

PRELIMINARY COURSE SYLLABUS
Physics 116C Spring 2004
Introduction to Computer-Based Experiments in Physics
 April 2, 2004

Class meets MWF 1:10-2:00 PM in 158 Roessler
Lab meets W 3:10-6:00 PM in 152 Roessler.

Week	Monday	Topics/Notes	Lab
0	(Mar 29)	Course overview, LabVIEW Introduction First day of class is Friday, April 2	---
1	Apr 5	Introduction to statistics, error analysis, least squares fits	1: LabVIEW Programming (LP)
2	Apr 12	Sampling theorem, FFT, spectral analysis	2: Geiger Counter and counting statistics, LP
3	Apr 19	Noise spectra, Johnson Noise	3: Radioactive decay and mean life, LP
4	Apr 26	DAQ hardware, A/D, D/A conversion Exam 1 on Wednesday, April 28	4: Digital Thermometer
5	May 3	PID process control	5: PID Temp Controller
6	May 10	Signal sources, grounding, shielding	6: Johnson Noise I
7	May 17	Data busses, transmission lines	7: Johnson Noise II
8	May 24	GPIB and instrument control Exam 2 on Wednesday, May 26	8: Adv. Lab I
9	May 31	<i>Memorial Day holiday on Monday</i> Other DAQ systems	9: Adv. Lab II
10	June 7	Real-time systems Last 116C class is Wed., June 9	10: Adv. Lab III

Final Exam: Thursday, June 17, 1:30 PM - 3:30 PM

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Class web site: <http://www.physics.ucdavis.edu/classes/Physics116/physics116.html>

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Texts:

Essick, **Advanced LabVIEW Labs**

National Instruments, **LabVIEW 6i Student Edition (includes software)**

References:

Bevington and Robinson, **Data Reduction and Error Analysis for the Physical Sciences, 2nd Ed.**

Melissinos and Napolitano, **Experiments in Modern Physics, 2nd Ed.**

Horowitz and Hill, **The Art of Electronics, 2nd. Ed.**

Squires, **Practical Physics, 4th Ed.**

plus library references and supplementary handouts

Course Description: Essentially a continuation of Physics 116B. Introduction to techniques for making physical measurements using computer-based instrumentation.

Prerequisites: Physics 9D, 116B, Math 22AB or consent of department

Grading: 14% MT1, 14% MT2, 38% Lab, 10% HW, 24% Final.