PHY1020 COURSE SYLLABUS WINTER 2013

TEXT: **INQUIRY INTO PHYSICS**, 7th Edition (e-book is okay), by Vern J. Ostdiek and Donald J. Bord

LECTURE: T, Th 6:00 – 7:20 p.m. **LOCATION**: Rm. 2009 Science Hall

LECTURER Girfan Shamsutdinov (Dr. Shams) **OFFICE**: 339 Physics Research Building (666 W. Hancock)

E-MAIL: girfan@wayne.edu

OFFICE HOURS: Thurthdays, 12 noon – 1:00 p.m.

Physics Service: Physics Building, first floor, **room 174**, (TA help)

LECTURE, READING ASSIGNMENTS and QUIZZES: In this course we learn fundamental laws of Nature, and explore governing forces of the Universe through fascinating book of "Inquiry into Physics" by Vern J. Ostdiek and Donald J. Bord. Content of the course is listed under lecture topics. There will be three exams, and short quizzes at the approximate rate of one per week. Grades on exams and quizzes are given below. Exams and Quizzes will be based on lecture materials, reading assignments and "Learning Checks" which are presented at the ends of most sections in the text. We will discuss details of this extra credit at the first class meeting.

HOMEWORK: The listed questions and problems from each chapter are homework assignments which you should do along with the reading assignment for each lecture. They will not be collected or graded, but several questions similar to the homework (and "Learning Checks" found in each chapter) will appear on the exams. (Note that the solutions and answers to the odd-numbered problems are found at the back of your text.)

PLANETARIUM SESSION: You will also be able to earn a bit of **extra credit** by attending a planetarium session during the term, at the Wayne State University Planetarium (0209 Old Main). You will need to fill out and sign a form at the end of the show, so that there is a record of your attendance. Details will be discussed in class. For information on the planetarium and student show times, you can visit "http://planetarium.wayne.edu. I also encourage you to visit Planetarium and see fascinating movies and presentations during the course of this semester

Note: There are NO-MAKE-UP EXAMS or exams given early. This policy will be discussed in class.

Also Note: Any changes to the grading scheme below will be discussed in class and posted on Blackboard.

GRADE DETERMINATION: LECTURE ONLY

Best two of first three (hour) exams:
(Each exam is worth 30 %) 60%

Final Exam 40 %

100%

Bonus Points

Quizzes	6%
Planetarium	1%

GRADING SCALE:

A– / A	85 – 100%
B– / B / B+	70 – 84%
C– / C / C+	55 – 69%
D– / D / D+	40 – 54%
F	< 40%

GRADE DETERMINATION: LECTURE PLUS LAB

Best two of first three (hour) exams:	
(Each exam worth 22.5 %)	45%
Lab	15%
Final Exam	40 %
	100%

Bonus Points

Quizzes	6%
Planetarium	1%

GRADING SCALE:

A– / A	85 – 100%
B– / B / B+	70 – 84%
C– / C / C+	55 – 69%
D– / D / D+	40 – 54%
F	< 40%

Class Schedule

The following class schedule is meant to serve as a general guide to the time line at which material will be covered in the course and is subject to revision. Students will be informed of any changes/updates that take place as we move through the semester.

DATE	LECTURE TOPICS	READING ASSIGNMENT	WEEKLY LAB. EXPTS.
Th 8/29	Introduction and Physical Quantities	Prologue, 1.1	
T 9/3	Speed, Velocity, and Acceleration; Vectors	1.2 - 1.3	NO LAB
Th 9/5	Simple Types of Motion	1.4	
T 9/10	Force, Mass, Newton's 1st and 2nd Laws	2.1 - 2.4	#2 Measurements and Predictability
Th 9/12	Types of Motion, Newton's 3rd Law, Gravitation and Tides	2.5 - 2.7 2.8 - 2.9	
T 9/17	Conservation Laws and Linear Momentum	3.1 - 3.2	#3 Velocity and Acceleration
Th 9/19	Work and Energy, Conservation of Energy and Collisions	3.3 - 3.4 3.5 - 3.6	
T 9/24	Power, Rotation and Angular Momentum; Catch-up and review	3.7 - 3.8	#4 Free Fall; Acceleration of Gravity
Th 9/26	****** HOUR EXAM #1 (Prologue and Chapters 1 – 3) ******		

