

Project/Seminar Winter Syllabus

Krishna Chowdary

chowdark@evergreen.edu

Lab 2 3255

360 867 6156

office hours: by appointment

Assignments Overview:

Each week, you should devote 6 hours to Project/Seminar:

- Two (2) of those hours will be spent in Seminar on Thursday morning from 9 – 11 in the Physics Cave. When you arrive in the morning, please arrange the room in our preferred seminar style. The seminar topics for the week will be two piece of apparatus and the associated physics; the order is noted in the Seminar Topics Schedule (see below).
- Approximately 2 of those hours should be spent preparing for that week's Seminar. To prepare for Seminar, spend approximately 1 hour reading over the Documents file for each instrument assigned for that week's seminar. Take notes on what you notice and wonder, what you found interesting and confusing, what you'd like to spend seminar time on, and what you'd like to see added to the file (and note that on the file wish list). Bring those notes to seminar.
- Approximately 2 of those hours should be spent adding to the experiment files. Split the time between the instrument(s) you have been assigned that week (see Instrument Assignment Schedule, below). Depending on the point in the quarter, you will contribute to the experiment files in different ways.
 - In week 13 and 14, you will find and contribute unique documents to the files (look over the file first to avoid duplication; you may want to coordinate with other students who have been assigned the same apparatus that week). You will contribute Documents to the files of 4 instruments. Documents can include:
 - manuals (most already have manuals), other information from the manufacturer about the instrument (in the case of TeachSpin instruments, for example, their website has newsletters that feature different instruments), or manuals for similar instruments/experiments;
 - excerpts from textbooks;
 - primary source literature (sources from our library in order of preference from most preferred to least: American Journal of Physics; Physics Today; The Physics Teacher; Science; Nature, others);
 - Wikipedia or other encyclopedia entries and results from other web searches.
 - Documents should cover the broad range of: theory; experiment/apparatus technical details; historical background.
 - In weeks 15 – 19, you will produce Summaries and Annotations for documents that have already been contributed to the files. Each week, you will produce summaries/annotations for 1 instrument, so 5 instruments in total.
 - In week 20, you will Curate the Document Collections. Coordinate with the other people assigned to your instrument(s) to organize, index, create a table of contents, etc. for each instrument's Documents file.

To summarize, each week:

- You will Seminar on 2 instruments, as noted on the Seminar Topic schedule, below (2 hours total/week).
- You will prepare for Seminar by spending 1 hour reading over each of the Document files for the instruments assigned for Seminar that week (1 hour/instrument x 2 instruments = 2 hours total/week).
- You will contribute content to the Document files for various instruments, as assigned in the Instrumentation Assignment Schedule, as follows:
 - In weeks 13 and 14, you will research to find documents to add to the Documents file. For each week, you have been assigned 2 instruments for a total of 4 instruments, so should spend 1 hour for each instrument in each of those weeks (1 hour/instrument x 2 instruments = 2 hours total/week).
 - In weeks 15 – 19, you will produce annotations/summaries for documents assembled in the Documents file. You have been assigned 1 instrument a week in each of those weeks, so should spend 2 hours on each instrument in each of those weeks (2 hours total/week), producing annotations/summaries for five (5) instrument files.
 - In week 20, you will Curate the Documents file for 2 instruments, working in conjunction with other students. Working with the other people assigned to the same instruments, distribute the workload so each student spends 1 hour on each file (1 hour/file x 2 files = 2 hours, total).

Seminar Topic Schedule (subject to change):

Week	Seminar Topic	Notes
11 (Jan. 8 – Jan. 14)	Overview	
12 (Jan. 15 – Jan. 21)	---	extra EM, no P/S
13 (Jan. 22 – Jan. 28)	Franck-Hertz; Speed of Light	
14 (Jan. 29 – Feb. 4)	Gyroscope; Mechanical Chaos	
15 (Feb. 5 – Feb. 11)	Faraday Rotation; Magnetic Domains	
16 (Feb. 12 – Feb. 18)	Quantum Analogs, Superconductivity/Magnetic Susceptibility	
17 (Feb. 19 – Feb. 25)	Microwave Interference; Physical Optics	
18 (Feb. 26 – Mar. 4)	---	extra EM, no P/S
19 (Mar. 5 – Mar. 11)	NMR; Fourier Methods	
20 (Mar. 12 – Mar. 18)	Overflow; Spring Planning; Wrap-up	meet Tue. not Thu.
Winter Conference (Mar. 19 – Mar. 25)	Conferences (Th, F)	

Instrument Assignment Schedule:

	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Key	Name
BB	A, B	I, J	L	K	J	I	H	A, B	A	Franck-Hertz
EL	C, D	K, L	E	L	K	J	I	A, B	B	Speed of Light
EV	E, F	A, B	F	E	L	K	J	C, D	C	Gyroscope
JG	G, H	C, D	G	F	E	L	K	C, D	D	Mechanical Chaos
JR	I, J	E, F	H	G	F	E	L	E, F	E	Faraday Rotation
KD	K, L	G, H	G	A	G	F	E	E, F	F	Magnetic Domains
KJ	A, B	I, J	C	B	A	G	F	E, F	G	Quantum Analogs
LJ	C, D	K, L	D	C	B	A	G	G, H	H	Superconductivity/Magnetic Susceptibility
PC	E, F	G, H	H	D	C	B	A	G, H	I	Microwave Interference
PS	G, H	E, F	I	H	D	C	B	G, H	J	Physical Optics
SD	I, J	E, F	J	I	H	D	C	I, J	K	NMR
SM	K, L	G, H	K	J	I	H	D	I, J	L	Fourier Methods
SS	A, B	I, J	L	K	J	I	H	I, J		
TS	C, D	K, L	E	L	K	J	I	K, L		
VT	E, F	I, J	F	E	L	K	J	K, L		
ZR	G, H	K, L	G	F	E	L	K	K, L		

Evergreen Learning Goals:

- Articulate and assume responsibility for your own work.
- Participate collaboratively and responsibly in our diverse society.
- Communicate creatively and effectively.
- Demonstrate integrative, independent, critical thinking.
- Apply qualitative, quantitative and creative modes of inquiry appropriately to practical and theoretical problems across disciplines.
- As a culmination of your education, demonstrate depth, breadth and synthesis of learning and the ability to reflect on the personal and social significance of that learning.

Relevant Program Learning Goals:

- Strive to create an intentionally inclusive and anti-bias learning environment that is attentive to and supportive of the unique gifts and background of each student with the goal of equitable outcomes for all.
- Improve your ability to articulate and assume responsibility for your own work.
- Strengthen your collaborative skills and the ability to respond in useful ways to the work of colleagues.
- Improve your skills in clear communication of mathematical and scientific ideas, both orally and in writing.
- Improve your reading of technical texts to develop conceptual understanding and procedural skills.
- Develop and utilize increasingly sophisticated mathematical models that describe and explain physical systems.
- Gain a survey exposure to a variety of advanced physics lab experiments and apparatus that covers some of the breadth of physics, while developing insight into the fundamental interplay between the experimental, computational, and theoretical aspects of physics.