

Physics 102: Physics for Policy Makers (Current Topics in the Physical World)

Fall 2021

Course Description:

This course is about the physics that underlies many topic of current interest, both to policy makers and the informed citizenry. We will discuss the science behind terrorist methodologies, global warming, energy issues, and much more. This is *not* an advocacy course that seeks to push any agenda other than teaching the science behind the issues. For example, knowing what drives climate change does not tell you what should be done about it. Policy decisions must involve politics, economics, international commitments, etc. But to make rational policy, it is also essential to know the underlying science. This course will address the science.

Course Details:

Lecturer: Professor Brett DePaola Office: CW 116; Email: depaola@phys.ksu.edu .

Class Days/Times: Tuesdays & Thursdays, 1:05 – 2:20.

Office Hours: By appointment, just because my schedule is so crazy. But I welcome students!

Required Textbook:

None. The lectures are *loosely* based on the book *Physics for Future Presidents: The Science Behind the Headlines* by Richard A. Muller. [NOTE: This is NOT the same as *Physics and Technology for Future Presidents* by the same author.] This book is *not* required.

Course Web Site:

Important course resources such as exam grades, announcements, supplemental lecture materials and so-on will be posted on the course web site, accessed through Canvas.

Individual Help:

Any student wanting individual help is *encouraged* to visit me by appointment. There is a *Physics Help Room* in Cardwell 41 that is open nearly all day, every day. However, the instructors who staff that room, while very competent in general physics concepts, may not be conversant on the topical items which are the subject of this course. The same goes for tutors, paid or otherwise. When in doubt, please contact the instructor – who will be more than happy to meet with you.

Authorized versus Unauthorized Aid in Academic Work for this class:

In this course, you are permitted to discuss homework with other students, but you may not directly copy any source. Exams and quizzes must be completed individually using only the materials allowed by the exam/quiz instructions. If you have any questions about what constitutes authorized and unauthorized aid, contact the instructor. Also, please read the official university statement below on Academic Honesty.

Grading:

Grades are determined on a 1000 point scale as shown below. You cannot get a good grade in the course unless you do all the homework and take the exams. There will be no extra credit projects.

Distribution of points:

Homework (assessments): 150 points;

In-class quizzes: 300 points;

Mid-term exam: 250 points;

Final exam: 250 points;

Just for breathing: 50 points;

Total: 1000 points.

Determination of final grade:

900 points or above: A

800 - 899 points: B

700 - 799 points: C

600 - 699 points: D

Under 600 points: F

Homework & Quizzes:

Homework counts as 15% of your final grade. There will be approximately one assignment per month. The homework will consist of you writing an assessment of some existing or potential science-related situation. The assessment will be in form and format suitable for policy makers to digest and act upon. You will be graded on content and clarity of writing *including grammar*. (Policy makers need to know how to write – as do those who write to inform policy makers!) *No credit is given for late homework.*

There will be a self-test and graded quiz in *nearly every class*. The quizzes will be short and should be easy for anyone who paid attention. Missed quizzes cannot be made up.

Exams:

There are two exams during the semester: a mid-term and a final. They will be take-home exams and will consist of essay questions. Appropriate responses to these questions will contain well-thought-out and justified arguments. *There will be no substitutions for the final exam.*

Laboratory:

There is no laboratory for this course.

Safe Zone Statement

I am part of the SafeZone community network of trained K-State faculty/staff/students who are available to listen and support you. As a SafeZone Ally, I can help you connect with resources on campus to address problems you face that interfere with your academic

success, particularly issues of sexual violence, hateful acts, or concerns faced by individuals due to sexual orientation/gender identity. My goal is to help you be successful and to maintain a safe and equitable campus.

Weapons Policy Statement

Kansas State University prohibits the possession of firearms, explosives, and other weapons on any University campus, with certain limited exceptions, including the lawful concealed carrying of handguns, as provided in the University Weapons Policy, found at <http://www.k-state.edu/police/weapons/index.html>.

You are encouraged to take the online weapons policy education module (<http://www.k-state.edu/police/weapons/index.html>) to ensure you understand the requirements of the policy, including the requirements related to concealed carrying of handguns on campus. Students possessing a concealed handgun on campus must be lawfully eligible to carry and either at least 21 years of age or a licensed individual who is 18-21 years of age. All carrying requirements of the policy must be observed in this class, including but not limited to the requirement that a concealed handgun be completely hidden from view, securely held in a holster that meets the specifications of the policy, carried without a chambered round of ammunition, and that any external safety be in the "on" position.

If an individual carries a concealed handgun in a personal carrier such as a backpack, purse, or handbag, the carrier must remain within the individual's exclusive and uninterrupted control. This includes wearing the carrier with a strap, carrying or holding the carrier, or setting the carrier next to or within the immediate reach of the individual.

Each individual who lawfully possesses a handgun on campus shall be wholly and solely responsible for carrying, storing and using that handgun in a safe manner and in accordance with the law, Board policy and University policy. All reports of suspected violation of the weapons policy are made to the University Police Department by picking up any Emergency Campus Phone or by calling 785-532-6412.

