PHY319: Classical Mechanics  
Course Syllabus – Fall 2015

Instructor: Dr. Yoshi Sato  
Dept. of Physics, Gettysburg College  
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Class Time: MWF 12:00-12:50pm  
Class Location: Masters Hall 208  
Textbook: Thornton & Marion, “Classical Dynamics” (5th ed.)  
Office hours: Tuesdays 11:00am – noon, Wednesdays 1:00-2:00pm, by appointment, and anytime the door is open

Course Description: PHY319 is an advanced course on Newtonian dynamics for physics majors. Prerequisite: Physics 211, 255, and math 211. The main topics of the course are:

• Kinetics and Newton’s Laws (Chapter 1 & 2)  
• Lagrangian Dynamics (Chapter 7)  
• Motion in Non-inertial Reference Frame (Chapter 10)  
• Central-force Motion (Chapter 5 & 8)  
• Dynamics of a System of Particles (Chapter 9)  
• Dynamics of Rigid bodies (Chapter 11)  
• Oscillations (Chapter 3 & 12)

Course Outcomes: Upon the completion of this course, you will demonstrate:

• Systematic understanding and problem solving skills (approach, estimation, computation, and analysis) of classical mechanics in various contexts such as mechanical engineering, astrophysics, and biophysics.  
• Use of mathematics to deal with physical quantities.

Course Grade: Your course grade will be based on exercises, homework problem sets, and examinations. Here is the grade breakdown:

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<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>In-class Exercise</td>
<td>20%</td>
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<tr>
<td>Homework</td>
<td>20%</td>
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<tr>
<td>Midterm Exams</td>
<td>40%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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Grades will be given on an absolute scale, based on your accumulation of points.
There is no curve. The minimum grades guaranteed are

<table>
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<tr>
<th>Cut-off</th>
<th>Minimum Grade</th>
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<tbody>
<tr>
<td>90%</td>
<td>A-</td>
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<tr>
<td>80%</td>
<td>B-</td>
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<tr>
<td>70%</td>
<td>C-</td>
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<td>60%</td>
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In-class Exercise 20%:
Problems will be assigned in class to each group on a regular basis. You are expected to participate and to work on the problem solving in the class times. You will be asked to explain your answers or processes before you leave the classroom.

Homework 20%:
There will be roughly eight homework assignments. You will have one week to complete each unless otherwise stated. Late homework will be reduced by 25% per business day. Graded homework will be returned in class. Your answers must be your own. To hand in a copy of someone else's work as your own is a violation of the Gettysburg College Honor Code and will be treated as such.

Midterm Exams 40%:
There will be two in-class midterm examinations, one on Friday, October 9 and the other on Monday, November 23. Each will contribute 20% to your final grade. Open notes closed book.

Final Exam 20%:
Final exam will be cumulative. Scheduled for during the final exam week. Open notes closed book.

Suggested Readings:


