I. CATALOG INFORMATION

A. Discipline: PHYSICS

B. Subject Code and Number: PHYS M10AL

C. Course Title: General Physics I Lab

D. Credit Course units:

Units: 1

Lecture Hours per week: 0

Lab Hours per week : 3

Variable Units : No

E. Student Learning Hours:

Lecture Hours:

Classroom hours: 0 - 0

Laboratory/Activity Hours:

Laboratory/Activity Hours 52.5 - 52.5

Total Combined Hours in a 17.5 week term: 52.5 - 52.5

F. Non-Credit Course hours per week

G. May be taken a total of: [X] 1 [ ] 2 [ ] 3 [ ] 4 time(s) for credit

H. Is the course co-designated (same as) another course: No [X] Yes [ ]
If YES, designate course Subject Code & Number:

I. Course Description:

Examines some of the basic phenomena in mechanics, thermodynamics, and wave motion. Applies common, modern laboratory instruments in hands-on experiments using real world data. Teaches the principles of data taking, reduction, synthesis, and analysis, in addition to the writing of scientific reports.

J. Entrance Skills

*Prerequisite: No [ ] Yes [X] Course(s)
MATH M05 and MATH M06 and MATH M07 or PHYS M10A or concurrent enrollment and

*Corequisite: No [X] Yes [ ] Course(s)

Limitation on Enrollment: No [X] Yes [ ]

Recommended Preparation: No [X] Yes [ ] Course(s)

Other: No [X] Yes [ ]

K. Other Catalog Information:

II. COURSE OBJECTIVES

Upon successful completion of the course, a student will be able to:

		Methods of evaluation will be consistent with, but not limited by, the following types or examples.
1	assemble and perform experiments in mechanics, thermodynamics, and wave-motion, following instructions in the laboratory manual.	Written tests or quizzes before and/or after the experiment Completion of informal or formal laboratory reports
2	measure and record the data, including estimated uncertainty, using appropriate units and significant figures.	Written tests or quizzes before and/or after the experiment Completion of informal or formal laboratory reports
3	reduce and analyze data, calculate experimental uncertainties, produce and analyze graphs, and summarize the experiment and its results using an appropriate technical writing style.	Written tests or quizzes before and/or after the experiment Completion of informal or formal laboratory reports
4	critically evaluate the experimental results and procedures using accepted values and other relevant information and draw conclusions regarding the efficacy of the experimental procedure.	Written tests or quizzes before and/or after the experiment Completion of informal or formal laboratory reports
5	suggest changes to the experimental procedure which, if implemented, could reduce the experimental uncertainty and/or error.	Written tests or quizzes before and/or after the experiment Completion of informal or formal laboratory reports
6	suggest practical applications for the values measured, conclusions reached, or methods utilized in the experiment.	Written tests or quizzes before and/or after the experiment Completion of informal or formal laboratory reports

III. COURSE CONTENT

Estimated %	Topic	Learning Outcomes
Lecture (must total 100%)		
Lab (must total 100%)		
5.00%	Introduction: Data Taking and Data Analysis	1, 2, 3, 4, 5, 6
7.00%	Free Fall and Reaction Time	1, 2, 3, 4, 5, 6
7.00%	Projectile Motion	1, 2, 3, 4, 5, 6
7.00%	Vector Addition, The Force Table	1, 2, 3, 4, 5, 6
7.00%	Static and Kinetic Friction	1, 2, 3, 4, 5, 6
7.00%	Measuring the Force of a Muscle	1, 2, 3, 4, 5, 6
7.00%	Hooke's Law	1, 2, 3, 4, 5, 6
7.00%	Conservation of Linear Momentum	1, 2, 3, 4, 5, 6
7.00%	Mechanical Advantage	1, 2, 3, 4, 5, 6
7.00%	Blood Pressure Measurements	1, 2, 3, 4, 5, 6
11.00%	Thermal Expansion of Metal Rods (a formal report)	1, 2, 3, 4, 5, 6
7.00%	Specific Heat	1, 2, 3, 4, 5, 6
7.00%	Wave Motion and Sound	1, 2, 3, 4, 5, 6
7.00%	Noise Pollution	1, 2, 3, 4, 5, 6

IV. TYPICAL ASSIGNMENTS

A. Writing assignments

Writing assignments are required. Possible assignments may include, but are not limited to:	
1	summarize the experimental objectives, method, and results in a concise abstract.
2	respond to questions that require an essay or a brief answer.
3	write conclusions and analyses in informal laboratory reports using an appropriate technical language style.
4	prepare formal laboratory reports which conform to the style specified in the laboratory manual.

B. Critical thinking assignments

Critical thinking assignments are required. Possible assignments may include, but are not limited to:	
1	solve assigned physics and chemistry problems.
2	analyze the experiment and define its goals and correct conclusions.
3	compare and contrast the various ways an experiment could be conducted to solve quantitative physics and chemistry problems.
4	evaluate the significance and relevance of the experimental results.
5	suggest changes in the experimental procedure which could lower the experimental uncertainty of the results.

