



PHY 221 – University Physics I

Science Department

Semester: Fall & Spring 2009

Catalog Course Description: This is the first of a sequence of courses. The course includes a calculus based treatment of the following topics: vectors, laws of motion, rotation, forces and energy. Lecture (3.0), Laboratory (6.0).

Prerequisite(s): MAT 140

Credit Hours: 4

Instructor: _____ (request in class)

Office: Beltline Campus, Lindau Engineering Technology (LET) 421

Office Hours: Call or e-mail for an appointment

Telephone: 803-738-7689 (Beltline Math & Science Office)

Class Instructor E-mail: _____ (request in class)

Campus Mailbox: LET 421

FAX: 803-790-7530

Lab Instructor: _____ (request in lab)

Lab Instructor E-mail: _____ (request in lab)

Class Schedule: _____ (get this from your registration form)

Textbook(s): Lecture: *University Physics*, H.D. Young & Freedman, 12th Ed.
Lab: *Physics 221/222 Laboratory Experiments*, by Jerry D. Wilson

Additional Materials: Scientific calculator and a personal email address and weekly computer access.

Departmental Website: <http://www.midlandstech.edu/science>

Departmental Assistant: Jan Oliver (oliverj@midlandstech.edu)

Department Chair: Dr. Gerylyne Lopez-de-Victoria (lopezgd@midlandstech.edu)

General Education Core Competency Statement: This course is designed to meet the college's general education core competency for Scientific Reasoning.

Course Objectives: Upon completion of this course the student will be able to have a working knowledge of calculus-based, university physics I principles.

Course Outcomes and Competencies:

Intended Course Outcome: Students will understand and be able to use scientific reasoning and principles through the study of basic University Physics I. To promote an interest in physics. To enable the student to more thoroughly understand the concepts of physics in general. To enable the student to apply knowledge to a specific problem in a systematic manner. To enable the student to develop skill in handling apparatus and to practice the procedures of making accurate measurements and presenting results in a scientific report.

Course Competency (Performance Measure): Students will demonstrate their understanding and ability to use scientific reasoning and principles by answering examination questions based on the learning objectives: Solve problems using college algebra and college calculus or answer conceptual questions dealing with and to understand the concepts of

1. the motion of an object or objects using kinematics.
2. the motion of an object or objects using dynamics.
3. interacting physical systems using the laws of conservation of energy and momentum.

Measurement Instrument: Students will complete a set embedded examination questions prepared by faculty based on the course learning objectives.

Course Attendance: Students will be allowed to miss twice the number of times a lecture or laboratory section meets per week.

If the lecture meets 3 times per week, 6 absences are allowed.

If the lecture meets 2 times per week, 4 absences are allowed.

If the laboratory meets once a week, 2 absences are allowed.

If the student misses more than 10 minutes of class by either arriving late or leaving early, then the student will be counted as absent, missing fewer than 10 minutes is a tardy. Three tardies count as one absence.

Students adding courses after classes begin are responsible for work covered from the first day of class. All classes missed count as absences.

Please note the following: You are responsible for all material and announcements presented, whether you are present or absent.

Withdrawal: Students may withdraw from a course anytime before the last week of classes (see the current semester college calendar, available on the MTC web site, for official dates). Students who wish to withdraw from a course must submit a withdrawal form to records. The date of withdrawal may affect a number of things, including financial aid/ tuition reimbursement, tuition refunds, and course grades. The effective date of withdrawal depends upon the date the withdrawal form is submitted to records. It is the student's responsibility to be aware of relevant dates, to make an informed decision, and if necessary, to submit withdrawal forms in a timely fashion.

For questions regarding the effect of withdrawal on financial aid or tuition reimbursement students should contact Student Financial Services. Deadlines for tuition refunds may be found on the current semester college calendar, available on the MTC web site, or by calling the cashier's office.

