

# Class Schedule - Spring 2010

## Physics

100 **Thinking About Physics** credit: 1 hours.

Designed for students who want to prepare for PHYS 211 by improving their conceptual and problem solving skills. Shows how to analyze physical situations, describe them mathematically, and understand the meaning of the solutions. Examples will be drawn from material that will be covered in PHYS 211. PHYS 100 and PHYS 211 may be taken concurrently. Approval of the department is required to register. Prerequisite: Credit or concurrent registration in MATH 220 or MATH 221.

CRN	Type	Section	Time	Days	Location	Instructor
48977	discussion-recitation	A	03:00 PM - 04:50 PM	T	room 143 Loomis Laboratory	
Departmental Approval Required						

101 **College Physics: Mech & Heat** credit: 5 hours.

Newton's Laws, work and energy, rotational motion, fluids, thermodynamics, and waves. A noncalculus-based course for students in the life sciences, preprofessional health programs, agriculture, and veterinary medicine. Credit is not given for both PHYS 101 and either PHYS 211 or PHYS 213. Prerequisite: Trigonometry.

This course satisfies the General Education Criteria for a Physical Sciences, and Quant Reasoning II course.

For students in the life sciences, pre-professional health programs, agriculture and veterinary medicine. Exams are given in the evening (during fall and spring semesters). Register for a lecture (A) section, a discussion (D) section and a laboratory (L) section.

CRN	Type	Section	Time	Days	Location	Instructor
35570	lecture	A1	01:00 PM - 01:50 PM	MW	room 151 Loomis Laboratory	Wandelt, B
Physical Sciences, and Quant Reasoning II course.						
35571	lecture	A2	02:00 PM - 02:50 PM	MW	room 151 Loomis Laboratory	Wandelt, B
Physical Sciences, and Quant Reasoning II course.						
41684	discussion-recitation	D2B	08:00 AM - 09:50 AM	T	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
48227	discussion-recitation	D2G	10:00 AM - 11:50 AM	T	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
41584	discussion-recitation	D2N	01:00 PM - 02:50 PM	T	room 32 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.						
46754	discussion-recitation	D2X	05:00 PM - 06:50 PM	T	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35572	discussion-recitation	D3B	08:00 AM - 09:50 AM	W	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35576	discussion-recitation	D3G	10:00 AM - 11:50 AM	W	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35578	discussion-recitation	D3S	03:00 PM - 04:50 PM	W	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35579	discussion-recitation	D3V	05:00 PM - 06:50 PM	W	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35583	discussion-recitation	D3Y	07:00 PM - 08:50 PM	W	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35590	discussion-recitation	D4B	08:00 AM - 09:50 AM	R	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35598	discussion-recitation	D4G	10:00 AM - 11:50 AM	R	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35639	discussion-recitation	D4N	01:00 PM - 02:50 PM	R	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35645	discussion-recitation	D4S	03:00 PM - 04:50 PM	R	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35650	discussion-recitation	D4V	05:00 PM - 06:50 PM	R	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

40186	discussion-recitation	D4Y	07:00 PM - 08:50 PM	R	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35755	discussion-recitation	D5B	08:00 AM - 09:50 AM	F	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35756	discussion-recitation	D5G	10:00 AM - 11:50 AM	F	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35757	discussion-recitation	D5N	01:00 PM - 02:50 PM	F	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35758	discussion-recitation	D5S	03:00 PM - 04:50 PM	F	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35760	laboratory	L1G	10:00 AM - 12:50 PM	M	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35761	laboratory	L1S	03:00 PM - 05:50 PM	M	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
40187	laboratory	L1Y	07:00 PM - 09:50 PM	M	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
41683	laboratory	L3B	09:00 AM - 11:50 AM	W	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35764	laboratory	L3S	03:00 PM - 05:50 PM	W	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35765	laboratory	L3Y	06:00 PM - 08:50 PM	W	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35766	laboratory	L4B	08:00 AM - 10:50 AM	R	room 64 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.						
35767	laboratory	L4N	01:00 PM - 03:50 PM	R	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35768	laboratory	L4S	04:00 PM - 06:50 PM	R	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35769	laboratory	L4Y	07:00 PM - 09:50 PM	R	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35770	laboratory	L5B	08:00 AM - 10:50 AM	F	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35771	laboratory	L5G	11:00 AM - 01:50 PM	F	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35772	laboratory	L5N	02:00 PM - 04:50 PM	F	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
48226	laboratory	L5V	05:00 PM - 07:50 PM	F	room 64 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

102 **College Physics: E&M & Modern** credit: 5 hours.

Electric forces and fields, electric potential, electric circuits, magnetic forces and fields, geometrical optics, relativity, and modern physics. A noncalculus-based course for students in life sciences, preprofessional health programs, agriculture, and veterinary medicine. Credit is not given for both PHYS 102 and either PHYS 212 or PHYS 214. Prerequisite: PHYS 101.

This course satisfies the General Education Criteria for a Physical Sciences, and Quant Reasoning II course.

For students in the life sciences, pre-professional health programs, agriculture and veterinary medicine. Exams are given in the evening (during fall and spring semesters). Register for a lecture (A) section, a discussion (D) section and a laboratory (L) section.

CRN	Type	Section	Time	Days	Location	Instructor
35773	lecture	A1	10:00 AM - 10:50 AM	MW	room 151 Loomis Laboratory	Chemla, Y
Physical Sciences, and Quant Reasoning II course.						

35774	lecture	A2	11:00 AM - 11:50 AM	MW	room 151 Loomis Laboratory	Chemla, Y
Physical Sciences, and Quant Reasoning II course.						
35775	discussion-recitation	D2B	08:00 AM - 09:50 AM	T	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35776	discussion-recitation	D2G	10:00 AM - 11:50 AM	T	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
41529	discussion-recitation	D2N	01:00 PM - 02:50 PM	T	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35778	discussion-recitation	D2S	03:00 PM - 04:50 PM	T	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35779	discussion-recitation	D2U	03:00 PM - 04:50 PM	T	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35780	discussion-recitation	D2V	05:00 PM - 06:50 PM	T	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35782	discussion-recitation	D2Y	07:00 PM - 08:50 PM	T	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35783	discussion-recitation	D3B	08:00 AM - 09:50 AM	W	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35785	discussion-recitation	D3N	01:00 PM - 02:50 PM	W	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35786	discussion-recitation	D3P	01:00 PM - 02:50 PM	W	room 32 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35787	discussion-recitation	D3S	03:00 PM - 04:50 PM	W	room 137 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.						
45283	discussion-recitation	D3V	05:00 PM - 06:50 PM	W	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
45284	discussion-recitation	D4B	08:00 AM - 09:50 AM	R	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
46744	discussion-recitation	D4V	05:00 PM - 06:50 PM	R	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
46745	discussion-recitation	D4Y	07:00 PM - 08:50 PM	R	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
46747	discussion-recitation	D5B	08:00 AM - 09:50 AM	F	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35781	discussion-recitation	D5N	01:00 PM - 02:50 PM	F	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35777	discussion-recitation	D5S	03:00 PM - 04:50 PM	F	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35784	discussion-recitation	D5V	05:00 PM - 06:50 PM	F	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35789	laboratory	L1N	01:00 PM - 03:50 PM	M	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35790	laboratory	L1S	04:00 PM - 06:50 PM	M	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35791	laboratory	L1Y	07:00 PM - 09:50 PM	M	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

45281	laboratory	L3N	01:00 PM - 03:50 PM	W	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
45282	laboratory	L3S	04:00 PM - 06:50 PM	W	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
41528	laboratory	L3Y	07:00 PM - 09:50 PM	W	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35796	laboratory	L4B	08:00 AM - 10:50 AM	R	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35797	laboratory	L4G	11:00 AM - 01:50 PM	R	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35798	laboratory	L4N	02:00 PM - 04:50 PM	R	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35788	laboratory	L4Y	06:00 PM - 08:50 PM	R	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35795	laboratory	L5B	08:00 AM - 10:50 AM	F	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35799	laboratory	L5G	11:00 AM - 01:50 PM	F	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35800	laboratory	L5N	02:00 PM - 04:50 PM	F	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
46735	laboratory	L5V	05:00 PM - 07:50 PM	F	room 258 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

123 **Physics Made Easy** credit: 3 hours.

Designed for students who are interested in explaining and teaching science to children at the elementary school level. A hands-on inquiry-based approach to learning is used. No math or physics background needed. Topics cover most of the National Science Education K-4 Content Standards. Students assemble and keep a science teaching tool-kit.

This course satisfies the General Education Criteria for a Physical Sciences course.

Additional course materials fee required.

CRN	Type	Section	Time	Days	Location	Instructor
38535	lecture	A	04:00 PM - 04:50 PM	W	room 151 Loomis Laboratory	Hubler, A
Physical Sciences course. Register for the lecture (A) section and for one of the lab (L) sections. PHYS 123 lab sections carry a \$50 materials fee.						
39062	laboratory	L1G	11:00 AM - 01:50 PM	M	room 234 Loomis Laboratory	
Physical Sciences course. Physics 123 Supply 50.00 dollars.						
38538	laboratory	L1N	02:00 PM - 04:50 PM	M	room 234 Loomis Laboratory	
Physical Sciences course. Physics 123 Supply 50.00 dollars.						
39064	laboratory	L2G	11:00 AM - 01:50 PM	T	room 234 Loomis Laboratory	
Physical Sciences course. Physics 123 Supply 50.00 dollars.						
39065	laboratory	L2N	02:00 PM - 04:50 PM	T	room 234 Loomis Laboratory	
Physical Sciences course. Physics 123 Supply 50.00 dollars.						

