Ohio Articulation Number (OAN)
Course Submission Form
2005-2006

College/University     Lorain County Community College

Course(s) Submitted (Title & Course #) General Physics I PHYC 151 E for Ohio Articulation Number OSC014

Date    April 25, 2006    Course   1    of a    1    Course OAN mapping.

Name and title of individual submitting on behalf of the college/university

Name    Rosemary Schestag    Title    Project Manager

Address    1005 Abbe Road N, CC219 Elyria, OH 44035

E-mail    rschesta@lorainccc.edu

Phone    440-366-7412

Fax    440-366-4150

Credit Hours    5    qtr    _    sem    X_

Lecture Hours    4

Laboratory Hours    3    (if applicable)

Pre-Requisites(s) Course work (if applicable) MTHM 121 (Technical Math I) or high school algebra and trigonometry.

Placement Score (if applicable)

(Domain) (Score)

Catalog/Course Description (Includes Course Title and Course #)

General Physics I PHYC 151 - Linear and rotational kinematics; Newton’s laws of motion and gravitation; energy and momentum conservation; equilibrium; fluids; temperature and kinetic theory; thermodynamics. Laboratory required. (A special fee will be assessed.) Prerequisites: MTHM 121 (Technical Math I) or high school algebra and trigonometry.
Texts/Outside Readings/Ancillary Materials

**REQUIRED TEXTBOOK(S)/MATERIAL(S):**
College Physics, 5th edition, by Wilson
General Physics 151 Lab Manual, by Johnson

**OTHER RESOURCES INCLUDING EQUIPMENT AND SOFTWARE:**
Scientific calculators

**LIBRARY AND LEARNING RESOURCES:**
All students are expected to fully utilize periodical and reference literature available in the Library and/or via Library computer.

Course Objectives and/or Plan of Work

**SYNOPSIS OF SUGGESTED COURSE OUTCOMES:**
The student shall:
- be able to apply Newton’s Laws of motion and energy considerations to everyday situations to explain motion and forces qualitatively.
- be able to solve problems involving motion under the influence of external forces.
- be able to use energy and momentum conservation principles to predict the behavior of a system.
- be able to calculate the exchange of thermal energy between parts of a system.

Description of Assessment and/or Evaluation of Student Learning

**SUGGESTED INSTRUCTIONAL METHOD(S) AND TECHNIQUE(S):**
Lectures and demonstrations
Problem solving
Laboratory exercises

**SUGGESTED-ASSESSMENT/GRADING PROCEDURES:**
Quizzes 30% of Total Grade
Tests and Final Exam 50% of Total Grade
Lab Reports* 20% of Total Grade

*The lab report grade must be at least 70% of the possible points to pass the course.

90% - 100% A
80% - 89.99% B
70% - 79.99% C
60% - 69.99% D
Master Syllabi and Working Syllabi (if both are used)

Syllabus
PHYC 151
General Physics I
Lorain County Community College
Spring 2006

Course Number: PHYC 151 E D160A
Faculty: Mr. David VanArsdale Office: PS210  366-4022
        Office: PS101D  (Lab)  366-7202
        Email: dvanarsd@lorainccc.edu
Home phone: 440-458-6016

Course Hours:         Lecture:     M T R F ( 2:00 PM- 2:50 PM)   PS107
                      Lab D1601:  F (9:00 AM- 11:50 AM)   PS101
                      Lab D1602:  W (2:00 PM- 4:50 PM)   PS101


Course Description:
Linear and rotational kinematics; Newton's laws of motion and gravitation; energy and momentum conservation; equilibrium; fluids; temperature and kinetic theory; thermodynamics. Laboratory required.

Prerequisites:
MTHM 121, or MATH 111, or Counselor approval required

Course Topics:
Chapter 1 Measurement and Problem Solving
Chapter 2 Kinematics: Description of Motion
Chapter 3 Motion in Two Dimensions
Chapter 4 Force and Motion
Chapter 5 Work and Energy
Chapter 6 Linear Momentum and Collisions
Chapter 7 Circular Motion and Gravitation
Chapter 8 Rotational Motion and Equilibrium
Chapter 9 Solids and Fluids
Chapter 10 Temperature and Kinetic Theory
Chapter 11 Heat
Chapter 12 Thermodynamics

Evaluation:
The final grade is calculated from a total percentage of points obtained from quizzes and tests (45%), lab reports and any other graded activities (30%), and final exam (25%). In addition, at least 70% of the possible lab points must be achieved in order to pass the course.
Grading Scale:  
- 90% - 100%  A  
- 80% - 89.99%  B  
- 70% - 79.99%  C  
- 60% - 69.99%  D

Problem Assignments:  
Problems will be assigned for each chapter. They will not be graded.  
However, students who make a poor effort to solve the assigned problems  
invariably do poorly on tests. A rigorous approach to the assigned  
problems is the best way to prepare for tests.

