Welcome to the first semester of the two-semester sequence in freshman physics for science and engineering majors. Please read this guide carefully since it outlines the materials that will be covered this semester. Guide sections include:

1. Course Text, Website, Prerequisites, and Co-requisites
2. Course Description and Rationale, Goals and Student Learning Objectives
3. Outline for Lectures
4. Course Format – Lecture, Supplemental Instruction, and Tutoring
5. Examinations – Schedule and Rules
6. Homework Policy
   - Online HW
   - Handin HW
7. Quiz Policy
8. Cancellation due to Snow
9. Attendance/Absence and Disabilities Policies
10. How Your Grade is Determined
11. Help If You Have a Problem
12. Academic Conduct and Integrity
13. Physics Tutoring at UMass-Lowell

Being successful in this course is a shared responsibility between you and your instructor. Expect to put in a lot of time as this is a challenging course. It's your responsibility to request help.

Keep all course material in a folder or binder in an organized fashion. Organization is a major key to success in this course.

1. **Course Text, Prerequisites, and Co-requisites**

**Text:** The course textbook is *Physics for Scientists and Engineers, 4th Ed.* by Douglas C. Giancoli; Pearson/Prentice Hall publisher. The text comes either as a complete book set if you are taking two semesters of physics or a volume 1 set if you are taking only one semester of physics. In Physics I we will focus on
the first half (or Vol. I) of Giancoli. More information on the textbook is available on the course website.

The course website, which contains almost ALL material related to this course, can be directly accessed at: http://faculty.uml.edu/Chandrika_Narayan/ (click on Teaching, click on 95.141 Navitas). Here you will find textbook information, this course policy, the homework assignments for the semester, and other information about the course. Power Points from the text will also be posted on this website.

Homework will be submitted and graded primarily electronically via the Mastering Physics website www.masteringphysics.com. The course name at this website is MPNARAYAN03172. While the masteringphysics.com access kit is REQUIRED for the course, you are NOT required to necessarily buy the latest edition or the exact version of the textbook offered at the bookstore. You could purchase an electronic edition, a used earlier edition, or even a different textbook entirely (although this is not recommended). Bundled packages containing the textbook (highly recommended), masteringphysics.com access kit (required), and math supplement (recommended) is available from the North Campus Bookstore. More information on textbook bundles offered by the bookstore are available on the course website.

Pre-requisites and Co-requisites: All students should have had the equivalent of high school plane geometry, and algebra I and II, including trigonometry. High school physics is helpful but not necessary. Some of the calculus concepts needed during the semester will be taught as they are encountered in the course, but these short lessons are no substitute for the deeper understanding you will need as a scientist or engineer. Although there is no calculus pre- or co-requisite for this course, but be prepared to sharpen you algebra and trig skills and learn the calculus needed along the way. You will need Calculus I and II for Physics II and III (see catalog). You must be taking physics laboratory course 96.141 NV1 or NV2. which a co-requisite to this course.

2. Course Description and Rationale, Goals and Objectives

Course Description and Rationale: 95.141 Physics I is the first semester of a two-semester sequence primarily intended for science and engineering majors. Mechanics including vectors, kinematics in one and two dimensions, Newton's Laws of dynamics, Newton's Law of Universal Gravitation, work, energy, momentum, conservation of energy and momentum, collisions, rotational kinematics and dynamics, oscillatory motion and a rudimentary introduction to mechanical waves. Corequisites: Physics Lab 96.141
As a scientist or engineer, you will be expected to 1) develop mathematical models that predict the behavior of physical phenomena, and 2) use those models to understand the phenomena, design products and/or improve technology to better mankind. This introductory course in physics marks the beginning of your journey into not just understanding, but mastering through application, the physical concepts that are crucial for your specific major.

**Course Goals:** Three goals have been set for these freshman level courses.

Goal 1 is to develop in course participants a strong fundamental understanding of physical phenomena.

Goal 2 is to have students learn how to use mathematical tools to model physical phenomena in ways which allow engineered outcomes.

Goal 3 is to have the students develop learning strategies for successfully completing demanding engineering and science courses.

**Student Learning Objectives:** During the course students will:

- Demonstrate a conceptual understanding of the various topics listed in the course description.

- Learn how to apply physical laws to various observed phenomena.

- Learn how to approach scientific and engineering problems in a professional manner.

- Demonstrate the ability to apply mathematical tools such as vectors, geometry, algebra, trigonometry, and calculus techniques to physical problems.

- Develop problem-solving skills and apply those skills to correctly solving and/or modeling a variety of physical problems.

- Develop a learning strategy for successfully completing demanding college courses.
4. Course Format - Lecture, Supplemental Instruction, and Tutoring

The lecture meets twice per week –
Thurs. 2-3:15 p.m (in Ball 206)
and
Sat. 10:30-11:45 a.m (in Olney 218).

