Course Number: PHYS-1401

Course Title: General Physics I

Course Description: This course is an Algebra-based physics course designed for dental, biology, medical, pharmacy, architectural, and other students needing to satisfy requirements for a two-semester technical course in physics. Topics include: motion, force, work, energy, properties of matter, waves, heat, and sound. Lab required.

Course Credit Hours: 4
  Lecture Hours: 3
  Lab Hours: 3

Placement Assessment(s): To ensure your success in this course, please be sure you meet the minimum prerequisites. They are (1) Placement in MATH 2312 and College-Level Reading. Students should have taken high school pre-calculus or equivalent within the last five years with a grade of "C" or better. (2) Concurrent enrollment in a PHYS 1401 Lab.

Student Learning Outcomes: Upon successful completion of this course, students should be able to do the following:
1. Demonstrate knowledge of basic units of measurement and their relationships
2. Solve problems through equations involving the motion of bodies
3. Solve problems involving forces including frictional forces
4. Solve problems involving work and energy
5. Solve problems involving momentum and collisions
6. Explain the basic principles of fluid dynamics
7. Apply the principles of heat and thermodynamics
8. Explain and apply the principles of wave motion and sound
9. Demonstrate the collections, analysis, and reporting of data using the scientific method

Withdrawal Policy: “See the current Collin Registration Guide for the last day to withdraw. “

Collin College Academic Policies: “See the current Collin Student Handbook.”

Americans with Disabilities Act: Collin College will adhere to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal opportunity. It is the student's responsibility to contact the ACCESS office, SCC-G200 or 972.881.5898 (V/TTD: 972.881.5950) to arrange for appropriate accommodations. See the current Collin Student Handbook for additional information.
INSTRUCTOR INFORMATION

Instructor’s Name: Meade Brooks  
Office Number: D213, Preston Ridge Campus, Science Building  
Phone Number: 972-377-1640 (do not leave voicemail, email instead)  
Email: mbrooks@collin.edu

Class Information:  
Section Number: BP1  
Meeting Times/Location: This is a Blended Course with an online lecture accompanied by a lab. Except for two onsite exams (given in the Preston Ridge Testing Center), the lecture is entirely online. The lab is 50% online and will meet on-campus once every two weeks for a total of six meetings. Labs will meet every other Monday from 9:00 AM - 11:50 AM in room D227 at the Preston Ridge Campus.

Minimum Technology Requirement: The following chart lists minimum standard requirements to access and run online applications used for this course. For more information visit http://online.collin.edu/StudentInformation.html.

<table>
<thead>
<tr>
<th>OS (Operating System)</th>
<th>Windows: 98, XP, Vista</th>
<th>Apple: Mac OS 10.2, 10.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Pentium or later</td>
<td>Any Intel-based Macintosh; any PowerPC G3 333 MHz or later</td>
</tr>
<tr>
<td>Memory</td>
<td>512 MB RAM</td>
<td></td>
</tr>
<tr>
<td>Audio</td>
<td>SoundBlaster or compatible 16-bit sound card with speakers or headphones</td>
<td>Built-in audio (included with your Macintosh) with either speakers or headphones</td>
</tr>
<tr>
<td>Access to the Internet</td>
<td>Broadband via DSL, cable, or satellite is preferred</td>
<td></td>
</tr>
<tr>
<td>Browser</td>
<td>Click <a href="http://www.oracle.com/technetwork/java/javase/downloads/jre8-downloads-132621.html">here</a> to view Blackboard Supported Browsers. Be sure to disable any browser pop-up blockers (<a href="http://www.oracle.com/technetwork/java/javase/downloads/jre8-downloads-132621.html">tutorial</a>).</td>
<td></td>
</tr>
</tbody>
</table>

Minimum Student Skills: Students should have the attributes, skills and knowledge necessary for success in this online course including: self-motivation, good time-management skills, self-discipline, good reading comprehension, persistence, available time, ability to use a laptop, printer, software, and the Internet.

Find out if you are ready to take an online course by completing the e-learning readiness assessment SmarterMeasure ([http://online.collin.edu/AreYouReadi.html](http://online.collin.edu/AreYouReadi.html)). This is an important tool that helps determine your skills for taking an online course.

From the SmarterMeasure assessment, you will discover information about your:
- Reading Speed and Comprehension
- Technical Competency and Knowledge
- Typing Speed and Accuracy
- Personal Attributes that relate to distance learning success

Please visit the e-Collin support website (http://online.collin.edu) and select SmarterMeasure to take this assessment.

