CLARK ATLANTA UNIVERSITY
SCHOOL OF ARTS AND SCIENCES
DEPARTMENT OF PHYSICS
COURSE SYLLABUS

CPHY 121 MECHANICS (PHYSICS I)
SPRING 2019

CRN	Credit Hours	Section	Meeting Days	Meeting Time	Meeting Location	Level
26794	3	01	MWF	10:00 - 10:50	Denn 162	*U*

Instructor: M. D. Williams, Ph.D.

Office Hours	MWF 13:30 - 15:30 and by appointment
Office Location	TWC RCST 3037E
Office Telephone	404-880-6902
Email	mdwms@cau.edu

Course Description: This an introductory Physics course for students with a background in basic calculus. Topics include kinematics, dynamics, Newton's laws of motion, laws of conservation of momentum and energy, and oscillatory motion. There is an associated laboratory course, CPHY 121L (CRN no. 27799).

Prerequisites: Pre- or Co-requisite: MAT 111 (Calculus I).

Course Objectives: The student is expected to gain an understanding of the basic concepts of physics in the area of mechanics.

Learning Outcomes: Successful completion of this course will enhance students' critical thinking ability and problem solving skills. Students will be able to

1) understand relationships among physical quantities and apply them to problems related to physical phenomena
2) apply the general kinematic equations of motion to any specific situation, subject to a constant or impulsive force, and solve for unknown quantities of the motion in terms of known quantities.
3) use the concepts of conservation of energy, and of linear and angular momentum, to write equations for specific situations that predict subsequent motion, and energy conversions, of objects undergoing collisions or the application of forces.

Required Text: Essential University Physics, Volume I, 3rd edition, Addison-Wesley

Teaching/Learning Methods/Classroom Format: Lectures (discussion of principles and theories with examples of problem solving)

If you believe you qualify for course adaptations or special accommodations under the Americans with Disabilities Act, it is your responsibility to contact the CAU Disabled Student Support Services office and provide the appropriate documentation. If you have already documented a disability or other condition that would qualify you for special accommodations, or if you have emergency medical information or special needs I should know about, please notify me during the first week of class. You can reach me by phone or e-mail, or you can schedule an appointment to meet with me.

Assignments: Homework problems and supplemental reading assignments

Course Grading: The grade will be determined by **1)** the average of scores on homework (25%), **2)** average of scores on tests (50%), and **3)** a final exam (25%).

Grade scale:
A: 90 - 100
B: 80 - 89
C: 70 - 79
D: 60 - 69
F: below 60

Course Policies and Expectations: Students are expected to attend all classes, do homework, take all tests and the final exam. This class should be considered a stepping stone in your development as a professional scientist or engineer. Your behavior including your dress, speech and conduct should be representative of that goal. It is expected that students will come to class on time, adhere to the CAU dress code, and be prepared to participate in the activities of the class. The use of cellular telephones and other personal communication devices is strictly prohibited. The second infraction will result in immediate removal from the lecture, the third and successive infractions will result in successive drops in the letter grade. All applicable copyright and intellectual property laws are to be followed.

Attendance in the class is mandatory. **To accommodate any emergency or adverse situation the instructor will drop students' lowest test and homework score. No make-up tests will be given.** Students are expected to enroll in the companion course CPHY 121L Mechanics Laboratory to satisfy the requirements of their respective majors.

Supplemental Readings/Additional Bibliography:
"HyperPhysics" at http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html

"The Feynman Lectures on Physics" Vol.'s 1-3, by R. P. Feynman, R. B. Leighton, and M. Sands; Addison-Wesley Publishing; Reading, MA, 1964-65.

Tentative Course Outline and Schedule:

Standards of Measurement (Chapter 1)	*2 Lectures*
1-D Motion (Chapter 2)	*3 Lectures*
First Examination	
1-D and 2-D Motion (Chapter 3)	*3 Lectures*
Force and Motion (Chapter 4)	*3 Lectures*
Second Examination	
Newton's Motion Laws (Chapter 5)	*3 Lectures*
Work, Energy, and Power (Chapter 6)	*3 Lectures*
Third Examination	
Conservation of Energy (Chapter 7)	*3 Lectures*
Gravity (Chapter 8)	*3 Lectures*
Systems of Particles (Chapter 9)	*2 Lectures*
Fourth Examination	
Rotational Motion (Chapter 10)	2 *Lectures*
Angular Momentum (Chapter 11)	
Fifth Examination	
Oscillatory Motion (Chapter 13)	3 *Lectures*
Fluid Mechanics (Chapter 15)	3 *Lectures*
Sixth Examination	