Supplemental instruction - TBA

The lectures will cover new material and administer weekly quizzes and mid-term exams. The supplemental instruction will be used to enhance your problem-solving abilities.

Free tutoring is available at the Physics Department tutoring center (Olney 136) or in the Centers for Learning (CLASS) - see 13..

(material continued on next page)
5. Examinations - Schedule and Rules

Exam Schedule- Spring 2014

TBA

In addition, there will be a 3-hour final examination during finals week. The place and time for the final will be posted later in the semester with the finals schedule. You are required to attend each exam at the officially announced time.

Rules for Quizzes and Exams

-- ALL CELL PHONES MUST BE PLACED AT THE FRONT OF THE CLASS.

-- If you leave the room during a quiz or exam, you must hand in your paper and you will not be allowed to continue with the quiz or exam.

-- Your work must be ONLY your individual effort i.e. you are not to communicate in any way with another student (see section 12).

-- You are not allowed to talk or whisper during the quiz or exam.

-- You must bring pencils, erasers and a calculator. Only ordinary calculators are allowed. You can NOT use a cell phone! Alphanumeric calculators (those that include written formulas in their display modes) are also NOT permitted. All formulae needed for an exam will be provided during the exam.

-- You may not use any material such as text, notes, formula sheet, scrap paper, etc. All formulae needed for a quiz or an exam will be provided.

-- If you need assistance during the quiz or exam, please raise your hand or come up quietly to the instructor.
6. **Homework:**

a) **Regular Homework Assignments (ONLINE)**

Regular homework assignments, typically ten problems a week, will also be done ONLINE at [www.masteringphysics.com](http://www.masteringphysics.com), course **MPNARAYAN03172**. These will constitute 70% of your final homework grade. For these, you will be allowed 3 attempts to input the correct answer (a final incorrect answer will cost you 20% of the grade for that problem). Your total HW grade will be reduced 25% for each day past the due date that the HW is submitted.

You have to do many more than just the assigned homework problems to learn the material in the course. Problem solving skills is one of the most important learning goals of this course. One of the best ways to do homework is to form small groups and work the problems together. Remember, the Mastering Physics software randomizes the variables for each problem, so everyone will have different answers for each problem. However, the way you solve the problems will be similar, and this can be worked out in groups. Assigning one or two problems to each member in the group is NOT an effective way of doing homework! In order to do well in this course you must have a good understanding of the homework, so if you work in a group, make sure you understand how to do each problem! Working on Physics as a team will improve your grade.

b) **Regular Homework Assignments (HANDIN)**

You will also need to work out a selected number of the homework problems neatly on notebook paper. These will be reviewed and graded (for process and logic, not the final answers on a scale of 0-5. The written homework will constitute 30% of the regular homework assignment grade. These will also help you when you need help from the tutoring centers, since they can go through the problem with you to find any mistakes you may have made.

You should be able to see your ONLINE HW scores as soon as you finish the HW set. The two lowest online regular homework grades will be dropped from grading considerations.

The Physics department runs its own tutoring center, in a dedicated room in the Physics Department. Teaching Assistants for Physics I will be available all day in the tutoring center, and you can drop in any time that they are there for help on the homeworks.
7. **Quiz Policy**

Quizzes will be given weekly. These will be announced. They will typically cover recent material and be similar to the homework problems. Students must come to class with calculators. The lowest quiz grade will be dropped. Unexcused absences for a quiz will result in a grade of "0" for that particular quiz.

8. **Cancellation Due to Closing of University**

Please check the UML website or call **978.934.2121** (4-2121 on campus) to check for a cancellation. If the University closes due to an emergency we will pick up where we left off. At the next lecture a revised schedule will be posted to work around the lost day. If the closing causes a cancellation of an exam, the exam will be rescheduled and the revised date announced during the first lecture scheduled after the cancelled day.

9. **Attendance/Absence and Disabilities Policies**

**Attendance/Absence.** Attendance is required for all classes.

There are no make-up examinations. Illness on the day of a major examination must be verified by submission of a letter from a physician or nurse showing that you were seen prior to or on the day of the examination and attest that your illness made you unable to take the examination. Any other unusual situation needs your recitation instructor's approval in writing. All other absences, i.e. varsity sports, family weddings etc., must be made one week in advance by written request and approved by your instructor. Only one approved major examination absence is allowed. In that case your grade will require increased emphasis on the other in-class exams or the final examination (see below).