Netiquette Expectations: Sensitive discussion topics may be brought up in this class, so please think carefully before responding. Keep these guidelines in mind:

- Standards of courtesy and respect must be maintained at all times in our online “classroom.” Join in to the discussion, but remember that this is still a “classroom” setting and that respect and consideration are crucial for any intellectual discussion.
- Discussion areas are the place for intelligent and respectful airing of ideas. Name-calling and personal attacks are not permitted.
- Any violation of the standards of appropriate behavior online will be reported to the Dean of Students and appropriate disciplinary action will be taken by the college.

A good rule of thumb is that you should never post a response online that you would not be willing to say in person. Once the course begins, please use your Blackboard communication tools to contact Professor Brooks.

Course Resources:
You will need to purchase four primary resources for this course:
1. Digital Course Textbook
2. Online Homework Assignment Account
3. Lab Simulation Package.

Except for the college lab manual which is available in the college bookstores, these resources must be purchased online at the Kinetic Books bookstore.

(1) Digital Course Textbook:
This course uses a digital physics text book developed by Kinetic Books. The book title is Principles of Physics and must be purchased at the Kinetic Books web site (purchase information is given below). All “lectures” in this course are given by the student reading and interacting with the digital textbook.

The digital physics textbook contains the usual textual information found in most physics books that outline and explain physics concepts. However, the Kinetic Books digital physics textbook is unique in that woven into the digital text are animations, audio & video information, interactive examples & practice problems, and games. The digital textbook can be accessed via CD or online from the Kinetic Books web site.

Students should purchase their digital textbook and virtual physics labs before the start of the semester. These are available for purchase at the Kinetic Books on-line store via credit card at: https://webstore.kineticbooks.com

Click the “Products” link (under “Categories”) to see a list of available textbooks for purchase. The textbook to purchase for this course is titled “Principles of Physics” (scroll down to find available versions). For this course two versions of the “Principles of Physics” DIGITAL
TEXTBOOK are available:

**VERSION 1** (Click following link for direct purchase connection)
*Principles of Physics - INDIVIDUAL LICENSE* $54.95
Version 1 is mailed out on CD and may be installed on only one computer. This textbook version may only be accessed from this one computer but does not time out. This product is not transferable - it cannot be returned for use by another student another year. The textbook will be delivered by mail on CD.

**VERSION 2** (Click following link for direct purchase connection)
*Principles of Physics - WEB ACCESS LICENSE* $54.95
The Web Access license is a 1 year subscription to the digital textbook, over the internet, from Kinetic Books servers. The digital textbook may be access from any computer with an internet connection (a small installation must be done). After 1 year this web version digital textbook will expire and will no longer be accessible.

(2) **Online Homework Assignment Account**
Your chapter assignment problems will be completed online at the Kinetic Books website and are based on the digital physics textbook you must purchase. Assignments cannot be completed without the textbook. Students must purchase (cost is $10) an online assignment account to access and complete their assignments. Online assignments accounts may be purchased at: 
Kinetic Books Store - Physics Online Homework

Upon purchase students may log in to their assignment page at 

To see your assignments you must first use the menu options to APPLY for this course (look for the appropriate semester under Professor Brooks at Collin College). I will then accept you into my class at which time you will have access to your assignments for this course. Detailed assignment information, including due dates, is available at this website. You do not need to be online to answer the questions, but you do need to be online to submit your answers.

Completing homework assignments thoroughly and on time is very important. The best way to study for tests in this course is to thoroughly complete and understand the homework. Test problems will reflect an understanding of both homework problems and examples worked in the digital textbook. You may ask questions regarding homework assignments by emailing Professor Brooks using Blackboard mail or, preferably, by posting a discussion question in Blackboard.

(3) **Lab Simulation Package**
For the lab simulations, two versions of the VIRTUAL PHYSICS LABS are available:

**VERSION 1** (Click following link for direct purchase connection)
*Virtual Physics Lab - INDIVIDUAL LICENSE (CD)* $29.95
Version 1 is mailed out on CD and may be installed on only one computer. This lab version may only be accessed from this one computer but does not time out. This product is not transferable - it cannot be returned for use by another student another year. The virtual labs will be delivered by mail on CD.