Absence/Make-up Policy:  
If you know in advance that you will be absent the day a test is to be given,  
made alternate arrangements prior to the test date. Missed tests will be  
handled on a case-by-case basis. Missed quizzes cannot be made up. After  
an excused absence, problem assignments may be submitted at the next  
scheduled class.

In general, labs cannot be made up. Anticipated absences may be avoided by  
attending the alternate lab class on a space available basis. When final  
grades are calculated, the single lowest lab score will be ignored.

Late Assignments:  
Lab reports will be reduced by 20% for each lab class day they are late.  
Assignments may be turned in during class, lab, or in PS210.

Academic Dishonesty:  
Cheating on a test will result in a zero for that test.

Students will work in small groups during lab sessions to plan, gather data,  
and organize results. Collaboration on lab write-ups is not permitted. No  
original text which becomes part of a lab report is to be shared with anyone  
else in the class. Students who share common language on a lab report will  
for the first offense be warned, the next offense penalized by lab score  
reduction, and thereafter receive zero for lab reports which share common  
language.

Instructor Office Hours:  
The instructor will be available for individual consultation in the lab office  
(PS 101D) 11:00 am - noon on MTWR, and at other times by appointment.

Tutoring:  
The Individualized Learning Support Center (ILSC/Tutoring Center) located  
in the Learning Resources Center. Tutoring may take place in small study  
groups or workshops, walk-in tutoring or one-to-one (private) tutoring.  
Students are entitled to two free hours of tutoring each week. To make an  
appointment for tutoring services, call the ILSC 366-4057.
Reading Days:

Readings days are scheduled for May 9 and 10. This is an opportunity for students to ask questions to prepare for the final exam. No new material will be presented.

Special Needs:

The Office for Special Needs Services exists to serve the needs of students with disabilities – physical, learning and/or emotional. If you are a person with a disability who needs accommodations or assistance, contact the O.S.N.S. located in Room 115 in the Learning Resource Center. The coordinator is Ms. Theo Scott (X4058). To receive accommodations, one must be registered with the O.S.N.S. office, and notify the instructor during the first week of class.

Miscellaneous:

No food or beverage in lab at any time.

No use of cell phones, pagers, etc. in class or lab.

Easiest method of communication is email: dvanarsd@lorainccc.edu

Messages may be left in PS 210, or by calling the Physics Lab, 366-7202.

If special circumstances warrant, changes to this course description will be made, and students will be notified of those changes as soon as possible.

