COURSE SYLLABUS

Physics 1405-73700
Spring 2015
Office of Math and Natural Science
Location: P330, Telephone: 972 273-3500

This course syllabus is intended as a set of guidelines for PHYS 1405. Both North Lake College and your instructor reserve the right to make modifications in content, schedule, and requirements as necessary to promote the best education possible within prevailing conditions affecting this course.

Instructor Information:
Course: Dr. Viola Ruck  
vruck@dcccd.edu
Laboratory: Dr. Viola Ruck

Course Information

Course title: Elementary Physics I 
Course number: 1405
Section number: 73700
Credit hours: 4.00
Laboratory meeting times: Tuesday and Thursday 5:45 PM - 8:35 PM
Laboratory room: C227
Course description: This course is an algebra based presentation of Physics that meets the laboratory science requirements for students.
Course prerequisites: None

Required Textbook

Course Objectives

The objective of the study of a natural sciences component of a core curriculum is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories.

1. To obtain an understanding of the basic physical laws of the universe.
2. To obtain a background on everyday phenomena you will encounter in your life.
3. To learn problem solving skills.
4. To understand and apply method and appropriate technology to the study of natural sciences.
5. To recognize scientific and quantitative methods and the differences between these approaches and the other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing.
6. To identify and recognize the differences among competing scientific theories.
7. To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.
8. To demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.

PROGRAM-LEVEL OBJECTIVES FOR PHYSICS 1405

Physics 1405 develops the following objectives from the Texas Higher Education Coordinating Board:
- Communication Skills
- Critical Thinking Skill
- Empirical and Quantitative Skills
- Teamwork

Specific Course Learning Outcomes

Following the successful completion of this course, you will:

1. Perform calculations related to topics included in PHYS 1405:
   a. Be able to express, interpret and utilize relationships between concepts of physics.
   b. Solve problems using metric and SI units.
   c. Utilize date given in problems to draw graphs and interpret the results.
2. Describe the motion of objects in nature utilizing the laws of nature.
3. Define inertia, vectors, forces, energy, torque and momentum, determine methods of measurements and perform experiments involving these concepts.
4. Determine the relationship between force and acceleration, momentum and velocity of objects and predict the outcome of forces acting on objects.
5. Determine the relationship between pressure, volume and depth of immersion of an object and perform related calculations.
6. Analyze the relationship between center of mass and the equilibrium of objects.
7. Classify wave types and determine the wavelength relevant to different waves.
8. Define different types of energy and recognize the environmental issues related to energy.
9. Identify what forces act on an object and calculate how these forces will influence its motion.
10. Perform measurements using laboratory equipment as well as everyday objects to determine quantitatively the outcome using the laws of physics.

Course Outline: See Appendix A
Means of Assessment of Course Learning Outcomes

Tests
There will be four tests (including the final exam) in this course. The final exam is comprehensive. The test’s format, (short answer, problems etc) will be announced before the test in question.

Self-Study - Homework
This being a hybrid course the homework consists of studying the book and course notes to learn the physics at a conceptual level.

Laboratory
Attending the laboratory is mandatory. The lab will be done in teams. The grade is determined by the accuracy and quality of the lab work and your participation in the team. Each student will present a laboratory report that is clear and concise and follows the guidelines handed out in the laboratory.

Attendance Policy
Attendance in all labs is mandatory. You are encouraged to ask questions and to participate in on-line discussions. You are expected to be active in the laboratory. A student who misses unexcused more than three labs will not get a passing grade.

Participation
Science is a collaborative effort and students are encouraged to ask questions, give feedback and share their views and experiences.

MAKE UP POLICY
If a student misses a test, he or she will be able to make it up, provided that a valid, verifiable, written, excuse is emailed to the instructor. The test grade will be an “F” if the student fails to take the test at the rescheduled time. In any case, the student is strongly urged to email to the instructor about his/her particular situation. If a student misses a lab, he or she should arrange with the instructor to make-up the lab. Failure to make up a lab will result in getting a zero for that lab.

Evaluation Procedures

The four tests will be evaluated with grades, considering the correctness of the answers, the use of graphs where applicable and the clarity and completeness of the overall test. The organization of the answers as well as correctness of the spelling of the physics concepts will be taken into account.