140 **How Things Work** credit: 3 hours.

Nonmathematical lecture-demonstration course for nonscience students, underscoring the generality and ubiquity of basic physical laws in understanding commonplace phenomena: musical instruments, photography, electric and electronic circuits, television, motors, engines, etc. Credit is not given to engineering majors.

This course satisfies the General Education Criteria for a Physical Sciences, and Quant Reasoning II course.

Exams are given in the evening. Register for a lecture (A) section and a discussion (D) section.

CRN	Type	Section	Time	Days	Location	Instructor
38540	lecture	A1	04:00 PM - 05:15 PM	MW	room 141 Loomis Laboratory	Willenbrock, S
Physical Sciences, and Quant Reasoning II course.						
38595	discussion-recitation	D1B	08:00 AM - 08:50 AM	M	room 31 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.						
38597	discussion-recitation	D1C	09:00 AM - 09:50 AM	M	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38599	discussion-recitation	D1G	10:00 AM - 10:50 AM	M	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38602	discussion-recitation	D1H	11:00 AM - 11:50 AM	M	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38604	discussion-recitation	D1J	12:00 PM - 12:50 PM	M	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
41602	discussion-recitation	D4G	10:00 AM - 10:50 AM	R	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
41603	discussion-recitation	D4H	11:00 AM - 11:50 AM	R	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
44779	discussion-recitation	D4J	12:00 PM - 12:50 PM	R	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
44780	discussion-recitation	D4N	01:00 PM - 01:50 PM	R	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
44781	discussion-recitation	D4P	02:00 PM - 02:50 PM	R	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
44782	discussion-recitation	D4S	03:00 PM - 03:50 PM	R	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
44783	discussion-recitation	D4U	04:00 PM - 04:50 PM	R	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

44784	discussion-recitation	D4V	05:00 PM - 05:50 PM	R	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
44785	discussion-recitation	D4X	06:00 PM - 06:50 PM	R	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
44787	discussion-recitation	D4Y	07:00 PM - 07:50 PM	R	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
44788	discussion-recitation	D4Z	08:00 PM - 08:50 PM	R	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38543	discussion-recitation	D5B	08:00 AM - 08:50 AM	F	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38546	discussion-recitation	D5C	09:00 AM - 09:50 AM	F	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38548	discussion-recitation	D5G	10:00 AM - 10:50 AM	F	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38551	discussion-recitation	D5H	11:00 AM - 11:50 AM	F	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38580	discussion-recitation	D5J	12:00 PM - 12:50 PM	F	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38583	discussion-recitation	D5N	01:00 PM - 01:50 PM	F	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38587	discussion-recitation	D5P	02:00 PM - 02:50 PM	F	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38590	discussion-recitation	D5S	03:00 PM - 03:50 PM	F	room 31 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.						
38592	discussion-recitation	D5U	04:00 PM - 04:50 PM	F	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
41559	discussion-recitation	D5V	05:00 PM - 05:50 PM	F	room 31 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

192 **Science and Pseudoscience** credit: 1 hours.

Extra-sensory perception, alien abduction, and psychic crime-solving from the standpoint of scientific inquiry and exploration; the scientific methods, how science progresses, and the types of argumentative fallacies that pervade the pseudoscientific community; examples of good science and how the scientific method is self-correcting.

CRN	Type	Section	Time	Days	Location	Instructor
53001	lecture	A	04:00 PM - 05:20 PM	T	room 144 Loomis Laboratory	Pitts, K
Discovery course. Restricted to First Time Freshman students. Students should enroll in only one Discovery course.						

194 **Behavior of Complex Systems** credit: 1 hours.

Exploration of systems with simple rules that nevertheless exhibit complex behavior. Lecture demonstrations on fractal growth, chaos, catastrophes, self-assembly, lightning, turbulence, explosions, and human rhythms. Simple computer models which exhibit regular, irregular, symmetric, and self-similar patterns and dynamics. Dynamics of isolated and coupled complex systems and mathematical tools for quantifying complex behavior.

CRN	Type	Section	Time	Days	Location	Instructor
53008	laboratory-discussion	A	04:00 PM - 05:20 PM	T	room 257 Loomis Laboratory	Hubler, A
Discovery course. Restricted to First Time Freshman students. Students should enroll in only one Discovery course.						

199 **Undergraduate Open Seminar** credit: 1 to 5 hours.

Approved for both letter and S/U grading. May be repeated.

CRN	Type	Section	Time	Days	Location	Instructor
10145	independent study		ARRANGED			

Independent Study/Instructor Approval Required/INDEPENDENT STUDY. To register for independent study under PHYS 199, use the PHYS 199 CRN (available from the departmental undergraduate records office) specific to the instructor with whom you have arranged to work. (You cannot register under the general CRN 10145.)

53002	laboratory-discussion	SS	11:00 AM - 12:20 PM	F	room 322 Loomis Laboratory	Willenbrock, S
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1 hours Science and Society/SCIENCE AND SOCIETY. 1 hour. Future politicians, business persons, lawyers, journalists, and other world leaders need to understand science in order to make the crucial decisions that will determine the future of our planet. This Discover Course, intended for non-science majors, will discuss in nontechnical language the science behind various sources of energy (oil, nuclear, solar), nuclear weapons, global warming, outer space, terrorism, and other topics of vital importance. Students should enroll in only one Discovery course. Restricted to First Time Freshman students.

**211 University Physics: Mechanics** credit: 4 hours.

Newton's Laws, work and energy, static properties and fluids, oscillations, transverse waves, systems of particles, and rotations. Lectures with demonstrations, discussions and laboratory. For students in engineering, mathematics, physics and chemistry. Credit is not given for both PHYS 211 and PHYS 101. Prerequisite: Credit or concurrent registration in MATH 231.

This course satisfies the General Education Criteria for a Physical Sciences, and Quant Reasoning II course.

For students in engineering, mathematics, physics and chemistry. Exams are given in the evening (during fall and spring semesters). Register for a lecture (A) section, a discussion (D) section and a laboratory (L) section. Engineering students must obtain a dean's approval to drop this course after the second week of instruction.

CRN	Type	Section	Time	Days	Location	Instructor
35801	lecture	A11	08:00 AM - 08:50 AM	TR	room 141 Loomis Laboratory	Selen, M
Physical Sciences, and Quant Reasoning II course.						
35802	lecture	A21	09:00 AM - 09:50 AM	TR	room 141 Loomis Laboratory	Selen, M
Physical Sciences, and Quant Reasoning II course.						
35803	lecture	A31	10:00 AM - 10:50 AM	TR	room 141 Loomis Laboratory	Stelzer, T
Physical Sciences, and Quant Reasoning II course.						
35804	lecture	A41	11:00 AM - 11:50 AM	TR	room 141 Loomis Laboratory	Stelzer, T
Physical Sciences, and Quant Reasoning II course.						
35806	discussion-recitation	D2C	08:00 AM - 09:50 AM	T	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35807	discussion-recitation	D2G	10:00 AM - 11:50 AM	T	room 147 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.						
35808	discussion-recitation	D2H	10:00 AM - 11:50 AM	T	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
53113	discussion-recitation	D2M	01:00 PM - 02:50 PM	T	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35809	discussion-recitation	D2N	01:00 PM - 02:50 PM	T	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35810	discussion-recitation	D2P	01:00 PM - 02:50 PM	T	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35812	discussion-recitation	D2S	03:00 PM - 04:50 PM	T	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35815	discussion-recitation	D2U	05:00 PM - 06:50 PM	T	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35814	discussion-recitation	D2V	05:00 PM - 06:50 PM	T	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35816	discussion-recitation	D2Y	07:00 PM - 08:50 PM	T	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35817	discussion-recitation	D3B	08:00 AM - 09:50 AM	W	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
47451	discussion-recitation	D3C	08:00 AM - 09:50 AM	W	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35818	discussion-recitation	D3G	10:00 AM - 11:50 AM	W	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