Lecture Schedule

<table>
<thead>
<tr>
<th>Class</th>
<th>Date</th>
<th>Chapter</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17-Jan T</td>
<td>1</td>
<td>Measurement, Tolerance, Unit Conversion</td>
</tr>
<tr>
<td>2</td>
<td>19-Jan R</td>
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<tr>
<td>3</td>
<td>20-Jan F</td>
<td>2</td>
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<tr>
<td>4</td>
<td>23-Jan M</td>
<td>2,3</td>
<td>Velocity, Acceleration</td>
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<tr>
<td>5</td>
<td>24-Jan T</td>
<td>2,3</td>
<td>Velocity, Acceleration</td>
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<td>6</td>
<td>26-Jan R</td>
<td>3</td>
<td>Kinematic Equations, Slope/Area, Free Fall</td>
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<tr>
<td>7</td>
<td>27-Jan F</td>
<td>3</td>
<td>Kinematic Equations, Slope/Area, Free Fall</td>
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<td>8</td>
<td>30-Jan M</td>
<td>3</td>
<td>Components of 2D Motion</td>
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<tr>
<td>9</td>
<td>31-Jan T</td>
<td>3</td>
<td>Vector Addition, Relative Velocity</td>
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<tr>
<td>10</td>
<td>2-Feb R</td>
<td>3</td>
<td>Vector Addition, Relative Velocity</td>
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<td>11</td>
<td>3-Feb F</td>
<td>3</td>
<td>Trajectory</td>
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<td>12</td>
<td>6-Feb M</td>
<td>3</td>
<td>Review</td>
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<td>13</td>
<td>7-Feb T</td>
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<td>Test 1 (Ch 1-3)</td>
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<tr>
<td>14</td>
<td>9-Feb R</td>
<td>4</td>
<td>Newton I</td>
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<td>15</td>
<td>10-Feb F</td>
<td>4</td>
<td>Newton II</td>
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<td>16</td>
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<td>20-Feb M</td>
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<td>Newton II, Friction</td>
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<td>Date</td>
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<td>Section</td>
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<tr>
<td>21</td>
<td>Feb 21</td>
<td>T 4</td>
<td>Work, Kinetic Energy, Scalar Product of Vector</td>
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<td>Feb 23</td>
<td>R 5</td>
<td>Work, Kinetic Energy</td>
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<td>Mar 2</td>
<td>R 5,6</td>
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<td>Mar 3</td>
<td>F 6</td>
<td>Newton III, Linear Momentum</td>
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<td>Impulse, Conservation of Linear Momentum</td>
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<td>29</td>
<td>Mar 7</td>
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<td>Mar 9</td>
<td>R 4-6</td>
<td>Review</td>
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<td>31</td>
<td>Mar 10</td>
<td>F</td>
<td>Test 2 (Ch 4-6)</td>
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<td>Spring Break</td>
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<td>32</td>
<td>Mar 20</td>
<td>M 7</td>
<td>Angular Displacement, Velocity, Acceleration</td>
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<td>33</td>
<td>Mar 21</td>
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<td>34</td>
<td>Mar 23</td>
<td>R 7</td>
<td>Universal Gravitation</td>
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<td>Mar 24</td>
<td>F 7,8</td>
<td>Kepler’s Laws of Planetary Motion, Rotational</td>
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<td>36</td>
<td>Mar 27</td>
<td>M 8</td>
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<td>Mar 28</td>
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<td>38</td>
<td>Mar 30</td>
<td>R 8</td>
<td>Moment of Inertia, Torque, Vector Product</td>
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<td>Mar 31</td>
<td>F 8</td>
<td>Rotational Dynamics</td>
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<td>Apr 3</td>
<td>M 8</td>
<td>Rotational Dynamics</td>
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<td>41</td>
<td>Apr 4</td>
<td>T 8</td>
<td>Rotational Work and Kin Energy</td>
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<td>42</td>
<td>Apr 6</td>
<td>R 8</td>
<td>Angular Momentum</td>
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<td>43</td>
<td>Apr 7</td>
<td>F 8</td>
<td>Conservation of energy, momentum, orbits</td>
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<td>44</td>
<td>Apr 10</td>
<td>M 9</td>
<td>Elastic Moduli, Pressure, Pascal’s Principle</td>
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<td>45</td>
<td>Apr 11</td>
<td>T 9</td>
<td>Elastic Moduli, Pressure, Pascal’s Principle</td>
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<td>Apr 13</td>
<td>R 9</td>
<td>Bouyancy, Archimedes</td>
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<td>Apr 14</td>
<td>F 9</td>
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<td>Apr 17</td>
<td>M 9</td>
<td>Bernoulli, Viscosity</td>
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<td>Apr 18</td>
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<td>Bernoulli, Viscosity</td>
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<td>Apr 20</td>
<td>R 9</td>
<td>Review</td>
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<td>51</td>
<td>Apr 21</td>
<td>F</td>
<td>Test 3 (Ch 7-9)</td>
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<td>52</td>
<td>Apr 24</td>
<td>M 10</td>
<td>Temperature, Heat, Gas Laws, Thermal Expansion</td>
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<td>Apr 25</td>
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<td>Temperature, Heat, Gas Laws, Thermal Expansion</td>
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<td>54</td>
<td>Apr 27</td>
<td>R 10</td>
<td>Kinetic Theory</td>
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<td>55</td>
<td>Apr 28</td>
<td>F 11</td>
<td>Heat, Specific Heat, Latent Heat</td>
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<td>56</td>
<td>May 1</td>
<td>M 11</td>
<td>Heat Transfer</td>
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<td>May 2</td>
<td>T 11</td>
<td>Heat Transfer</td>
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<td>58</td>
<td>May 4</td>
<td>R 12</td>
<td>Thermodynamics, First Law, Second Law, Entropy</td>
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<td>May 5</td>
<td>F 12</td>
<td>Heat Engines and Thermal Pumps, Review</td>
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<td>May 8</td>
<td>M 12</td>
<td>Test 4 (Ch 10-12)</td>
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<td>9-May</td>
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<td>T</td>
<td>Reading Day</td>
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<td>11-May</td>
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<td>-R-W</td>
<td>Final Exams</td>
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<tr>
<td>17-May</td>
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<td>W</td>
<td>Final Exam 1:00-2:50 PM</td>
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### Lab Schedule

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<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Linearly Accelerated Motion</td>
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<tr>
<td>2</td>
<td>Lab Report Format, Technical Writing Skills, MS Excel, Tolerance</td>
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<tr>
<td>3</td>
<td>Free Fall</td>
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<tr>
<td>4</td>
<td>Vector Analysis</td>
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<tr>
<td>5</td>
<td>Projectile</td>
</tr>
<tr>
<td>6</td>
<td>Newton’s Second Law</td>
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<tr>
<td>7</td>
<td>Conservation of Mechanical Energy(1)</td>
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<td>8</td>
<td>Impulse – Momentum</td>
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<td>9</td>
<td>Centripetal Force</td>
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<td>10</td>
<td>Center of Mass and Torque</td>
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<tr>
<td>11</td>
<td>Density, Bouyancy</td>
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<tr>
<td>12</td>
<td>Conservation of Mechanical Energy (2)</td>
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<tr>
<td>13</td>
<td>Coefficient of Linear Expansion</td>
</tr>
<tr>
<td>14</td>
<td>Specific Heat Capacity</td>
</tr>
</tbody>
</table>