Students who withdraw before midterm will receive a grade of W. Students who withdraw after midterm and have an overall class average of 60% or greater will receive a grade of W. Students who withdraw after midterm and have an overall class average below 60% will receive a grade of WF, which is calculated as an F. Grades of W or WF are also assigned when a student exceeds the maximum number of absences allowed in a course. These grades are entered on the final grade roster along with the last date of attendance (LDA). Students should understand that the LDA does not constitute an effective date of withdrawal and should not consider a decision to stop attending class to be equivalent to withdrawal.

Course Grading and Scale: The final grade for this course will be determined as follows:

- Tests 60%
- Homework 15%
- Lab 25%

A (90-100)

B (80-89)

C (70-79)

D (60-69)

F (<60)

Total of lecture exams - divided by the number of exams- equals lecture average. Lecture average times 0.75 equals lecture points.

Total of lab reports - divided by the number of reports - equals lab average. Lab average times 0.25 equals lab points. Lecture points plus lab point's equals course average.

A grade of zero will be recorded for any announced exam (or assignment), which is missed.

There are no make-up exams for any reason; however, the cumulative final exam will count twice in place of the missed exam. If no exam is missed, then the final may count twice in place a lower exam score.

Please Note: Should change become necessary, the instructor reserves the right to adjust the requirements, pace, or scheduling of this course. Any change will be announced in class before it becomes effective.

The Science Department Chair, Coordinators, and faculty are here to help you. If you are having any problems in your classes, please contact the person who can help you. If we don't know you are having problems, we can't help you. Gerry Lopez is Department Chair and can be reached at 822-3443; Greg Mancini is Beltline Science Coordinator and can be reached at 738-7660. Contact Jan Oliver at 822-3548 for information regarding the Airport Science Coordinator.

Laboratory Policies And Safety Precautions: There will be no eating nor drinking in lab. Do not bring these items into the laboratory. During lab, you will be expected to demonstrate proper lab techniques such as coming prepared to work in a group. Each student is expected to read each lab assignment prior coming to lab. Failure to do this will slow down your group and might allow you to accept illogical data with no time left to redo the experiment, so each student should

- a. contribute to setting up the lab apparatus.
- b. actively make lab measurements.
- c. replace the lab apparatus back to its proper place when through.
- d. Clean up your work station before leaving the lab.

Any student who exhibits disruptive behavior such as talking, discourtesy to faculty or fellow students to include obscene language or gestures, or uncooperative actions will be asked to leave the classroom. The student will be counted absent for this class. Depending upon the nature of the offense, the instructor may require that the student see the Science Department Chair . Cell phones and beepers must be turned off unless you have permission from the instructor – and then only in the vibrating mode. Personal stereos, and similar devices are not permitted in class. Any student involved in academic dishonesty will be given a grade of zero on that assignment. This includes but is not limited to giving or receiving information, use of unauthorized materials, plagiarism, or changing answers after a grade has been assigned.

The lab report may be handwritten if and only if your penmanship is legible – otherwise it needs to be typed. The basic structure of the report is as follows

- **Title Page** (1 page): Near the top of the page state the lab title, your full name, and date the lab was done. Near the bottom of the page, state class and section number and list of all lab partners.
- **Main Body** (1 page plus lab attachments): Basic explanation of the lab's purpose including attaching the data, table, and graph sheets completely and correctly filled out, removed from the lab manual, and placed into the Main Body of the report.
- **Conclusion Page** (1 page): Basic explanation of the results and their implications including the overall results and their error or percent difference with an explanation of potential sources of error.

The report needs to be put in proper order and stapled. Do not use paper clips or any other binding where one or more pages could slip free and be lost. The report needs to be turned in no later than the start of next week's lab unless told otherwise by the Lab Instructor. More specific details will be given the first day of lab. There are no make-up labs, so don't miss labs. No lab grades are dropped, so come prepared and do your best.

There will be a Lab Midterm and a Lab Final given during the lab period as shown on the outline. Both will contain a practical section (hands-on) and analytical section (calculations) and will cover topics and techniques discussed in the lab. Each will count as a lab grade.

The Lab Final may count twice to replace a low or missed lab grade, but only one. Further missed labs will be scored zero.

