Fall 2017: Fundamentals of Physics

— SYLLABUS —

PHY 2002L: BTRA, X — TR 9:05 a.m. – 10:20 a.m.
Lecture Room: 1311, 17 Lexington

Contact Info

Professor Richford
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Rm. 938, 17 Lexington; Mailbox in Rm. 506, 17 Lexington
Office Hours: Tuesdays, 8 a.m. – 9 a.m.

Textbook

Recommended: "The Physics of Everyday Phenomena," W. Thomas Griffith
Additional practice problems and resources: "Physics," Giancoli:
http://wps.prenhall.com/esm_giancoli_physicsppa_6/16/4350/1113788.cw/index.html

Grading

Exams 100%
(consisting of three exams: best exam score 50%, second best 40%, lowest 10%)

Problems & Homework

Problems are key. It is very important to regularly work out and solve problems given throughout the course—this practice is the best way to learn the process and concepts of this class. Submissions must be neat and hand-written. Homework will be assigned and corrected; however, it will not count towards your grade.

Learning Objectives

Understanding basic physics and gaining insight into fundamental physical principles; development of quantitative skills and critical thinking through problem solving; development of scientific and experimental skills using the scientific method in laboratory experiments; appreciation of the power and beauty of modern science and its central role in civilization and culture.

Attendance

Absence from 5 (five) or more lecture sessions draws a WU grade for the course.

Academic Honesty

Baruch's Policy on Academic Honesty states, in part—

Academic dishonesty is unacceptable and will not be tolerated. Cheating, forgery, plagiarism and collusion in dishonest acts undermine the college's educational mission and the students' personal and intellectual growth. Baruch students are expected to bear individual responsibility for their work, to learn the rules and definitions that underlie the practice of academic integrity, and to uphold its ideals. Ignorance of the rules is not an acceptable excuse for disobeying them. Any student who attempts to compromise or devalue the academic process will be sanctioned.

Academic dishonesty in this will not be tolerated and automatically results in an F for the course. A report of suspected academic dishonesty will be sent to the Office of the Dean of Students. Additional information and definitions can be found at www.baruch.cuny.edu/academic/academic_honesty.html.

Disability Accommodation

Students with disabilities may be eligible for a reasonable accommodation to enable them to participate fully in courses at Baruch. If you feel you may be in need of an accommodation, please contact the Office of Services for Students with Disabilities at (646) 312–4590.

Lecture Schedule

Course topics, session topics, dates, assignments, and pacing all subject to change

Tuesday, August 29	Introduction
Thursday, August 31	Unit Conversions; Algebra/Trig primer; Position
Tuesday, September 12	Distance vs. Displacement
Tuesday, September 5	Velocity & Speed
Thursday, September 7	Acceleration & Mass & Newton's Laws (Ch 2, 3, 4)
Tuesday, September 12	*Homework 1 assigned*
Thursday, September 14,	*Homework 2 assigned*
Tuesday, September 19	Circular Motion (Ch. 5); Thursday Schedule
Tuesday, September 26	Momentum & Impulse (Ch. 7) *Homework 3 assigned*
Thursday, September 28	
Tuesday, October 3	Review 1
Thursday, October 5	Exam 1
Tuesday, October 10	Rotation & Angular Momentum (Ch. 8)
Thursday, October 12	*Homework 5 assigned*
Tuesday, October 17	Energy & Work & Gravitation
Thursday, October 19	*Homework 6 assigned*
Tuesday, October 24	
Thursday, October 26	Special Relativity Intro (Ch. 20)
Tuesday, October 31	Fluids & Drag (Ch. 9)
Thursday, November 2	*Homework 7 assigned*
Tuesday, November 7	Review 2
Thursday, November 9	Exam 2
Tuesday, November 14	Heat and Thermodynamics (Ch. 10, 11)
Thursday, November 16	*Homework 8 assigned*
Tuesday, November 28	
Thursday, November 30	Advanced Topics (T.B.D.)
Tuesday, December 5	
Thursday, December 7	Review 3
Tuesday, December 12	Final Exam (Cumulative)

Fall 2017: Lab

PHY 2003: ETRL — TR 4:10 p.m. – 5:25 p.m.

Contact Info

Professor Richford
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Rm. 939, 17 Lexington; Mailbox in Rm. 506, 17 Lexington
Office Hours: Tuesdays, 8 a.m. – 9 a.m.

Lab Details

The lab schedule has yet to be determined; however, there will be at least 4 recitation sessions quiz will be given at the beginning of each recitation, after which, problems from lecture and homework will be solved on the board.