### Problem List – College Physics (Wilson & Buffa, 5th Edition)

#### Chapter 1 – Measurement and Problem Solving
10, 11, 14, 17, 18, 31, 32, 34, 39, 40, 42, 46, 48, 51, 52, 54, 55, 56, 59, 63, 73, 74, 79, 85, 87, 88, 95, 101, 102

#### Chapter 2 – Kinematics: Description of Motion
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#### Chapter 5 – Work and Energy
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#### Chapter 7 – Circular Motion and Gravitation
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Chapter 9 – Solids and Fluids
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Chapter 11 – Heat
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Chapter 12 – Thermodynamics
5, 7, 8, 17, 18, 23, 25, 26, 27, 29, 39, 41, 43, 45, 49
This information is from the Equivalency Guide in CAS.

It shows how our indicated courses are accepted by BGSU, KSU, U of Akron, and U of Toledo.

Blue font indicates that the school submitted that course as indicated OAN.

### COURSE DESCRIPTION WITH STUDENT OUTCOMES

**Lorain County Community College**

**DIVISION:** Science and Mathematics

**COURSE TITLE:** General Physics I

**COURSE NUMBER:** PHYC 151

**HOURS-CREDIT:** 5

**CONTACT:** 7

**LECT:** 4

**LAB:** 3

**REC/CLINICAL:**

**TOTAL COURSE ILUs:** 6.55

**LECTURE:** 1.0

**LAB:** .85

**REC/CLINICAL:** 0

**LECTURE SEATS:** 48

**LAB SEATS:** 24

**CLINICAL SEATS:** 0

**IS THERE A SEPARATELY SCHEDULED LAB:** Yes

**IS THERE A SEPARATELY SCHEDULED CLINICAL:** No

**FEES:** Yes

**SPECIAL FACILITIES:** None

**FAS ACCOUNT NO.:** 1-02-02-350-450

**GEN. EDUCATION REQ. CHANGES:** Yes

**START YEAR/SEMESTER:** Fall 1998

**TRANSFER MODULE REQ. CHANGES:** Yes

**PREREQUISITES:** MTHM 121 (Technical Math I) or high school algebra and trigonometry

**COREQUISITES/CONCURRENT:** None

**CATALOG DESCRIPTION:**

Linear and rotational kinematics; Newton’s laws of motion and gravitation; energy and momentum conservation; equilibrium; fluids; temperature and kinetic theory; thermodynamics. Laboratory required. (A special fee will be assessed.) Prerequisites: MTHM 121 or high school algebra and trigonometry.

**REQUIRED TEXTBOOK(S)/MATERIAL(S):**

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General Physics 151 Lab Manual, by Johnson

**OTHER RESOURCES INCLUDING EQUIPMENT AND SOFTWARE:**

Scientific calculators
LIBRARY AND LEARNING RESOURCES:
All students are expected to fully utilize periodical and reference literature available in the Library and/or via Library computer.

SYNOPSIS OF SUGGESTED COURSE OUTCOMES:
The student shall:
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• be able to solve problems involving motion under the influence of external forces.
• be able to use energy and momentum conservation principles to predict the behavior of a system.
• be able to calculate the exchange of thermal energy between parts of a system.

TOPICAL OUTLINE: (COMMON CORE TOPICS)
• Kinematics in one and two dimensions
• Dynamics; Newton’s laws of motion
• Translational and rotational equilibrium
• Energy and momentum conservation
• Fluid properties
• Laws of thermodynamics

SUGGESTED INSTRUCTIONAL METHOD(S) AND TECHNIQUE(S):
Lectures and demonstrations
Problem solving
Laboratory exercises

SUGGESTED-ASSESSMENT/GRADING PROCEDURES:
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Grading Scale: 90% - 100% A  
80% - 89.99% B  
70% - 79.99% C  
60% - 69.99% D

GENERAL EDUCATION REQUIREMENT:
Meets General Education Outcomes: 1, 2, 3, 6, 7, 8 and 9. Refer to LCCC catalog for a complete description of the eleven General Education Outcomes.

TRANSFER MODULE REQUIREMENT CHANGES:
Add to Natural/Physical Sciences area of Transfer Module.

Comment:
Combines PHYS 151/152/153 in Semester Conversion.
Date Revised for Semester Conversion: November 1996

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<tr>
<th>OBR Use</th>
<th>Action</th>
</tr>
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