This Syllabus covers algebra-based General Physics 2140 and the associated Discussion/Quiz sections. The website for this course is on the WSU Blackboard, *Winter 2014 PHY 2140 General Physics Sec 901*. The course covers Electricity and Magnetism, Electromagnetic Radiation and Interference, Optics and aspects of Modern Physics. The prerequisites are PHY 2130 and High School algebra and trigonometry. If your algebra and trigonometry are not fast and accurate, your grade in this course will be lower. Get this fixed in the first few weeks of the semester. There is a summary of this prerequisite material on the inside front cover of the textbook, and a longer summary in sections 1 through 7 of Appendix A in the textbook. This section meets Mondays and Wednesdays 6:00 pm to 7:20 pm for class, in 513 Oakland Center. Quiz sections are for problem discussion and quizzing, and meet as follows, starting the first week of classes:

Quiz Sections	Section	CRN	Instructor	Room
Monday 7:30 PM	902	24145	Indermeet Kohli	513 OAK

NOTE: The Lab course, PHY 2141, is a separate course, with a separate Syllabus, schedule, Instructor and grades. The content of the labs is consistent with PHY 2140, but the sequence is different. Labs begin during the second full week of classes, the week of January 13.
NOTE: The WSU last day to withdraw from a class is Saturday March 22.

PHY 2140 Instructor for this section: Indermeet Kohli; indermeet.kohli@wayne.edu

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Farmington Hills, MI 48331
Phone: 313-577-3592

Office Hours: Monday and Wednesday faculty office - 5:00 – 6:00 PM

Course Materials:
- Text – Physics, 2nd Edition by Giambattista, Richardson and Richardson, published by McGraw Hill, available in the Barnes and Noble WSU campus bookstore. This is also the textbook for Physics 2130. Other editions and used textbooks may also be available.
- WebAssign access card. WebAssign is an online homework system, at *www.webassign.net*. A two-semester WebAssign access card is included in the price of a new textbook purchased at the BN campus bookstore, or, if you are not getting a new textbook from this bookstore, available separately from the Barnes and Noble campus bookstore. Or, pay online at *www.webassign.net*. If you pay online, make sure to select the above Giambattista, Richardson and Richardson textbook, 2nd edition.

Notes: PowerPoint notes for each class will normally be available on the Blackboard website for this course, after the class.

Goal: The goal of this course, which is the traditional goal in Physics, is that you be able to apply basic physical laws to analyze real-life or unstructured situations ("word problems"), both descriptively and numerically, at least for the aspects covered in this course. You should be able to analyze both existing situations, and situations that you or someone else want to construct. Research and experience indicate that, to get to this point, you also need to be able to:
- State and paraphrase definitions and laws, and apply them in simple cases
- Have opportunity to practice, with feedback (e.g. homework) before exams.
Consequently, homework and quiz questions will include such questions.

Homework: Each week, several WebAssign problems will be assigned for credit. All problems for each week are due Sunday of that week (earlier for weeks before exams). These problems can be discussed in a general way in the Quiz Sections, but not worked out to a final numerical answer. You "do" a WebAssign problem by logging in to the WebAssign site (*www.WebAssign.net*), reading the problem, working it out on the side, and entering the answer in the website. I allow you five tries for each problem, to get the answer right.

Your Webassign account should be set up by you using the following information:

- Class Key: **wayne 0762 5259**
- For User ID: Please use first initial and full last name, up to a maximum of eight characters total, excluding any special characters such as periods or dashes.
- Institution: wayne (just that, not Wayne State University or anything else)

In addition, each week, additional non-credit problems will be posted on WebAssign and non-credit conceptual questions will be posted on Blackboard. The non-credit problems will be similar to the multiple-choice problems that will be on the Exams, except that the choices will be removed. These problems (both types) can be worked out in the Quiz Sections in complete detail.

NOTE 1 ON HOMEWORK AND EXAM PROBLEMS: The Exams will be mostly problems (plus a few definitions, formula statements and so forth), modified as in a list of options that will be published on Blackboard. There is NO WAY that you will be able to do the modified problems on the Exams without practicing doing problems ON YOUR OWN, first. You might try to memorize how to do each assigned homework problem but at least some of the Exam problems will be of types that you have not exactly seen before. Your goal should be to understand how to apply the basic theories to solve problems. If you can apply the basic theories, on your own, then you should be able to do all of the Exam problems.

