



# Project ASTRO Workshop Handbook

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Astronomical Society of the Pacific

July 2009

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This handbook is intended to facilitate a smooth launch for newly formed Project ASTRO partnerships. The Project ASTRO Workshop Handbook is organized into the following sections:

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### Welcome Partners!

It's been a pleasure working with you to establish your participation in Project ASTRO for the 2009-10 school year. At the Astronomical Society of the Pacific, we have discovered an enormous interest in Project ASTRO in the educational and astronomical communities. We are very pleased that you will be playing a key role in the project and contributing to the advancement of astronomy and science education.

There are many new and exciting discoveries in astronomy we hear about every year. We develop methods and activities to help you explain these scientific advances to your students, as well as some of the fundamentals. Bay Area Project ASTRO evolves with California Science Standards, and also with emerging science, to make it easier for you to teach the relevant information that students are most curious about.

We are always happy to hear from you, so if you ever have any ideas, suggestions, problems, or good news for us, please feel free to let us know. We are here to help you.

I look forward to meeting you at the workshop.

Best regards,

Allyson Clark, Bay Area Coordinator  
Project ASTRO

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## Introduction

### About Project ASTRO

Project ASTRO is an innovative science education program of the nonprofit Astronomical Society of the Pacific (ASP). The ASP is an international organization of professional and amateur astronomers, science educators of all levels, and people who want to know more about our amazing universe. Founded in 1889 in San Francisco and still located there today, the ASP has members nationwide and in 70 countries around the world.

Project ASTRO is designed to bring about long-term partnerships between teachers and visiting astronomers. We conduct a training workshop before the school year and provide ongoing support to help our partners excite and inspire students through hands-on, inquiry-based activities that put them in the position of acting like scientists – as they come to understand more about the universe, and science in general.

Project ASTRO in the Bay Area alone provides astronomy education to over 5,000 students in the classroom annually. While the Bay Area was the first Project ASTRO site, it has since expanded to 15 sites nationwide, reaching over 23,000 students each year across the country!

### Getting Started

As a Project ASTRO participant, you have agreed to include astronomy in your classroom curriculum during the 2009-2010 school year. We strongly encourage your partnership to begin teaching astronomy in the fall in order to sustain momentum and enthusiasm from the workshop. If you cannot start astronomy in the fall, we ask that you arrange at least one school visit for the volunteer astronomer during the fall so they can meet the students and become familiar with the classroom and school. Also consider integrating astronomy projects into other subjects as a tool and introduction in which the astronomer can participate. Part of your workshop will be devoted to developing mutually acceptable time schedules.

### Follow-up

We plan to offer a variety of follow-up activities during the school year for all Project ASTRO participants. Your input and ideas are always welcome. Some of these activities may include:

- ☆ Annual end of the year Partner Appreciation Event
- ☆ Project ASTRO newsletter emails
- ☆ Updates on latest astronomical discoveries
- ☆ Invitations to local astronomy events and lectures
- ☆ Access to the Bay Area Project ASTRO lending library
- ☆ Public relations and publicity events



### Project ASTRO Workshop

Project ASTRO requires our newly formed partnerships to attend the summer training workshop because it is a critical component to your success during the school year.

Our partners meet first thing Friday morning, then work together throughout the two days. You will learn and do hands-on astronomy activities appropriate to the grade level you will be working with, so dress casually. You will also become more familiar with Bay Area astronomy resources and have time to plan your partnership activities for the coming year. This is also a fantastic opportunity to meet and network with a great group of educators and astronomers assembled at the workshop.

**Please attend both days and be on time — we have two extraordinary days planned!**

#### Workshop Goals

- ☆ Learn about and do hands-on astronomy activities
- ☆ Learn about student reasoning and common student preconceptions in astronomy
- ☆ Become familiar with resources in astronomy education
- ☆ Meet and develop a school-year plan that works for your partnership

#### Workshop Details

- ☆ Friday August 7<sup>th</sup> & Saturday August 8<sup>th</sup>
- ☆ 9:00am – 4:30pm
- ☆ San Mateo County Office of Education in Redwood City, CA
- ☆ No charge
- ☆ Continental breakfast and box lunch provided – both days
- ☆ Dress casually for hands-on activities and your comfort during training
- ☆ ATTENDANCE is REQUIRED!

