



WACO, TEXAS

**COURSE SYLLABUS
AND
INSTRUCTOR PLAN**

**ELEMENTARY PHYSICS 2
PHYS - 1407 - 01**

Gary W. Johnson, P.E., PhD.

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Course Description:

Conceptual-level survey of topics in physics intended for liberal arts and other non-science majors.

Prerequisites and/or Corequisites:

None.

Course Notes and Instructor Recommendations:

There may be useful handouts made available in class from time to time. These could include formula sheets for the tests and final exam. If a student is having difficulty, please contact the instructor as soon as possible! Advice: there is no such thing as a dumb question in Dr. Johnson's class. Ask your questions! Do not leave with something still not understood!

Instructor Information:

Instructor Name:	Dr. Gary W. Johnson
MCC E-mail:	gjohnson@mclennan.edu
Office Phone Number:	(254) 299-8186
Office Location:	S 345
Office/Teacher Conference Hours:	T-Th 10:00-11:00 and after 2:15 SB-345 Other times by appointment.
Other Instruction Information:	Instructor reserves the right to change things in this syllabus at any time during the semester.

Required Text & Materials:

Title:	Conceptual Physics, 12 th edition (<i>e-book is available inside the software</i>)
Author:	Paul G. Hewitt
Edition:	12th
Publisher:	Pearson Addison-Wesley
ISBN:	978032190979-4 (textbook only) 978032190910-7 (textbook with Mastering Physics Student Access Kit)
Title:	Mastering Physics Student Access Kit (<i>this is the <u>true</u> required item</i>)
Publisher:	Pearson Addison-Wesley
ISBN:	978032194065-0 (license can be purchased online through www.masteringphysics.com)

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A “scientific” calculator: this means something that can handle exponents, trig functions, hyperbolic trig functions, and logarithms (both kinds).

Access to Blackboard: this course might (or might not) have a component on Blackboard. If you haven't yet logged into the system, learn how to do so. Log in and make sure you can access this course's materials. The prime on-line location is Pearson Mastering Physics, however.

Additional requirements: Students must have a reliable computer and internet connection. Students must be able to demonstrate basic computer literacy skills such as keyboarding, sending and receiving email, and using a web browser.

[MCC Bookstore Website](#)

Methods of Teaching and Learning:

Students will learn through lecture and reading, as well as through work on homework, quizzes, labs, and exams. Additional methods may be used as opportunities present themselves.

Course Objectives and/or Competencies:

Upon successful completion of this course, students will:

1. Define and discuss the scientific method and its applications.
2. Describe and explain atoms and atomic structure and their applications.
3. Describe and explain charge, Coulomb's Law, the electric field, the electric potential, and their applications.
4. Describe and explain current, resistance, and simple DC circuits.
5. Describe and explain magnetism, the magnetic field, magnetic forces, and their applications.
6. Describe and explain simple AC circuits.
7. Describe and explain wave mechanics and its applications.
8. Describe and explain electromagnetic radiation using wave mechanics.
9. Describe and explain reflection, refraction, and other optical properties of light.
10. Describe and explain quantum theory, especially as it relates to the behavior of electrons and photons.
11. Describe and discuss the atomic nucleus and radioactivity.

Core Objectives – Life and Physical Sciences:

- A. Critical thinking skills – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information. These will be assessed through lecture exams, problems assigned for homework, and/or laboratory exercises.

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- B. Communication skills – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication. These will be assessed by presentations and/or reports based on laboratories, problems, and/or research.
- C. Empirical and Quantitative skills – to include manipulation and analysis of numerical data or observable facts resulting in informed conclusions. These will be assessed through lecture exams, problems assigned for homework, and/or laboratory exercises.
- D. Teamwork – to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal. This will be evaluated through group discussions, group laboratory projects, and/or through group presentations.

Core objectives for life and physical sciences are covered by all activities during the semester. The course objectives/competencies are mapped onto the chapters in the list below.

Course Outline or Schedule:

This course will encompass the following material to be assessed by three tests and a comprehensive final exam. Priority is on chapters 19-33. The schedule and chapters to be covered are subject to changes announced in class.