About Your Professor: Dr. Williams holds the academic rank of Professor at CAU in the Department of Physics in the School of Arts and Sciences. He is actively involved in research in the area of Surface Physics. Ph.D. Stanford University (1987)

Any Additional Items Needed: None

CLARK ATLANTA UNIVERSITY
Arts & Sciences
Department of Physics

Course Syllabus
CPHY 121L Mechanics Laboratory

SPRING 2019

CRN	Credit Hours	Course Section	Meeting Days	Meeting Time	Meeting Location	Level
27799	1	1	F	1400 - 1650	DENN 125	U

Instructors: M. D. Williams, Ph.D. and I. S. Matara Kankanamge, Ph.D.

Office Hours	MW: 13:30 - 15:30 and by appointment
Office Location	TWC RCST 3037E
Office Telephone	(404) 880-6902
Email	mdwms@cau.edu

Course Description:
Principles of kinematics, dynamics, laws of conservation of momentum and energy, and oscillatory motion.

Course Objectives:
This laboratory course is designed to provide the student with hands-on experience with the concepts and principles taught in Mechanics for students of mathematics, physics, engineering, and computer sciences.

Learning Outcomes:
1. Understand basic mechanics principles, understand the operation and use of experimental and test/measurement instrumentation.
2. Perform experiments and write standard laboratory reports with a concise communication of what was done and what was learned, complete with theory, data, error analysis, results, and conclusions.

Required Text: Laboratory Manual, Laboratory Notebook, Graph Papers, Protractor, Ruler, Calculator

Teaching/Learning Methods/Classroom Format: *(lectures, videos, outside speakers, etc.)*
Teaching methods employed are brief lectures/introductions to experiments, recitation periods, demonstrations and student presentations of problem solutions and/or student demonstrations.

If you believe you qualify for course adaptations or special accommodations under the Americans with Disabilities Act, it is your responsibility to contact the CAU Disabled Student Support Services office and provide the appropriate documentation. If you have already documented a disability or other condition that would qualify you for special accommodations, or if you have emergency medical information or special needs I should know about, please notify me during the first week of class. You can reach me by phone or e-mail, or you can schedule an appointment to meet with me.

Assignments: Lab Reports 100%

Course Grading:
Grade scale:

A 90 - 100
B 80 - 89
C 70 - 79
D 60 - 69
F <60

Grading and other policies and expectations:

LABORATORY RULES:

1. Punctuality is essential

2. You must be prepared when you arrive for your scheduled lab. You must bring your lab manual and notebook. You must have read the introduction and the procedure for the lab being conducted that week, you will be quizzed on this. You will have an opportunity to ask questions on classroom concepts and problems during the recitation. Recitation period is the first 30 minutes of lab.

After recitation, there will be a brief introduction to the laboratory by your instructor and the lab will begin. All data necessary for the completion of the lab report must be collected during the lab session. **Each student must analyze his or her own data and write an independent laboratory report.** Your lab instructor will initial your data before you leave the laboratory. The written report is due in the laboratory one week after the lab was performed or as instructed.

3. There will be no make-up if you miss a lab session. If you are absent during a lab, do not turn in a report. If you cannot avoid missing your scheduled lab period you should plan to attend another scheduled lab (if available) before the week is over. This plan must be discussed and approved by your assigned lab instructor and by the lab instructor for the substitute section.

4. Late lab reports are not acceptable. Lab reports are due at the beginning of the recitation period.

5. Each lab report must contain the following information:

Your name
Lab day, time, and name of instructor
Names of other students in your lab group

6. All lab reports must be written in ink or typed. You are provided with a lab report format which is consistent with the Department of Physics expectations in the text.

7. A scientific report MUST be submitted for all of the labs completed. Each lab report will be graded on a scale of 10 points. The best 10 labs will be used to determine the grade for the lab reports.

Required Readings:

Pre-lab study of theory related to the experiment or exercise of the day. Studying topics of interest from the text and other external sources are encouraged.

Supplemental Readings/Additional Bibliography:

Tentative Course Outline and Schedule: The topic list below may vary at the discretion of the instructor.

