Physics 101-02
Great Ideas in Science
Spring 2008

Professor: Lev Kaplan
Lectures: MWF 10:00 – 10:50 in Boggs 242
Textbook: Hewitt, Suchocki, and Hewitt, *Conceptual Physical Science*, 3rd edition, ISBN 0-321-05173-4
Laboratory: Weekly in Percival Stern 2023. **You must register separately for a lab section!**
Office: 5046 Percival Stern Hall
Office hours: Mon 11:00 – 12:00 and Wed 12:00 – 1:00 (tentative: days and times to be confirmed during first week of class and posted on the blackboard website), or by appointment
Email: lkaplan@tulane.edu [Great way to ask a quick question or arrange an appointment]
Telephone: 504-862-3176 (x3176) [If I'm not there, try email]
Web: tulane.blackboard.com [Lecture notes, assignment schedule, solutions, grades, web links, etc.]

Welcome to Great Ideas in Science!

General Course Objectives and Requirements:

This course will help develop your understanding of the basic principles of physical science, the applications of these principles in our world, and the relation of science to philosophy, politics and other aspects of human activity. The course will focus on concepts and essays. Mathematics will be deemphasized, but not eliminated. The largest portion of the course grade will be based on weekly essays where original writing is important. The course will also provide experience in logical and quantitative reasoning, laboratory experiments, and in data interpretation and analysis. Hopefully, you will discover that physics is not only useful, but also interesting and fun. Topics discussed may include some of the following: science and knowledge, motion and force, gravity, electricity and magnetism, energy, heat and disorder, waves, sound and music, light, atoms and molecules, earth, stars and galaxies, black holes, the universe and the big bang, nuclear bombs, unpredictability and chaos, relativity, quantum physics and uncertainty, and quantum computation.

Grading:

Laboratory:	15%	[But **you must pass the lab to pass the course!**]
Essays and Problems:	45%	
Quizzes and Attendance:	15%	
Midterm:	10%	
Final Exam:	15%	

There is no "extra credit", and **no predetermined scale** for converting your numerical score to a letter grade. It often happens that the numerical gap between final letter grades is less than 1% at the end of the course. To promote fairness among different sections of PHYS 101, it is expected that average letter grades will be similar in each section. A typical average grade in this course has been a B- or B. Teaching style, material covered, homework problems, quizzes, and exam contents will vary among professors.

Tips for Success:

- Stay engaged; **ask questions** in class and during office hours
- Expect to spend around **6 hours/week** on average outside of class for this course
- Study relevant online notes and textbook sections **before** and after material is covered in class
- **Begin homework assignments early; put substantial thought into each assignment**
- Use available resources (office hours, team study, Physical Science Place website)
- Seek help early and please **do not fall behind**
- Approach physical science with a **positive attitude** and you'll enjoy it more

Laboratory:

Since physics is an experimental science, the laboratory is a key component of your learning experience. You must earn **at least a 59% lab grade** (departmental policy!) in order to pass Physics 101. You must register separately for a lab section, and **you must attend the section for which you are registered** (make sure you have the correct day, time, and room number). You can find your lab section, lab schedule, sample 101 pre-lab and lab report, and TA contact information on the lab website: www.physics.tulane.edu/Labs/101Labs.shtml. The first lab meeting during the week of January 28 will be informational; the first real lab ("Vectors, Forces, and Equilibrium") will be held the week of February 11. The labs are self-contained and will often be out of sequence with the lectures.

Obtain a copy of the **lab manual** in 2020 Stern Hall ($10 cash, see lab manual availability schedule). Bring the lab manual to every lab, along with a calculator and textbook (if necessary).

You are required to **prepare ahead of time** for each lab (excluding the first informational lab), as evidenced by a 150-200 word **pre-lab write-up** including your name, the name and date of the lab, the objective of the lab, and a brief hypothesis concerning the outcome (for a sample, click "Lab Info and Policies" on the lab website and follow the link at the bottom of the page). In addition, there will be a short **quiz** at the beginning of each lab, again beginning with the second lab meeting. See the lab manual, the lab website, and your TA for more details about lab requirements and lab grading. Dr. Tim Schuler (tschule@tulane.edu or x5086) is the lab supervisor. A make-up lab will be given only for an **officially excused absence**: (a) illness with a doctor's note or a dated medical excuses policy form from the student health center, (b) a family emergency such as a serious illness or death in the immediate family, or (c) official Tulane business. Written documentation must be submitted **before** the missed lab (except in case of emergency), and only one make-up lab will be allowed, to be completed during the week of April 21.

Student Hand-Held Controls ("Clickers"):

Obtain a clicker (also known as an H-ITT transmitter, available in the bookstore for about $35) if you don't already have one. Please register your clicker's number with me **by Wednesday, January 16**, or if your clicker needs to be replaced. You are required to bring your clicker (but not your friends' clickers – see "Professional Conduct" below) to each class session. I may use the clickers to check attendance, to get instant feedback on lectures, to take occasional polls, and/or to administer multiple-choice quizzes. We will practice using these devices before the first quiz.

Blackboard Website and Tulane Email:

I will use "Blackboard" (tulane.blackboard.com) for posting lecture notes, announcements, assignments, a calendar of due dates, solutions, useful web links, syllabus updates, grades, etc. To log in, use the same ID and password that you use to access your Tulane email. If you have trouble logging in, contact the help desk at x8888 (862-8888). Once you register for this course, your name should automatically be added to the "blackboard" roster the following night. This syllabus is already available online, with all the links active. **Check the blackboard website regularly for announcements** (including homework announcements, changes in homework due dates, updated office hours, etc.).

Sometimes, I may need to contact you by email, so either **check your "yourname@tulane.edu" email on a regular basis**, or else arrange to have it forwarded to another email address that you do monitor.