**VERSION 2** (Click following link for direct purchase connection)
Virtual Physics Labs - WEB ACCESS LICENSE $29.95

The Web Access license is a 1 year subscription to the virtual labs, over the internet, from Kinetic Books servers. The labs may be access from any computer with an internet connection (a small installation must be done). After 1 year this web version will expire and will no longer be accessible.

**NOTE:** Each textbook and virtual lab package contains content for both PHYS 1401 and PHYS 1402 courses. With the web access license, PHYS 1402 must be taken within one year of PHYS 1401 to use the same Kinetic Books resources before they expire.

(4) Collin College PHYS 1401 Lab Manual

We will use this lab manual for the on-campus labs. It is available for purchase in the college bookstores.

**Supplies:** You should have a scientific calculator, computer with internet access, and Scantron forms for exams (the small half-sheet size)

**Attendance Policy:** There are no on-campus meetings for this course.

**Method of Evaluation:** Course averages will be calculated as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework Problems</td>
<td>30%</td>
</tr>
<tr>
<td>Video Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Sports Project</td>
<td>5%</td>
</tr>
<tr>
<td>Graded Discussions</td>
<td>10%</td>
</tr>
<tr>
<td>Labs (50% online, 50% oncampus)</td>
<td>25%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>10%</td>
</tr>
<tr>
<td>Final Exam (comprehensive)</td>
<td>10%</td>
</tr>
</tbody>
</table>

100 % possible

Grades will be determined as follows:

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

All class grades will be available through Blackboard. Instructor turn-around time for email or discussion postings is typically 24 hours or less during the week, a bit longer on weekends.

**Course Calendar:** Course requirements include homework problems, simulation labs, on-campus labs, video assignments, a physics of technology project, and two exams.

**Homework Problems:** The homework problems will be delivered and graded through Kinetic Books (grades will be immediately available upon submission of assignment).

**Simulation Labs:** Consists of interacting with online simulations and completing the corresponding worksheets.
**On-campus Labs:** Consists of six on-campus lab meetings during which you will perform a variety of hands-on experiments.

**Video Assignments:** Involves watching the Mechanical Universe physics video series (accessible online) and completing a video worksheet for each video.

**Physics of Sports Project:** Physics is best learned through real-world applications. This project will give you a chance to explore the physics of your favorite sport.

**Graded Discussions:** Discussion questions will be posted at regular intervals. Be sure to follow the course calendar (below) so that you will have covered the material necessary to participate in the discussions. Discussion grades will be based on level and quality of participation. You must reply thoughtfully at least once to each discussion topic to receive a high Discussion grade for this course.

**Exams:** The midterm and final exams will be given in the Preston Ridge Testing Center.

Assignments that correspond to each chapter should be completed as listed below.

<table>
<thead>
<tr>
<th>Week</th>
<th>Course Material</th>
</tr>
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</table>
| Week 1  | Students access their course materials  
          | Chapter 1 - Measurement and Mathematics |
| Week 2  | Chapter 2 - Motion in One Dimension  
          | Chapter 3 - Vectors                    |
| Week 3  | Chapter 4 - Motion in Two and Three Dimensions |
| Week 4  | Chapter 5 - Force and Newton's Laws   |
| Week 5  | Chapter 6 - Applications of Newton's Laws |
| Week 6  | Chapter 7 - Work, Energy, and Power   |
| Week 7  | Chapter 8 - Momentum                  |
| Week 8  | Chapter 9 - Uniform Circular Motion   |
| Week 9  | Chapter 10 - Rotational Kinematics    
          | Chapter 11 - Rotational Dynamics       |
| Week 10 | **Midterm (Chapters 1 – 11)**        
          | Chapter 12 - Static Equilibrium and Elasticity |
| Week 11 | Chapter 13 - Gravity and Orbits      
          | Chapter 14 - Fluid Mechanics          |
| Week 12 | Chapter 15 - Oscillations and Harmonic Motion 
          | Chapter 16 - Wave Motion               |
| Week 13 | Chapter 17 - Sound                   
          | Chapter 18 - Wave Superposition and Interference |
| Week 14 | Chapter 19 - Temperature and Heat    
          | Chapter 20 - Kinetic Theory of Gases  |
| Week 15 | Chapter 21 - First Law of Thermodynamics, Gases, and Engines 
          | Chapter 22 - Second Law of Thermodynamics, Efficiency, and Entropy |
| Week 16 | **Final Exam (Comprehensive)**        |