# Physics 111 Syllabus Fall 2012

Mr. Joseph L. Powlette powlette@cs.moravian.edu, phone 1438, CHS 110

**Text: Physics 2000 (Part 1 , Part 2), Calculus 2000 by E.R. Huggins**

**Text: Physics for Science and Engineering Students by Nolan (on disk)**

| Date | Topic | Readings | Exercises | Lab |
|---|---|---|---|---|
| Aug 27 | Intro & Relativity | 1.1-1.5 | 1,2 | Graphical Analysis |
| 29 | | 1.6-1.23 | 3,4 | |
| 31 | Length Contraction | 1.24-1.31 | 33.12,6,7 | |
| Sept 7 | Simultaneity | 1.32-1/39 | 33.17,33.35 | No Lab |
| 7 | Vectors | 2.1-2.10, 3.1-3.9 | 1 to 4, 3.46 | |
| 10 | Motion | 3.1-3.16, | 1 to 4 | Relativity Experiment |
| 12 | Motion | 3.17-3.33, 2.1-2.8 | 5 to 7 | |
| 14 | Calculus of Motion | 4.1-4.13, 4.1-4.2 | A-1,A-3,4.7 | |
| 17 | Mass | 6.1-6.15 | 2 to 4,7 | Motion Plotter and Ch. 5 computer problems |
| 19 | Cons. Of Momentum | 7.1-7.8, 8.1-8.4 | 2 to 5, 8.28 | |
| 21 | Cons. Of Angular Momentum | 7.9-7.18 | 8,9 | |
| 24 | Newton 1 | 8.1-8.16, 10.1-10.4 | 2,3,4,8 | Newton's Second Law |
| 26 | Kepler's Laws | 8.16-8.28,10.6-10.8 | 9,13,15 | |
| 28 | Newton 2 | 8.29-8.37,5.1-5.4 | 18,20 | |
| Oct 1 | Exam 1 | Ch. 1-7 | | Centripetal Force |
| 3 | Applications to Second law | 9.1-9.14, 5.5 | 2,3,5.38 | |
| 5 | Cont. above | 9.14-9.19, 6.1-6.2 | 5.39 | |

# Physics 111 Syllabus Fall 2012

Mr. Joseph L. Powlette powlette@cs.moravian.edu, phone 1438, CHS 110

**Text: Physics 2000 (Part 1 , Part 2), Calculus 2000 by E.R. Huggins**

**Text: Physics for Science and Engineering Students by Nolan (on disk)**

| Date | Topic | Readings | Exercises | Lab |
|---|---|---|---|---|
| 10 | Energy | 10.1-10.8, 7.1-7.6 | 1,2,3, 7.14 | No lab |
| 12 | Energy | 10.8-10.17,7.7 | 4, 9,10 | |
| 15 | Energy | 10.18-10.31,7.8 | 12,15, 7.48 | Ballistic Pendulum |
| 17 | System of Particles | 11.1-11.12,8.5 | 2,5, 8.20 | |
| 19 | System of Particles | 11.12-11.22, 8.6 | 11,12, 8.51 | |
| 22 | Equilibrium | 13.1-13.8,11.1-11.3 | 2,3,5 | Collision in 2D |
| 24 | Equilibrium | 13.9-13.12,11.4 | 9,10 | |
| 26 | Oscillations | 14.1-14.12,13.1-13.3 | 2,3,6,11 | |
| 29 | Oscillations | 14.13-14.34,13.4-13.6 | 22, 13.7 | Forced Damped Harmonic Motion |
| 31 | 1 D waves | 15.1-15.11,14.1-14.5 | 1,2,4 | |
| Nov 2 | 1 D waves | 15.12-15.22,14.6-14.8 | 5,6,8,9, | |
| 5 | Exam 2 | Ch.8-13 (omit 12) | | Standing Waves on a String |
| 7 | Atomic Processes | 17.1-17.11, 16.1-16.2 | 1,2,4, | |
| 9 | Atomic Processes | 17.12-17.17, 17.1-17.7 | 5, 17.25 | |
| 12 | Atomic Processes | 17.18-17.25,17.9 | 6,7 | Gas laws |
| 14 | Atomic Processes | 17.26-17.34,15.1-15.3 | 8, 15.23 | |
| 16 | Entropy | 18.1-18.7,19.1-19.3 | 1,2 | |
| 19 | Entropy | 18.8-18.16,19.4- | 3,4,5,6 | Gas Law Cycle |

# Physics 111 Syllabus Fall 2012

Mr. Joseph L. Powlette powlette@cs.moravian.edu, phone 1438, CHS 110

**Text: Physics 2000 (Part 1 , Part 2), Calculus 2000 by E.R. Huggins**

**Text: Physics for Science and Engineering Students by Nolan (on disk)**

| | | | | |
|---|---|---|---|---|
| | | 19.5 | | |

| | | | | |
|---|---|---|---|---|
| 26 | Entropy | 18.17-18.21,19.10-19.11 | 7,8,9,10 | Viscosity |
| 28 | Entropy | 18.22-18.29,19.7-19.9 | 19.37 | |
| 30 | Exam 3 | Ch. 14-18 (omit Ch 16) | | |

| | | | | |
|---|---|---|---|---|
| Dec 3 | Fluid Dynamics | 23.1-23.8,15.4-15.6 | | Fourier analysis w/ sound |
| 5 | Fluid Dynamics | 23.9-23.18,15.7-15.8 | 1,2,3 | |

| | |
|---|---|
| Final exam: Thursday, 1:30PM | December 13, 2012 |

Hour exams =25 % Quizzes and problem solutions=25%
Final exam=25% Laboratory average=25%

**Course Objectives**

- Upon completion, students should understand the theoretical development of physical laws
- Be able to solve problems at the appropriate mathematical level.
- Understand and be able to apply modern laboratory and computer techniques.

Problem solutions are to be your own work and but cooperation with other students is permitted. Help with problems is available from the instructor, problem sessions and the evening help sessions (run by the Society of Physics Students). Office hours are posted but I am available at any time that I am not in class or working in a laboratory.

Attendance of lectures is important since new material, problem solutions, different approaches from that of the text and computer instructions will be presented during this time.

"Students who wish to request accommodations in this class for a disability should contact Elaine Mara, assistant director of learning services for academic and disability support at 1307 Main Street, or by calling 610-861-1510. Accommodations cannot be provided until authorization is received from the Academic Support Center."