35813	discussion- recitation	D3H	10:00 AM - 11:50 AM	W	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38007	discussion- recitation	D3J	10:00 AM - 11:50 AM	W		
Physical Sciences, and Quant Reasoning II course.						
35819	discussion- recitation	D3N	01:00 PM - 02:50 PM	W	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
49446	discussion- recitation	D3P	01:00 PM - 02:50 PM	W	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35820	discussion- recitation	D3S	03:00 PM - 04:50 PM	W	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35821	discussion- recitation	D3T	03:00 PM - 04:50 PM	W	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35823	discussion- recitation	D3U	05:00 PM - 06:50 PM	W	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35822	discussion- recitation	D3V	05:00 PM - 06:50 PM	W	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
51927	discussion- recitation	D3X	07:00 PM - 08:50 PM	W	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35824	discussion- recitation	D3Y	07:00 PM - 08:50 PM	W	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
41645	discussion- recitation	D3Z	07:00 PM - 08:50 PM	W	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35825	discussion- recitation	D4B	08:00 AM - 09:50 AM	R	room 147 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.						
35827	discussion-recitation	D4G	10:00 AM - 11:50 AM	R	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35828	discussion-recitation	D4H	10:00 AM - 11:50 AM	R	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35830	discussion-recitation	D4J	10:00 AM - 11:50 AM	R	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
53114	discussion-recitation	D4M	01:00 PM - 02:50 PM	R	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35833	discussion-recitation	D4N	01:00 PM - 02:50 PM	R	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35843	discussion-recitation	D4P	01:00 PM - 02:50 PM	R	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35847	discussion-recitation	D4Q	01:00 PM - 02:50 PM	R	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35850	discussion-recitation	D4R	03:00 PM - 04:50 PM	R	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35848	discussion-recitation	D4S	03:00 PM - 04:50 PM	R	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35849	discussion-recitation	D4T	03:00 PM - 04:50 PM	R	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35955	discussion-recitation	D5B	08:00 AM - 09:50 AM	F	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

46833	discussion-recitation	D5C	08:00 AM - 09:50 AM	F	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35959	discussion-recitation	D5G	10:00 AM - 11:50 AM	F	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35962	discussion-recitation	D5H	10:00 AM - 11:50 AM	F	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35975	discussion-recitation	D5J	10:00 AM - 11:50 AM	F	room 137 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35965	discussion-recitation	D5N	01:00 PM - 02:50 PM	F	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35969	discussion-recitation	D5P	01:00 PM - 02:50 PM	F	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
48279	discussion-recitation	D5R	03:00 PM - 04:50 PM	F	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
35971	discussion-recitation	D5S	03:00 PM - 04:50 PM	F	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
53112	discussion-recitation	D5U	05:00 PM - 06:50 PM	F	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
51773	discussion-recitation	D5V	05:00 PM - 06:50 PM	F	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
51928	discussion-recitation	D5X	05:00 PM - 06:50 PM	F		
Physical Sciences, and Quant Reasoning II course.						
35811	discussion-recitation	DUO	01:00 PM - 02:50 PM	T	room 151 Allen Residence Hall	

Physical Sciences, and Quant Reasoning II course. Section DUO is for Residential Learning Community students only.

35979	laboratory	L1G	10:00 AM - 11:50 AM	M	room 264 Loomis Laboratory	
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Physical Sciences, and Quant Reasoning II course.

35981	laboratory	L1H	10:00 AM - 11:50 AM	M	room 232 Loomis Laboratory	
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Physical Sciences, and Quant Reasoning II course.

35984	laboratory	L1N	01:00 PM - 02:50 PM	M	room 264 Loomis Laboratory	
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Physical Sciences, and Quant Reasoning II course.

35992	laboratory	L1R	03:00 PM - 04:50 PM	M	room 232 Loomis Laboratory	
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Physical Sciences, and Quant Reasoning II course.

35987	laboratory	L1S	03:00 PM - 04:50 PM	M	room 264 Loomis Laboratory	
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Physical Sciences, and Quant Reasoning II course.

35999	laboratory	L1U	05:00 PM - 06:50 PM	M	room 232 Loomis Laboratory	
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Physical Sciences, and Quant Reasoning II course.

35995	laboratory	L1V	05:00 PM - 06:50 PM	M	room 264 Loomis Laboratory	
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Physical Sciences, and Quant Reasoning II course.

36003	laboratory	L1Y	07:00 PM - 08:50 PM	M	room 264 Loomis Laboratory	
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Physical Sciences, and Quant Reasoning II course.

41649	laboratory	L1Z	07:00 PM - 08:50 PM	M	room 232 Loomis Laboratory	
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Physical Sciences, and Quant Reasoning II course.

36010	laboratory	L2N	01:00 PM - 02:50 PM	T	room 264 Loomis Laboratory	
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Physical Sciences, and Quant Reasoning II course.

36017	laboratory	L2P	01:00 PM - 02:50 PM	T	room 232 Loomis Laboratory	
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Physical Sciences, and Quant Reasoning II course.

36030	laboratory	L2R	03:00 PM - 04:50 PM	T	room 232 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
36022	laboratory	L2S	03:00 PM - 04:50 PM	T	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
36040	laboratory	L2U	05:00 PM - 06:50 PM	T	room 232 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
36034	laboratory	L2V	05:00 PM - 06:50 PM	T	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
36046	laboratory	L2Y	07:00 PM - 08:50 PM	T	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
46834	laboratory	L2Z	07:00 PM - 08:50 PM	T	room 232 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
36053	laboratory	L3B	08:00 AM - 09:50 AM	W	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
36058	laboratory	L3G	10:00 AM - 11:50 AM	W	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
49447	laboratory	L3H	10:00 AM - 11:50 AM	W	room 232 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
36064	laboratory	L3N	01:00 PM - 02:50 PM	W	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
36073	laboratory	L3R	03:00 PM - 04:50 PM	W	room 232 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
36068	laboratory	L3S	03:00 PM - 04:50 PM	W	room 264 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.						
36083	laboratory	L3U	05:00 PM - 06:50 PM	W	room 232 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
36077	laboratory	L3V	05:00 PM - 06:50 PM	W	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
36086	laboratory	L3Y	07:00 PM - 08:50 PM	W	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
48280	laboratory	L3Z	07:00 PM - 08:50 PM	W	room 232 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38008	laboratory	L4N	01:00 PM - 02:50 PM	R	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38010	laboratory	L4P	01:00 PM - 02:50 PM	R	room 232 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38015	laboratory	L4R	03:00 PM - 04:50 PM	R	room 232 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38012	laboratory	L4S	03:00 PM - 04:50 PM	R	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
51772	laboratory	L4V	05:00 PM - 06:50 PM	R	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38020	laboratory	L5B	08:00 AM - 09:50 AM	F	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38017	laboratory	L5C	08:00 AM - 09:50 AM	F	room 232 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

38026	laboratory	L5G	10:00 AM - 11:50 AM	F	room 264 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38023	laboratory	L5H	10:00 AM - 11:50 AM	F	room 232 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

212 **University Physics: Elec & Mag** credit: 4 hours.

Coulomb's Law, electric fields, Gauss' Law, electric potential, capacitance, circuits, magnetic forces and fields, Ampere's law, induction, electromagnetic waves, polarization, and geometrical optics. Lectures with demonstrations, discussions, and laboratory. For students in engineering, mathematics, physics, and chemistry. Credit is not given for both PHYS 212 and PHYS 102. Prerequisite: PHYS 211; credit or concurrent registration in MATH 241.

This course satisfies the General Education Criteria for a Physical Sciences, and Quant Reasoning II course.

For students in engineering, mathematics, physics and chemistry. Exams are given in the evening (during fall and spring semesters). Register for a lecture (A) section, a discussion (D) section and a laboratory (L) section. Engineering students must obtain a dean's approval to drop this course after the second week of instruction.

CRN	Type	Section	Time	Days	Location	Instructor
38029	lecture	A11	01:00 PM - 01:50 PM	TR	room 141 Loomis Laboratory	Mestre, J
Physical Sciences, and Quant Reasoning II course.						
38032	lecture	A21	02:00 PM - 02:50 PM	TR	room 141 Loomis Laboratory	Mestre, J
Physical Sciences, and Quant Reasoning II course.						
52875	lecture	A22	02:00 PM - 02:50 PM	TR	room 151 Loomis Laboratory	Mestre, J
Physical Sciences, and Quant Reasoning II course.						
38046	discussion-recitation	D2B	08:00 AM - 09:50 AM	T	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
53104	discussion-recitation	D2C	08:00 AM - 09:50 AM	T	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38043	discussion-recitation	D2G	10:00 AM - 11:50 AM	T	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

53105	discussion-recitation	D2H	10:00 AM - 11:50 AM	T	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38048	discussion-recitation	D2S	03:00 PM - 04:50 PM	T	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38051	discussion-recitation	D2V	05:00 PM - 06:50 PM	T	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38054	discussion-recitation	D2Y	07:00 PM - 08:50 PM	T	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38057	discussion-recitation	D3B	08:00 AM - 09:50 AM	W	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38059	discussion-recitation	D3G	10:00 AM - 11:50 AM	W	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38062	discussion-recitation	D3N	01:00 PM - 02:50 PM	W	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38065	discussion-recitation	D3S	03:00 PM - 04:50 PM	W	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38067	discussion-recitation	D3V	05:00 PM - 06:50 PM	W	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
46838	discussion-recitation	D4B	08:00 AM - 09:50 AM	R	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
53106	discussion-recitation	D4C	08:00 AM - 09:50 AM	R	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38070	discussion-recitation	D4G	10:00 AM - 11:50 AM	R	room 139 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.						
38077	discussion-recitation	D4S	03:00 PM - 04:50 PM	R	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
51214	discussion-recitation	D4U	05:00 PM - 06:50 PM	R	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38081	discussion-recitation	D4V	05:00 PM - 06:50 PM	R	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
51210	discussion-recitation	D4W	05:00 PM - 06:50 PM	R	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
53103	discussion-recitation	D4X	07:00 PM - 08:50 PM	R	room 147 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38086	discussion-recitation	D4Y	07:00 PM - 08:50 PM	R	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
51211	discussion-recitation	D4Z	07:00 PM - 08:50 PM	R	room 143 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38088	discussion-recitation	D5B	08:00 AM - 09:50 AM	F	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38094	discussion-recitation	D5G	10:00 AM - 11:50 AM	F	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38095	discussion-recitation	D5N	01:00 PM - 02:50 PM	F	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38096	discussion-recitation	D5S	03:00 PM - 04:50 PM	F	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