Lab #	Topic
1	Measurements and Data Analysis
2	Graphical Analysis I
3	Graphical Analysis II
4	Resolution of Forces
5	Uniformly Accelerated Motion
6	Harmonic Oscillator: Kinematics
7	Harmonic Oscillator: Dynamics
8	Harmonic Oscillator: Energetics
9	Damped Harmonic Oscillator
10	Simple Pendulum
11	Projectile Motion: Ballistic Pendulum

About Your Professors: Dr. Williams holds the academic rank of Professor at CAU in the Department of Physics in the School of Arts and Sciences. He is actively involved in research in the area of Surface Physics. Ph.D. Stanford University (1987)

Dr. Matara Kankanamge is a postdoctoral research associate in the Department of Physics in the School of Arts and Sciences. She is actively involved in research in our Center of Excellence in Materials Physics. Ph.D. Georgia State University (2016)

CLARK ATLANTA UNIVERSITY
SCHOOL OF ARTS AND SCIENCES
DEPARTMENT OF PHYSICS
CPHY 122: ELECTRICITY AND MAGNETISM (PHYSICS II)
2019 Spring Semester

CRN	Semester Hours	Course Section	Meeting Days	Meeting Time	Meeting Location	Level *(U/G)*
26650	3	1	M,W,F	9:00 - 9:50	**McPheeters-Dennis Hall** Room162	U

Instructor: **ALFRED Z. MSEZANE**

Office Hours	***Note that office hours will be announced in class and posted on office door.*** M - F: 2:00 - 6:00 p.m. **OR** by Appointment
Office Location	Sage-Bacote, Room 217
Office Telephone	(404) 880-8663
Email	amsezane@cau.edu

Course Description:
This course on Electricity and Magnetism, also popularly known as PHYSICS II, is the continuation of the PHYSICS I course on Mechanics (CPHY 121). Many of the basic concepts and techniques developed and learned in Mechanics, such as vector analysis, force, work, energy, and oscillatory motion, are applied to the electric and magnetic fields. Most of the electrical and electronic devices that are an integral part of our modern life are based on the physical concepts of electricity and magnetism. For example, the operation of computers, televisions, radios, photocopying machines, electric motors, and cell phones are based on laws of electricity and magnetism. You are going to learn these laws of electricity and magnetism in this course. The electromagnetic force between charged particles is one of the fundamental forces of nature, just like the gravitational force that you learned about in PHYSICS I. **This is a required course for Physics, Mathematics, Computer Science, Chemistry, and Engineering majors.**

Prerequisites *(if applicable)*
This course is a continuation of CPHY 121. Students explore the electromagnetic phenomena predicted by Maxwell's equations. **Pre-requisite:** CPHY 121. **Pre- or Co-requisite:** Mat 112.

Working knowledge is assumed of undergraduate mechanics and heat as well as calculus. Importantly, a knowledge of vectors is EXTREMELY IMPORTANT. Students are encouraged to interact strongly among themselves.

Course Objectives:
The phenomena of electricity and magnetism will be developed independently and then a connection between the two will be established via the famous Maxwell's equations of electromagnetism. These four equations along with Newton's laws are the backbone of classical physics. The ultimate aim of this course is to develop and understand these equations, particularly, what these equations represent that make them so special and critically important.

Learning Objectives:

To explore and master the fundamental concepts of the electromagnetic phenomena predicted by Maxwell's equations

Learning Outcomes:

(a) To understand basic physical concepts and principles presented in the course. **(b)** To understand applications of these concepts to common electrical and electronic devices. **(c)** To understand, interpret and deduce mathematical relationships between various physical quantities and to acquire ability to apply the knowledge to solve problems. **(d)** To practice and master the physical concepts presented in the course

Teaching/Learning Methods/Classroom Format: *(lectures, videos, outside speakers, etc.)*

Lectures and small research projects; Web. For those who are research oriented, Workstation access is provided at the Center for Theoretical Studies of Physical Systems (CTSPS), Room 203 Sage-Bacote.

Required Text:

ESSENTIAL UNIVERSITY PHYSICS, Volume 2 (Pearson/Addison Wesley, San Francisco, 2007), by Richard Wolfson.

Students are strongly encouraged to buy and use the text book.