#### What to Bring

- ☆ 3-ring binder for your free copies of *The Universe at Your Fingertips* and *More Universe at Your Fingertips*. Altogether these books total over 1,100 pages, so you will need a 4” binder. If you prefer to have two smaller binders, then two 3” binders will also work.
- ☆ Calendar / Date book for planning and scheduling school year visits
- ☆ Astronomers: TB test results, if you have not sent to us previously
- ☆ Teachers: Principal approval, if you have not sent to us previously
- ☆ Teachers: \$100 check for SFSU credit registration, if interested in academic credit



## Directions to Workshop

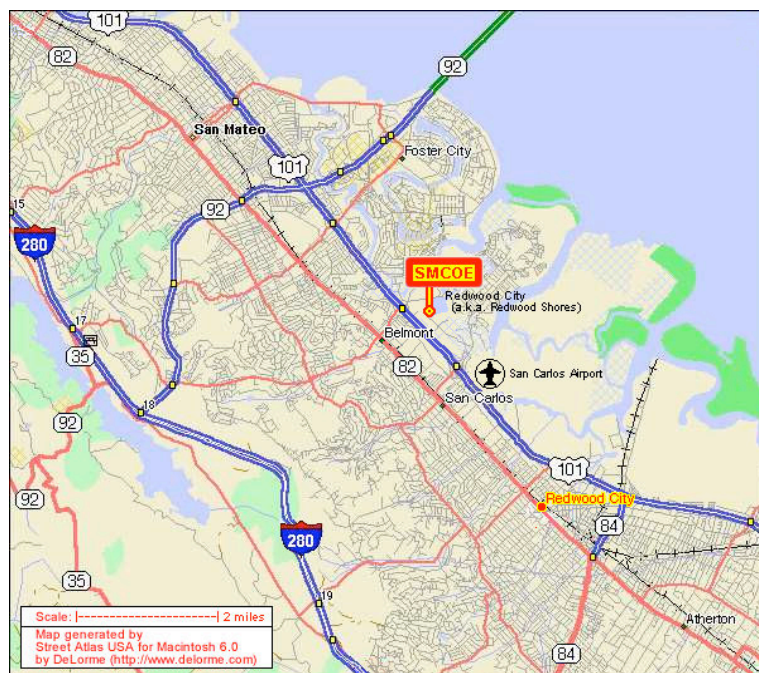
San Mateo County Office of Education  
101 Twin Dolphin Drive  
Redwood City, CA 94065  
Tele: 650-802-5300  
[www.smcoe.k12.ca.us](http://www.smcoe.k12.ca.us)

### ★ From 101 Northbound

- Take the Ralston Ave/Belmont off ramp (There are two exits from this off ramp: Marine World Parkway or Ralston Ave)
- Take the Marine World Parkway exit, which puts you onto Marine World Parkway
- Turn right onto Twin Dolphin Drive
- Turn left onto Lagoon Drive, which will be the first stoplight
- The SMCOE building is on the corner of Twin Dolphin Drive and Lagoon Drive; Turn right into the SMCOE parking lot

### ★ From 101 Southbound

- Take the Ralston Ave/Belmont off ramp (There are three exits from this off ramp: Marine World Parkway, Ralston Ave and Harbor Boulevard)
- Take the Marine World Parkway exit, which puts you onto Marine World Parkway
- Turn right onto Twin Dolphin Drive
- Turn left onto Lagoon Drive, which will be the first stoplight
- The SMCOE building is on the corner of Twin Dolphin Drive and Lagoon Drive; Turn right into the SMCOE parking lot





## Workshop Agenda

### DAY ONE: Friday, August 7, 2009

- 9:00 – 9:30      **Registration and continental breakfast**
- 9:30 – 9:45      **Welcome** – Workshop Overview and Introductions  
Allyson Clark, Project ASTRO Coordinator
- 9:45 – 10:15     **Ice Breaker**
- 10:15 – 10:35    **Student Learning: Video** – *A Private Universe*  
Produced by Matthew Schneps and the Science Media Group of the  
Harvard-Smithsonian Center for Astrophysics  
Introduced by Andrew Fraknoi, Chair, Astronomy Program, Foothill College
- 10:35 – 10:45    **Break**
- 10:45 – 11:00    **Discussion** – *A Private Universe* and the Reasons for the Seasons  
Andrew Fraknoi
- 11:00 – 12:00    **Activity 1** – Pocket Solar System  
**Activity 2** – Worlds in Comparison  
Activities designed to illustrate the distances and sizes in our solar system.  
Suzanne Gurton, Education Manager, Astronomical Society of the Pacific
- 12:00 – 1:00     **Lunch with your Partner**
- 1:00 – 2:00      **Activity 3** – Tourist Tour of the Solar System:  
Where Bill Gates' Great-Great Grand-daughter Will Go for Her Honeymoon  
Andrew Fraknoi
- 2:00 – 2:40      **Guest Speaker** – Brian Day, Educational Technology Technical Lead,  
NASA Ames Research Center  
Crashing the Moon: Lunar Crater Observation and Sensing Satellite  
(LCROSS) Project
- 2:40 – 2:50      **Break**
- 2:50 – 3:15      **Activity 4** – Make a Model Comet  
Suzanne Gurton
- 3:15 – 3:45      **Mining the Universe at Your Fingertips: A Treasure Hunt** Andrew Fraknoi
- 3:45 – 4:20      **Partner Planning**
- 4:20 – 4:30      **Closing, Homework, Preview of Saturday**



