**Marshall University - College of Science - Physics Department**

**PHY 201 Syllabus (3 Credit hours)**

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| Course Title/Number | PHY 201501-3795 | | |
| Semester/Year | Fall Semester 2014 | | |
| Days/Time | MWF 9:00 am – 9:50 pm | | |
| Location | SCI 277 | | |
| Instructor | Maria Babiuc Hamilton | | |
| Office Number | SCI 257 | | |
| Phone/Email | 304-696-2754/ babiuc@marshall.edu | | |
| Office Hours | MWF 10:00 am – 11:00 am | | |
| University Policies | By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to: [www.marshall.edu/academic-affairs](http://www.marshall.edu/academic-affairs) and clicking on “Marshall University Policies”.  Direct: [www.marshall.edu/academic-affairs/policies](http://www.marshall.edu/academic-affairs/policies)  Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment.  General Emergencies: [www.marshall.edu/emergency](http://www.marshall.edu/emergency)  MU Alert Sign Up: [www.marshall.edu/emergency/mualert](http://www.marshall.edu/emergency/mualert) | | |
| Instructor Policies | **Course corrections**: Information in this syllabus was, to the best knowledge of the instructor, considered correct and complete when distributed at the beginning of the term. The instructor, however, reserves the right, acting within policies and procedures of Marshall, to make changes in the course content and/or instructional techniques during the term with or without advance notice or obligation.  **Student Conduct**: Student rights and responsibilities are outlined in the Marshall catalog, page 34. Especially, the infractions and violations listed under "Conduct, Rights and Regulations" will be enforced in this class. Students who disrupt class may be removed from class (failing all of the activities for the day) on a daily basis, as warranted, by the instructor. Continuing behavior problems will result in an instructor drop of the offending student.  **Cell Phones** must remain unused and set to vibrate during regular class times. If an emergency call or message comes through, please leave the class before you answer it. If during an EXAM, ANY of these devices are “on” or “visible”, they belong to me and you get a zero (0) on that exam. | | |
| **Student Learning Outcomes** | | **How students will practice each outcome in this Course** | **How student achievement of each outcome will be**  **assessed in this Course** |
| Students will learn Physics and will develop the skills of problem solving and scientific thinking | | Solve physical problems involving matter in motion (trajectories) in one- and two-dimensions; solve problems in static and dynamic equilibrium; implement work, energy and momentum as calculation tools; periodic motion, waves and sound, fluid dynamics and thermodynamics; all using the mathematical tools learned from algebra, trigonometry, geometry, and vectors. | Group Work, Homework, Examinations |
| Students will build a strong foundation that will enable them to understand the laws of nature that underline not just Physics, but also other scientific fields. | | State in words and in formulas functional relationships in physical science. Interpret equations found in reference books and identify *limitations* applying to those equations. Properly implement an equation found in a reference book (including the text book) to a physical problem of interest. | Group Work, Homework, Examinations |
| Students will demonstrate the ability to think critically and will learn the essential skills of approaching and solving real-life problems. | | Apply physical principles to everyday life problems; employ critical thinking skills to solve problems. | Group Work, Homework, Examinations |
| Students will understand how science operates and the linking of a theoretical model with reality. | | Demonstrate the ability to work effectively. Read and interpret graphs and data, being able to fit existing data and predict new data. | Group Work, Homework, Examinations |

**Other Course Expectations**

All students are expected to attend classes and to actively participate.

Five unmotivated absences will be sanctioned with -1% of your final grade.

All students are expected to do, to the best of your current ability, the homework.

**Required Texts and Web Resources**

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| Textbook | College Physics (9th Ed), by Young, Sears and Zemanky |
| Homework  Access Card | Go to the web page: [www.masteringphysics.com](http://www.masteringphysics.com)  Course ID: **MPBABIUCHAMILTON31817**, Course title: PHY201Fall14 |

**Course Description**

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| Introduction to Physics for Science Professionals. Includes: motion in one and two dimensions, Newton’s laws and forces, gravitation, work and energy, momentum, collisions, rotational motion, fluid mechanics, waves and sound, thermodynamics. |
| *This class is challenging! There is a lot of information to be processed, and the difficult skill of problem-solving to be acquired! You will probably need to work harder than in other classes, but I do believe you can rise to the challenge! I have high expectations, but I am on your side. I will support you in learning the material, and I know that the extra effort will be highly rewarded. You need to make an honest effort to learn principles and problem-solving techniques. You will not survive if you do not read the textbook material, and if you are not engaging in active problem-solving during class. The point is for you to learn. Only watching me won’t do. There are no shortcuts!* |