Assignments:

Assignments are at the end of the Syllabus. These depend upon the preparation and readiness of the students. They have been carefully selected to reinforce understanding

"If you believe you qualify for course adaptations or special accommodations under the Americans with Disabilities Act, it is your responsibility to contact the CAU Disabled Student Support Services office and provide the appropriate documentation. If you have already documented a disability or other condition that would qualify you for special accommodations, or if you have emergency medical information or special needs I should know about, please notify me during the first week of class. You can reach me by phone or e-mail, or you can schedule an appointment to meet with me."

Grading and other policies and expectations:

Grading

A: 90-100; **B:** 75-89; **C:** 60-75; **D:** 45-60; **F:** below 45.

Evaluation	Weight
Two Tests (1 each)	2
Mid-Term	1
Final Examination	2
Homework	1
Total	**6**

The final examination is a **TAKE HOME. NO COPYING IS ALLOWED!!**
QUIZZES: There will be as many quizzes as needed. They will HELP in the final grade determination. The quizzes will contain short questions on important concepts presented in past one week. The dates and times of quizzes will **not** be announced in advance.

There is no make-up for quizzes.

Collaboration and references: Students are encouraged to collaborate or to seek printed help in working out problems. However, the final write-up must be entirely your own. Transcription from your peers is strongly discouraged, in fact it is forbidden. When you do obtain outside help you must acknowledge it. Such an acknowledgement will never lower your grade; it is required as a simple matter of intellectual fairness and professionalism. **Take home tests/exams must be written clearly for full credit.**

Course Policies and Expectations:
Students are required to attend each class session. They are expected to arrive in the **class on time**, and to complete all assignments by the due date and submit all **assignments before lectures start**. Mutual respect and willingness to work hard and smart are desired. **Except in special circumstances, there will be no make-up exams. Importantly, each student must submit his/her test/exam in person. Multiple submissions are not acceptable.**

Supplemental Readings/Additional Bibliography:

Fundamentals of Physics by Halliday and Resnick
Physics for Scientists and Engineers by Tippler
Feynman Lectures on Physics, Volume 2 (These books are available in our library)

The Textbook is very well-written. So, students are advised to devote significant time understanding the material in the book. Students must have and study the textbook to understand the material; we follow the text closely.

Course Outline and Schedule: *(dates, weeks, topics)*
The following chapters will be covered (Each lasting for about a week):

Course Outline

1. Chapter 20 (Electric Charge, Force, and field).
2. Chapter 21 (Gauss' Law).
3. Chapter 22 (Electric Potential).
4. Chapter 23 (Electric Energy and Capacitance).
5. Chapter 24 (Electric Current).
6. Chapter 25 (Electric Circuits).
7. Chapter 26 (Magnetic Force and Field).
8. Chapter 27 (Electromagnetic Induction).
9. Chapter 28 (Alternating Current Circuits).
10. Chapter 29 (Maxwell's Equations).

CLASS SCHEDULE

CHAPTER	LECTURES
Chapter 20	1-5
Chapter 21	6-9
Chapter 22	10-12
Chapter 23	13-15
Chapter 24	16-18
Chapter 25	19-22
Chapter 26	23-26
Chapter 27	27-29
Chapter 28	30-33
Chapter 29	34-36

NOTE: Class attendance is mandatory!!!

About Your Professor:
Dr. Alfred Msezane, Professor of Physics and Founding Director of CTSPS at Clark Atlanta University, is an internationally known researcher with extensive peer-reviewed publications and collaborates extensively nationally/internationally. Msezane is a Fellow of The Royal Society of Chemistry (London, UK); Fellow of The American Physical Society and Life Member; Fellow of National Society of Black Physicists; Fellow of The Institute of Physics (London, UK) and Fellow of American Association for the Advancement of Science (AAAS).

