## PHYS 1420: General Physics II Course Syllabus for Spring 2008, MWF 9:00-9:55 am

Instructor: Dr. Wayne Keith: 793-3874, keith.wayne@mcm.edu

Office Hours: S 110-C: MWF 10-11:30, TR 2:30-5:30

Web: <a href="http://www.mcm.edu/~keith.wayne">http://www.mcm.edu/~keith.wayne</a>
Text: <a href="http://www.mcm.edu/~keith.wayne">Physics (7th)</a>, by Cutnell & Johnson
Required: scientific calculator, paper, pen/pencil
Prerequisites: PHYS 1410 – General Physics I

**Course Description:** General Physics II is the second part of a quantitative algebra-based science course revealing the workings of our physical environment through the study of thermodynamics, electromagnetism, and optics. The course is suitable for students who are in the fields of natural science or mathematics as well as for those who are following the pre-medical curriculum. This course requires concurrent enrollment in the laboratory.

**Course Goals:** The objective of the student is to develop the skills necessary to analyze the behavior of physical systems related to heat flow, electric and magnetic fields, and light, and to learn how to solve basic physics problems from different areas of thermophysics and electromagnetism.

**Grading: 10%** Daily grades: Class participation, attendance, quizzes and other in-class activities. Four lowest daily grades WILL BE DROPPED.

10% Homework: Assignments will be made in class and posted online. Homework will be due at the beginning of class on the date indicated.

**20%** Laboratory: See separate lab syllabus for details.

45% exams (15% each): Three in-class exams.

15% Final exam: Comprehensive final.

**Attendance/Make up policy:** Attendance is required. No make-ups for in-class activities will be given for any reason, since four daily grades will be dropped. Make-up exams will be given for excused absences only at the discretion of the instructor. Contacting the instructor via email or phone prior to missing class for any reason is strongly encouraged, even if it is for a school sponsored event.

**Classroom Rules:** Students are expected to be present and on time for all class meetings. Excessive absences (more than 3 consecutive) may result in the student being dropped from the course. Ringing cell phones and other disruptions during class may result in a loss of daily grade points or other penalties. Late homework loses 10% per week.

**ADA Policy:** If you have a documented disability that may impact your performance in this class and for which you may require accommodations, you must be registered with and provide documentation of your disability to the Disability Services Office, Old Main 102, 793-4880.

**Final notes:** Class discussion is strongly encouraged; please feel free to ask questions, during class or outside of class, about anything that is not clear. Properly preparing for class by reading the textbook and keeping up with the homework is the most important factor in doing well in this course.

