Syllabus **The Physical World I (Physics 101)** Fall 2016

Instructor: Prof. Uwe Thumm, thumm@phys.ksu.edu
Office hours: By appointment
Text: Conceptual Physics, 12th edition, Paul Hewitt (Pearson 2015)

Classes meet M W F 10:30 - 11:20 am in CW 103. To view all course information online, including syllabus, assignments, homework solutions, exam keys, and your grades, you will need K-State online access.

The goal of this course is to help you develop a greater capacity to notice, think about, analyze, and understand the natural world. In this class, I intend to familiarize you with the development of scientific concepts and to provide you with an appreciation of the laws of physics and their implications for science and technology in our daily lives. During this semester, you will learn about our current understanding of what the physical world is made of and how it works.

What I expect from you is to attend all classes and to takes notes that you later meticulously review and revise. You are expected to carefully read the assigned chapters in the textbook, with pencil and paper handy, and to routinely work out all "check point" questions in the text and all "reading check questions" at the end of each chapter. Your answers to these questions will not be graded, but I strongly encourage you to carefully write them down and to discuss them with classmates, bringing up every point that is not crystal clear to you. For all exams and graded assignments, please remember that it is your responsibility to communicate your written solutions in a well-organized and readable manner and not mine to decipher your answers. It is best if you adhered to this practice even for the "check yourself" and "review" questions that are not turned in.

Homework: I will assign homework problems in class and post them at K-State online. Your answers will be collected on the dues dates given in the course schedule at the beginning of the class and graded. There will be no make-up homework assignments. At the end of the semester your two lowest homework scores will be dropped, and you will receive a total of up 200 points for your homework. As for the "check point" and "reading check" questions in the textbook, you need to very conscientiously study your homework assignments. Even though you are encouraged to first discuss ideas and strategies with your classmates, I expect every student to write down and hand in his/her own work. Please keep in mind that it is impossible to do well in the exams without ample practice.

Exams: There will be three in-class and a comprehensive final exam. You have to attend the final exam to pass this course. You will receive a maximum of 250 points for each in-class exam and 300 points for the final exam. Only your two best in-class exams count towards your final grade. There will be no make-up exams. Electronic communication tools, such as programmable calculators, laptops, and cell phones must not be used. All exams will be held in CW 103.

Grades: Your final grade for this course will be based on your exam and homework scores. The maximum total number of points is 1000. The cut-offs are: **A:** 900 points, **B:** 800, **C:** 650, **D:** 500, **F:** < 500. There will be no extra credit activities to improve your grade.

Honesty: All students, by registration, acknowledge the jurisdiction of the Kansas State University Honor System. For more information refer to www.k-state.edu/honor. The Honor System includes the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work." The grade XF can result from a breach of academic honesty, where F indicates failure in the course and X an Honor Pledge violation.

Disabilities: If you need classroom accommodations, access to technology, or information about emergency building/campus evacuation processes contact the Student Access Center at www.k-state.edu/accesscenter, 785-532-6441. 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.

Classroom Conduct: All student activities in this course are governed by the Student Judicial Conduct Code. For more information refer to www.k-state.edu/sga/judicial/ and the Student Governing Association By Laws at www.k-state.edu/sga/documents/, Article V, Section 3. Students who engage in behavior that disrupts the learning environment may be asked to leave the class.

Course outline

Lecture	Date		Week	Topic	HW # due	Chap.
1	Aug.	22	1	About physics		1
2		24		Linear motion. Inertia. Newton's first law		2
3		26		Forces and motion. Equilibrium	1	2
4		29	2	Speed and velocity		3
5		31		Change in velocity: acceleration		3
6	Sep.	2		Forces and acceleration	2	4
7		5	3	No class- Labor Day		
8		7		Newton's second law		4
9		9		Interactions. Vectors	3	5
10		12	4	Newton's third law		5
		14		Impulse and momentum		5
11		16		**EXAM 1**		**1-5**
12		19	5	Momentum conservation	4	6
13		21		Collisions		6
14		23		Work. Energy. Power		7
15		26	6	Kinds of energy. Energy conservation	5	7
16		28		Rotation motion and inertia		8
17		30		Torque. Angular momentum (conservation)		8
18	Oct.	3	7	Gravity	6	9
19		5		Motion in gravitational fields		10
20		7		Planetary motion. Kepler's laws		10
21		10	8	Molecules. Atoms. Nuclei	7	11
		12		Solids.		12
22		14		**EXAM 2**		**6-12**
23		17	9	Liquids. Gases		13,14
24		19		Temperature. Heat	8	15,16
25		21		Phase changes: freezing and melting		17
26		24	10	Thermodynamics		18
27		26		Wave motion. Interference	9	19
28		28		Standing waves		19
29		31	11	Sound. Resonances		20
30	Nov.	2		Physics and music	10	21
31		4		Electric charges, forces, and fields		22
32		7	12	Electric current. Ohm's law		23
33		9		Magnetism	11	24
		11		**EXAM 3**		**13-25**
34		14	13	Electromagnetic induction		25
35		16		Motors. Generators. Appliances		22-25
36		18		Electromagnetic radiation: light	12	26,27
				Thanksgiving break		
37		28	14	Reflection and refraction		28
38		30		Propagation and interferences of light waves		29
39	Dec.	2		Propagation and interferences of light waves	13	29
40		5	15	Light sources. Light quanta		30,31
41		7		Quantum mechanics: atomic physics		32
42		9		Nuclear physics and applications	14	33,34
		12		**FINAL EXAM** 11:50am – 1:40pm		**1-34**