PHYSICS 1331

Term 2204 (Spring 2020), class# 22240

- Instructor: Dr.S. (Prof. Vladimir Savinov).
- Office: Allen Hall, 402 (office hours are conducted elsewhere).
- Office hours: time and location will be announced in class, on CourseWeb and via e-mail. Also, I am usually available right after class in Thaw 104 or in the hallway outside. I am practically never available right before class, not even for quick questions. Office hours are conducted in group environment (unless you are the only student who showed up). Show up at the time when office hours start. If you show up late, most likely you will miss some important discussion. Just in case, so you know, I do not do tutoring.
- Phone#: (412) 624-9042 (NOT a good way to get in touch with me).
- e-mail (THE best way to contact me): vps3@pitt.edu
  In order for your e-mail to be delivered to me you are strongly advised to use Pitt’s e-mail system. Note that I will be communicating with class using students’ e-mail addresses in pitt.edu domain. It is your responsibility to make sure you read e-mails sent to you at pitt.edu regularly and do not miss any of the information. All e-mails sent to class will also be posted/archived on CourseWeb.
- Lectures: MWF 1:00pm-1:50pm, Thaw 104.

Course Description

Classical (non-relativistic) Mechanics is one of the earliest and well-established disciplines in Physics. Various aspects of Mechanics, such as, e.g. chaos, non-linear phenomena, numerous applications to Engineering and such remain to be active areas of research. In this class we will study deterministic behavior of single particles and rigid bodies. We will start with Newtonian formulation of Mechanics and advance to Lagrangian and Hamiltonian dynamics later in the term. Most generally, the objectives include 1) to provide the students with a strong background in the techniques and methods of Classical Mechanics at intermediate level, 2) to introduce the mathematical methods for solving differential equations and, most importantly, 3) to prepare you better for more advanced classes, more specifically, Electricity and Magnetism, Introduction to Electromagnetic Theory, Thermodynamics and Statistical Physics, and Quantum Mechanics.

The lectures will closely follow the textbook (with additional material introduced in class, as needed), and most, but not necessarily all, of the homework problems will be from the text or based on it. In
addition, there may also be assignments from outside the book on relevant material. I requested a copy of
the textbook to be placed on reserve at [Bevier Engineering Library] in [Benedum Hall]. You can buy a
copy of the textbook from Pitt’s bookstore. Textbook information can be found [at publisher’s web
1-891389-22-X. I plan to cover most of material from chapters 1 through 11 and 13. Knowledge of
introductory physics (at Phys174 level), calculus, vector algebra and differential equations is assumed
and expected. Please keep in mind that these are prerequisites for this class. You will have to read the
textbook before class and after class and do a sizeable body of independent work outside of class. You
will be responsible for all material from chapters (partially or fully) discussed in class.

Attendance

Attendance is not mandatory though I expect every student to attend every single class. Students are
most strongly advised to take lecture notes during class and to study their notes later in the week. If
you can’t reproduce the calculations presented in class or/and in the book, this would be a clear sign
of having trouble with class material. If you miss a class, it would be your responsibility to catch up
by studying the textbook, by asking other students to share their notes with you and by attending
office hours to ask questions about assigned problems and to clarify material in the textbook and/or
presented in class. I will not be holding individual sessions with students who missed a class – if you
couldn’t make it, read the book. I do not provide lecture notes.

Courseweb

Up to date information about class, including assignments and complementary material, will be regularly
posted on Courseweb (a.k.a. Blackboard). You can access Courseweb at [http://courseweb.pitt.edu] (use
your Pitt network computer account and password to log in). CourseWeb information will be updated
regularly (almost daily).

Homework Assignments

Homework will be assigned (announced electronically on Courseweb) regularly. When you turn in your
assignment, show all your work. Do not skip intermediate steps. Do not try to save paper. Your
pictures/plots/sketches must be large size. Do not turn in your scratch paper. Be neat. Do not e-mail
your work to me (unless I request this). Make it easy for whoever grades your work to figure out what
you have done. Show ALL steps, do NOT assume that some of the steps are “obvious” or “trivial”.
Points will be taken off for insufficient explanations and/or difficult-to-read work. This applies even
more so to the exams. Attend office hours. Take notes in class. The solutions to the homework problems
will be posted on Courseweb. Before you ask questions of the type “what’s wrong with (every single
step) of my solution?”, study posted solutions, understand how to do the problem, do it from scratch
and, if you are unable to solve the problem after that, come to office hours / ask me to help, so I can
explain the solution to you. I do not normally explain what’s wrong with individual wrong solutions,
rather, I explain how the problem should (or could) be solved.

Grading Scheme and Other Details

There will be two midterm exams and one comprehensive (i.e., cumulative) final exam. Midterms dates
will be announced at a later time, but no later than two weeks before the actual exam. The final
exam date is set by the university (see https://www.registrar.pitt.edu/sites/default/files/pdf/2204%20Final%20Exams.pdf), and it is currently scheduled on Tuesday, Apr. 21, between 10:00am and 11:50am. The location of final exam will be announced at a later time. You should be aware of the University Final Exam Conflict Accommodation Procedure outlined at https://www.registrar.pitt.edu/assets/pdf/final_procedure.pdf. The final grade will be determined by your homework (~10%), mid-term exams (~25% each), and final exam (~40%). If you have any questions / need anything clarified, please contact me at vps3@pitt.edu.

Supplementary References

I requested to place several additional textbooks for you on reserve at [Bevier Engineering Library in Benedum Hall]. These books are not required for this class, but may come in handy. These books include:


- **Classical Mechanics: Point Particles and Relativity** by W. Greiner. Pitt library call number QC125.2.G7413, 2004, the first part of a two-volume introduction to undergraduate-level Mechanics used in some parts of Europe.

- **Classical Mechanics: Systems of Particles and Hamiltonian Dynamics** by W. Greiner. Pitt library call number QA805.G675, 2003, the second part of a two-volume introduction to undergraduate-level Mechanics used in some parts of Europe.


**Special and/or Unexpected Circumstances and Emergencies**: Should such arise, please follow the following protocol: first take care of your emergency and/or unexpected circumstances and then,
when you have time, send an e-mail to your teacher outlining your circumstances and the nature of your emergency. All such events will be handled on case by case basis. Generally, do not rely on an oral communication with your teacher, any request / explanation of some situation / any commitment must be communicated electronically. Generally, no “I” or “G” grades will be assigned in this class. All work for this course should be completed before the end of this term.

**Religious Observances and Class Activities:** In case your religious observances conflict with class activities / tests / homework assignments due dates and such, please alert your teacher to such possible conflicts as soon as possible and in advance.

**Special Accommodations for Disability:** If you have a disability that requires special testing or other accommodations, you should notify both the instructor and the Office of Disability Resources and Services (DRS) as early as possible in the term. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations. The Office of Disability Resources and Services is located in the William Pitt Union, Room 140. If needed, please call (412) 648-7890 (voice) to schedule an appointment with them. A comprehensive description of the services provided by DRS office can be obtained on their web site.

**Academic Integrity:** All students in this course are expected to follow the University of Pittsburgh academic integrity guidelines. If you are not aware of the specifics, you should obtain a copy of these guidelines from the Dietrich School of Arts and Sciences Dean’s Office, 140 Thackeray Hall, or look them up online at their web site. Violations of these guidelines by a student may result in a zero score for an examination/homework/other or/and a failing grade for the entire course.