## PHYS 1420 Spring 2008 Course Schedule All dates and topics are tentative and subject to change except **bold** dates.

1/25   6	Week	Date	Lec.	Tentative Lecture Topic	Reading	Associated Lab	
1/16		1/14	1	Intro, Sylabus, Review of PHYS 1410		NO LAD THIC	
1/18   3	1	1/16	2	Temperature	12.1-12.5		
1/23   5		1/18	3	Heat	12.6-12.9	WEEK	
1/25   6		1/21	4	Temp and Heat, Discussion	12.11	01-Speed of Sound	
1/28	2	1/23	5	Transfer of Heat	13.1-13.4		
1/30   8		1/25	6	Ideal Gas	14.1-14.3	Î	
1/30   8		1/28	7	Ideal Gas and Xfer, Discussion	13.5, 14.5	02-Thermal Expansion	
2/4   10   Thermodynamics, Discussion   15.1-15.11   2/6   Exam #1   Ch. 12 - 15   2/8   11   Charge and Electrostatic Force   18.1-18.5   18.1-18.5   2/11   12   Electric Field   18.6-18.9   04-Specific Latent   2/15   14   Electric Potential   19.1-19.3   04-Specific Latent   2/18   Presidents Day - NO CLASS   19.4-19.5   04-Specific Latent   2/18   Presidents Day - NO CLASS   19.4-19.5   04-Specific Latent   2/18   Presidents Day - NO CLASS   19.4-19.5   04-Specific Latent   2/18   Presidents Day - NO CLASS   19.4-19.5   04-Specific Latent   2/18   Presidents Day - NO CLASS   19.4-19.5   04-Specific Latent   2/18   Presidents Day - NO CLASS   19.4-19.5   04-Specific Latent   2/18   Presidents Day - NO CLASS   19.4-19.5   04-Specific Latent   19.1-19.3   04-Specific Latent   19	3	1/30	8				
2/4   10   Thermodynamics, Discussion   15.13   2/6   Exam #1   Ch. 12 - 15   the Law of		2/1	9	Second Law of Thermodynamics			
1		2/4	10			03-Temperature and the Law of Cooling	
11	4	2/6			Ch. 12 – 15		
2/11   12   Electric Field   18.6-18.9   2/13   13   Electrostatics, Discussion   18.11   19.119.3   19.119.		2/8	11	Charge and Electrostatic Force			
1		2/11	12		18.6-18.9	04-Specific Heat and Latent Heat	
2/15	5	2/13	13	Electrostatics, Discussion			
Colored Presidents Day - NO CLASS   19.4-19.5   19.4-19.5   2/20   15   Capacitors   19.4-19.5   19.4-19.5   2/22   16   Electric Potential, Discussion   19.7   2/25   17   Electric Current   20.1-20.4   20.6, 20.7, 20.9   2/29   19   Kirchoff's Rules   20.8, 20.10-20.11   2/29   19   Kirchoff's Rules   20.8, 20.10-20.11   2/20   2/29   19   Kirchoff's Rules   20.12-20.13   05-Electric State of		2/15	14				
Capacitors   19.4-19.5   WEF		2/18		Presidents Day – NO CLASS		NO LAB THIS WEEK	
2/22   16   Electric Potential, Discussion   19.7   2/25   17   Electric Current   20.1-20.4   20.1-20.4   20.2/27   18   Series and Parallel Wiring   20.6, 20.7, 20.9   2/29   19   Kirchoff's Rules   20.12-20.13   20.8, 20.10-20.11   20.3/3   20   RC Circuits   20.12-20.13   20.12-20.13   20.15   Potentia   3/7   Exam #2   Ch. 18 - 20   Electrostat   20.12-20.13   20.12-20.13   20.15   Potentia   20.15   Potenti	6	2/20	15	-	19.4-19.5		
7   2/27   18   Series and Parallel Wiring   20.6, 20.7, 20.9   2/29   19   Kirchoff's Rules   20.8, 20.10-20.11   Lab		2/22	16		19.7		
7         2/27         18         Series and Parallel Wiring         20.6, 20.7, 20.9         Oral present Lab           2/29         19         Kirchoff's Rules         20.8, 20.10-20.13         05-Electr           8         3/5         21         Electric Circuits, Discussion         20.15         Potentia           3/7         Exam #2         Ch. 18 - 20         Electrostat           3/10         22         Magnetic Field         21.1-21.4         06-Ohm's           9         3/12         23         Magnetic Fields and Electric Currents         21.5-21.6         Resistar           3/14         24         Magnetic Fields and Electric Currents         21.7-21.9         Curre           3/17         Spring Break         NO LAB         WEF           3/21         Spring Break         WEF           3/24         Easter Monday         NO LAB           3/28         26         Electromagnetic Induction         22.1-22.5           12         4/2         28         RLC Circuits         23.1-23.5         07-Capa           4/4         29         EM Induction, Discussion         22.10, 23.6         08-Magnetic the Earth, and and the Earth, and the Earth, and the Earth, and the Earth, and a		2/25	17	Electric Current	20.1-20.4	0 1	