38074	discussion-recitation	D5V	05:00 PM - 06:50 PM	F	room 139 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
53107	discussion-recitation	D5X	05:00 PM - 06:50 PM	F	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38097	laboratory	L1B	08:00 AM - 09:50 AM	M	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38098	laboratory	L1G	10:00 AM - 11:50 AM	M	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38099	laboratory	L1N	01:00 PM - 02:50 PM	M	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38100	laboratory	L1S	03:00 PM - 04:50 PM	M	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38101	laboratory	L1V	05:00 PM - 06:50 PM	M	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38102	laboratory	L1Y	07:00 PM - 08:50 PM	M	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38035	laboratory	L2B	08:00 AM - 09:50 AM	T	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38103	laboratory	L2G	10:00 AM - 11:50 AM	T	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38104	laboratory	L2N	12:00 PM - 01:50 PM	T	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38106	laboratory	L2S	03:00 PM - 04:50 PM	T	room 262 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.						
38107	laboratory	L2V	05:00 PM - 06:50 PM	T	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
51233	laboratory	L2Y	07:00 PM - 08:50 PM	T	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38108	laboratory	L3B	08:00 AM - 09:50 AM	W	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38109	laboratory	L3G	10:00 AM - 11:50 AM	W	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38111	laboratory	L3N	01:00 PM - 02:50 PM	W	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38115	laboratory	L3S	03:00 PM - 04:50 PM	W	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
51234	laboratory	L3V	05:00 PM - 06:50 PM	W	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
51235	laboratory	L3Y	07:00 PM - 08:50 PM	W	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38112	laboratory	L4B	08:00 AM - 09:50 AM	R	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38113	laboratory	L4G	10:00 AM - 11:50 AM	R	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						
38105	laboratory	L4S	03:00 PM - 04:50 PM	R	room 262 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.						

213 **Univ Physics: Thermal Physics** credit: 2 hours.

Introduction to the first and second laws of thermodynamics including kinetic theory of gases, heat capacity, heat engines, introduction to entropy and statistical mechanics, and introduction to application of free energy and Boltzmann factor. Lectures with demonstrations, discussions, and laboratory. For students in engineering, mathematics, physics and chemistry. Credit is not given for both PHYS 213 and PHYS 101. Prerequisite: PHYS 211; credit or concurrent registration in MATH 241.

This course satisfies the General Education Criteria for a Physical Sciences, and Quant Reasoning II course.

For students in engineering, mathematics, physics and chemistry. Exams are given in the evening (during fall and spring semesters). PHYS 213 meets only during part of the term; check the meeting dates. Register for a lecture (A) section, a discussion (D) section and a laboratory (L) section. Engineering students must obtain a dean's approval to drop this course after the second week of instruction.

CRN	Type	Section	Time	Days	Location	Instructor
38132	lecture	A1	09:00 AM - 10:15 AM	MW	room 141 Loomis Laboratory	Thaler, J
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38135	lecture	A2	11:00 AM - 12:15 PM	MW	room 141 Loomis Laboratory	Thaler, J
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38138	lecture	A3	01:00 PM - 02:15 PM	MW	room 141 Loomis Laboratory	Budakian, R
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38141	discussion-recitation	D2G	10:00 AM - 11:50 AM	T	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38161	discussion-recitation	D2N	01:00 PM - 02:50 PM	T	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
53082	discussion-recitation	D2P	01:00 PM - 02:50 PM	T	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38168	discussion-recitation	D2S	03:00 PM - 04:50 PM	T	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38174	discussion-recitation	D2U	03:00 PM - 04:50 PM	T	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						

38180	discussion-recitation	D2V	05:00 PM - 06:50 PM	T	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38185	discussion-recitation	D2X	05:00 PM - 06:50 PM	T	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38191	discussion-recitation	D2Y	07:00 PM - 08:50 PM	T	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
47383	discussion-recitation	D2Z	07:00 PM - 08:50 PM	T	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38205	discussion-recitation	D3B	08:00 AM - 09:50 AM	W	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38164	discussion-recitation	D3C	08:00 AM - 09:50 AM	W	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38236	discussion-recitation	D3N	01:00 PM - 02:50 PM	W	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38241	discussion-recitation	D3P	01:00 PM - 02:50 PM	W	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38245	discussion-recitation	D3S	03:00 PM - 04:50 PM	W	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38250	discussion-recitation	D3U	03:00 PM - 04:50 PM	W	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
51346	discussion-recitation	D3V	05:00 PM - 06:50 PM	W	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
51347	discussion-recitation	D3Y	07:00 PM - 08:50 PM	W	room 242 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38212	discussion-recitation	D4B	08:00 AM - 09:50 AM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38272	discussion-recitation	D4G	10:00 AM - 11:50 AM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38217	discussion-recitation	D4H	10:00 AM - 11:50 AM	R	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38273	discussion-recitation	D4N	01:00 PM - 02:50 PM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
53083	discussion-recitation	D4P	01:00 PM - 02:50 PM	R	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38275	discussion-recitation	D4S	03:00 PM - 04:50 PM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38276	discussion-recitation	D4U	03:00 PM - 04:50 PM	R	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38277	discussion-recitation	D4V	05:00 PM - 06:50 PM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38278	discussion-recitation	D4X	05:00 PM - 06:50 PM	R	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38279	discussion-recitation	D4Y	07:00 PM - 08:50 PM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
51349	discussion-recitation	D4Z	07:00 PM - 08:50 PM	R	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						

51348	discussion-recitation	D5B	08:00 AM - 09:50 AM	F	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
51350	discussion-recitation	D5C	08:00 AM - 09:50 AM	F	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38280	discussion-recitation	D5G	10:00 AM - 11:50 AM	F	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38281	discussion-recitation	D5H	10:00 AM - 11:50 AM	F	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38282	discussion-recitation	D5N	01:00 PM - 02:50 PM	F	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38274	discussion-recitation	D5P	01:00 PM - 02:50 PM	F	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38283	discussion-recitation	D5S	03:00 PM - 04:50 PM	F	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
51351	discussion-recitation	D5U	03:00 PM - 04:50 PM	F	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38284	laboratory	L2G	10:00 AM - 11:50 AM	T	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38285	laboratory	L2N	01:00 PM - 02:50 PM	T	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38289	laboratory	L2P	01:00 PM - 02:50 PM	T	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38291	laboratory	L2S	03:00 PM - 04:50 PM	T	room 164 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38294	laboratory	L2U	03:00 PM - 04:50 PM	T	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38297	laboratory	L2V	05:00 PM - 06:50 PM	T	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38300	laboratory	L2X	05:00 PM - 06:50 PM	T	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38302	laboratory	L2Y	07:00 PM - 08:50 PM	T	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38304	laboratory	L2Z	07:00 PM - 08:50 PM	T	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38315	laboratory	L3S	03:00 PM - 04:50 PM	W	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38316	laboratory	L3U	03:00 PM - 04:50 PM	W	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
51326	laboratory	L3V	05:00 PM - 06:50 PM	W	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
51330	laboratory	L3X	05:00 PM - 06:50 PM	W	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
51327	laboratory	L3Y	07:00 PM - 08:50 PM	W	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
51331	laboratory	L3Z	07:00 PM - 08:50 PM	W	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						

51328	laboratory	L4B	08:00 AM - 09:59 AM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38327	laboratory	L4C	08:00 AM - 09:50 AM	R	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38317	laboratory	L4G	10:00 AM - 11:50 AM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38318	laboratory	L4H	10:00 AM - 11:50 AM	R	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38319	laboratory	L4N	01:00 PM - 02:50 PM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38320	laboratory	L4P	01:00 PM - 02:50 PM	R	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38321	laboratory	L4S	03:00 PM - 04:50 PM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38322	laboratory	L4U	03:00 PM - 04:50 PM	R	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38323	laboratory	L4V	05:00 PM - 06:50 PM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38324	laboratory	L4X	05:00 PM - 06:50 PM	R	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38325	laboratory	L4Y	07:00 PM - 08:50 PM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.						
38326	laboratory	L4Z	07:00 PM - 08:50 PM	R	room 132 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.Meets 15-Mar-10 - 05-May-10.

214 **Univ Physics: Quantum Physics** credit: 2 hours.

Interference and diffraction, photons and matter waves, the Bohr atom, uncertainty principle, and wave mechanics. Lectures with demonstrations, discussions, and laboratory. For students in engineering, mathematics, physics, and chemistry. Credit is not given for both PHYS 214 and PHYS 102. Prerequisite: PHYS 212 (includes MATH 241 and PHYS 211).