Dr. Msezane wrote in 2014 for the prestigious American Physical Society - The Back Page: "**Nelson Mandela's Leadership**", Alfred Z. Msezane and Sekazi K. Mtingwa http://www.aps.org/publications/apsnews/201405/backpage.cfm. It is noted that the **YALI Washington Fellowship** is now known as **The Mandela Washington Fellowship.**

Any Additional Items Needed:

Physics 122, SPRING 2019

Home Work

Chapter 20

Numbers: 28, 46, 50, 53, 56, 43, 44, 62, 63, 69 and 78

Chapter 21

Numbers: 22, 25, 37, 39, 45, 47, 53, 62, and 70

Chapter 22

Numbers: 35, 36, 40, 45, 49, 54, 58, 59, 69, 76, and 79

Chapter 23

Numbers: 38, 41, 43, 47, 48, 52, 54, 56, 64, 79 and 81

Chapter 24

Numbers: 37, 41, 42, 49, 56, 60, and 65

Chapter 25

Numbers: 38, 40, 48, 50, 53, 59, 62, 64, 75, and 81

Chapter 26

Numbers: 41, 45, 52, 57, 64' 77, 82, 93, 37

Chapter 27

Numbers: 35, 39, 47, 60, 62, 65, 72, 75, and 81

Chapter 28

Numbers: 17, 25, 30, 41, 48, 52, 55, 61, 68, 70, and 80

Chapter 29

Numbers: 16, 22, 32, 34, 39, 45, 59, 62, 65, and 71

SYLLABUS
PHY122L ELECTRICITY AND MAGNETISM LAB
Clark Atlanta University
Fall Semester, 2018

Instructor: Mr. Terry Harrington
Laboratory Coordinator: Mr. Terry Harrington
Office: Room 113 McPheeters-Dennis Hall; Tel. #: 880-8400

• Course Description

This laboratory course is required for partial fulfillment of course requirements for Physics 122 (Electricity & Magnetism).

• Purpose

The course consists of experiments which are designed to enhance your familiarity and knowledge of physics principles and to provide opportunities for students to gain familiarity with test equipment and to investigate experimentally electricity and magnetism. Students will engage in experiments that explore electromagnetic forces, induction, static and time-dependent electromagnetic fields and electric circuits.

• Prerequisites

The student must have completed the Physics 121 lecture and lab series.

• Required Text and Materials

Textbook: Clark Atlanta University Department of Physics Laboratory Manual for Physics 122L.

Materials: Supplied in the lab except for materials needed to complete lab reports (writing and drawing instruments, computers, paper, computer programs, etc.).

• Course Objectives

The student is expected to gain through the course a basic understanding of and basic proficiency in the use of test equipment and concepts of physics in the area of electricity and magnetism. The course consists of ten (10) laboratory experiments (each of which are designed to illustrate a technique or principle of measurement, or a physical principal introduced in lecture.) and recitations. In addition to recitation presentations made by the instructor students may be required to make presentations, the nature of which are determined by the instructor. There will be 4 quizzes given on weeks 3, 5, 7, and 9. The average of quizzes one and two will count one as one lab report and the average of quizzes three and four will count as one lab report. There will be a final exam and it will account for 10% of your course grade.

The experiments will be performed in the order listed in the lab manual unless your lab instructor informs you otherwise. Your lab grade will be determined by the average of the eleven (11) lab report grades (ten experiments plus a grade for recitation).

Each laboratory period will start with a recitation hour, followed by two hours of experimental work (setting up hardware, collecting data, putting away hardware).

Lab reports are due at the end of the class period.
DO NOT MISS LAB! Missed labs will result in a grade of zero for that lab.

CLARK ATLANTA UNIVERSITY
SCHOOL OF ARTS AND SCIENCES
DEPARTMENT OF PHYSICS
COURSE SYLLABUS

CPHY 123: OPTICS AND MODERN PHYSICS
SPRING 2019

CRN	Semester Hours	Course Section	Meeting Days	Meeting Time	Meeting Location	Level *(U/G)*
28088	3	1	T, R	01:40 – 02:55	McPheeters-Dennis Hall 162	U

Instructor: Dr. Ronald E. Mickens

Office Hours:	
Office Location	Thomas Cole Science and Technology Building; Room 1027**B**
Office Telephone	(404) 880-6923
E-mail	rmickens@cau.edu

Course Description: This course satisfies the physical science requirement for non-science majors. Its main goal is to provide an introduction to the physical sciences and their application to understanding natural phenomena.

Prerequisites (*if applicable*)
Pre-requisites for this course are CPHY 121 – Mechanics; CPHY 122 - Electricity and Magnetism; CMAT 111 – Calculus I and CMAT 112 – Calculus II.

Course Objectives: The objective of this course is to develop an understanding of the basic principles in optics and modern physics by means of a detailed analysis of wave phenomena.

Learning Outcomes: A student passing this course is expected to perform at or above the twenty-five (25) percentile level on a standardized test covering the material for this calculus based three course sequence.