Statement Regarding Academic Honesty

Kansas State University has an Honor and Integrity System based on personal integrity, which is presumed to be sufficient assurance that, in academic matters, one's work is performed honestly and without unauthorized assistance. Undergraduate and graduate students, by registration, acknowledge the jurisdiction of the Honor and Integrity System. The policies and procedures of the [Honor and Integrity System](#) apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, and via distance learning. A component vital to the Honor and Integrity System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students. The Honor Pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work." A grade of XF can result from a breach of academic honesty. The F indicates failure in the course; the X indicates the reason is an Honor Pledge violation.

Statement Regarding Students with Disabilities

Students with disabilities who need classroom accommodations, access to technology, or information about emergency building/campus evacuation processes should contact the Student Access Center and/or their instructor. Services are available to students with a wide range of disabilities including, but not limited to, physical disabilities, medical

conditions, learning disabilities, attention deficit disorder, depression, and anxiety. If you are a student enrolled in campus/online courses through the Manhattan or Olathe campuses, contact the Student Access Center at accesscenter@k-state.edu, 785-532-6441; for K-State Polytechnic campus, contact Julie Rowe, Diversity, Inclusion and Access Coordinator, at jarowe@ksu.edu or call 785-826-2971.

Statement Defining Expectations for Classroom Conduct

All student activities in the University, including this course, are governed by the [Student Judicial Conduct Code](#) as outlined in the Student Governing Association [By Laws](#), Article V, Section 3, number 2. Students who engage in behavior that disrupts the learning environment may be asked to leave the class.

Statement on Mutual Respect and Inclusion in K-State Teaching and Learning Spaces

At K-State, faculty and staff are committed to creating and maintaining an inclusive and supportive learning environment for students from diverse backgrounds and perspectives. K-State courses, labs, and other virtual and physical learning spaces promote equitable opportunity to learn, participate, contribute, and succeed, regardless of age, race, color, ethnicity, nationality, genetic information, ancestry, disability, socioeconomic status, military or veteran status, immigration status, Indigenous identity, gender identity, gender expression, sexuality, religion, culture, as well as other social identities.

Faculty and staff are committed to promoting equity and believe the success of an inclusive learning environment relies on the participation, support, and understanding of all students. Students are encouraged to share their views and lived experiences as they relate to the course or their course experience, while recognizing they are doing so in a learning environment in which all are expected to engage with respect to honor the rights, safety, and dignity of others in keeping with the K-State Principles of Community <https://www.k-state.edu/about/values/community/>.

If you feel uncomfortable because of comments or behavior encountered in this class, you may bring it to the attention of your instructor, advisors, and/or mentors. If you have questions about how to proceed with a confidential process to resolve concerns, please contact the Student Ombudsperson Office. Violations of the [student code of conduct](#) can be reported here <https://www.k-state.edu/sqa/judicial/student-code-of-conduct.html>. If you experience bias or discrimination, it can be reported here <https://www.k-state.edu/report/discrimination/>.

Statement Regarding Wearing of Face Masks

All students are expected to comply with K-State's face mask policy. As of August 2, 2021, everyone must wear face masks over their mouths and noses in all indoor spaces on university property, including while attending in-person classes. This policy is subject to change at the university's discretion. For additional information and the latest on K-State's face covering policy, see <https://www.k-state.edu/covid-19/guidance/health/face-covering.html>.

Course Schedule:

Week	Week Of	Topic 1 (Tuesday)	Topic 2 (Thursday)
1	Aug 23	Introduction	Physics of 9-11
2	Aug 30	Terrorist Nukes	Next Terrorist Attack
3	Sept 6	Bio-Terrorism	Key Energy Surprises
4	Sept 13	Key Energy Surprises (cont)	Solar Power
5	Sept 20	End of Oil, Renewables	Calculation Strategies
6	Sept 27	Radiation & Death	Radiation & Death (cont)
7	Oct 4	Radioactive Decay	Radioactive Decay (cont)
8	Oct 11	Nuclear Weapons	Midterm Exam ☹
9	Oct 18	More Nukes, Nuclear Madness	Nuclear Power
10	Oct 25	Nuclear Waste, Controlled Fusion	Reactor Tour
11	Nov 1	Space & Satellites	Gravity Applications; Humans in Space
12	Nov 8	Spying with Invisible Light	Brief History of Climate
13	Nov 15	Greenhouse Effect	Climate Change
14	Nov 22	Fall Break ☺	Thanksgiving Break ☺
15	Nov 29	IPCC Report	Cyber Security
16	Dec 6	We'll See...	We'll See...
Final Exam Due Before: Thursday, Dec 16, 3:50 pm			

Homework (Assessment) Schedule:

Assessment No.	Assessment Topic	Assign Date	Due Date
1	Terrorism	Sept 7	Sept 13
2	Nuclear	Nov 2	Nov 8

Statement for Copyright Notification

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