T 10/1	Matter, Phases and Pressure	4.1 - 4.2	#5	Newton's Laws of Motion
Th 10/3	Density, Fluid Pressure and Gravity; Archimedes's, Pascal's and Bernoulli's Principles	4.3 - 4.4 4.5 - 4.7		
T 10/8	Temperature and Thermal Expansion	5.1 - 5.2	#6	Conservation of Momentum
Th 10/10	1st Law of Thermodynamics; Heat Transfer and Specific Heat Capacity; Phase Transitions, Heat Engines and the 2nd Law of Thermodynamics	5.3 - 5.5 5.6 - 5.7		
T 10/15	Wave Types and Properties, Reflection and Doppler Effect	6.1 - 6.2	#9	Density and Hydrometers
Th 10/17	Wave Diffraction and Interference, Sound and its Production Propagation and Perception of Sound	6.2 - 6.4 6.5 - 6.6		
T 10/22	Catch-up and review		#10	Heat
Th 10/24	****** HOUR EXAM #2 (Chapters 4 – 6) ******			
T 10/29	Electric Charge and Force, Coulomb's Law Electric Current and Circuits, Ohm's Law	7.1 - 7.2 7.3 - 7.4	#13	Periodic Motion and Waves
Th 10/31	Electric Power, AC and DC	7.5 - 7.6		
T 11/5	Magnetism and Electricity Interactions	8.1 - 8.2	#11	Measurements of Voltage and Current
Th 11/7	Electromagnetism and Electromagnetic Waves	8.3 - 8.5		
T 11/12	Black Body Radiation, EM Waves and our Atmosphere Optics, Light Waves, Reflection and Mirrors	8.6 - 8.7 9.1 - 9.2	#12	Electric and Magnetic Induction
Th 11/14	Refraction, (Lenses and Images) (Human Eye), Dispersion and Color, Rainbows and Blue Sky	9.3 – (9.4) (9.5) - 9.7		
T 11/19	****** HOUR EXAM #3 (Chapters 7 – 9) ******		#15	Wave-like Nature of Light
Th 11/21	Quantum Hypothesis, Photoelectric Effect and Photons	10.1 - 10.2		
T 11/26	Atomic Spectra, Bohr Model of Atom, Quantum Mechanics (Atomic Structure, X-Ray Spectra, Lasers	10.3 - 10.5 10.6 - 10.8)	NO LAB	
Th 11/28	**Holiday – Happy Thanksgiving Day**			
T 12/3	The Nucleus, Radioactivity: Alpha, Beta and Gamma Decay (Half-Life, Nuclear Reactions and Binding Energy Nuclear Fission and Fusion	11.1 - 11.2 11.3 - 11.5) 11.6 - 11.7	#16	Spectroscopy

Th 12/5 Einstein's Special Theory of Relativity 12.1 (as time permits)
Review

T 12/10 Study Day

T 12/12 **** FINAL EXAM (Comprehensive) ****** 6:00 - 8:30 p.m.**

HOMEWORK: The listed questions and problems from each chapter are homework assignments which you should do along with the reading assignment for each lecture. They will not be collected or graded, but several questions similar to the homework (and "Learning Checks" found in each chapter) will appear on the exams.

(Note that the solutions and answers to the odd-numbered problems are found at the back of your text.)

CHAPTER	QUESTIONS	PROBLEMS
1	3, 7, 8, 11, 17, 23	1, 5, 7, 11, 15, 17, 25
2	3, 16, 20, 27, 28, 30	3, 5, 8, 10, 13, 19, 25
3	4, 8, 17, 20, 27, 29	3, 7, 11, 15, 22, 25, 33
4	7, 13, 17, 22, 25, 28	1, 6, 7, 9, 15, 19, 25
5	9, 12, 16, 17, 19, 24, 30	1, 3, 7, 10, 13, 17, 25
6	9, 15, 17, 21, 27, 32	1, 3, 7, 10, 15, 23, 24
7	7, 9, 15, 21, 25, 26, 28	2, 5, 9, 14, 17, 22
8	5, 10, 15, 20, 33, 34, 35	1, 3, 6, 9, 13
9	1, 7, 10, 12, 19, 31, 34, 38, 44, 47, 56	6, 10, 11
10	2, 6, 17, 20, 28, 30, 35	4, 5, 9, 10, 19
11	5, 6, 11, 13, 20, 23, 25	1, 3, 5, 7, 11, 13
12	2, 3, 5, 6, 8, 10	1

LABORATORY (optional): Location: Rm 142 Physics Res. Bldg. (666 W. Hancock)
Students taking the optional laboratory (which satisfies Liberal Arts Natural Science Laboratory Requirements) will receive 4 credits rather than 3 credits (without lab) for this course. This lab is designed for non-science majors and will give you a better overall hands-on feeling for this course. Your lab grade will be based on your participation in lab and the 10 best reports that you submit for the 12 lab experiments. Thus, you may miss two labs without affecting your grade. However, every lab missed (beyond two missed labs) will result in 0 points given for the missed lab(s). If four or more labs are missed, your grade for the course will be **lowered one full grade**.
The lab grade will count for 15 % of your final grade for the course. If you anticipate that you may miss a lab, try to attend one of the other lab meetings during the same week. Work with your lab instructor under such circumstances, to see if the issue can be resolved. **The PHY1020 Laboratory Manual will be available on Blackboard for students to download. It will be essential that you print out a copy of the Manual and bring it to each lab meeting. Note that the first lab meets in the week of September 9th.**

Note: Students will be informed of any changes to the above laboratory grading scheme.

Attention Students with Disabilities:

If you have a documented disability that requires accommodations, you will need to register with Student Disability Services (SDS) for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TDD only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to discuss your special needs. Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.

Please be aware that a delay in getting SDS accommodation letters for the current semester may hinder the availability or facilitation of those accommodations in a timely manner. Therefore, it is in your best interest to get your accommodation letters as early in the semester as possible.

SDS News:

Effective Fall semester 2010 Student Disability Services will be implementing a revised alternative testing form when a student schedules classroom exams/quizzes administration at SDS. As before the student and instructor each have a portion to complete. Exams are to be mailed to a new password protected email address: sdsexams2010@wayne.edu.