EXAMS: There will be three 50-minute exams in class, consisting of multiple choice questions (no partial credit). The lowest exam score may be replaced by half of your earned score on the Final Exam. Therefore, no makeup exams will be given. You MUST bring your Wayne State ID to the exam and present it to a proctor if asked during the exam. **A group photograph of the class will be taken during each exam.** No electronic devices (other than a calculator) are allowed in the room during the exam (**no iPods, headphones, cell-phones, Blackberries, etc**.). You will need a stand-alone calculator ("standalone" excludes calculators on cell phones, for example). Graphing calculators or other calculators with communications capacity will not be allowed.

Exams will be based on the WebAssign problems (graded and non-graded together), and the conceptual questions, all modified using the methods below:
A. No change
B. Numbers changed
C. Setup changed (e.g. decel instead of accel, motorcycle instead of car etc.)
D. Solve for different variable (possibly using a different equation)
E. Part of a problem
F. Combinations
G. For Exams, multiple choice

GRADING: Your course grade will be determined by your performance on the three midterm Exams, Online Homework, Quiz Section results, and the Final Exam. The Final Exam will cover the material presented during the entire semester. The overall course grade will be determined on the basis of the following distribution:

Three In-class 50 Minute Exams (100 points each)	300 points	
Quizzes (best 6), attendance in quiz sections	70 (60+10) points	
Final Exam	200 points	
WebAssign	30 points	
Extra credit for attending a WSU Planetarium session	3 points	
Extra Credit for Supplemental Instruction (SI) attendance	3 points	
Total	**600 points + 6 extra credit points**	

Points accumulated	Percent	Grade
540-600	90-100	A
510-539	85-89	A-
480-509	80-84	B+
450-479	75-79	B
420-449	70-74	B-
390-419	65-69	C+
360-389	60-64	C
330-359	55-59	C-
300-329	50-54	D+
270-299	45-49	D
240-269	40-44	D-
0-239	0-39	F

ADDITIONAL STUDY HELP: If you have difficulty doing homework or lab work, or understanding some of the course material, you can get help from the *Physics Resource Center*, in room 172 Physics Building The center will open a couple of weeks after the beginning of the semester.

Supplemental Instruction: We also expect to have Supplemental Instruction (SI) for PHY 2140 this semester. This is no-cost voluntary group tutoring sessions sponsored by the WSU Academic Success Center with a trained student who got an excellent grade in the course earlier. Watch for details and emails from the student SI leader.

The Academic Success Center (1600 Undergraduate Library) assists students with content in select courses, in test anxiety and in strengthening study skills. Visit www.success.wayne.edu for schedules and information on study skills workshops, tutoring and supplemental instruction (primarily in 1000 and 2000 level courses).

Responsibility for Work: Whether on homework or an exam, I will never take seriously a statement such as, "but that's how (another student or someone in the Resource Center or anyone else) told me to do it." Your work is your own, and you should always try to tie the solution back to the fundamental laws. You can always check with me.

Accommodation: If you feel that you may need an accommodation based on the impact of a disability, please feel free to contact me privately to discuss your specific needs. Additionally, Student Disability Services (SDS, formerly the Office of Educational Accessibility Services), coordinates reasonable accommodations for students with documented disabilities. The office is located in 1600 UGL, phone: 313-577-1851 (Voice) / 577-3365(TTY), web site http://studentdisability.wayne.edu/.

Plagiarism: In general, plagiarism is presenting someone else's work as your own, whether on purpose or through negligence. For a more detailed discussion, see http://www.clas.wayne.edu/unit-inner.asp?UnitID=24&WebPageID=924 . In this course, for the first instance of plagiarism, the work will be graded down 40%. For the second instance, the assignment will be failed with a zero, and for the third, the course will be failed. In each case, including the first, a memo will be sent to the Physics Department describing the circumstances.

