outcomes

When completing this course, students are expected to:

- Understand significant concepts those are necessary to describe the laws of nature.
- Have the skill to use mathematical tools which are elementary to understand the relationships among physical quantities.

4. Weighting of final grade

Participation	10%
Assignments	20%
Quizzes	20% (2*10%)
Midterms	20%
Final	30%

5. Grading

A	100-95	A-	94-90	B+	89-87
B	86-83	B-	82-80	C+	79-77
C	76-73	C-	72-70	D+	69-67
D	66-63	D-	62-60	F	59 or lower

6. Policies

Attendance Policy

Attendance in class is mandatory for all students enrolled in the course. Any excused absence must be discussed directly with the teacher. Being late to class within 15 minutes will be recorded as 1 LATE and being late over 15 minutes will be recorded as 1 ABSENCE. 3 LATES equal to 1 ABSENCE. 20% absences of the total teaching hours will cause an F (a failing grade) directly. However, students are still welcome to continue to attend class. F students have no right to drop this course anymore. Each unexcused absence will result in the lowering of the attendance grade by 1 point. Each excused absence will result in the lowering of the attendance grade by 0.5 point.

Participation Policy

Students should participate in their chosen classes actively and effectively. The Participation Grade is related to the Attendance Grade. Students' final attendance grade is the maximum of their participation grade.

Participation grade will be based on a variety of factors including, but not limited to taking part in class discussions and activities, completing assignments, being able to answer questions correctly, obeying class rules, and being prepared for class, frequent visiting your instructors and chatting in English during their office hours is highly recommended.

Policy on Assignments and Quizzes

Students should finish their assignments completely and punctually. Assignment should be submitted on the date appointed by the instructor. If a student cannot hand in the assignment on time, the reasonable excuse will be needed. Late assignments will receive a maximum grade of 80. An assignment that is late for 3 days will be corrected but receive 0.

You are recommended print all your assignment in the uniform format with the heading of Student's Pledge of no cheating. Written assignment or printed ones without the uniform heading of pledge will receive a maximum grade of 80.

It is mandatory to have weekend assignment every week. Any weekend assignment should be submitted on first class of next week.

It is mandatory to have holiday assignment on the public holidays. Any holiday assignment should be submitted on the first day on returning to school.

Students are required to do a multitude of presentations during the course.

Plagiarism

Any form of cheating is NEVER tolerated. Any student ONCE caught cheating on a quiz, assignment or examination will receive a 0 for that particular work of the whole semester. At the beginning of the semester the definition of plagiarism will be carefully explained. When any thoughts or writings of another person are used, the sources must be clearly identified (using quotes, bibliography and giving reference).

Classroom Policies

1. No eating, cellular phones, electronic dictionaries, smoking, chatting or drowsing in class.
2. Please speak in English rather than Chinese in class.
3. Students are not allowed to attend class without textbooks.
4. Stand up when answering questions.
5. Respect classmates' ideas, opinions, and questions of your classmates.
6. You are welcome to visit the instructor's office in his/her office hours.
7. Take good care of the laboratory facilities. Do not splash water on the desktop.
8. When each class is over, hang the earphone on the hanger. Put the trash into the trash-bin.
9. All your classroom involvement, performance and after-class communications with instructor will affect your participation score.
10. All communications with the teacher must be in English, both inside and outside class time.

7. Texts and other recourses

Hewitt, Paul (2007) Conceptual Physics, 10th ed., Tsinghua University Press

8. Teaching methods

Lecture with class discussion based on assigned homework.

9. Week by week topic and study guide

Week 1	Chapter:1	Introduction
		Units & Dimensions
		Science Notation
	Chapter 2	Newton's First Law
		Forces
Week 2	Chapter 3	Distance, Displacement
		Average Speed, Velocity
		Acceleration
		<i>Lab: Speed and Acceleration</i>
	Chapter 3&9	Gravity & Free Fall
	Chapter 4	Mass and Weight
		Newton's Second Law
Week 3	Chapter 5	Newton's Third Law
		Vectors
	Chapter 6	Momentum
		Conservation of Momentum
Week 4	Chapter 7	Work and Energy
		Energy & Power
	Chapter 8	Rotational Motion I
	Quizzes 1	
Week 5		Rotational Motion II
	Chapter 10	Projectile Motion
	Chapter 11	Atomic Structure
Week 6	Chapter 12-13	Solids & Liquids
	Chapter 14	Gases
	Chapter 15	Temperature
		Lab: Temperature
Week 7	Chapter 15-16	Heat & heat Transfer
	Chapter 17-18	Phase Change
		Thermodynamics
Week 8	Mid-term Exam	
	Chapter 19	Vibrations and Waves
	Chapter 20	Sound I
Week 9	Chapter 21	Sound II
	Chapter 22	Electrostatics
		Electric Field and Potential
	Chapter 23	Current and Resistance
Week 10	Chapter 23	Ohm's Law
		Electric Power
	Chapter 24	Magnetism I
		Magnetism II

Week 11	Chapter 25	Electromagnetic Induction
	Chapter 26-27	Light I
		Light II
Week 12	Chapter 28	Mirrors & Reflection
		Refraction & Lenses
	Quizzes 2	
Week 13	Chapter 29	Light Wave Properties
	Chapter 29	Interference
		Polarization
Week 14	Chapter 30	Light Emission
	Chapter 31	Light Quanta
	Chapter 32	Atomic Structure II
Week 15	Chapter 33	X-Rays and Radioactivity
	Chapter 34	Nuclear Reactions
		Nuclear Energy
Week 16	Chapter 35-36	Relativity
Week 17	Final Exam	