The laboratory reports will be graded on completeness, correctness and clarity, as well as organizing the data in a clear and concise way.

Tests
There are four tests. The last test is comprehensive. The first three tests get the same weight the last test double the weight in grading. The lab reports will form a separate grade.
Grading Scale

Physics 1405 is taught in a hybrid mode with on-line lecture and lab method. The material needs to be learned from the book and class notes. The on-line tools give opportunity to ask questions and start discussions. In the lab some ideas previously discussed in class will be examined through experiments. A scientific calculator is required. Your final grade will be determined as follows:

Final Grade = 0.76 Tests + 0.24 Laboratory

<table>
<thead>
<tr>
<th>Final Average</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-89</td>
<td>B</td>
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<tr>
<td>70-79</td>
<td>C</td>
</tr>
<tr>
<td>60-69</td>
<td>D</td>
</tr>
<tr>
<td>0-59</td>
<td>F</td>
</tr>
</tbody>
</table>

Discipline/ Course/ Department/Policies:

On-Campus i.e. Lab Etiquette:
No cell phones are allowed during tests. Taping is not allowed unless permission is obtained from the instructor. Please be courteous to others, collegiate attitude is expected from all students.

Late Paper Policy:
Submit all papers on time. Your instructor is not required to accept a late paper.

INSTITUTIONAL POLICIES

ACADEMIC DISHONESTY

The Student Code of Conduct prohibits academic dishonesty and prescribes penalties for violations. According to this code, which is printed in the college catalog, "academic dishonesty", includes (but is not limited to) cheating, fabrication, facilitating academic dishonesty, plagiarism, and collusion".

1) The Vice-President of Academic & Student Affairs may initiate disciplinary proceedings against a student accused of academic dishonesty.

2) Academic dishonesty includes, but is not limited to, cheating on a test, plagiarism and collusion.

3) Cheating on a test includes:
   a) Copying from another student’s test paper;
   b) Using, during a test, materials not authorized by the person giving the test;
c) Collaborating with another student during a test without permission to do so;
d) Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of an un-administered test.
e) Substituting for another student, or permitting another student to substitute for you to take a test; and
f) Bribing another person to obtain an unadministered test or information about an unadministered test.

4) “Plagiarism” means the appropriation of another’s work (ideas and/or words) and the unacknowledged incorporation of that work in one’s written work offered for credit. Quotes not identified as quotes constitute a form of plagiarism even if the borrowed ideas are documented.

5) “Collusion” means an unauthorized collaboration with another person in preparing written work offered for credit.

Academic dishonesty may result in the following sanctions, including, but not limited to:
1. A grade of zero or a lowered grade on the assignment or course.
2. A reprimand.
3. Suspension from the college.

NOTIFICATION OF ABSENCE DUE TO RELIGIOUS HOLY DAY(S)

Students who will be absent from the lab for the observance of a religious holiday must notify the instructor in advance by email. Please refer to the Student Obligations section of the college catalog for more explanation. You are required to complete any assignments or take any examinations missed as a result of the absence within the time frame specified by your instructor.

REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (A430)

North Lake College provides academic accommodations to students with disabilities, as defined under ADA law. It is the student’s choice and responsibility to initiate any request for accommodations. If you are a student with a disability who requires such ADA accommodations, please contact North Lake College’s Disability Services Office in person (A430) or by phone at 972-273-3165. http://www.northlakecollege.edu/resources/disability.html

ADMINISTRATIVE WITHDRAWAL

Students with valid extenuating circumstances may be eligible for an administrative withdrawal by the Dean of the Division in which the course or courses are taught. An administrative withdrawal will not be awarded to students who simply fail to withdraw prior to the last day to receive a “W.” The request for an administrative withdrawal must be made in writing to the Dean of the Division with any supporting documentation attached. This must occur before the last official day of the semester.
DROP POLICY

If you are unable to complete this course, you must officially withdraw by **Saturday, October 4, 2015**. Withdrawing is a formal procedure which you must initiate; your instructor cannot do it for you. All Dallas County Community Colleges charge a higher tuition rate to students registering the third time for a course. This rule applies to the majority of credit and Continuing Education / Workforce Training courses. Developmental Studies and some other courses are not charged a higher tuition rate. Third attempts include courses taken at any DCCCD college since the Spring 2002 semester. For further information, go online to: [http://www.DCCCD.edu/thirdcourseattempt](http://www.DCCCD.edu/thirdcourseattempt).

