

**PHYS 20L Course Outline as of Fall 2021****CATALOG INFORMATION**

Dept and Nbr: PHYS 20L Title: GENERAL PHYSICS LAB I

Full Title: General Physics Lab Part I

Last Reviewed: 11/17/2014

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	1.00	Lecture Scheduled	0	17.5	Lecture Scheduled	0
Minimum	1.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 0.00

Total Student Learning Hours: 52.50

Title 5 Category: AA Degree Applicable

Grading: Grade or P/NP

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: PHYS 3A

**Catalog Description:**

Laboratory experiments to accompany Physics 20.

**Prerequisites/Corequisites:**

Course Completion or Current Enrollment in PHYS 20

**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: Lab experiments to accompany Physics 20. (Grade or P/NP)

Prerequisites/Corequisites: Course Completion or Current Enrollment in PHYS 20

Recommended:

Limits on Enrollment:

Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

**ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:
	B3	Laboratory Activity	Fall 1981
<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
	5C	Fulfills Lab Requirement	Fall 1981
<b>CSU Transfer:</b>		Effective:	Inactive:
<b>UC Transfer:</b>		Effective:	Inactive:
<b>CID:</b>			
CID Descriptor:PHYS 100S	Algebra/Trigonometry-Based Physics: AB		
SRJC Equivalent Course(s):	PHYS20 AND PHYS20L AND PHYS21 AND PHYS21L OR		
	PHYS20A AND PHYS20B		
CID Descriptor:PHYS 105	Algebra/Trigonometry-Based Physics A		
SRJC Equivalent Course(s):	PHYS20 AND PHYS20L OR PHYS20A		
<b>Certificate/Major Applicable:</b>			
Major Applicable Course			

## **COURSE CONTENT**

### **Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Use the Universal Lab Interface (ULI) system to measure and analyze real-world experimental data related to motion, energy, momentum, static balance and heat, including appropriate use of units and significant figures.
2. Plot, curve fit, and interpret data using spreadsheet software.

### **Objectives:**

Upon completion of this course students will be able to:

1. Set up and perform a number of physics experiments using balances, calipers, and thermometers, as well as computers with motion detectors, force probes, temperature probes and microphones.
2. Use computer spreadsheets to record data and calculate experimental results, and use computer graphing programs to construct graphs and analyze these data.
3. Apply concepts of linear motion, simple harmonic motion, force, impulse and momentum, using motion detectors and force probes.
4. Verify basic physics principles such as Newton's second and third laws of motion and conservation of momentum and energy.
5. Use the principle of conservation of energy to determine moments of inertia.
6. Measure the velocity of standing waves in strings and sound in resonating air columns.
7. Determine the coefficient of linear expansion for metal rods.
8. Measure the specific heat of metals.
9. Write formal lab reports.

### **Topics and Scope:**

1. Measurements
2. Data analysis, calculations and graphing, using Excel spreadsheets

3. Kinematics
4. Momentum and conservation of momentum
5. Torque and levers
6. Moment of inertia
7. Simple harmonic motion
8. Sound waves
9. Standing waves in strings and air columns
10. Coefficient of linear expansion
11. Specific heat

### Assignment:

1. Laboratory experiments (12 - 16)
2. Individual and/or group lab reports (12 -16)
3. Quizzes (0-10)
4. Final exam

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Lab reports

Writing  
60 - 90%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None

Problem solving  
0 - 0%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations  
0 - 0%

**Exams:** All forms of formal testing, other than skill performance exams.

Quizzes, and final exam

Exams  
10 - 40%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

None

Other Category  
0 - 0%

### Representative Textbooks and Materials:

Instructor-prepared lab manual