This course satisfies the General Education Criteria for a Physical Sciences, and Quant Reasoning II course.

For students in engineering, mathematics, physics and chemistry. Exams are given in the evening (during fall and spring semesters). PHYS 214 meets only during part of the term; check the meeting dates. Register for a lecture (A) section, a discussion (D) section and a laboratory (L) section. Engineering students must obtain a dean's approval to drop this course after the second week of instruction.

CRN	Type	Section	Time	Days	Location	Instructor
38329	lecture	A1	09:00 AM - 10:15 AM	MW	room 141 Loomis Laboratory	Thaler, J
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38330	lecture	A2	11:00 AM - 12:15 PM	MW	room 141 Loomis Laboratory	Thaler, J
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38331	lecture	A3	01:00 PM - 02:15 PM	MW	room 141 Loomis Laboratory	Budakian, R
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38332	discussion-recitation	D2G	10:00 AM - 11:50 AM	T	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38333	discussion-recitation	D2N	01:00 PM - 02:50 PM	T	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
53064	discussion-recitation	D2P	01:00 PM - 02:50 PM	T	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38335	discussion-recitation	D2S	03:00 PM - 04:50 PM	T	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38336	discussion-recitation	D2U	03:00 PM - 04:50 PM	T	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						

38337	discussion-recitation	D2V	05:00 PM - 06:50 PM	T	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38338	discussion-recitation	D2X	05:00 PM - 06:50 PM	T	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38339	discussion-recitation	D2Y	07:00 PM - 08:50 PM	T	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
47382	discussion-recitation	D2Z	07:00 PM - 08:50 PM	T	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38340	discussion-recitation	D3B	08:00 AM - 09:50 AM	W	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38334	discussion-recitation	D3C	08:00 AM - 09:50 AM	W	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38345	discussion-recitation	D3N	01:00 PM - 02:50 PM	W	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38347	discussion-recitation	D3P	01:00 PM - 02:50 PM	W	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38350	discussion-recitation	D3S	03:00 PM - 04:50 PM	W	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38354	discussion-recitation	D3U	03:00 PM - 04:50 PM	W	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
51336	discussion-recitation	D3V	05:00 PM - 06:50 PM	W	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
51337	discussion-recitation	D3Y	07:00 PM - 08:50 PM	W	room 242 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38342	discussion-recitation	D4B	08:00 AM - 09:50 AM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38357	discussion-recitation	D4G	10:00 AM - 11:50 AM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38343	discussion-recitation	D4H	10:00 AM - 11:50 AM	R	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38360	discussion-recitation	D4N	01:00 PM - 02:50 PM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
53065	discussion-recitation	D4P	01:00 PM - 02:50 PM	R	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38364	discussion-recitation	D4S	03:00 PM - 04:50 PM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38369	discussion-recitation	D4U	03:00 PM - 04:50 PM	R	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38372	discussion-recitation	D4V	05:00 PM - 06:50 PM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38374	discussion-recitation	D4X	05:00 PM - 06:50 PM	R	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38377	discussion-recitation	D4Y	07:00 PM - 08:50 PM	R	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
51341	discussion-recitation	D4Z	07:00 PM - 08:50 PM	R	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						

51339	discussion-recitation	D5B	08:00 AM - 09:50 AM	F	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
51343	discussion-recitation	D5C	08:00 AM - 09:50 AM	F	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38383	discussion-recitation	D5G	10:00 AM - 11:50 AM	F	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38387	discussion-recitation	D5H	10:00 AM - 11:50 AM	F	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38425	discussion-recitation	D5N	01:00 PM - 02:50 PM	F	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38362	discussion-recitation	D5P	01:00 PM - 02:50 PM	F	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38428	discussion-recitation	D5S	03:00 PM - 04:50 PM	F	room 242 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
51345	discussion-recitation	D5U	03:00 PM - 04:50 PM	F	room 236 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38431	laboratory	L2G	10:00 AM - 11:50 AM	T	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38434	laboratory	L2N	01:00 PM - 02:50 PM	T	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38466	laboratory	L2P	01:00 PM - 02:50 PM	T	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38471	laboratory	L2S	03:00 PM - 04:50 PM	T	room 164 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38474	laboratory	L2U	03:00 PM - 04:50 PM	T	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38493	laboratory	L2V	05:00 PM - 06:50 PM	T	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38494	laboratory	L2X	05:00 PM - 06:50 PM	T	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38495	laboratory	L2Y	07:00 PM - 08:50 PM	T	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38496	laboratory	L2Z	07:00 PM - 08:50 PM	T	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
39192	laboratory	L3S	03:00 PM - 04:50 PM	W	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38504	laboratory	L3U	03:00 PM - 04:50 PM	W	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
51320	laboratory	L3V	05:00 PM - 06:50 PM	W	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
51324	laboratory	L3X	05:00 PM - 06:50 PM	W	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
51321	laboratory	L3Y	07:00 PM - 08:50 PM	W	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
51325	laboratory	L3Z	07:00 PM - 08:50 PM	W	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						

51322	laboratory	L4B	08:00 AM - 09:50 AM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38528	laboratory	L4C	08:00 AM - 09:50 AM	R	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38505	laboratory	L4G	10:00 AM - 11:50 AM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38507	laboratory	L4H	10:00 AM - 11:50 AM	R	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38509	laboratory	L4N	01:00 PM - 02:50 PM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38511	laboratory	L4P	01:00 PM - 02:50 PM	R	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38513	laboratory	L4S	03:00 PM - 04:50 PM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38516	laboratory	L4U	03:00 PM - 04:50 PM	R	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38518	laboratory	L4V	05:00 PM - 06:50 PM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38521	laboratory	L4X	05:00 PM - 06:50 PM	R	room 132 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38523	laboratory	L4Y	07:00 PM - 08:50 PM	R	room 164 Loomis Laboratory	
Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.						
38526	laboratory	L4Z	07:00 PM - 08:50 PM	R	room 132 Loomis Laboratory	

Physical Sciences, and Quant Reasoning II course.Meets 19-Jan-10 - 12-Mar-10.

221 **Enrichment Mechanics** credit: 1 hours.

Supplement to PHYS 211 with a collaborative group learning approach to improving conceptual understanding and problem solving in introductory calculus-based mechanics. Intended for underprepared students who have taken PHYS 100, but other at-risk students will be admitted also. Prerequisite: PHYS 100; concurrent registration in PHYS 211.

CRN	Type	Section	Time	Days	Location	Instructor
53717	discussion-recitation	M1	10:00 AM - 11:50 AM	R	room 234 Loomis Laboratory	
53718	discussion-recitation	M2	01:00 PM - 02:50 PM	R	room 234 Loomis Laboratory	
53719	discussion-recitation	M3	03:00 PM - 04:50 PM	R	room 234 Loomis Laboratory	
53720	discussion-recitation	M4	05:00 PM - 06:50 PM	R	room 234 Loomis Laboratory	

225 **Relativity & Math Applications** credit: 2 hours.

Introduction to the theory of Special Relativity, with applications to kinematics and dynamics. Key mathematical methods as they apply to aspects of electromagnetic theory and classical mechanics, including vector analysis, series expansions, matrices, Fourier analysis, partial differentiation, three-dimensional calculus, and simple differential equations. Preference given to Physics majors and minors. Prerequisite: Credit or concurrent registration in PHYS 212.

CRN	Type	Section	Time	Days	Location	Instructor
53724	lecture	A	11:00 AM - 11:50 AM	T	room 151 Loomis Laboratory	Makins, N
Register for the LEC (A) section and for one of the DIS (D) sections.						
53725	discussion-recitation	D4Y	07:00 PM - 08:50 PM	R	room 234 Loomis Laboratory	Lamb, S
53726	discussion-recitation	D5G	10:00 AM - 11:50 AM	F	room 234 Loomis Laboratory	Lamb, S
53727	discussion-recitation	D5N	01:00 PM - 02:50 PM	F	room 234 Loomis Laboratory	Lamb, S
53728	discussion-recitation	D5S	03:00 PM - 04:50 PM	F	room 234 Loomis Laboratory	Lamb, S

280 **Nuclear Weapons & Arms Control** credit: 3 hours.

Beginner's-level introduction to the physics of nuclear weapons, nuclear weapon effects, delivery systems, and defenses against nuclear attack; includes presentation of current issues. Nontechnical, but about technology. Designed to assist in making informed judgments about nuclear armaments and arms control. Same as GBLB 280.

This course satisfies the General Education Criteria for a Advanced Composition course.