STOP BEFORE YOU DROP

For students who enrolled in college level courses for the first time in the Spring of 2007, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions. Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a "W". Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access: [https://www1.dcccd.edu/coursedrops](https://www1.dcccd.edu/coursedrops).

FINANCIAL AID STATEMENT

Students who are receiving any form of financial aid should check with the Financial Aid Office prior to withdrawing from classes. Withdrawals may affect your eligibility to receive further aid and could cause you to be in a position of repayment for the current semester. **Students who fail to attend or participate are also subject to this policy.**

To apply for financial aid in the DCCCD, students must complete FAFSA (Free Application for Federal Student Aid) on the web at: [http://www.fafsa.ed.gov](http://www.fafsa.ed.gov)

COUNSELING SERVICES

Counseling services for personal issues are provided to all students currently enrolled at North Lake College at NO CHARGE. These services are provided by licensed professionals who are bound by confidentiality (within ethical parameters) at no charge. With the assistance of a counselor, students are able to identify, understand, resolve issues and develop appropriate skills. To make an appointment call 972-273-3333 or go to A311. For additional information go to: [http://northlakecollege.edu/services-and-resources/health-and-wellness/counseling-services/Pages/default.aspx](http://northlakecollege.edu/services-and-resources/health-and-wellness/counseling-services/Pages/default.aspx)
THE ACADEMIC SKILLS CENTER (A332)

The Academic Skills Center (ASC) is designed to provide assistance to students in the following areas:

- Labs for students enrolled in foreign language, Developmental Reading, and ESOL courses. One-on-one tutoring is available.
- The Writing Center can help students clarify writing tasks, understand instructors’ requirements, develop and organize papers, explore revision options, detect grammar and punctuation errors, and properly use and document sources. Rather than merely editing or "fixing" papers, tutors focus on helping students develop and improve their writing skills.
- The Online Writing Lab (OWL) allows students to submit papers to our writing tutors electronically and get feedback within 24-72 hours. The OWL can be accessed through eCampus. After logging on to eCampus, click on the Community Tab at the top. Type “Owl” in the search field and click “Go.” Next, click on the double drop-down arrows next to “NLC-OWL2,” and then click on “Enroll.” Once enrolled, students can receive services from the OWL.

For more information or to schedule a tutoring appointment, come by A-332 or call 972-273-3089.

Science Learning Center

- The Science Learning Center (P333) provides free tutorial services for North Lake science students. The center features tutors, software, videos, CD-ROM’s, internet, models, places to study quietly, places for group work, and other materials to assist in science classes. In order to access resources of the center a North Lake College ID Card is required. The subject specific schedule of tutors is updated every semester and is located at the front of the center, just ask a tutor.
- For more information call 972-273-3273 or go to North Lake College Tutorial Services

Exemplary Educational Objectives

The following Exemplary Educational Objectives have been identified by the Texas Higher Education Coordinating Board and the DCCCD as important objectives to be developed and enhanced by the specific learning activities in Physics courses.

The objective of the study of a natural sciences component of a Core Curriculum is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories.

1. To understand and apply method and appropriate technology to the study of natural sciences.

2. To recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing.
3. To identify and recognize the differences among competing scientific theories.

4. To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.

5. To demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.

**Core Curriculum Intellectual Competencies**

This course reinforces all of the 6 Core Curriculum Intellectual Competencies defined by the Texas Higher Education Coordinating Board. The CCIC’s identified by the DCCCD which are reinforced by PHYS 1405 are as follows:

1. **READING**: Reading at the college level means the ability to analyze and interpret a variety of printed materials -- books, articles, and documents.

2. **WRITING**: Competency in writing is the ability to produce clear, correct, and coherent prose adapted to purpose, occasion, and audience.

3. **SPEAKING**: Competence in speaking is the ability to communicate orally in clear, coherent and persuasive language appropriate to purpose, occasion and audience.

4. **LISTENING**: Listening at the college level means the ability to analyze and interpret various forms of spoken communication.

5. **CRITICAL THINKING**: Critical thinking embraces methods of applying both qualitative and quantitative skills analytically and creatively to subject matter in order to evaluate arguments and to construct alternative strategies.