Tests, Homework and Final Exam: Class tests may be multiple choice, identification, definitions, short answers, essay and/or a mixture of these formats. I will not be any more precise at this time, because the emphasis will be on learning the concepts and nature of physics - not on the nature of testing.

There will be almost weekly homework assignments. Their due dates will be announced in class.

There will be several class tests and a final exam. Test dates and times are fixed and will not be moved or altered unless there is some natural disaster or similar event. Please do not plan on asking later to change dates or times because of a personal conflict - because these dates are fixed, and there are no make-up tests.

PHY 221 Lecture Information:

| Week | Weekly Readings |
|------|--|
| 1 | Ch. 1 Units, Physical Quantities, and Vectors |
| 2 | Ch. 2 Motion Along a Straight Line |
| 3 | Ch. 3 Motion in Two or Three Dimensions |
| 4 | Ch. 4 Newton's Laws of Motion Test #1 (Ch. 1, 2, 3) |
| 5 | Ch. 5 Applying Newton's Laws |
| 6 | Ch. 5 Applying Newton's Laws |
| 7 | Ch. 6 Work and Kinetic Energy Test #2 (Ch. 4, 5) |
| 8 | Ch. 7 Potential Energy and Energy Conservation |
| 9 | Ch. 8 Momentum, Impulse, and Collisions |
| 10 | Ch. 8 Momentum, Impulse, and Collisions |
| 11 | Ch. 11 Equilibrium and Elasticity Test #3 (Ch. 6, 7, 8) |
| 12 | Ch. 11 Equilibrium and Elasticity |
| 13 | Ch. 12 Gravitation |
| 14 | Review Test #4 (Ch. 11, 12) |
| 15 | Final Exam (Cumulative) |

Exact test dates will be announced in class.

PHY 221 Lab Information:

| Week | Labs |
|------|--|
| 1 | Introduction to the Laboratory and Procedures |
| 2 | Lab 1. Experimental Uncertainty and Data Analysis |
| 3 | Lab 2. Measurement Instruments |
| 4 | <i>Problem Lab/Special Project</i> |
| 5 | Lab 3. The Force Table |
| 6 | Lab 4. Friction |
| 7 | Lab Midterm |
| 8 | <i>Problem Lab/Special Project</i> |
| 9 | Lab 5. The Simple Pendulum |
| 10 | Lab 6. Work and Energy |
| 11 | Lab 7. Conservation of Linear Momentum |
| 12 | Lab 8. Projectile Motion: The Ballistic Pendulum |
| 13 | Lab 9. Torques, Equilibrium, and Center of Gravity |
| 14 | Lab Final |

College Policies

Students are expected to read the student handbook and abide by its policies. Copies of the handbook may be obtained at various locations on campus and is located on the web: <http://www.midlandstech.edu/planner/>

Academic Dishonesty: The Student Code addresses what constitutes academic dishonesty. All forms of dishonesty including, but not limited to, cheating on tests, plagiarism, collusion and falsification, will call for discipline.

Cheating on Tests includes:

- Copying from another student's paper.
- Using materials during a test not authorized by the person giving the test.
- Collaborating with any other person during a test without permission.
- Knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or part the contents of any un-administered test.
- Bribing any other person to obtain information about tests.
- Substituting for another student, or permitting another student to substitute for oneself.

Plagiarism is the appropriation of any other person's work and unacknowledged incorporation of that work in one's own work offered for credit.

Campus Emergency Protocol: Students and employees are asked to report safety concerns or suspicious activities to Campus Security at 7199 (on campus) or 738-7199 (cell phone or off campus). In the event of an emergency, employees and/or students should immediately call Campus Security or local 911. If an emergency occurs, the college will use a variety of methods to communicate additional information and instructions including the MTC Information Centers, campus loud speakers, MTC Alerts! (http://www.midlandstech.edu/Phone_Alert.htm), voice mail, email, college Intranet, and the MTC website homepage.

Inclement Weather Policy: In the event weather conditions or other emergencies cause the closing or a delayed start of Midlands Technical College, announcements will be made over local radio and TV stations, on the MTC Web site, and on the college's information line (803-738-8234). Notices will be sent to students via Campus Cruiser Mail when applicable. Separate announcements may be made for day and evening classes as weather conditions change during the day.