CRN	Type	Section	Time	Days	Location	Instructor
38668	lecture	A	02:30 PM - 03:50 PM	TR	room 144 Loomis Laboratory	Lamb, F
Advanced Composition course. Minimum of sophomore standing required. Register for the lecture (A) section and for one of the writing lab (L) sections. Not intended for students with Freshman class standing.						
40888	laboratory	L11	10:00 AM - 10:50 AM	M	room 137 Loomis Laboratory	
Advanced Composition course.						
40889	laboratory	L12	11:00 AM - 11:50 AM	M	room 137 Loomis Laboratory	
Advanced Composition course.						
40891	laboratory	L13	12:00 PM - 12:50 PM	M	room 137 Loomis Laboratory	
Advanced Composition course.						
40890	laboratory	L14	12:00 PM - 12:50 PM	M	room 137 Loomis Laboratory	
Advanced Composition course.						
40892	laboratory	L15	01:00 PM - 01:50 PM	M	room 137 Loomis Laboratory	
Advanced Composition course.						
40893	laboratory	L16	02:00 PM - 02:50 PM	M	room 137 Loomis Laboratory	
Advanced Composition course.						
40894	laboratory	L17	03:00 PM - 03:50 PM	M	room 137 Loomis Laboratory	
Advanced Composition course.						
40896	laboratory	L18	03:00 PM - 03:50 PM	M	room 139 Loomis Laboratory	
Advanced Composition course.						

325 **Mechanics and Relativity I** credit: 3 hours.

Examines kinematics and dynamics. Special relativity, Newtonian kinematics and dynamics in three dimensions, behavior of systems of particles, oscillations, transient response of oscillators, nonlinear oscillators, motion in rotating frames of reference, and rigid body dynamics. Vector analysis is developed as needed. Credit is not given for both PHYS 325 and PHYS 219. Prerequisite: Credit or concurrent registration in MATH 285 and PHYS 212.

Register for the lecture and for one of the discussion sections.

CRN	Type	Section	Time	Days	Location	Instructor
38566	lecture	A	09:00 AM - 10:20 AM	MW	room 144 Loomis Laboratory	Neubauer, M
38567	discussion-recitation	D1	06:00 PM - 06:50 PM	M	room 139 Loomis Laboratory	
38568	discussion-recitation	D2	07:00 PM - 07:50 PM	M	room 139 Loomis Laboratory	
38569	discussion-recitation	D3	08:00 PM - 08:50 PM	M	room 139 Loomis Laboratory	

326 **Mechanics and Relativity II** credit: 3 hours.

Continuation of PHYS 325. Lagrangian techniques and the calculus of variations, central force motion, scattering, coupled oscillations, the wave equation in one dimension, generalized coordinates and the Hamiltonian formulation, relativistic dynamics, Euler angles and tops, non-linear and fluid dynamics. Prerequisite: PHYS 325; credit or concurrent registration in MATH 241 or MATH 380.

Register for the lecture and one of the discussion sections.

CRN	Type	Section	Time	Days	Location	Instructor
38582	lecture	A	02:30 PM - 03:50 PM	MW	room 144 Loomis Laboratory	Bezryadin, A
38584	discussion-recitation	D1	06:00 PM - 06:50 PM	W	room 236 Loomis Laboratory	
38585	discussion-recitation	D2	07:00 PM - 07:50 PM	W	room 236 Loomis Laboratory	
38586	discussion-recitation	D3	08:00 PM - 08:50 PM	W	room 236 Loomis Laboratory	

401 **Classical Physics Lab** credit: 3 hours.

Experiments and techniques in classical mechanics and electromagnetism. Dynamics of electrical and mechanical oscillators in the linear domain. Fourier analysis of system response. Measurements of electrostatic fields, transmission lines, waves, and radiation. Investigation of electromagnetic phenomena in dielectrics, conductors, and magnetic materials. Instruction in data analysis and report writing. Graduate credit is not given to physics graduate program majors. Prerequisite: PHYS 325.

Register for the lecture and one of the laboratory sections.

CRN	Type	Section	Time	Days	Location	Instructor
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38571	lecture	A	01:00 PM - 01:50 PM	M	room 158 Loomis Laboratory	Lev, B
38572	laboratory	L1	01:00 PM - 04:50 PM	T	room 6103 Engineering Sciences Bldg	
38573	laboratory	L2	01:00 PM - 04:50 PM	W	room 6103 Engineering Sciences Bldg	
38574	laboratory	L3	01:00 PM - 04:50 PM	R	room 6103 Engineering Sciences Bldg	

402 **Light** credit: 0 to 4 hours.

Wave kinematics; geometrical optics: basic concepts, ray-tracing and matrix formalism, Gaussian imaging by thick lenses, stops, apertures, and intensity relations; interference; interference spectroscopy and coherence; diffraction: Fresnel-Kirchhoff formulation, Fraunhofer case, Fresnel case, and holography; polarized light. Lectures, laboratory, and problems. 4 undergraduate hours. 3 or 4 graduate hours (3 hours without lab). Prerequisite: MATH 285; PHYS 102 (includes PHYS 101) or PHYS 214 (includes PHYS 211 and PHYS 212).

CRN	Type	Section	Time	Days	Location	Instructor
36694	lecture	AA	01:00 PM - 02:20 PM	MW	room 136 Loomis Laboratory	Flynn, C
3 hours Graduate students (only) may enroll in the AA lecture (and no laboratory) for 3 hours credit. Restricted to Graduate - Urbana-Champaign.						
44817	lecture	BB	01:00 PM - 02:20 PM	MW	room 136 Loomis Laboratory	Flynn, C
4 hours Undergraduate and graduate students may enroll in the BB lecture and in one of the laboratory (BL) sections for 4 hours credit.						
36707	laboratory	BL1	01:00 PM - 03:50 PM	R	room 6106 Engineering Sciences Bldg	
36714	laboratory	BL3	01:00 PM - 03:50 PM	F	room 6106 Engineering Sciences Bldg	

403 **Modern Experimental Physics** credit: 2 to 5 hours.

Techniques and experiments in the physics of atoms, atomic nuclei, molecules, the solid state, and other areas of modern physical research. 4 or 5 hours. 5 undergraduate hours. 4 graduate hours. Prerequisite: PHYS 401; concurrent registration in PHYS 486.

CRN	Type	Section	Time	Days	Location	Instructor
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46820	laboratory	A	01:00 PM - 04:50 PM	TR	room 5105 Engineering Sciences Bldg	Hertzog, D; Grosse Perdekamp, M
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404 **Electronic Circuits I** credit: 0 to 5 hours.

The physics of semiconductor devices; theory and application of discrete and integrated devices in linear circuits; use of operational amplifiers and feedback; regulation, oscillators, and modulation; emphasizes practical experience. Lectures, problems, and laboratory. Same as CHEM 423. 5 undergraduate hours. 4 graduate hours. Offered Spring term only. Prerequisite: PHYS 401 and PHYS 435.

CRN	Type	Section	Time	Days	Location	Instructor
38598	lecture	AC	04:00 PM - 05:50 PM	MW	room 136 Loomis Laboratory	Giannetta, R
5 hours Undergraduates register for lecture AC (38598) and for one of the laboratory (L) sections. Restricted to Undergrad - Urbana-Champaign.						
38600	lecture	AG	04:00 PM - 05:50 PM	MW	room 136 Loomis Laboratory	Giannetta, R
4 hours Graduate students register for lecture AG (38600) and for one of the laboratory (L) sections. Restricted to Graduate - Urbana-Champaign.						
38605	laboratory	L2	01:00 PM - 03:50 PM	TR	room 5106 Engineering Sciences Bldg	
38601	laboratory	L3	09:00 AM - 11:50 AM	WF	room 5106 Engineering Sciences Bldg	

419 **Space, Time, and Matter-ACP** credit: 3 or 4 hours.

Identical to PHYS 420 except for the additional writing component including a final term paper. Same as PHIL 419. 3 undergraduate hours. 4 graduate hours. Credit is not given for both PHYS 419 and PHYS 420. Junior standing is required. Prerequisite: One physical science course; one of PHYS 214, PHIL 101, PHIL 270, PHIL 317.

This course satisfies the General Education Criteria for a Advanced Composition course.

CRN	Type	Section	Time	Days	Location	Instructor
38575	lecture	A	01:00 PM - 02:20 PM	TR	room 144 Loomis Laboratory	Phillips, P
Advanced Composition course. 3 hours Undergraduates enroll in section A (38575). (To enroll in this course without the Advanced Composition component and for reduced credit, see PHYS 420.) Restricted to Undergrad - Urbana-Champaign.						
38576	lecture	G	01:00 PM - 02:20 PM	TR	room 144 Loomis Laboratory	Phillips, P

Advanced Composition course. 4 hours Graduate students enroll in section G (38576). Restricted to Graduate - Urbana-Champaign.

**420 *Space, Time, and Matter*** credit: 2 hours.

Philosophical examination of some fundamental concepts and theories of the physical world, such as time, matter, space, and geometry; interpretation of quantum theory. Graduate students write an additional paper. Same as PHIL 420. Credit is not given for both PHYS 420 and PHYS 419. Junior standing is required. Prerequisite: One physical science course; one of PHYS 214, PHIL 101, PHIL 270, PHIL 317.

CRN	Type	Section	Time	Days	Location	Instructor
43171	lecture	NAC	01:00 PM - 02:20 PM	TR	room 144 Loomis Laboratory	Phillips, P
Meets with and is the same as PHYS 419 except for carrying only 2 hours credit, requiring no final term paper and not satisfying the Advanced Composition requirement.						