V. METHODS OF INSTRUCTION

Methods of instruction may include, but are not limited to:

- [ ] Distance Education – When any portion of class contact hours is replaced by distance education delivery mode (Complete DE Addendum, Section XV)
- [ ] Lecture/Discussion
- [X] Laboratory/Activity
- [X] Other (Specify) Demonstrations conducted by instructor.
- [ ] Optional Field Trips
- [ ] Required Field Trips

VI. METHODS OF EVALUATION

Methods of evaluation may include, but are not limited to:

[X] Essay Exam	[X] Classroom Discussion	[X] Skill Demonstration
[X] Problem Solving Exam	[X] Reports/Papers/ Journals	[X] Participation
[X] Objective Exams	[X] Projects	[X] Other (specify)

Students are required to complete a report for each lab exercise. These reports require the mathematical and verbal analysis of the experimental results and have questions that test the student's understanding of the concepts.

VII. REPRESENTATIVE TEXTS AND OTHER COURSE MATERIALS

Wilson, Jerry, and Cecilia Hernandez. Physics Laboratory Experiments. 7th ed. Brooks Cole, 2010.

Harper, Clinton D. Physics M10A Lab Manual. Sunshine Publishing, 2006.

VIII. STUDENT MATERIALS FEES

[X] No [ ] Yes

IX. PARALLEL COURSES

College	*Course Number*	*Course Title*	*Units*
Los Angeles Pierce College	PHYSICS 66	Physics for Life Science Majors I	5
UC Santa Barbara	PHYS 6AL	Introductory Experimental Physics	1
San Francisco State	PHYS 112	General Physics I Lab	1
CSU Northridge	PHYS 100AL	General Physics I Lab	1
Sonoma State	PHYS 209A	General Physics Lab	1
Cal Poly Pomona	PHYS 121L	College Physics Lab	1

X. MINIMUM QUALIFICATIONS

Courses Requiring a Masters Degree:
Master's in physics, astronomy, or astrophysics OR Bachelor's in physics or astronomy AND Master's in engineering, mathematics, meteorology, or geophysics OR the equivalent.

XI. ARTICULATION INFORMATION

A. Title V Course Classification:

1. This course is designed to be taken either:

   [ ] Pass/No Pass only (no letter grade possible); or
   [X] Letter grade (P/NP possible at student option)

2. Degree status:
   Either [X] Associate Degree Applicable; or [ ] Non-associate Degree Applicable

B. Moorpark College General Education:

1. Do you recommend this course for inclusion on the Associate Degree General Education list?
   Yes: [X] No: [ ] If YES, what section(s)?

   [ ] A1 - Natural Sciences - Biological Science
   [X] A2 - Natural Sciences - Physical Science
   [ ] B1 - Social and Behavioral Sciences - American History/Institutions
   [ ] B2 - Social and Behavioral Sciences - Other Social Behavioral Science
   [ ] C1 - Humanities - Fine or Performing Arts
   [ ] C2 - Humanities - Other Humanities
   [ ] D1 - Language and Rationality - English Composition
   [ ] D2 - Language and Rationality - Communication and Analytical Thinking
   [ ]

- [ ] E1 - Health/Physical Education
- [ ] E2 - PE or Dance
- [ ] F - Ethnic/Gender Studies

C. California State University(CSU) Articulation:

1. Do you recommend this course for transfer credit to CSU? Yes: [X] No: [ ]
2. If YES do you recommend this course for inclusion on the CSU General Education list?
   Yes: [X] No: [ ] If YES, which area(s)?

A1 [ ] A2 [ ] A3 [ ] B1 [ ] B2 [ ] B3 [X] B4 [ ]

C1 [ ] C2 [ ] D1 [ ] D2 [ ] D3 [ ] D4 [ ] D5 [ ]

D6 [ ] D7 [ ] D8 [ ] D9 [ ] D10 [ ] E [ ]

D. University of California (UC) Articulation:

1. Do you recommend this course for transfer to the UC? Yes: [X] No: [ ]
2. If YES do you recommend this course for the Intersegmental General Education Transfer Curriculum (IGETC)? Yes: [X] No: [ ]

IGETC Area 1: English Communication

- [ ] English Composition
- [ ] Critical Thinking-English Composition
- [ ] Oral Communication

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

- [ ] Mathematical Concepts

IGETC Area 3: Arts and Humanities

- [ ] Arts
- [ ] Humanities

IGETC Area 4: Social and Behavioral Sciences

- [ ] Anthropology and Archaeology
- [ ] Economics
- [ ] Ethnic Studies
- [ ] Gender Studies
- [ ] Geography
- [ ] History
- [ ] Interdisciplinary, Social & Behavioral Sciences
- [ ] Political Science, Government & Legal Institutions
- [ ] Psychology

☐ Sociology & Criminology

IGETC Area 5: Physical and Biological Sciences (mark all that apply)

☐ Physical Science Lab or Physical Science Lab only (none-sequence)
☐ Physical Science Lecture only (non-sequence)
☐ Biological Science
☐ Physical Science Courses
☐ Physical Science Lab or Biological Science Lab Only (non-sequence)
☐ Biological Science Courses
☐ Biological Science Lab course
☐ First Science course in a Special sequence
☐ Second Science course in a Special Sequence
☒ Laboratory Activity
☐ Physical Sciences

IGETC Area 6: Language other than English

☐ Languages other than English (UC Requirement Only)
☐ U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)
☐ U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)

XII. REVIEW OF LIBRARY RESOURCES

A. What planned assignment(s) will require library resources and use?

The following assignments require library resources: None

B. Are the currently held library resources sufficient to support the course assignment?

YES: ☒ NO: ☐

If NO, please list additional library resources needed to support this course.