Required Text: **Essential University Physics**, 2nd Ed., by Richard Wolfson, Pearson Addison Wesley; New York, NY

Teaching/Learning Methods/Classroom Format: *(lectures, videos, outside speakers, etc.)*
Lectures including discussions using the Wiederhold Question Matrix and Suchman Inquiry strategies, schematic representations of principles, and application-oriented examples will be utilized. Outside readings will be required.

Assignments:

Homework – 20% of course grade

Problem solving is an integral part of this course. Homework is due in class. Credit is obtained by generating and understanding the correct mathematical form and physical interpretation of the answer. Each assigned problem should be restated prior to your presentation and should be accompanied by any necessary drawings or diagrams. The lowest homework grade will be dropped.

Exam – 40% of course grade

There will be four (4) equally weighted exams given during the semester.

Final Exam – 40% of course grade

Course Grading:

A:	90 - 100
B:	80 - 89
C:	70 - 79
D:	60 - 69
F:	< 60

Course Policies and Expectations:

It is expected that students will come to class on time, adhere to the University dress code, and be prepared to participate in the activities of the class. Cellular telephones and other personal communication devices are to be turned off. You should not bring and eat food and/or drink during the class. Attendance in the class is mandatory. A student may be dropped from the course for excessive absences.

Supplemental Readings/Additional Bibliography:

"PhysicsNow" at http://www.pse6.com

"The Feynman Lectures on Physics" Vol.'s 1-3, by R. P. Feynman; Addison-Wesley 1964-65.

Tentative Schedule / List of Topics

Oscillatory Motion (Chapter 13)
Wave Motion (Chapter 14)
Sound Waves (Chapter 14)
Superposition and Standing Waves (Chapter 14)
Electromagnetic Waves (Chapter 29)
Light and Laws of Geometrical Optics (Chapter 30)
Geometric Optics (Chapters 30, 31)
Interference of Light Waves (Chapter 32)
Diffraction (Chapter 32)
Temperature, Thermal Expansion (Chapters 16, 17)
First Law of Thermodynamics (Chapter 18)
Heat Engines, 2nd Law of Thermo. (Chapter 19)
Introductory Quantum Mechanics (Chapter 34)
Atomic Physics (Chapter 36)

About Your Professor:

Dr. Ronald E. Mickens is the Callaway Distinguished Professor in the Department of Physics at Clark Atlanta University. His research interests include mathematical physics, history and philosophy of science, and the relationships between physics and mathematics. His most recent book is R. E. Mickens, "Generalized Trigonometric and Hyperbolic Functions" (Chapman and Hall/CRC Press, London, 2018).

Any Additional Items Needed:

CLARK ATLANTA UNIVERSITY
Arts & Sciences
Department of Physics

Course Syllabus
CPHY 123L Optics and Modern Physics Laboratory

FALL 2018

CRN	Semester Hours	Course Section	Meeting Days	Meeting Time	Meeting Location	Level *(U/G)*
27763	1	1	Tu	1340 - 1620	MD 119	U

Instructor: M. D. Williams, Ph.D.

Office Hours	MTWF: 9:30 AM - 11:30 AM
Office Location	DENN 110
Office Telephone	(404) 880-6902
Email	mdwms@cau.edu

Course Description:
Principles of simple harmonic motion, physical optics, and electromagnetic waves.

Prerequisites *(if applicable)*: Algebra, Basic Calculus and Trigonometry

Course Objectives:
This laboratory course is designed to provide the student with hands-on experience with the concepts and principles taught in the physics classes and to supplement the classroom lectures.

Learning Outcomes:
After completing this course, the student will be able to:
1. Understand simple harmonic motion and mechanics of electromagnetic waves.
2. Collect data and write a standard scientific report.

Required Text: Laboratory Manual, Laboratory Notebook, Graph Papers, Protractor and Ruler

Teaching/Learning Methods/Classroom Format: *(lectures, videos, outside speakers, etc.)*
Students perform weekly laboratory experiments in groups of two or four.

Assignments:
Lab Reports 90%
Quiz, Recitation & Attendance 10%

Course Grading:
Grade scale:

A 90-100
B 80-89
C 70-79
D 60-69
F <60

Course Policies and Expectations:

LABORATORY RULES:

1. Punctuality is essential
2. You must be prepared when you arrive for your scheduled lab. You must bring your lab manual and notebook. You must have read the introduction and the procedure for the lab being conducted that week, you will be quizzed on this. You will have an opportunity to ask questions on classroom concepts and problems during the recitation. Recitation period is the first 30 minutes of lab.