**427 *Thermal & Statistical Physics*** credit: 4 hours.

Equilibrium thermodynamics, statistical mechanics, and kinetic theory of gases. A unified treatment is used in that the principles of heat and thermodynamics are discussed along with statistical postulates and the microscopic approach of introductory quantum mechanics. Designed primarily for advanced undergraduates. Credit is not given for both PHYS 427 and any of ME 404, CHEM 442, CHEM 444, MSE 500. Prerequisite: Two 400-level courses in physics.

CRN	Type	Section	Time	Days	Location	Instructor
36679	lecture	A	02:30 PM - 03:50 PM	TR	room 158 Loomis Laboratory	Dahmen, K

**435 *Electromagnetic Fields I*** credit: 3 hours.

Static electric and magnetic fields, their interactions with electric charge and current, and their transformation properties; the effect of special relativity is incorporated. Macroscopic fields in material media are described. Prerequisite: MATH 285; PHYS 325; credit or concurrent registration in MATH 241 or MATH 380.

Register for the lecture and one of the discussion sections.

CRN	Type	Section	Time	Days	Location	Instructor
38588	lecture	A	11:00 AM - 11:50 AM	MWF	room 144 Loomis Laboratory	Mason, N
38589	discussion-recitation	D1	07:00 PM - 07:50 PM	M	room 32 Loomis Laboratory	
38591	discussion-recitation	D2	08:00 PM - 08:50 PM	T	room 32 Loomis Laboratory	

**436 *Electromagnetic Fields II*** credit: 3 hours.

Concentrates on time-dependent fields. Electromagnetic induction, Maxwell's equations, electromagnetic wave propagation in various media and structures, and electromagnetic radiation from charge and current distributions are treated. The relativistic covariance of Maxwell's equations is discussed. Prerequisite: PHYS 326 and PHYS 435.

Register for a lecture and one of the discussion sections.

CRN	Type	Section	Time	Days	Location	Instructor
38593	lecture	A	11:00 AM - 11:50 AM	MWF	room 136 Loomis Laboratory	Nayfeh, M
38594	discussion-recitation	D1	08:00 PM - 08:50 PM	M	room 32 Loomis Laboratory	
38596	discussion-recitation	D2	07:00 PM - 07:50 PM	T	room 32 Loomis Laboratory	

466 **Atomic Scale Simulations** credit: 3 or 4 hours.  
Same as CSE 485 and MSE 485. See MSE 485.

CRN	Type	Section	Time	Days	Location	Instructor
44676	lecture-discussion	A	03:00 PM - 03:50 PM	MWF	room 4101 Materials Science and Eng Bld	Johnson, D
3 hours This section is for Undergraduate Students only. Restricted to Undergrad - Urbana-Champaign.						
44679	lecture-discussion	A1	03:00 PM - 03:50 PM	MWF	room 4101 Materials Science and Eng Bld	Johnson, D
This section is for Graduate Students only, you may choose either 3 or 4 credit hours. Restricted to Graduate - Urbana-Champaign.						

470 **Subatomic Physics** credit: 4 hours.

The nature and properties of nuclei and elementary particles, symmetries, interactions, nuclear models, tools and techniques of experimental subatomic physics, and applications to power generation, astrophysics, chemistry, medicine, and biology. Lecture-problem format. Offered Spring term only. Prerequisite: PHYS 485 or PHYS 486.

CRN	Type	Section	Time	Days	Location	Instructor
36729	lecture	A	02:30 PM - 03:50 PM	MW	room 136 Loomis Laboratory	Peng, J

479 **Plasma and Fusion Science** credit: 3 hours.  
Same as ECE 421 and NPRES 421. See NPRES 421.

CRN	Type	Section	Time	Days	Location	Instructor
53191	lecture-discussion	L	09:30 AM - 10:50 AM	TR	room 243 Mechanical Engineering Bldg	Miley, G

485 **Atomic Phys & Quantum Theory** credit: 3 hours.

Introduction to the basic concepts of quantum theory which underlie modern theories of the properties of materials; elements of atomic and nuclear theory; kinetic theory and statistical mechanics; quantum theory and simple applications; atomic spectra and atomic structure; molecular structure and chemical binding. Prerequisite: CHEM 104; MATH 285; PHYS 214.

CRN	Type	Section	Time	Days	Location	Instructor
36733	lecture	A	08:30 AM - 09:50 AM	MW	room 136 Loomis Laboratory	Demarco, B

486 **Quantum Physics I** credit: 4 hours.

Atomic phenomena integrated with an introduction to quantum theory; evidence for the atomic nature of matter and the properties of the Schrodinger equation, single particle solutions in one dimension, the hydrogen atom, perturbation theory, external fields, and atomic spectroscopy of outer electrons. Prerequisite: MATH 285; PHYS 214; credit or concurrent registration in MATH 415.

Register for a lecture and a discussion section.

CRN	Type	Section	Time	Days	Location	Instructor
36737	lecture	A	09:00 AM - 10:20 AM	TR	room 144 Loomis Laboratory	Abbamonte, P
36743	discussion-recitation	D1	07:00 PM - 07:50 PM	T	room 143 Loomis Laboratory	
36748	discussion-recitation	D2	08:00 PM - 08:50 PM	W	room 139 Loomis Laboratory	

487 **Quantum Physics II** credit: 4 hours.

Continuation of PHYS 486. Identical particles, spectral hyperfine structure, magnetic properties of matter, atomic spectroscopy of inner electrons, high-energy photon effects, molecular binding and spectra, emission and absorption of light, and symmetry principles. Prerequisite: PHYS 486.

CRN	Type	Section	Time	Days	Location	Instructor
36752	lecture	A	09:00 AM - 10:20 AM	TR	room 158 Loomis Laboratory	Liss, T
Register for the lecture and for one of the discussion sections.						
36758	discussion-recitation	D1	08:00 PM - 08:50 PM	T	room 143 Loomis Laboratory	

36762	discussion-recitation	D2	07:00 PM - 07:50 PM	W	room 139 Loomis Laboratory	
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496 **Intro to Physics Research** credit: 3 hours.

Presents current research topics through extensive reading, writing, and oral-presentation activities. Designed for second-semester juniors interested in pursuing physics research careers and advanced physics training. Students generally become involved in a research group at this time, leading to a full-time summer research experience. No graduate credit.

This course satisfies the General Education Criteria for a Advanced Composition course.

CRN	Type	Section	Time	Days	Location	Instructor
43749	lecture	A	02:00 PM - 04:50 PM	F	room 322 Loomis Laboratory	Cooper, S
Advanced Composition course. Instructor Approval Required						

497 **Individual Study** credit: 1 to 4 hours.

Individual study at an advanced level in a subject not covered by course offerings. May be repeated. Prerequisite: Consent of instructor.

Before registering for this class, students must file a project outline.

CRN	Type	Section	Time	Days	Location	Instructor
10147	independent study		ARRANGED			
Instructor Approval Required To register for PHYS 497, use the PHYS 497 CRN (available from the departmental undergraduate records office) specific to the instructor with whom you have arranged to study. (You cannot register under the general CRN 10147.)						

498 **Special Topics in Physics** credit: 1 to 4 hours.

Subject offerings of new and developing areas of knowledge in physics intended to augment the existing curriculum. See Class Schedule or departmental course information for topics and prerequisites. May be repeated in the same or separate terms if topics vary.

CRN	Type	Section	Time	Days	Location	Instructor
36765	lecture	BIO	10:30 AM - 11:50 AM	MW	room 158 Loomis Laboratory	Selvin, P
3 hours Intro to Biological PhysicsINTRODUCTION TO BIOLOGICAL PHYSICS. We will apply simple yet powerful ideas of physics to gain some understanding of biology. (What is the inertia of a bacteria and how does this affect its behavior?) We will begin with atoms, move to molecules, then macromolecules, then cells, and finally whole systems. For example, how do we see? The answer: photons cause the release of chemicals that create electricity. How do we move? The answer: tiny biomolecular motors break chemical bonds, using the energy to create force and motion with efficiencies that put man-made machines to shame. These motors, and indeed, much of biology at the molecular level, operate at the nanometer (one-billionth of a meter) and						

picoNewton (1 trillionth of a pound) scales. How can we measure such tiny things? Come find out! Prerequisite: PHYS 211-212-213 sequence or consent of instructor. No prior biology knowledge or prerequisites, since the course includes a molecular biology primer.

