PHYSICS 107, IDEAS OF MODERN PHYSICS
SPECIAL INFORMATION FOR SPRING, 1995
PROFESSOR BERNICE DURAND

READ THIS BEFORE COMING TO CLASS MONDAY, JANUARY 23!!!!

As you may have heard, sometimes Physics 107 is offered on TV, as well as live. The TV lectures were originally taped during regular live lectures in the fall of 1990; and as announced in the Timetable, this semester's lectures will all be taped for a fresh version of the TV course. This won't change much about how the course runs, but we need a few special rules to make the taping go well.

Come to class on time! Room 1300 Sterling, has front and rear doors. NEVER use the rear doors to enter or exit the room during class. If you MUST come late or leave early, sit on the side of the room near the front door.

Pick up all daily announcements just outside the front door, since I won't be announcing things in class nor writing reminders on the board. This makes it extra important to keep and READ all the course information!!

Sit in the FRONT HALF of the room. Leave the side seats on the side where the front door is, EMPTY. This will enable you to see things I project onto the wall, plus provide seats near the door for latecomers.

If you have questions before class, ask the TA, not me. I'll be busy setting up for lecture. After class I'll go out in the hall and be available for as long as necessary. I also keep a pink sheet by the door for messages.

Don't wear hats, read newspapers, or talk or whisper during class. If you have to communicate with a neighbor, do so by writing notes!

Don't be freaked out by the two bright lights on me, or the two cameras. The second camera is for closeups of the demonstrations, different angles of me, and shots of the class to use when we edit out bloopers I've made.

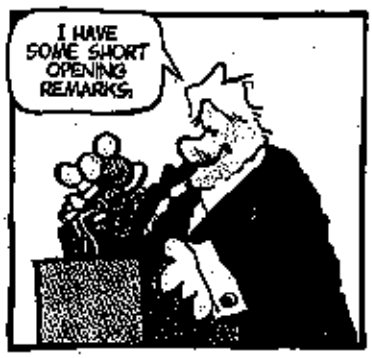
Please point it out right away if you see me make a mistake! If I goof on something, I'm going to repeat it to get it right. This COULD mean having to stay an extra minute beyond the bell. Be patient! DON'T start to pack up before the lecture ends! I'll be more likely to end early than late.

Please ask questions during lecture. They can always be edited out if needed.

On the reverse of this page is a draft of our schedule. You'll get the final version at the first lecture, along with the rest of the course information.

I love teaching this course, and am delighted to be teaching in the Spring semester, when the enrollment is traditionally about half what it is in the Fall. Because of the taping, I'll be putting my maximal effort into every lecture, hoping this will be the best I've ever done with this course. I'll appreciate your cooperation and comments!

Prof. B. Durand



PHYSICS 107, THE IDEAS OF MODERN PHYSICS
SPRING 1995 Prof. Bernice Durand

Week	Lec	Date	Subject
1	1	M Jan 23	The Earliest Science: Seasons and the Moon
	2	W Jan 25	Demystifying the Heavens: Tycho, Kepler, Galileo
	3	F Jan 27	Two Leaps of Logic: Galileo
2	4	M Jan 30	Falling Motion: Galileo's Kinematics
	5	W Feb 1	Three Great Principles: Galileo
	6	F Feb 3	Conservation of Momentum: Descartes and Huygens
3	7	M Feb 6	Three Great Laws of Motion: Newton's Dynamics
	8	W Feb 8	The Universal Law of Gravitation: Newton
			HOMEWORK 1A DUE (over Lecs 1-6)
	9	F Feb 10	Conservation of Energy
4	10	M Feb 13	Electric and Magnetic Forces and Fields: Coulomb and Faraday
	11	W Feb 15	The First Unified Field Theory: Maxwell
	12	F Feb 17	Waves: Simple Behavior of a Simple System
5	13	M Feb 20	Sound: Mechanical Waves in a Medium
	14	W Feb 22	Light: Electromagnetic Waves in a Field
			HOMEWORK 1B DUE (over Lecs 7-11)
	15	F Feb 24	Chaos: Complex Behavior of a Simple System
6	16	M Feb 27	Light Waves are Different: the Famous Missing Gamma Factor
			REVIEW SESSION, 7:00-8:30 pm
		T Feb 28	HOUR EXAM OVER UNIT 1, 7:30-8:30 pm (over Lecs 1-11)
	17	W Mar 1	The Two Postulates of Special Relativity: Einstein
	18	F Mar 3	Gedanken Experiments on Simultaneity and Length
7	19	M Mar 6	Gedanken Experiments on Clocks and Time
	20	W Mar 8	Spacetime: Gamma Factor Effects and Time as the 4th Dimension
			HOMEWORK 2A DUE (over Lecs 12-19)
		F Mar 10	Enrichment Lecture (probably not filmed)
SPRING RECESS Mar 11-19			
8	21	M Mar 20	Spacetime Diagrams
	22	W Mar 22	Mass and Energy are Equivalent
	23	F Mar 24	E = m(c squared): Bombs, Stars, and Reactors
9	24	M Mar 27	Relativity in Action: Big Gamma Factors
	25	W Mar 29	The Equivalence Principle: Einstein
	26	F Mar 31	Curved Spacetime: Physics is Math
10	27	M Apr 3	Big Bang Cosmology: "Seeing" the Very Large
	28	W Apr 5	Black Holes and Dark Matter in the Universe
	29	F Apr 7	Atoms, Electrons, and Nuclei: "Seeing" the Very Small
11	30	M Apr 10	The Quantum Physics of Light: Planck, Spectra of Solids
	31	W Apr 12	Waves are Particles: Einstein, the Photoelectric Effect
			HOMEWORK 2B DUE (over Lecs 20-28)
		F Apr 14	NO CLASS Good Friday, Passover
12	32	M Apr 17	The Quantum Physics of Matter: Bohr, the Hydrogen Atom
			REVIEW SESSION, 7:00-8:30 pm
		T Apr 18	HOUR EXAM OVER UNIT 2, 7:30-8:30 pm (over Lecs 12-28)
	33	W Apr 19	Particles are Waves: deBroglie, Schrodinger, Born
	34	F Apr 21	The Uncertainty Principle: Heisenberg
13	35	M Apr 24	Quantum Physics in Action: Superconductivity
	36	W Apr 26	Quantum Physics in the Sky: Sunsets, Ozone, Greenhouse Effect
			HOMEWORK 3A DUE (over Lecs 29-34)
	37	F Apr 28	Quantized Energy Levels: Lasers and Atomic Clocks
14	38	M May 1	Quantum Electronics and Computer Chips
	39	W May 3	Quantum Field Theory: Feynman's Dynamics
	40	F May 5	Nature's Building Blocks: Particles, Quarks, Leptons
15	41	M May 8	The Four Forces: Gauge Bosons
	42	W May 10	Inner Space/Outer Space: Particle Physics Meets Cosmology
			HOMEWORK 3B DUE (over Lecs 35-41)
	43	F May 12	The Nobel Prize: Tracing the Ideas of Modern Physics
16		T May 16	REVIEW SESSION, 7:00-8:30 pm
		W May 17	HOUR EXAM OVER UNIT 3, 2:45-3:45 pm (over Lecs 29-43)