6. **COMPUTER LITERACY**: Computer literacy at the college level means the ability to use computer-based technology in communicating, solving problems, and acquiring information.

The following learning activities provide examples on how the Course Outcomes, Educational Exemplary Objectives and the Core Curriculum Intellectual Competencies are incorporated into the course.

1. Learning Activity: Laboratory Experiment
   
a. Learning Outcomes: Student will measure the gravitational acceleration at NLC using a pendulum and express it in SI units.

   b. Assessment: The student will use Newton’s Laws of motion and gather data using the pendulum, communicate the findings in a written report.
2. Learning Activity: Students will divide in groups of 3 to 4 to solve problems involving Newton’s laws. The student in the group will compare answers and reach a consensus on the correct answer. One of the groups will present the problem to the class using the blackboard.

   a. Learning Outcomes: Students will demonstrate application of Newton’s laws of motion to problems involving everyday objects and be able to apply them to the situation stated by the problem.

   b. Assessment: Each group will reach the correct answer, checked by the instructor.

3. Learning Activity: Students will form pairs and compare their hypothesis to projectile motion in different situation.

   a. Learning Outcomes: Students will analyze what the data of their experiment shows and identify the angle that yields the longest range, and the angle that will have the highest height.

   b. Assessment: Students will present the result in writing and are successful when the right angle is chosen.
Appendix A

Syllabus, Physics 1405-73700, Spring 2015, NLC, Dr. Viola Ruck


Laboratory: Every Tuesday and Thursday from 5:45 PM - 8:35 PM in C227

Schedule for Phys-1405-73700

Period 1 - Preparation for Test 1
January 20, 2015 Start of Spring Semester
Study chapters 1, 2, 3, 4 and 5
Every Tuesday and Thursday laboratory from 5:45 PM - 8:35 PM in C227
January 29, 2015 Thursday Test 1 in lab.

Period 2 - Preparation for Test 2
Study chapters 6, 7, 8, 9 and 10
Every Tuesday and Thursday laboratory from 5:45 PM - 8:35 PM in C227
February 12, 2015 Thursday Test 2 in lab.

Period 3 - Preparation for Test 3
Study chapters 11, 12, 13, 14, 15 and 16
Every Tuesday and Thursday laboratory from 5:45 PM - 8:35 PM in C227
February 19, 2015, Thursday No lab (Conference day for faculty)
Drop Date: February 18, 2015
March 2, 2015 Tuesday Test 3 in lab.

Period 4 - Preparation for Test 4
Study chapters 17 and 18 and review all previous chapters (1-18)
Every Tuesday and Thursday laboratory from 5:45 PM - 8:35 PM in C227
March 9-13, 2015 Spring Break
March 19, 2015 Thursday Test 4 (Final Exam) in lab.
Appendix B

How to Prepare a Scientific Laboratory Report

A laboratory report should show the reader what project you worked on, the data you have collected and your conclusion, namely your interpretation of the facts you gathered. This should be clear and concise, with the data in a table or in a way that it is easily tested.

The laboratory report should contain:

1. **Title.** “Define the problem”. The title shows what problem or process you studied.

2. **Abstract.** This is a condensed version of your report. It states the subject of your experiment, how you collected the data and what you concluded from it.

3. **Hypothesis.** “An educated guess”. Identify what your variables are and what you expect the experiment to show. This is an educated guess; give any historical or theoretical background on the problem. The hypothesis does not have to be always correct, it can be disproved by your findings, but it has to be testable, which means you can only change one variable at a time.

4. **Procedure.** “The recipe to follow”. This is the part that describes what you did and how you did it, what equipment you used. Write down also the mathematical formulas or equations used.

5. **Results of measurements.** “Gathering the data”. Present your observation and the data gathered in a clear and concise way. Draw figures, diagrams or attach a table with data. Raw data is not understandable, so figure out a data table that shows your results at one glance clearly, so you can draw the conclusion.

6. **Conclusion.** Refer back to your hypothesis and show if it was correct or you found something different. Explain what your data shows and why, namely what your interpretation of your findings is. Discuss where and what could influence the accuracy of your data and give the percent error or mean deviation.

Do not forget: a scientific laboratory report keeps to facts and should be clear and concise. Keep it neat and easily readable.