Course Schedule:

Assignments and due dates will be updated regularly on the blackboard website, under Assignments.

Assignments:

Each assignment (to be posted on blackboard and announced in class) will consist of an **essay** and problems. The essay is worth 8 points and the problems are worth 2 points. The essay of 300 or more words must be your original work, must respond to the question posed, must be well crafted, and must integrate solid physics understanding with something outside of physics. Outside research is welcomed, but is not sufficient. Regurgitating material from the textbook, lecture notes, or the web does not count, and plagiarism will be punished severely. Creativity is important: while well-reasoned and organized but routine writing satisfying the above criteria may earn 6 points, the full 8 points are reserved for work that is inspiring, surprising, memorable, or shows unusual depth and insight. Few essays will receive 8 points. In some cases, another creative work may be submitted instead of an essay.

The **problems** will mostly come from the textbook and are graded generously. If you wish, you may discuss problems with your classmates before turning them in. Solutions will be posted online.

Late homework will not be accepted. Your lowest assignment grade (essay & problems) will be dropped.

Lecture Notes and Textbook:

Lecture notes will be posted online before each topic is discussed, and you are expected to read them before coming to class. At the same time, you will be reading relevant sections of the textbook, which is the source of all assigned problems. Your new textbook also includes free access to the Physical Science Place website with interactive tutorials, videos, and links; an insert in the front of your book contains the access code. Material covered in lecture will be the primary focus of quiz and exam questions, while the textbook is an important secondary source.

Quizzes:

Multiple-choice clicker questions will be administered often to ensure that you are keeping up with the reading and lectures. These questions may come at the beginning, middle or end of class. If you miss class without prior permission, you will receive a grade of 0 for questions asked on that day. Your worst quiz grade will be dropped (i.e. you are "allowed" one unexcused absence).

Examinations:

The midterm will be held in class on or around February 29, and the final exam will be held Saturday, May 3, 8:00-noon. The exams may contain a combination of conceptual questions and questions involving calculation. You may bring a calculator and **one handwritten, double-sided page** of notes to each exam. The best way to prepare is to keep up with and understand all the lectures, readings, and homework assignments. Come to the exam well rested.

Study Groups:

Although this is not required, you are encouraged to form study groups during the first week of class. Teamwork can be a great way to solidify your understanding of physics (or any other field) and can also be fun! You may consult with your study group about homework problems, discuss readings, and prepare for the exam.

Study Habits:

The rule of thumb is that for every hour spent in class, you should be spending two hours on the material outside of class - that's **about 6 hours per week** for this course (including the time spent on your essays and problems). If you wish a high grade (or because you love the subject and want to excel in it) you may want to put in more hours. Read the lecture notes and text before class, so you know where to ask questions. Start doing the assignments early. **Set up regular study hours** for this and every other class. If you wish, set up regular sessions with your study group, come to my office hours, and use other available resources, such as the textbook website. Don't try to learn everything the day before the final exam. You are more likely to succeed if you approach the study of physics **with a positive attitude**. Some other study hints that may also help with your other classes may be found at erc.tulane.edu/studying.

Special Assistance and ERC:

If you are having difficulties or need any special assistance, or have a learning disability, or if something is just unclear to you, or you need help in developing better study habits, please let me know **as early as possible**, either in person or via email. The important thing is **not to fall behind**, since it is much more difficult to catch up later. Remember that I am here for your benefit, but as responsible adults you need to let me know what I can do to help. In addition, **Educational Resources and Counseling** (ERC), located on the first floor of the Mechanical Engineering Building (website: erc.tulane.edu, phone: x5113), can provide help with many of the stresses of college life, including free and confidential counseling for personal, academic, or career concerns. ERC also provides **free tutoring** in physics and many other subjects (check schedule at x5103), career testing services, disability accommodations, and lots of tips on study strategies and maintaining good mental health. More detailed information is available on their website.

Professional Conduct:

As Tulane students, you are expected at all times to uphold high ethical and professional standards, as described in the Newcomb-Tulane Code of Academic Conduct. Plagiarism on assignments or cheating on exams or quizzes will not be tolerated, and may be punished by failure in the course, academic probation, and/or expulsion. Discussing homework assignments with your classmates is not cheating. You are expected always to treat your classmates with respect, and you have the right to be treated with fairness, respect, and consideration by me. **Disruptive and unprofessional behavior**, such as chatting in class or packing your backpacks before class has ended, disrespects everyone else who is trying to learn, and such behavior will not be accepted.

Class Registration, Attendance, Participation, and Involvement:

Please be sure that you are registered for this class through the TOUR system. I ask you to attend class regularly, arrive on time, and not pack up before class ends, so that you do not miss quizzes or important announcements. **Let me know in advance about any unavoidable absences.** I will use a sign-up sheet during the first week to make sure that everyone registered is here and everyone here is registered. **Class participation is strongly encouraged.** If you have a question, please do not be afraid to ask it. There is no such thing as a stupid question in this classroom, and if you are confused about some point, there is good chance that some other students are too, and they will be grateful to you for slowing me down. Even if some are not grateful, ask anyway. Also, your active participation will ensure that the discussion includes **ideas, applications, examples, and experiences of special interest to you**. With your involvement, we can make this class a valuable learning experience for everyone.

About me:

I enjoy teaching and doing physics research at Tulane. My present research interests involve waves in complicated geometries (from ocean waves to electron waves). If you want to know more about it, just ask. I was born in Latvia (former USSR), grew up in New Jersey, did my undergraduate studies at the University of Pennsylvania, and my graduate "work" at Harvard University (on the theory of high-energy particles). I strongly encourage you to stop by my office to talk about physics, Tulane, questions, concerns, suggestions, or anything else that may be on your mind.