

**The Fleet - UCSD - SDCC Independent Study of Fluid Mechanics and Sound  
Fall 2002**

**Class Title:** Real-world Physics

**Meeting Time:** Thursdays 4:00p-6:00p (tentative)

**Location:** The Science Center Classroom/Galleries

**Class Instructor:** Dr. Murugesan

**Instructor's Office:** M210 City College

**Office Hours:** \_\_\_\_\_

**Contacts:**

Dr. Poovan Murugesan

Dr. Noah Finkelstein 858 534 7198

Dr. Edward Price

Rafi Hanna Interpreter Lead

Paul Siboroski Exhibits Director

SDCC Instructor for the class

UCSD contact ([nfinkels@ucsd.edu](mailto:nfinkels@ucsd.edu))

UCSD Contact ([edward@physics.ucsd.edu](mailto:edward@physics.ucsd.edu))

R H Fleet ([rhanna@rhfleet.org](mailto:rhanna@rhfleet.org))

RH Fleet ([PSiboroski@rhfleet.org](mailto:PSiboroski@rhfleet.org))

UCSD Grad Students ask 'em A bunch of students to run the class

**Schedule:**

Week 1: 9/26 (1) **Introduction, Science and Perception:** Ed Price / Noah Finkelstein

Week 1: 10/3 (2) **Introduction to Fluids** Sean

Week 1: 10/10 (3) **Dynamics** - Mark

Week 1: 10/17 (4) **Turbulence** Megan

Week 1: 10/24 (5) **Applications of Fluid dynamics** –Jason ([pick indep. study area](#))

Week 1: 10/31 (6) **Into waves/ sound ... propagation of sound** - Phil

Week 7: 11/7 (7) **Dynamics / Applications of Waves**- Brian ([pick grad advisor; 1 paragraph project description due](#))

Week 8: 11/14 (8) - **standing waves / music / resonance** - Adam

Week 9: 11/21 (9) – **Sampling** - / **alias** / **mathematical reps** - Nobu

Week 10: 11/28 (10) – indep. study

Week 11: 12/5 (11) – indep. study

Week 12: 12/12 (12) – indep. Study

Week 13: 12/19 (13) - **Final projects due.** Presentations this week or in January.

**About the Class:**

Welcome to CUSP. This class is offered to a select few students attending City College and local high schools. You will have the opportunity to study the real world science of Fluid Mechanics and Waves/Sounds. The Science Center will serve as your classroom and textbook (along with notes developed and handed out by your graduate student advisors). Any questions you have regarding the class or the content can be directed towards the people under the 'Contacts' list.

The class will meet once a week at the Science Center. The first half of the class (Weeks 1-9) will be comprised of workshops wherein a graduate student from UCSD will teach the designated topic. Each week homework will be assigned and collected. The second half of the course (Weeks 6-13) you will create a final project based on your interests in the exhibits and workshops. This class is designed to be rewarding and fun. The outcome, however, will largely depend upon your participation.

**Resources:**

You have an ENORMOUS number of resources at your disposal. Take advantage of them. In addition to three faculty members (SDCC and UCSD), seven graduate students and Fleet staff will help guide you through the class.

If you are stuck on a topic, troubled by homework, or curious about the projects talk to one of us. As will be discussed in class, student projects (individual or group) will be guided by one of the graduate instructors. You will do the work, but they will serve to help you answer questions, obtain materials, etc.

**Homework**

Each week you will be assigned homework. The homework is designed to give you an opportunity to wrestle with the concepts presented. The homework is centered around exhibits at the Fleet and will require you to spend time on the floor playing with the exhibits. The homework will be handed out on Thursdays and one copy of your homework must be handed in (to Rafi Hanna) on the following Monday evening. On Tuesdays a solution set will be posted on the web (probably at <http://lhc.ucsd.edu/cusp>). The following Thursday you will be expected to hand in your corrected version of your homework. The first 10 minutes of the workshop will be dedicated to covering your prior week's homework. Your homework will be graded predominantly on effort and attempt to solve the problems. That is, if you are stuck on a problem, get help. If you still are unable to complete the problem, write out what your thinking process is about the problem, where and why you got stuck, and what you need to learn / work through in order to solve the problem. Hand ONE COPY of your homework on Monday by 5pm. Then between Tuesday and Thursday, for those problems that you do not complete, you are expected to work through the solutions that were presented on the web and hand in a final version.

**Facilitation**

As a participant in this course, you are expected to work on the floor as an interpreter. Depending upon how many hours per week you work, you may be eligible for SDCC service-learning credit, in addition to the independent study credit for your work in the workshops and final project.

**Grading:**

“Real-world Physics” is graded pass/no pass and is worth 1 or 2 units of credit at City College.

Your grade will be based on the following criteria.

Attendance 10%

Homework 20%

Participation 30%

Final Project 40%

*Attendance* is necessary for any class, and this one is no different. If you miss more than two workshops, you will not pass the class. If you **MUST** be absent, notify Rafi H. who will coordinate make-up information / work. Your *participation* in the workshops and with your final projects are key to this course. You should plan on coming to each workshop ready to participate and discuss the wonderful world of science. More information will be given to you regarding the *final project*, but know that the last half of the class will be devoted to creating some project (a research paper, a model or other demo, etc.). This project will be based on some aspect of the class and the exhibits in the Science Center.

Weekly you should check in with Dr. Murugesan – he will make a point of coming to some of the workshops. Ask questions, report progress, or simply say hello.