2/29   19	7	2/27	18	Series and Parallel Wiring		Oral presentations of Lab 4	
Society		2/29	19		· ·		
Solution						05-Electrostatic	
3/7   Exam #2   Ch. 18 - 20   Electrostate	8					Potential and	
3/10   22   Magnetic Field   21.1-21.4   06-Ohm's						Electrostatic Field	
9         3/12         23         Magnetic Fields and Electric Currents         21.5-21.6         Resistar Currents           3/14         24         Magnetic Fields and Electric Currents         21.7-21.9         Resistar Currents           3/17         Spring Break         NO LAB WEE           3/19         Spring Break         NO LAB WEE           3/24         Easter Monday         NO LAB WEE           11         3/26         25         Magnetic Field, Discussion         21.10         WO LAB WEE           3/28         26         Electromagnetic Induction         22.1-22.5         NO LAB WEE           3/31         27         Applications of EM Induction         22.7-22.9         O7-Capa           4/4         29         EM Induction, Discussion         22.10, 23.6         O7-Capa           4/4         29         EM Induction, Discussion         22.10, 23.6         O8-Magnetic the Earth, 'Galvano           13         4/9         30         Electromagnetic Waves         24.1-24.4, 24.6         the Earth, 'Galvano           4/11         31         Reflection         25.1-25.3         Galvano           4/14			22	Magnetic Field		06-Ohm's Law of	
3/14   24   Magnetic Fields and Electric Currents   21.7-21.9   Currents	9			č		Resistance to	
10   3/17   Spring Break   Spring		3/14				Current	
10   3/19   Spring Break   Spring Break   Spring Break   WEB		3/17		i		NO LAB THIS	
3/21   Spring Break   3/24   Easter Monday	10	3/19		<u> </u>			
11   3/24   Easter Monday   3/26   25   Magnetic Field, Discussion   21.10   WEB						WEEK	
11   3/26   25   Magnetic Field, Discussion   21.10   WEB     3/28   26   Electromagnetic Induction   22.1-22.5     3/31   27   Applications of EM Induction   22.7-22.9     12   4/2   28   RLC Circuits   23.1-23.5   07-Capa     4/4   29   EM Induction, Discussion   22.10, 23.6     4/7   Exam #3   Ch. 21 - 23   08-Magnetic Mayes   24.1-24.4, 24.6   4/11   31   Reflection   25.1-25.3   Galvano     4/14   32   Mirrors   25.4-25.6   4/14   32   Mirrors   25.4-25.6   4/18   34   Lenses   26.6-26.8     4/21   35   Lenses in Combination   26.9-26.13   10-Simple     4/25   37   Interference   27.1-27.4   4/28   38   Diffraction   27.5-27.7, 27.9     4/28   38   Diffraction   27.5-27.7, 27.9   11-Wayele   Light   1.5     16   4/30   39   Quantum Physics   29.1-29.6   Light   1.5     10   11   12   13   14   14   15   15     11   12   15   15   15     12   13   14   15   15   15     13   4   23   36   Geometrical Optics, Discussion   25.7, 26.15   10-Simple     14   4   28   38   Diffraction   27.5-27.7, 27.9   27.5-27.7, 27.9     15   4   20   39   Quantum Physics   29.1-29.6   11-Wayele   1.5     15   4   20   39   Quantum Physics   29.1-29.6   1.5     16   4   30   39   Quantum Physics   29.1-29.6   1.5     17   4   4   4   4   4   4   4   4   4				<u> </u>		NO LAB THIS WEEK	
3/28   26   Electromagnetic Induction   22.1-22.5     3/31   27   Applications of EM Induction   22.7-22.9     12   4/2   28   RLC Circuits   23.1-23.5   07-Capa     4/4   29   EM Induction, Discussion   22.10, 23.6     4/7   Exam #3   Ch. 21 - 23   08-Magnetic   24/1   31   Reflection   25.1-25.3   Galvano   24/14   32   Mirrors   25.4-25.6   4/16   33   Refraction   26.1-26.5   Refraction   26.1-26.5   Refraction   26.1-26.5   Refraction   26.9-26.13   15   4/23   36   Geometrical Optics, Discussion   25.7, 26.15   10-Simple   4/28   38   Diffraction   27.5-27.7, 27.9   11-Waveled   4/30   39   Quantum Physics   29.1-29.6   Light   1.5	11		25		21.10		
3/31   27   Applications of EM Induction   22.7-22.9   07-Capa   4/2   28   EM Induction, Discussion   22.10, 23.6		3/28	26		22.1-22.5		
12   4/2   28   RLC Circuits   23.1-23.5   07-Capa							
4/4         29         EM Induction, Discussion         22.10, 23.6           4/7         Exam #3         Ch. 21 – 23         08-Magnetic the Earth, of	12	4/2	28			07-Capacitors	
13		4/4	29	EM Induction, Discussion		•	
