

**THE MATERIAL ON THE NEXT FOUR PAGES IS IMPORTANT!!!
PLEASE READ VERY CAREFULLY!!**

**PHYS 2102 Laboratory Syllabus
Fall 2009**

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DO NOT FORGET TO FILL THE INFORMATION BELOW IN YOUR FIRST LAB SESSION. YOU WILL USE BELOW INFORMATION TO GET IN TOUCH WITH YOUR INSTRUCTOR DURING THE SEMESTER.

Your Instructor's name: _____

Your Instructor's Phone: _____ **Email:** _____

COURSE MATERIAL REQUIRED:

- Text; *Experiments for Physics 2102 Laboratory*
- "Physlet Physics", by Wolfgang Christian and Mario Belloni
- Spiral Bound Quadrille Notebook (no exceptions). It must be a notebook dedicated to this laboratory class. Students may continue to use the same notebook for 1101/1102 and 2101/2102 sequences.
- Calculator

COURSE INFORMATION: Physics 2102 laboratory is a course in experimental physics which must be taken concurrently with the lecture course, PHYS 2102. The laboratories are chosen to coincide with topical coverage in the lecture as much as possible.

COURSE OBJECTIVES:

- To conduct organized, experimental, scientific investigations
- To report your observations and results clearly and completely
- To draw conclusions from the results based on your understanding of the relevant physics
- To study introductory physics via computer simulation experiments and exercises.

LABORATORY ACTIVITIES

- 5 experimental laboratory sessions
- 5 out-of-class simulation exercises (taken from "Physlet Physics")
- One in-class final exam

COURSE GRADING:

- **50 % laboratory notebook** - you must have your lab notebook checked by the lab teaching assistant (TA) every period before you leave laboratory if your work

is satisfactory. Each lab period for which your lab notebook has been checked by your instructor is worth 10 points, with a maximum of 50 points.

- **20 % simulation quizzes.** For each laboratory session following the simulation exercises there will be a short 5 minute quiz related to the simulation activity. Each quiz will be worth 4 points. Use your lab notebook to record data, observations, and conclusions drawn from performing the simulation activities.
- **30% End of semester in-class final exam.** This end of semester exam will be comprehensive, including all 5 in-class experiments and all 5 simulations.

PLEASE NOTE THAT STUDENTS WHO MISS A LABORATORY MEETING (WITH THE EXCEPTION OF THE FIRST LAB MEETING) WILL LOSE 10 POINTS FOR THE LAB NOTEBOOK PLUS 4 POINTS FOR THE SIMULATION QUIZ. THE LOSS OF THESE 14 POINTS AUTOMATICALLY PREVENTS ENOUGH POINTS (90) FOR A FINAL GRADE OF 'A' TO BE POSSIBLE!!!!

No make-up labs will be given

- **If you miss a lab due to the reasons beyond your control, with a legitimate reason the credits of that lab will be added to your final exam. Therefore your final exam will be 44% of your overall grade points.**
- **This application can be done only for once. If you miss any more lab, you will miss 14 points from your overall grade which is equivalent to two letter grades (example: from A to C).**
- **It is strongly recommended that you do not miss any labs.**

LABORATORY NOTEBOOK CONTENT

Your laboratory notebook will be graded by its content and its neatness. Take the time to clearly write down all of your observations and measurements. Use tables and diagrams as necessary.

Laboratory notebooks should contain – at the very least – the following items:

- A statement of the objective of the laboratory
- A presentation of the acquired data
- Example calculations
- Conclusions (What did you learn from this experiment? Was the experiment well-designed to meet the desired objective? How did the experimental conditions affect the ability to meet the desired objective?)

Your laboratory notebooks will be used for the simulation quizzes and for the end of semester lab exam so you will want to keep an organized notebook.

Academic Integrity:

Students have the responsibility to know and observe the requirements of *The UNCC Code of Student Academic Integrity* (See the UNCC Catalog.). This code forbids

cheating, fabrication or falsification of information, multiple submission of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty. Any special requirements or permission regarding academic integrity will be stated by the instructor, and are binding on the students. Academic evaluations in this course include a judgment that the student's work is free from academic dishonesty of any type; and grades in this course therefore should be and will be adversely affected by academic dishonesty. Students who violate the code can be expelled from UNCC. The normal penalty for a first offense is zero credit on the work involving dishonesty and further substantial reduction of the course grade. In almost all cases the course grade is reduced to F. Copies of the code can be obtained from the Dean of Students Office. Standards of academic integrity will be enforced in this course. Students are expected to report cases of academic dishonesty to the course instructor.

Conducting a Laboratory Investigation

The goal of a physicist is to gain an understanding of our physical universe. To gain this understanding, observations must be made on physical systems. If the understanding is to be anything more than superficial, measurements of the physical properties of the system must be made. These measurements, once made, can then lead to a factual understanding of the system. For example, if our physical system is a bow and arrow, we can gain a factual understanding by examining the results of experiments done with the bow and arrow. To obtain this understanding we might begin by examining the physical appearance of the bow and arrow and by measuring certain properties of the bow and arrow, such as the length and mass of the arrow, the dimensions of the bow, etc. We might want to determine how far the arrow will travel when the bow string is pulled back by different distances or when the arrow is launched at different angles. In order to obtain and utilize the factual information in an efficient manner, certain techniques must be learned concerning the manner in which experimental data is obtained and how it is analyzed. In this laboratory many of the experiments have been designed to allow you an opportunity to develop skills necessary to make meaningful measurements, to extract useful data from a given physical system, to organize the data so as to reveal the maximum information about the system, and to draw conclusions about the system which are supported by the factual information obtained as a result of having done the experiment. Although your experiences in this class relate to the field of physics, the techniques whereby a problem is approached in a systematic way can carry over into many fields of study.

COMMENTS ON SIMULATION ACTIVITIES & EXERCISES

The simulation activities are assigned for the purpose of allowing students to interactively explore introductory physics concepts that are presented to them in the lecture portion of the class. Progress in computer simulations has provided an excellent opportunity for students to learn physics in the comforts of their own homes and on their own time schedule.

While only six (6) simulation chapters will be required for the laboratory portion of the class, there are many other chapters in the simulation book and CD that will help tremendously in learning the material that is being covered by your professor in the lecture portion of your class.

YOU ARE REQUIRED TO PERFORM ALL OF THE ILLUSTRATIONS AND EXPLORATIONS FOR THE ASSIGNED SIMULATION CHAPTERS!!!. It is also recommended that you do the Problems as well. While the quiz will pertain to the Exploration and Illustration activities for the assigned chapter, it will certainly be helpful to perform as many of the end-of-chapter problems as well.

Please note that students do not have to follow the schedule presented two pages prior to this one. Those dates represent the suggested times, and the lab quizzes which will be given on the simulation activities will be given on that schedule. Those dates represent the latest time that the student must complete these simulation activities. If your lecture schedule offers this material sooner in the semester, it would be wise to perform the scheduled simulation activities at that time because it will help tremendously in learning that particular material.

You will be quizzed in laboratory on the scheduled simulation activities so please include all notes, observations, and diagrams in your laboratory notebook. You will not be permitted to use the CD for the quizzes so be sure to record as much information as you think you'll need to properly answer one question related to the assigned simulation activity. Please **DO NOT** include unassigned simulation notes in your laboratory notebook.