<u>Chapter</u>	<u>Descriptive Content</u>	<u>Course Objectives</u>
Ch.19	Vibrations and Waves	7,1
Ch.20	Sound	7
Ch.21	Musical Sounds	7
Ch.22	Electrostatics	3,1
Ch.23	Electric Current	4
Ch.24	Magnetism	5
Ch.25	Electromagnetic Induction	3,4,5
Ch.26	Properties of Light	9,1
Ch.27	Color	9
Ch.28	Reflection and Refraction	9
Ch.29	Light Waves	9,7
Ch.30	Light Emission	9
Ch.31	Light Quanta	9,10
Ch.32	The Atom and the Quantum	2,10,1
Ch.33	The Atomic Nucleus and Radioactivity	11
Ch.34	Nuclear Fission and Fusion	11
Ch.35	Special Theory of Relativity	1
Ch.36	General Theory of Relativity	1

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Physics 1407 Spring 2015

Week	days	T	Th	remarks
1	1.13 & 15	syll	19	
2	1.20 & 22	20, start lab 1	21, finish lab 1	
3	1.27 & 29	22	23	W 1.28 last add/drop
4	2.3 & 5	24, start lab 2	25, finish lab 2	
5	2.10 & 12	catch-up	review 19-25	
6	2.17 & 19	Test 1 (ch 19-25)	26	F 2.20 last appl grad
7	2.24 & 26	27, start lab 3	28, end lab 3	
8	3.3 & 5	29, start lab 4	30, finish lab 4	
	3.9 thru 13	spring break	spring break	
9	3.17 & 19	brush-up, start lab 5	31, end lab 5	
10	3.24 & 26	catch-up	review 26-31	F 3.27 st.holiday
11	3.31 & 4.2	Test 2 (ch 26-31)	32	T 3.31 last day W
12	4.7 & 9	33	34	
13	4.14 & 16	35	36	
14	4.21 & 23	review 32-36	Test 3 (ch 32-36)	
15	4.28 & 30	review for FE	review for FE	F 5.1 last class day
16	5.4 thru 7	Final Exams	Final Exams	

lab	topic
1	resonance in vibrating strings
2	resistors in series and parallel
3	magnets: polarity and visualization
4	"stealth" and visibility with light
5	lenses (refraction and focusing)

Course Grading Information:

<u>Item</u>	<u>weight</u>	<u>how administered / where grades kept</u>
Homework	10%	Mastering Physics software
Quizzes	10%	Mastering Physics software
Labs	40%	on paper / instructor's spreadsheet
Tests (3)	30%	on paper / instructor's spreadsheet
Final Exam	10%	on paper / instructor's spreadsheet
Overall	100%	

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Homework: homework assignments are conceptual-and-numeric problems designed to challenge you to gain a deeper understanding of the course material. Homework will be turned in and graded utilizing the Mastering Physics software, complete with due dates and times in that software. Those dates and times are set to allow sufficient time for mastery.

Quizzes: quizzes are more-conceptual exercises meant to enhance and test your knowledge of the reading material. Quizzes will be turned in and graded utilizing the Mastering Physics software, complete with due dates and times in that software.

Labs: the lab grades will consist of problems completed in lab class, and lab reports to be written outside of class. 5 of these are scheduled.

Tests (3): There will be three major tests during the semester. Test questions will come from the material covered in class, the textbook, and the laboratory exercises.

Final Exam: the final exam is comprehensive, and has the same format as the tests.

Cheating and plagiarism are not allowed. That behavior rates failure of the course, and reporting of such conduct to the Department Chair.

Late Work, Attendance, and Make Up Work Policies:

Homework: students lose some credit for problems completed after the due date and time in the Mastering Physics software. Student absences have no effect on the due date and time. Nothing at all may be turned in after midnight before the final exam.

Quizzes: students lose some credit for problems completed after the due date and time in the Mastering Physics software. Student absences have no effect on the due date and time. Nothing at all may be turned in after midnight before the final exam.