13   4/9   30   Electromagnetic Waves   24.1-24.4, 24.6   the Earth, Galvano   4/11   31   Reflection   25.1-25.3   Galvano   4/14   32   Mirrors   25.4-25.6   4/16   33   Refraction   26.1-26.5   Refraction   4/18   34   Lenses   26.6-26.8   Refraction   26.9-26.13   15   4/23   36   Geometrical Optics, Discussion   25.7, 26.15   10-Simple   4/25   37   Interference   27.1-27.4   4/28   38   Diffraction   27.5-27.7, 27.9   11-Wavele   4/30   39   Quantum Physics   29.1-29.6   Light   1.5		4/7				08-Magnetic Field of	
4/11         31         Reflection         25.1-25.3         Galvano           14         4/14         32         Mirrors         25.4-25.6         09-Index           4/16         33         Refraction         26.1-26.5         Refraction           4/18         34         Lenses         26.6-26.8           4/21         35         Lenses in Combination         26.9-26.13           15         4/23         36         Geometrical Optics, Discussion         25.7, 26.15         10-Simple           4/25         37         Interference         27.1-27.4         10-Simple           4/28         38         Diffraction         27.5-27.7, 27.9         11-Wavelet           4/30         39         Quantum Physics         29.1-29.6         1-get	13	4/9	30		24.1-24.4, 24.6	the Earth, Tangent	
14         32         Mirrors         25.4-25.6         09-Index           4/16         33         Refraction         26.1-26.5         Refraction           4/18         34         Lenses         26.6-26.8           4/21         35         Lenses in Combination         26.9-26.13           15         4/23         36         Geometrical Optics, Discussion         25.7, 26.15         10-Simple           4/25         37         Interference         27.1-27.4         11-Waveled           4/28         38         Diffraction         27.5-27.7, 27.9         11-Waveled           4/30         39         Quantum Physics         29.1-29.6         I jud					·	Galvanometer	
14       4/16       33       Refraction       26.1-26.5       09-Index Refraction         4/18       34       Lenses       26.6-26.8         4/21       35       Lenses in Combination       26.9-26.13         15       4/23       36       Geometrical Optics, Discussion       25.7, 26.15         4/25       37       Interference       27.1-27.4         4/28       38       Diffraction       27.5-27.7, 27.9         4/30       39       Quantum Physics       29.1-29.6							
4/18         34         Lenses         26.6-26.8         Refract           4/21         35         Lenses in Combination         26.9-26.13           15         4/23         36         Geometrical Optics, Discussion         25.7, 26.15         10-Simple           4/25         37         Interference         27.1-27.4         27.5-27.7, 27.9         11-Waveled           4/30         39         Quantum Physics         29.1-29.6         11-Waveled	14					09-Index of	
4/21         35         Lenses in Combination         26.9-26.13           4/23         36         Geometrical Optics, Discussion         25.7, 26.15         10-Simple           4/25         37         Interference         27.1-27.4           4/28         38         Diffraction         27.5-27.7, 27.9         11-Wavelege Light           4/30         39         Quantum Physics         29.1-29.6         Light						Refraction	
15     4/23     36     Geometrical Optics, Discussion     25.7, 26.15     10-Simple       4/25     37     Interference     27.1-27.4       4/28     38     Diffraction     27.5-27.7, 27.9       4/30     39     Quantum Physics     29.1-29.6    11-Waveled Light							
4/25     37     Interference     27.1-27.4       4/28     38     Diffraction     27.5-27.7, 27.9       4/30     39     Quantum Physics     29.1-29.6    11-Wavele	15					10-Simple Lenses	
16 4/28 38 Diffraction 27.5-27.7, 27.9 4/30 39 Quantum Physics 29.1-29.6 I jet						<u> </u>	
16 4/30 39 Quantum Physics 29.1-29.6						11-Wavelength of Light	
101	16				· ·		
3/2   40   Thysical Optics, Discussion   27.10, 29.7		5/2	40	Physical Optics, Discussion	27.10, 29.7		
5/5 No Class - Finals Week NO LAB	17				,	NO LAB THIS	
	1/				Ch. 24 – 27, 29 +	WEEK	