All lab reports must be submitted no later than one week after the experiment is completed; these will be graded on a scale of 0–18. No credit will be given for a report submitted without completion of the experiment. Late lab reports will be penalized 4 (two) points (out of 18 [eighteen]) for each academic day of lateness. No reports will be accepted one week after the due date.

Although the experiment may be done in groups, each student must submit an individual lab report.

Lateness to lab sessions is penalized 1 (one) point (out of 18 [eighteen]) for each five-minute block of lateness off that session's corresponding lab report or quiz grade (for example, five minutes' lateness—one point deducted, six minutes' lateness—two points deducted). If you are more than 30 (thirty) minutes late, you will be considered absent from that session.

Required Materials

A notebook, a ruler, a protractor, and a scientific calculator

Lab Report Structure

A lab report must consist of the following, in the following order:

1. Name, names of lab partners, title, introduction
2. Procedure of experiment, including diagram and description of any apparatus, and journal of the experiment
3. Theory of underlying physics being tested
4. Experimental data
5. Calculations and error analysis
6. Conclusions and sources of error
7. Solutions to problems posed in the lab manual

Lab Report Formatting

Margins: 1-inch top and bottom, 1.5-inch left and right (drawings and tables may exceed margins)

Font: any roman font, 12-point size, 15-point spacing

Paragraph: fully justified text, right-ragged data; no space between paragraphs in the same section; do not indent first line of first paragraph in each section; indent first line of succeeding paragraphs by half an inch

Header/Footer: name, current page, and total number of pages on each page

Laboratory Schedule

Experiments, session topics, dates, and quizzes subject to change

Thursday, August 25	Introduction
To Be Determined	Experiment 1: Measurements and Unit Conversions
	Experiment 2: Gravitational Acceleration
	Experiment 3: 2D Vectors, Force Table
	Experiment 4: Newton's Second Law
	Recitation Session 1, Quiz 1
	Experiment 5: Momentum Conservation
	Experiment 6: Simple Pendulum
	Recitation Session 2, Quiz 2
	Experiment 7: Torque and Angular Acceleration
	Experiment 8: Specific Heat of Metals
	Recitation Session 3, Quiz 3
	Experiment 9: Ohm's Law
	Experiment 10: Reflection and Refraction of Light
	Recitation Session 4, Quiz 4

Lab Report Grading Rubric — Guidelines, only (not hard-and-fast rules, because of the likely variations of reports from the brief, example descriptions below)

Global Comments	Total: 3 point
0	*Report is unreadable*
1	*Report is sloppy and inconsistent with the formatting requirements*
2	*Report is readable and neat, yet inconsistent with the formatting requirements*
3	*Report is neat and consistent with the formatting requirements*

Name/Title/Introduction Section	Total: 1 point
0	*Missing any one of the following: name, names of lab partners, title, introduction*
1	*Contains all of the above*

Procedure and Journal Section	Total: 2 points
0	*Section missing; copy lab manual verbatim*
1	*Brief description (summarizing the lab manual and what you did in your own words—no more than a paragraph) present and adequate; diagram unclear; journal absent*
2	*Brief description, journal, and diagram present and clear*

Theory Section	Total: 2 points
0	*Section missing*
1	*A brief description of the underlying theory being tested is incomplete or unclear*
2	*A brief description of the underlying theory being tested is present and reasonably complete, yet it does not demonstrate that the student fully understands the details or significance*

Data Section	Total: 2 points
0	*Section missing*
1	*Data are present yet organized haphazardly or in sentences, or are incomplete, unclear, etc.*
2	*Data are present, organized logically, clearly*

Calculations and Error Analysis Section	Total: 3 points
0	*Section missing*
1	*Formulas used are absent, conclusions are absent, or intervening steps are absent; error not addressed; sentences used instead of algebraic equations*
2	*Formulas and conclusions present, steps absent; error analysis inadequate*
3	*Formulas, conclusions, and steps are present, error adequately accounted for*

Conclusions and Sources of Error Section	Total: 3 points
0	*Section missing*
1	*Conclusions unclear, not fitting the data and calculations; sources of error absent or unclear, or not fitting with the experiment*
2	*Conclusions address the fit between theory and experiment inadequately; sources of error vague or incomplete*
3	*Conclusions adequately address the fit between theory and experiment; sources of error specific and appropriate*

Posed-Questions Section	Total: 2 points
0	*Section missing (if required by lab manual)*
1	*Section present (if required by lab manual); not all questions answered or answers inadequate*
2	*Section missing (if not required by lab manual)*
2	*Section present (if required by lab manual); all questions answered adequately*