The most important consequence of plagiarism, whether or not it is detected, is that you will not be able to do the work, and moreover you will not have the confidence that you can do that part of the work. Surely one of

the primary benefits of a college-level course is the ability to step up in the outside world and say with confidence, "I can do that," and this is also the source of many of the other benefits. You may "get away" with plagiarism once or even more than once, but the main penalty, far worse than any grade punishment, is that your college education, which is one of the best things you can do for yourself, will not have the benefits you are looking for.

TENTATIVE CLASS SCHEDULE : Subject to change; * indicates weeks in which quizzes will be given in quiz section. Skipped sections (see "Topics" column) will not appear in class, homework, quizzes or exams.

Wk	#	Date	Day	Topics	Read Sections:
1	1	01/06	M	Introduction, charge, Coulomb's Law,	16.1 – 16.3
	2	01/08	W	Electric Field, motion of charges, electrostatics,	16.4 – 16.7
2	3	01/13	M	Gauss's Law and problems	16.7
	4	01/15	W	Electric potential and potential energy, capacitors	17.1 – 17.5
3*	5	01/20	M	Martin Luther King closure	
	6	01/22	W	Dielectrics, energy in capacitor, current, resistance, EMF (skip 18.3)	17.6 – 18.2
4*	7	01/27	M	Kirchoff's Rules, series and parallel circuits, circuit analysis, RC circuits	18.4 – 18.8
	8	01/29	W	Power and energy in circuits, circuit measurements **Review for Exam 1**	18.9 – 19.1
5	9	02/03	M	**Hour Exam 1 (Chapter 16-18)**	**16-18**
	10	02/05	W	Magnetic forces on particles and currents, electric and magnetic fields	19.2-19.6
6	11	02/10	M	Torque on a current loop (skip 19.9 & 19.10)	19.7-19.8
	12	02/12	W	Motional emf, Faraday's and Lenz's Law (skip 20:5 – 7)	20.1-4
7*	13	02/17	M	induced electric fields, Inductance, LR Circuits, Maxwell's Equations (skip Ch 21)	20.8 -20.10, 22.1
	14	02/19	W	EM spectrum, EM waves, Energy transport in EM waves, polarization (skip 22:2)	22.3 - 22.7
8*	15	02/24	M	EM Doppler, Huygen's Principal, reflection of light, Refraction of light, Snell's Law, Total Internal Reflection	22.8, 23.1-23.4
	16	02/26	W	**Review for Exam 2**	19-22
9	17	03/03	M	**Hour Exam-2 (Chapter 19-22)**	**19-22**
	18	03/05	W	Formation of images, plane mirrors, Spherical mirrors, thin lenses (skip 23:5)	23.6 - 23.9
		3/10 - 3/15 M-S		Spring Break	
10	19	03/17	M	Lenses in combination, cameras, the eye, Magnifier, compound microscope (skip 24.7)	24.1 -24.6
	20	03/19	W	Interference, gratings	25.1 – 25.5
11*	21	03/24	M	Diffraction by a single slit, resolution, X-Ray diffraction (skip 25:10, Chapter 26)	25.6 – 25.9
	22	03/26	W	Quantization of electromagnetic radiation, blackbody radiation Photoelectric effect, X-Ray production, Compton Scattering **Last day to withdraw**	27.1- 27.5
12*	23	03/31	M	Early atomic models, Bohr Atomic Model, Wave-particle duality, matter waves, Uncertainty Principal (skip 27.8)	27.6 – 27.7, 28.1 – 28.4
	24	04/02	W	**Review for Exam 3**	23-27
13	25	04/07	M	**Hour Exam-3 (Chapter 23-27)**	**23-27**
	26	04/09	W	Wave functions for confined particle, hydrogen atom, Exclusion Principal, electron configurations, Lasers (skip 28.8 & 28.10)	28.5 – 28.9
14	27	04/14	M	Nuclear structure, Nuclear binding energy, radioactivity	29.1 – 29.3
	28	04/16	W	Nuclear decay rates and half-lives, biological effects of radiation (skip 29.6 – 8 and Chapter 30)	29.4 – 29.5
15*	29	04/21	M	Review for Final	All

Tuesday April 29: cumulative common Final Exam (1:20 – 3:50 PM) in 150 General Lectures