

UNIVERSITY of HOUSTON

*teach*HOUSTON

CUIN 4342/Phys 4342: Science By Inquiry

“What you have been obliged to discover for yourself leaves a path in your mind that you can use again when the need arises.” (G.C. Lichtenberg)

Instructor: Dr. Paige Evans Office phone: (713) 743-3993 e-mail: pevans@uh.edu	Office: 304C Farish Hall Office Hours: Mon. 10:00 – 11:00 a.m.; 1:00-2:30 p.m. Wed. 10:00 – 11:00 a.m.; 1:00-2:30 p.m. (or by appointment)
Class Room: 208 Farish Hall	Class Time:

Attendance Policy

The work in this course is largely hands-on and will be done in groups. Therefore it is mandatory that you attend class sessions as arranged. In the case of an excused absence (documented University business, illness, family or personal emergency, religious observances), please contact the instructor and your partners as soon as possible, preferably in advance, to arrange a makeup session. Unexcused absences will result in loss of credit.

University of Houston ADA Statement

UH adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. Students with disabilities should register with Disabled Student Services and contact instructor(s) in a timely manner for appropriate accommodations. For students wishing special accommodations for tests and assignments, please contact the Center for Students with Disabilities at 713-743-5400.

Course Goals

- Students will develop a deeper conceptual understanding of targeted concepts from the physical science curriculum, and create a coherent conceptual model of the target content topics.
- Students will learn to reflect on and characterize their own learning and that of others.
- Students will experience this content through a process of guided inquiry and develop an understanding of how the process of inquiry interacts with student learning.
- Students will develop an understanding of what is meant by pedagogical content knowledge and enhance and characterize their own pedagogical content knowledge in physical science.
- Students will become familiar student difficulties in learning particular topics in physical science, and the effectiveness of various modes of teaching and learning to overcome these.

Text

Physics by Inquiry (McDermott and the University of Washington PEG), available at the University Bookstore; readings posted on Blackboard; homework posted on Blackboard.

Course Grade

Performance in the course will be assessed on the basis of

- (1) Oral assessments (checkouts) (10%)
- (2) Homework (25%)
- (3) Paper (25%)
- (4) Midterm (15%) & Final Exam (25%)

Notebook

You will need to keep a journal of your observations about your work with summaries of important results. This journal will not be graded, but is an important resource for your reflection paper and should serve as a guide to organize your thinking and help you study for exams.

Oral Assessments

Certain key experiments and exercises direct you to have your responses checked. Discuss the relevant issues with your partners and prepare a written response. After reviewing it and discussing portions of your response with you, a staff member will either give your response a check (✓) or will ask you to revise your response. In general, you should not proceed to the next experiment or exercise until you have been “checked off.”

Homework

Homework will be assigned weekly. It will consist of solving, and explaining your solution to, a series of problems, responding to questions or discussing a paper that you have read. Homework will be evaluated for grammar, spelling, punctuation, and clarity of thought as well as for the physics discussed. Homework problems will be graded on a scale of 1 (must be revised and resubmitted) to 4 (excellent). Failure to turn in homework assignments will significantly lower your grade.

Paper and Essay Assignments

This course is designed to promote reflection on learning and understanding. A great deal of emphasis is placed on your ability to provide a written discussion of the concepts you are studying, as well as the reasoning you use to arrive at your conclusions. A paper and several essay assignments will be given during the course. A description of each paper assignment, with a scoring rubric, will be distributed separately. All work on papers should be done individually. Any material that you include that is not in your own words must be cited clearly as to its source. Likewise, you should give credit for ideas that originate from another source. Using another person’s words or ideas without due credit is plagiarism and is a violation of University rules.

Academic Dishonesty

The *UH Student Handbook* defines academic dishonesty as “employing a method or technique or engaging in conduct in an academic endeavor that the student knows or should know is not permitted by the university or a course instructor to fulfill academic requirements.” Note that academic dishonesty can take various forms, from cheating on an exam, to assisting someone else in cheating, and presenting someone else’s written material as your own. For more

information on the university's policy, especially addressing plagiarism, please visit (<http://www.uh.edu/academics/catalog/policies/academ-reg/academic-honesty/index.php>).

SCHEDULE (WILL BE ADJUSTED ACCORDING TO ACTUAL PROGRESS AND SEMESTER)

DAY	ACTIVITIES	HW DUE
(1)	PBI VOL.2, ELECTRIC CIRCUITS 1.1-1.11	
(2)	PBI VOL.2, EC 2	EC 1.12-1.14, P.494 1.3
(3)	PBI VOL.2, EC 3.1-3.4	P.495, 2.1-2.3
(4)	PBI VOL.2, EC 3.5- 3.10	READING: BROWN, SLATER & ADAMS
(5)	PBI VOL.2, EC 4.1- 4.6	P.496 3.1-3.5
(6)	PBI VOL.2, EC 4.7 – 4.9	P. 499, 4.1-4.2
(7)	PBI VOL.2, EC 5.1 – 5.5	P. 499 4.3-4.4, EC 4.10-4.11, P.501 4.5
(8)	PBI VOL.2, EC 5.6 – 5.9	P. 502 5.1, 5.2, 5.4
(9)	PBI VOL.2, EC 6	RESUBMITTED PROBLEMS
(10)	PBI VOL.2, EC 7.1- 7.5	MCDERMOTT & SHAFFER , P. 503 5.5 - 5.7
(11)	PBI VOL.2, EC 7.6 – 7.11	P. 504 6.1-6.3
(12)	PBI VOL.2, EC 8.1-8.12	P. 505 7.1-7.4
(13)	REVIEW	EC 7.12-7.16, PAPER DRAFT
(14)	ELECTRIC CIRCUITS MIDTERM	
(15)	KINEMATICS: DESCRIPTIONS OF MOTION	PAPER DUE
(16)	KINEMATICS: CONSTANT VELOCITY	KIN 2.1-2.7
(17)	KINEMATICS: CONSTANT VELOCITY	PRESENTATIONS
(18)	KINEMATICS: CHANGING VELOCITY	HANDOUT
(19)	KINEMATICS: CHANGING VELOCITY	HANDOUT
(20)	KINEMATICS: CHANGING VELOCITY	PRESENTATIONS
(21)	TASK INTERVIEWS/ PBI VOL.1 LIGHT & COLOR 1	
(22)	TASK INTERVIEWS/ PBI VOL.1 L&C 2: MASKS & SCREENS	
(23)	PBI VOL.1 L&C 2: MASKS & SCREENS	ESSAY ASSIGNMENT
(24)	PBI VOL.1 L&C 3: PINHOLE CAMERAS	PBI V.1, P.259, 1.1-1.3
(25)	PBI VOL.1 L & C 4: SHADOWS	READING: TBD
(26)	PBI VOL.1 L&C 5,5: PIGMENTS & COLORED LIGHT	
(27)	REVIEW	
(28)	FINAL EXAM	