**Disabilities.** If you have either a learning disability or severe physical handicap you may be eligible for extra time during exams and the final. Discuss your situation with the UMass-Lowell Counseling Center (978) 934-4331. A properly filled out Learning Disability Accommodation Notification form must be filled out and a copy given to your recitation AND lecture instructor in order for us to accommodate your needs. All information will be kept confidential.
10. How Your Grade is Determined

Your letter grade is based on the total points you earn, as follows:

<table>
<thead>
<tr>
<th>Points</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Homework</td>
</tr>
<tr>
<td>70</td>
<td>Online</td>
</tr>
<tr>
<td>30</td>
<td>Handin</td>
</tr>
<tr>
<td>10</td>
<td>Quizzes</td>
</tr>
<tr>
<td>10</td>
<td>Exam 1</td>
</tr>
<tr>
<td>10</td>
<td>Exam 2</td>
</tr>
<tr>
<td>10</td>
<td>Exam 3</td>
</tr>
<tr>
<td>200</td>
<td>Final</td>
</tr>
<tr>
<td>700</td>
<td>Total</td>
</tr>
</tbody>
</table>

If one of the in-class exams is missed (due to an instructor approved absence), the points for the missed exam will be assigned to either the final exam or the two remaining exams, whichever method works in favor of the student's performance. Your instructor will determine the exact points required for the various letter grades after the final is graded. Obviously, the more points you accumulate, the better your grade will be - make sure you get all the homework and quiz points you can!

At the end of the semester, after all grades including the FINAL EXAM are added together the cutoffs for the various letter grades will be determined. The following table provides the cut-offs that were used in the previous few semesters, and is most likely to be continued this semester. You can use the table to estimate your letter grade as you progress through the course by comparing your point total (or percentage) with the expected cut-offs.

**Grade Conversion Table***

<table>
<thead>
<tr>
<th>Grade</th>
<th>%</th>
<th>Approx. Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>80% - 100%</td>
<td>&gt; 560</td>
</tr>
<tr>
<td>A-</td>
<td>75% - 79%</td>
<td>525 - 560</td>
</tr>
<tr>
<td>B+</td>
<td>70% - 74%</td>
<td>490 - 525</td>
</tr>
<tr>
<td>B</td>
<td>65% - 69%</td>
<td>455 - 490</td>
</tr>
<tr>
<td>B-</td>
<td>60% - 64%</td>
<td>420 - 455</td>
</tr>
<tr>
<td>C+</td>
<td>55% - 59%</td>
<td>385 - 420</td>
</tr>
<tr>
<td>C</td>
<td>50% - 54%</td>
<td>350 - 385</td>
</tr>
<tr>
<td>C-</td>
<td>45% - 49%</td>
<td>315 - 350</td>
</tr>
<tr>
<td>D+</td>
<td>40% - 44%</td>
<td>280 - 315</td>
</tr>
<tr>
<td>D</td>
<td>35% - 39%</td>
<td>245 - 280</td>
</tr>
<tr>
<td>F</td>
<td>0% - 34%</td>
<td>&lt;245</td>
</tr>
</tbody>
</table>

*(The cut-offs for this semester determined at the end of the course may differ slightly from that listed above.)*

Note: An unexcused absence from an Exam will result in a "0" for the exam and a 1/2 letter grade lowering of your mark after letter grade conversions. An unexcused absence on the final will result in a course grade of "F".
11. Help if You Have a Problem

If you have a problem, your recitation instructor is the first person you should contact. For help on the course work, arrange a meeting with your recitation instructor or one of the tutoring centers. The instructors will provide you with their specific office hours. They will also see you by appointment at mutually convenient times if you can’t make office hours. For major unresolved problems contact Prof. Chowdhury (contact info at the top of this document).

12. Academic Conduct and Integrity

You are responsible for proper academic conduct - please refer to the university's academic integrity policy at the following URL:

   http://www.uml.edu/Catalog/Undergraduate/Policies/Academic-Integrity.aspx

The basic rule of thumb is simple: you should not try to receive credit for work you have not performed. This means, e.g., that you must do your own homework assignments and take your own exams and quizzes. If you are struggling in the course, make an appointment with your instructor. There are no easy (ethical or otherwise) ways to pass this course, but your instructor is dedicated to ensure you have the best support possible to succeed.

13. Physics Tutoring at UMass-Lowell

The Physics Department has its own tutoring center for introductory physics courses Mon - Fri 9 am - 5 pm next to the Physics Department office in Olney 136E. Graduate teaching assistants in the physics department conduct these. In addition, the Center for Learning and Academic Support Services, Southwick 308 also provides peer drop-in tutoring conducted by senior undergraduates who have been recommended by faculty. It is your responsibility to determine which aids (instructor office hours, Physics Department tutoring center and UML tutoring centers) work best for you.

   http://www.uml.edu/CLASS/Tutoring/Drop-In-Tutoring.aspx

See Suzanne Gamache at the Tutoring Center (3rd floor Southwick) for more information and an up-to-date schedule on physics tutoring.

   Contact: Suzanne_Gamache@uml.edu; (978) 934-2947