**Grading Policy**

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| Breakdown   |  |  | | --- | --- | | Tests (3@15% each) | 45% | | Final Exam | 25% | | Homework | 20% | | Group Work | 10% | | Total Possible | 100% | | Grades   |  |  | | --- | --- | | A | 90% -100% | | B | 80% - 89.9% | | C | 65% - 79.9% | | D | 50% - 64.9% | | F | 49.9% and below | |

**Grading Specification**

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| Examination | The subject of the exams will consist of a combination of quantitative analysis, worked examples and homework problems, all from the book. The exams are closed book; no notes, cards or cell phones are allowed; a simple calculator will be permitted. Cheating is punished with zero (0) on that exam. You have two days after the exam is returned to challenge a grade. After this, the grade will be fixed. |
| Homework | The homework will consist of problems from the book, will be posted on the MasteringPhysics web page on Friday and will be due in a week. Late submission is penalized 10% per day the first 6 days. After that your homework is still available for only 40% of the grade. |
| Group Work | You will learn problem-solving only by doing, and by being constructively critiqued by your group and by the instructor. |

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| **Week** | **Monday** | **Wednesday** | **Friday** |
| **Week 1**  *(Aug. IV)* | Diagnostic Pretest, Syllabus, Evaluations | Statistics, Presentation, Math Primer | **Ch. 0.** Mathematics Review, **Ch. 1.** Introduction |
| **Week 2**  *(Sep. I)* | **Labor Day** | **Ch. 1.** Vectors, Vector Addition | **Ch. 1.** Components of Vectors, Worked Examples |
| **Week 3**  *(Sep. II)* | **Ch. 2.** Motion in 1D, Displacement, Velocity | **Ch. 2.** Coordinates, Graphs, Acceleration | **Ch. 2.** Constant Acceleration, Examples |
| **Week 4**  *(Sep. III)* | **Ch. 3**. Motion in 2D, Velocity, Acceleration | **Ch. 3.** Equations of Motion, Projectile Motion | **Ch. 3**. Uniform Circular Motion |
| **Week 5\***  *(Sep. IV)* | **Ch. 4.** Forces, Frames, Newton’s 1st Law | **Ch. 4.** Newton’s 2nd Law, Mass and Weight | **EXAM Ch. 1, 2, 3** |
| **Week 6**  *(Sep/Oct)* | **Ch. 4.** Newton’s Third Law, Tension | **Ch. 5.** Applications of Newton’s Laws | **Ch. 5**. Applications of Newton’s Laws |
| **Week 7**  *(Oct. II)* | **Ch. 5.** Applications of Newton’s Laws | **Ch. 5.** Applications of Newton’s Laws | **Ch. 5**. Applications of Newton’s Laws |
| **Week 8**  *(Oct. III)* | **Ch. 6.** Forces in Circular Motion | **Ch. 6.** Forces in Circular Motion | **Ch. 6.** Newton’s Law of Gravitations |
| **Week 9**  *(Oct IV)* | **Ch. 7.** Work and Energy, Overview | **Ch. 7.** Kinetic and Potential Energy | **EXAM Ch. 4, 5, 6** |
| **Week 10**  *(Oct. V)* | **Ch. 7.** Total energy, Power | **Ch. 8.** Conservation of Momentum | **Ch. 8.** Inelastic and Elastic Collisions in 2D |
| **Week 11**  *(Nov. I)* | **Ch. 8.** Inelastic and Elastic Collisions in 2D | **Ch. 8.** Collisions Energy, Impulse | **Ch. 8.** Center of mass, Rockets |
| **Week 12**  *(Nov. II)* | **Ch. 11.** Elasticity and Periodic Motion | **Ch. 11.** Elasticity and Periodic Motion | **Ch. 11**. The Simple Pendulum |
| **Week 13**  *(Nov. III)* | **Ch. 12.** Mechanical Waves, Periodicity | **Ch. 12**. Mechanical Waves Standing Waves | **EXAM Ch. 7, 8, 11** |
| **Week 15**  *(Nov. V)* | **Ch. 12.** Mechanical Waves, Sound | **Ch. 13.** Fluid Mechanics, Pressure, Buoyancy | **Ch. 13.** Fluid Mechanics, Bernoulli’s Equation |
| **Week 16**  *(Dec. I)* | **Ch. 14.** Temperature Scales, Equilibrium | **Ch. 14.** Heat, Phase Change | **Ch. 14.** Heat Transfer, Calorimetry |
| **Week 17** | *REVIEW, POSTTEST* | | |

**DEC: 15: FINAL EXAM:** Ch. 12, 13, 14 & Comprehensive Multiple-Choice Questions (8-10 am)