49741	lecture	BIP	10:30 AM - 11:50 AM	MW	room 158 Loomis Laboratory	Selvin, P
4 hours Intro to Biological Physics Meets with PHYS 498BIO (36765). Graduate students only, for 4 hours credit. (Undergraduates should enroll in 36765 for 3 hours credit.) Restricted to Graduate - Urbana-Champaign.						
40425	laboratory-discussion	PM1	11:00 AM - 01:50 PM	F	room 6105 Engineering Sciences Bldg	Errede, S
	laboratory-discussion	PM1	01:00 PM - 02:20 PM	TR	room 6105 Engineering Sciences Bldg	Errede, S
4 hours Physics of Musical Instruments PHYSICS OF MUSIC AND MUSICAL INSTRUMENTS. (Also available as PHYS 498 section PM2.) This course will investigate the physics of all kinds of music and musical instruments, the generation and propagation of sound waves in various media, and acoustics in general. Topics covered will include: Sound waves & propagation of sound waves, complex vibrations and resonance phenomena, perception of sound, tone quality, frequency & pitch, musical intervals, scales, tuning & temperament, all kinds of musical instruments, all kinds of music, auditorium and room acoustics, sound transducers, microphones, loudspeakers and loudspeaker enclosure design. Prerequisites: PHYCS 211, 212 and 214; or consent of instructor.						
40426	laboratory-discussion	PM2	01:00 PM - 02:20 PM	TR	room 6105 Engineering Sciences Bldg	Errede, S
	laboratory-discussion	PM2	02:00 PM - 04:50 PM	F	room 6105 Engineering Sciences Bldg	Errede, S
4 hours Physics of Musical Instruments PHYSICS OF MUSIC AND MUSICAL INSTRUMENTS. (Also available as PHYS 498 section PM1. See PM1 for a course description.)						

509 **Mathematical Physics II** credit: 4 hours.

Continuation of PHYS 508. Further core techniques of mathematical physics widely used in the physical sciences. Complex variables; group theory in classical and quantum systems; tensors in physics; differential forms and their applications in mechanics; electromagnetism. Topics are illustrated with realistic physics problems; a broad range of illustrative examples are explored; applications are emphasized. Prerequisite: PHYS 508.

CRN	Type	Section	Time	Days	Location	Instructor
49905	lecture	A	01:00 PM - 02:20 PM	TR	room 158 Loomis Laboratory	Stone, M
Restricted to Graduate - Urbana-Champaign.						

513 **Quantum Optics & Information** credit: 4 hours.

Experimental and core theoretical fundamentals of quantum information, using nonclassical, often counter-intuitive, features of quantum physics (including the wave-particle duality, superposition, and entanglement) to surpass the information-processing capabilities of systems restricted by classical physics. Underlying fundamental quantum

phenomena, including tests of nonlocality, quantum erasers, the quantum Zeno effect, squeezed light, multi-particle interference, state transformations of the Bloch sphere (e.g., Rabi oscillations), and decoherence; quantum cryptography and teleportation; basic quantum information theory; key quantum computation algorithms and techniques for error correction; major experimental "qubit" systems. Prerequisite: Recommended: PHYS 580.

CRN	Type	Section	Time	Days	Location	Instructor
53201	lecture	A	02:00 PM - 03:20 PM	TR	room 136 Loomis Laboratory	Kwiat, P
Restricted to Graduate - Urbana-Champaign.						

516 **General Relativity II** credit: 4 hours.

Continuation of PHYS 515 with emphasis on applications to astrophysics and cosmology. Relativistic stars, gravitational collapse, black holes, gravitational waves, numerical relativity, and cosmology. Same as ASTR 516. Offered in alternate Spring terms. Prerequisite: PHYS 515.

CRN	Type	Section	Time	Days	Location	Instructor
36773	lecture	A	10:30 AM - 11:50 AM	TR	room 144 Loomis Laboratory	Shapiro, S
Restricted to Graduate - Urbana-Champaign.						

542 **Theoretical Stellar Physics** credit: 4 hours.

Same as ASTR 504. See ASTR 504.

CRN	Type	Section	Time	Days	Location	Instructor
40851	lecture	1	02:00 PM - 03:20 PM	TR	room 134 Astronomy Bldg	Mouschovias, T

550 **Biomolecular Physics** credit: 4 hours.

Physical concepts governing the structure and function of biological macromolecules; general properties, spatial structure, energy levels, dynamics and functions, and relation to other complex physical systems such as glasses; recent research in biomolecular physics; physical techniques and concepts from theoretical physics emphasized. Designed for students without appreciable background in biology and chemistry. Same as BIOP 550 and MCB 550. Prerequisite: CHEM 104; PHYS 485 or PHYS 487.

CRN	Type	Section	Time	Days	Location	Instructor
36779	lecture	A	10:30 AM - 11:50 AM	TR	room 136 Loomis Laboratory	Schulten, K
Restricted to Graduate - Urbana-Champaign.						

560 **Condensed Matter Physics I** credit: 4 hours.

Crystalline perfection, free-electron gas, screening, plasma oscillations, and dielectric response; Bloch electrons, Brillouin zones, and band structure; semiconductors, intrinsic and extrinsic, with applications; phonons, elasticity, and anharmonicity; ferromagnetism and second-order phase transitions; superconductivity. Prerequisite: PHYS 427 and PHYS 580.

CRN	Type	Section	Time	Days	Location	Instructor
36787	lecture	A	03:30 PM - 04:50 PM	MW	room 158 Loomis Laboratory	Chiang, T
Restricted to Graduate - Urbana-Champaign.						

563 **Phase Transitions** credit: 4 hours.

Phenomenology of phase transitions, scaling, critical behavior, and multi-criticality; Landau theory of phase transitions; renormalization group methods, including lattice models and epsilon-expansion; numerical methods; critical dynamics; selected additional topics. Prerequisite: PHYS 504.

CRN	Type	Section	Time	Days	Location	Instructor
48933	lecture	A	04:00 PM - 05:20 PM	MW	room 158 Loomis Laboratory	Goldenfeld, N
Restricted to Graduate - Urbana-Champaign.						

575 **Particle Physics I** credit: 4 hours.

Basic calculations in elementary particle theory. Quantum electrodynamics, quantum chromodynamics, and the Glashow-Weinberg-Salam theory of weak and electromagnetic interactions as applied to the phenomenology of particle decays and high energy reactions. Prerequisite: PHYS 570 (in exceptional circumstances, PHYS 570 may be taken concurrently with departmental approval). Recommended (strongly): credit or concurrent registration in PHYS 582.

CRN	Type	Section	Time	Days	Location	Instructor
44743	lecture	A	10:30 AM - 11:50 AM	MW	room 322 Loomis Laboratory	El-Khadra, A
Restricted to Graduate - Urbana-Champaign.						

581 **Quantum Mechanics II** credit: 4 hours.

Spin and identical particles, simple many-particle systems and elements of second-quantization theory; time-dependent processes, radiative transitions, and quantization of the electromagnetic field; scattering of particles with spin; polarization; introduction to the Klein-Gordon and Dirac equations, and properties of simple relativistic systems. Prerequisite: PHYS 580.

CRN	Type	Section	Time	Days	Location	Instructor
36784	lecture	A	01:00 PM - 02:20 PM	MW	room 144 Loomis Laboratory	Goldbart, P

Restricted to Graduate - Urbana-Champaign.

583 **Advanced Field Theory** credit: 4 hours.

Quantization and Feynman path integral; gauge theories and renormalization; renormalization group with applications to particle physics and critical phenomena; approximation methods and recent developments.

Prerequisite: PHYS 582.

CRN	Type	Section	Time	Days	Location	Instructor
36786	lecture	A	09:00 AM - 10:20 AM	MW	room 158 Loomis Laboratory	Leigh, R

Restricted to Graduate - Urbana-Champaign.

597 **Individual Study** credit: 1 to 16 hours.

Individual study in a subject not covered in course offerings may be arranged for credit by registration under this number. 2 to 16 hours for full term; 1 to 8 hours for half-term. May be repeated. Prerequisite: Consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
10150	independent study		ARRANGED			

Instructor Approval Required To register for PHYS 597, use the PHYS 597 CRN (available from the departmental graduate records office) specific to the instructor with whom you have arranged to study. (You cannot register under the general CRN 10150.)

598 **Special Topics in Physics** credit: 1 to 4 hours.

Subject offerings of new and developing areas of knowledge in physics intended to augment the existing curriculum. See Class Schedule or departmental course information for topics and prerequisites. May be repeated in the same or separate terms if topics vary.

CRN	Type	Section	Time	Days	Location	Instructor
52571	lecture	TPH	12:30 PM - 01:50 PM	TR	room 136 Loomis Laboratory	Fradkin, E

Restricted to Graduate - Urbana-Champaign. 4 hours Topological Phases in Quantum CMTOPOLOGICAL PHASES IN QUANTUM CONDENSED MATTER. This course will cover current developments on topological phases in condensed matter physics, including: the theory of the fractional quantum Hall states, spin liquids, topological insulators and superconductors, effective field theories of topological phases, quasiparticles, fractional statistics (Abelian and non-Abelian), experimental detection of quasiparticles, quantum interferometers and the manipulation of quasiparticles, topological phases and topological quantum computing, quantum entanglement at quantum criticality and in topological phases. The course material will consist primarily of a review of recent literature in leading journals.

599 **Thesis Research** credit: 0 to 16 hours.

Approved for S/U grading only. May be repeated.

<b>CRN</b>	<b>Type</b>	<b>Section</b>	<b>Time</b>	<b>Days</b>	<b>Location</b>	<b>Instructor</b>
10154	independent study		ARRANGED			
<p>Instructor Approval Required To register for PHYS 599, use the PHYS 599 CRN (available from the departmental graduate records office) specific to the instructor with whom you have arranged to study. (You cannot register under the general CRN 10154.)</p>						