If the college closing or reopening means that there is at least 30 minutes of a class remaining, plan to attend that class. For example, if the college opens at 10:00 a.m. in TTH, classes that normally meet at 8:00 a.m. will not meet, but classes beginning at 9:30 a.m. will meet. If the college closes at 8:00 p.m., 6:00 p.m. classes will meet for their regular time, but 7:35 p.m. classes will not meet since there are fewer than 30 minutes remaining in class.

Student E-Mail Accounts: All MTC students are assigned a college e-mail account upon admission to the college. This account is called "Campus Cruiser Mail." Campus Cruiser Mail is the primary mode by which the college communicates with students. Students are responsible for checking their college e-mail on a regular basis for important information and announcements about registration, financial aid, cancelled classes, emergency announcements and other notices. Students can use their college e-mail accounts to communicate with faculty, staff, fellow students, and others, in support of their educational pursuits. In addition to e-mail, students will also have access to maintaining personal calendars and "tasks lists" through their Campus Cruiser e-mail account.

Student Evaluation of Instruction: Students have the opportunity to evaluate this course. The confidential evaluation process is conducted through MTC Online using the individual student's username and password. Announcements will be made during the term concerning how and when to complete the online evaluation. Students are encouraged to participate in this process.

Students Requiring Special Accommodations: If special accommodations are needed for a student with a disability, the student should go to Counseling Services on Beltline or Airport Campus for assistance. Documentation regarding a specific disability is required in order for special arrangements to be made. Confidentiality of information received will be maintained.

SCIENCE DEPARTMENT CODE OF CONDUCT

Student rights and responsibilities are outlined in the Student Handbook. We are extremely proud of the quality of students in the Science Department; however, there have been occasions where disciplinary action is necessary to prevent disruptive and dishonest behavior. The following items are specific violations and consequences supported by the Science Department. Your instructor will circulate a form for your signature stating that you understand the Science Department Course Syllabus, which includes this document.

1. Any student who exhibits behavior that is disruptive to the learning process such as talking, discourtesy to faculty or fellow students to include obscene language or gestures, or uncooperative actions will be asked to leave the classroom. The student will be counted absent for this class. Depending upon the nature of the offense or if it occurs during an test the instructor may require that the student see the Science Coordinator, Chair of the Science Department, or the Director of Campus Life before returning to class. Campus Security will be called for any threatening or violent behavior.
2. Beepers, cell phones, personal stereos, and similar devices are not permitted in class. Permission must be obtained from the Science Coordinator or Instructor for students who are emergency personnel or where there are extenuating circumstances. Campus Security can locate a student and will interrupt a class if there is a situation that needs immediate attention
3. Any student proven to have engaged in academic dishonesty will be given a grade of zero on the test or assignment. This includes, but is not limited to, giving or receiving information during an test, use of unauthorized materials during an test or assignment, plagiarism, or changing answers after a grade has been assigned. An instructor must have reasonable proof that dishonesty has occurred. Until an incident is verified, the student will be assigned a grade of "I" for the work. Witnesses of cheating should report this immediately to the instructor. The grade will be discussed confidentially with the student. If the student denies that academic dishonesty occurred, the Chair of the Science Department or Science Coordinator will meet with the instructor and student. The instructor will be supported if departmental guidelines for handling cheating incidences were followed. However, the student is referred to the Student Handbook for the policy on filing a grievance. In any incident involving academic dishonesty, a report will be filed with the Director of Campus Life.
4. Students with complaints about instructors should follow the appropriate chain of command as outlined in the "Science Department Conflict Resolution" form. A form can be obtained from the Science Department. Signatures must be obtained at each level before the complaint will be validated. There may be some circumstances where the first contact is with the Science Coordinator who will discuss the problem with the instructor. All efforts possible will be made to resolve conflicts internally. However students should remember that matters can also be handled through the Academic Appeal/Grievance process detailed in the Student Handbook.