Labs: two consecutive lab class periods have been scheduled for each laboratory experiment, to allow for the effects of student absences. The lab reports are due by the end of the day of the second class period for that experiment. *Otherwise, student absences do not affect these due dates.* For lab periods without scheduled experiments, there may or may not be problems assigned to be worked. If problems are assigned, those are due by the end of the next day, thus also allowing for the effects of a student absence. No other allowances in due date will be made as regards student absences. *If there is no scheduled experimental lab still to do, and no*

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assigned problem to work, this lab class time is an excellent opportunity for getting homework and quizzes done early, or for getting help directly from the instructor.

Tests: Unless there is a college-approved, documented excused absence, no missed test may be made up. **DO NOT MISS A TEST DAY!** Any unexcused absence for a test will result in a grade of zero for that test. It is possible to schedule an early test with the instructor, for an anticipated absence.

Final Exam: The final exam is required for all students, no exceptions. Unless there is a college-approved, documented excused absence, a missed final exam may not be made up. **DO NOT MISS FINAL EXAM DAY!** Any unexcused absence for the final exam will result in a grade of zero for that exam.

Attendance is mandatory. This course has both a lecture period and a lab period, and roll will be taken in both. Each counts half an absence for that day. ***Per MCC policy, you will be automatically dropped after missing 25% of the class meetings.*** If you are dropped before the official drop date, you will receive a grade of W. If you are dropped after the official drop date, you will receive a grade of F, unless there are highly unusual circumstances.

Tardiness and leaving class early: Any student who is late for class, or who leaves class early (without explicit permission from the instructor), will accumulate half an absence for each such occurrence. These count toward the 25% absence policy of MCC.

Student Behavioral Expectations or Conduct Policy:

Students are expected to maintain classroom decorum that includes respect for other students and the instructor, prompt and regular attendance, and an attitude that seeks to take full advantage of the education opportunity.

MCC Academic Integrity Statement:

The Center for Academic Integrity defines academic integrity as “a commitment, even in the face of adversity, to five fundamental values: honesty, trust, fairness, respect, and responsibility. From these values flow principles of behavior that enable academic communities to translate ideals into action.” Individual faculty members determine their class policies and behavioral expectations for students. Students who commit violations of academic integrity should expect serious consequences. For further information about student responsibilities and rights, please consult the McLennan website and your Highlander Student Guide.

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Academic Integrity Statement:

The instructor encourages students to work together in teams on the lab experiments and on the homework and quizzes, although this is not required. If a team of students performs the lab, then only one lab report must be written, with all the names of the team members affixed to it. All team members will get that one grade for that lab. Otherwise, every student who performs the lab by himself, must write his own report, and receive that grade.

No team efforts are allowed on the tests and final exam. When problems are assigned in the lab period, the instructor will specify whether teams are allowed or not. Not all such problems are graded.

MCC Attendance Policy:

Regular and punctual attendance is expected of all students, and each instructor will maintain a complete record of attendance for the entire length of each course, including online and hybrid courses. Students will be counted absent from class meetings missed, beginning with the first official day of classes. Students, whether present or absent, are responsible for all material presented or assigned for a course and will be held accountable for such materials in the determination of course grades.

Please refer to the [Highlander Guide](#) for the complete policy.

ADA Statement:

In accordance with the requirements of the Americans with Disabilities Act (ADA), and the regulations published by the United States Department of Justice 28 C.F.R. 35.107(a), MCC's designated ADA coordinators, Dr. Drew Canham – Vice President, Student Success and Mr. Gene Gooch - Vice President, Finance and Administration shall be responsible for coordinating the College's efforts to comply with and carry out its responsibilities under ADA. Students with disabilities requiring physical, classroom, or testing accommodations should contact Ms. Renee Jacinto, Disabilities Specialist, Student Services Center, Student Development Department, Room 211 or at 299-8122 or disabilities@mclennan.edu.

TITLE IX

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“No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.”

Legal Citation: Title IX of the Education Amendments of 1972, and its implementing regulation at 34 C. F. R. Part 106 (Title IX)

In accordance with the requirements of the Title IX Education Amendments of 1972 MCC's designated Title IX Coordinator, Al Pollard – Vice President, Program Development/EEO Officer and Deputy Coordinator, Brett Bunce – Director of Human Resources shall be responsible for coordinating the College's effort to comply with and carry out its responsibilities under Title IX.

Contact information

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