   After recitation, there will be a brief introduction to the laboratory by your instructor and the lab will begin. All data necessary for the completion of the lab report must be collected during the lab session. **Each student must analyze his or her own data and write an independent laboratory report**. Your lab instructor will initial your data before you leave the laboratory. The written report is due in the laboratory one week after the lab was performed or as instructed.
3. There will be no make-up if you miss a lab session. If you are absent during a lab, do not turn in a report. If you cannot avoid missing your scheduled lab period you should plan to attend another scheduled lab (if available) before the week is over. This plan must be discussed and approved by your assigned lab instructor and by the lab instructor for the substitute section.
4. Late lab reports are not acceptable. Lab reports are due at the beginning of the recitation period.
5. Each lab report must contain the following information:

   Your name
   Lab day, time, and name of instructor
   Names of other students in your lab group
6. All lab reports must be written in ink or typed. You are provided with a lab report format which is consistent with the Department of Physics expectations on page 3.
7. A scientific report MUST be submitted for all of the labs completed. Each lab report will be graded on a scale of 10 points. The best 10 labs will be used to determine the grade for the lab reports.

Supplemental Readings/Additional Bibliography:

Course Outline and Schedule: *(dates, weeks, topics)*

Tentative Course Outline and Schedule:

Week	LAB EXPERIMENT
1	Simple Harmonic Motion
2	Dynamics of Sound
3	Interference of Sound
4	Resonance & Standing Waves
5	Reflection & Optic Table Assembly
6	Refraction
7	Geometrical Optics: Mirrors
8	Geometrical Optics: Lenses
9	Interference
10	Diffraction
11	Polarization

You must be present for all the above laboratory periods. The average of the best ten lab grades will count toward your final laboratory grade. A scientific report will be submitted for all of the labs completed. Each lab report will be graded on a scale of 100 points.

About Your Professor: Dr. Williams holds the academic rank of Professor at CAU in the Department of Physics in the School of Arts and Sciences. He is actively involved in research in the area of Surface Physics. Ph.D. Stanford University (1987)

Any Additional Items Needed:

REQUIRED FORMAT FOR LABORATORY REPORT

NOTE: Student's name on lab report must be signed in ink

The Title Page of the lab must precede all submitted reports
Name of Lab Instructor Name of Student

Title of Experiment
Purpose or Aim: This can be copied from the manual. Otherwise, you must be concise

Pre-Lab Notes: Notes taken during pre-lab lecture. The lecture will explain the theory behind the lab and the other instructions in performing the lab.

Diagram:
Title of Diagram
The diagram must have a title explaining the object or equipment used in the experiment. The parts of the diagram must be labeled.

Data:
Title of Data
The data must have a title explaining the quantities that are being measured in the experiment that is being performed. It is preferable for the data to be in a tabular form. All the columns in the table must have the measured quantity and the corresponding units. If any of the data is calculated, a column must have a label indicating the calculated quantity.

Calculation/Analysis:
Title of Calculation
Title here should explain the quantity that is being calculated from the experiment performed. If a quantity is calculated several times from the experiment, The Calculation section can be change to **Sample Calculation** and the title of calculation must also be changed to indicate that only one calculation is being performed. The only calculation performed must include all the equation, formula and the correct units.

Graph:
Title of Graph if Applicable
Graphs must be either drawn by hand on graph paper or printed from the output of a suitable drawing program such as Microsoft Excel. Your instructor will show you examples of graph papers. T he "Y" axis on the graph should represent the dependent variable and the "X" axis the independent variable. The variables and the corresponding units on both axis must be labeled. If the graph is a straight line, the slope must be calculated and shown on the graph paper.

Discussion and Conclusions:
Discuss how successful the laboratory was in carrying out its intended purpose. This narrative should include sources of error or other barriers to achieving the desired result. Suggestions for improving the laboratory or alternative approaches are especially appreciated. Draw conclusions as to how the phenomena demonstrated impacts your life and/or how it can be used to make your life more convenient or society better.

Question and Answer:
The questions at the end of your manual must be rewritten before they are answered.