XIII. PREREQUISITE AND/OR COREQUISITE JUSTIFICATION

Requisite Justification for MATH M05

☐ A. Sequential course within a discipline.

☒ B. Standard Prerequisite or Corequisite required by universities.

CSUN, CSULA, CSUCI

☐ C. Corequisite is linked to companion lecture course.

☐

☐ D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____

☐ E. Prerequisite or Corequisite is necessary to protect the students' health and safety.

☐ F. Computation or communication skill is needed.

☐ G. Performance courses: Audition, portfolio, tryouts, etc. needed.

and

Requisite Justification for MATH M06

☐ A. Sequential course within a discipline.

☒ B. Standard Prerequisite or Corequisite required by universities.

CSUN, CSULA, CSUCI

☐ C. Corequisite is linked to companion lecture course.

☐ D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____

☐ E. Prerequisite or Corequisite is necessary to protect the students' health and safety.

☐ F. Computation or communication skill is needed.

☐ G. Performance courses: Audition, portfolio, tryouts, etc. needed.

and

Requisite Justification for MATH M07

☐ A. Sequential course within a discipline.

☒ B. Standard Prerequisite or Corequisite required by universities.

CSUN, CSULA, CSUCI

☐ C. Corequisite is linked to companion lecture course.

☐ D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____

☐ E. Prerequisite or Corequisite is necessary to protect the students' health and safety.

☐ F. Computation or communication skill is needed.

☐ G. Performance courses: Audition, portfolio, tryouts, etc. needed.

or

Requisite Justification for PHYS M10A or concurrent enrollment

☐ A. Sequential course within a discipline.

☒ B. Standard Prerequisite or Corequisite required by universities.

CSUN, CSULA, CSUCI

☐ C. Corequisite is linked to companion lecture course.

☐ D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____

☐ E. Prerequisite or Corequisite is necessary to protect the students' health and safety.

☐ F. Computation or communication skill is needed.

☐ G. Performance courses: Audition, portfolio, tryouts, etc. needed.

and

XIV. WORKPLACE PREPARATION

PHYS M10AL: Not Applicable

XV. DISTANCE LEARNING COURSE OUTLINE ADDENDUM

PHYS M10AL: Not Applicable

XVI. GENERAL EDUCATION COURSE OUTLINE ADDENDUM

General Education Division of Learning [check all applicable boxes]:

☐

- [X] Natural Sciences
  - [ ] Biological Science
  - [X] Physical Science
- [ ] Social and Behavioral Sciences
  - [ ] American History/Institutions
  - [ ] Other Social Science
- [ ] Humanities
  - [ ] Fine or Performing Arts
  - [ ] Other Humanities
- [ ] Language and Rationality
  - [ ] English Composition
  - [ ] Communication and Analytical Thinking
- [ ] Health/Physical Education
- [ ] Ethnic/Women's Studies

Check either Option 1 or Option 2

- [X] **OPTION #1:** Moorpark College has already received approval from the CSU and/or UC systems for this course to fulfill a GE requirement. Note: This option applies only to technical revisions and updated courses.
- [ ] **OPTION #2:** Moorpark College has not received approval from the CSU and/or UC systems for this course to fulfill a GE requirement. This option applies to all new and substantively revised courses.

XVII. STUDENT MATERIALS FEE ADDENDUM

PHYS M10AL: Not Applicable

XVIII. REPEATABILITY JUSTIFICATION TITLE 5, SECTION 55041

PHYS M10AL: Not Applicable

XIX. CURRICULUM APPROVAL

Course Information:

Discipline: PHYSICS

Discipline Code and Number: PHYS M10AL

Course Revision Category: Outline Update

Course Proposed By:

Originating Faculty Ronald Wallingford 02/26/2013

Faculty Peer: Balazs Becht 02/27/2013

Curriculum Rep: Robert Keil 04/01/2013

Department Chair: _____

Division Dean: Julius Sokenu 03/03/2013

Approved By:

Curriculum Chair: Mary Rees 04/09/2013

Executive Vice President: Jane Harmon 04/09/2013

Articulation Officer: Letrisha Mai 04/04/2013

Librarian: Mary LaBarge 04/09/2013

Implementation Term and Year: Fall 2013

Approval Dates:

Approved by Moorpark College Curriculum Committee: 04/09/2013

Approved by Board of Trustees (if applicable): 04/09/2013

Approved by State (if applicable): 04/23/2013