## Workshop Agenda

### DAY TWO: Saturday, August 8, 2009

- 9:00 – 9:30      **Continental breakfast**
- 9:30 – 10:30      **Guest Presenter** – Celeste Burrows, Astronomy Instructor, Chabot Space and Science Center  
**Activity 5** – Modeling Moon Phases
- 10:30 – 11:10      **(Brief) Field Trip to RAFT / Break**
- 11:10 – 11:45      **Partner Panel Discussion** – Active Project ASTRO Partners
- 11:45 – 12:00      **Discussion** – How to Plan the First Classroom Visit
- 12:00 – 1:00      **Lunch and Partner Planning**
- 1:00 – 1:20      **Activity 6** – Astronomy in the Marketplace  
Andrew Fraknoi
- 1:20 – 2:00      **Discussion** – Project ASTRO Roles & Concerns (The First Date Talk)  
Andrew Fraknoi & Suzanne Gurton
- 2:00 – 2:10      **Break**
- 2:10 – 3:00      **Activity 7** – Create Constellations (and other Sky Activities)  
Suzanne Gurton
- 3:00 – 3:20      **Partner Planning for the School Year**  
Andrew Fraknoi
- 3:20 – 3:30      **Project ASTRO Resources**  
Suzanne Gurton
- 3:30 – 4:00      **Q&A**  
Andrew Fraknoi & Suzanne Gurton
- 4:00 – 4:30      **Closing Remarks / Prizes**



## Appendix A

### TB Screening Requirement - Astronomers

Working with children requires some extra caution on the part of volunteers and volunteer providers. Project ASTRO screens all applicants and also requires proof of a negative TB test in order to work in the classroom. This is a California law.

This test is usually covered by insurance companies and only takes a few minutes to perform. If you do not already have proof of this test, contact your health care provider for the closest testing clinic to you. Most colleges and universities require this test as well and provide free or minimal cost screening. The results are good for four years after the test date. If you do not have insurance or it is not covered, the following public health providers offer testing services in your area:

| East Bay   | San Francisco  | South Bay   |
|--|--|---|
| Eastmont Wellness Center<br>Oakland<br>(510) 567-5700        | Dept of Public Health, Center<br>Numbers 5 & 10<br>(415) 554-2625 for info | Hillsdale Immediate Care<br>San Mateo<br>(650) 570-2273     |
| City of Berkeley Health Clinic<br>Berkeley<br>(510) 981-5350 | Mission Neighborhood<br>Health Center<br>(415) 552-3870                    | MayView Comm. Health Ctr<br>Palo Alto<br>(650) 327-8717     |
|  | Castro Mission Health Center<br>(415) 487-7500                             | MayView Comm. Health Ctr<br>Mountain View<br>(650) 965-3323 |
| Marin  |  |   |
| Marin Immunization Center<br>San Rafael<br>(415) 473-6888    | Chinatown Public Health Ctr<br>(415) 364-7600                              | Fair Oaks Clinic<br>Sunnyvale<br>(408) 792-5200             |
|  | Haight Asbury Free Clinic<br>(415) 487-5632                                | Santa Clara Dept. of Health<br>San Jose<br>(408) 792-5200   |
|  |  | East Valley Clinic<br>East San Jose<br>(408) 254-6440       |

**It is very important that you fax us a copy of your test results or bring a copy to the training workshop by August 8th. You will not be able to enter a classroom without this on file.**

Even if you have been volunteering in the classroom previously, it is *imperative* that we have this on file for our records. If you have given us one within the last four years, you do not have to do this again.

Thank you for your understanding.



## Appendix B

### Administrator Support Form – Teachers

Please bring this to the workshop if you have yet to complete and submit to the ASP.

Administrator support leads to more successful partnerships. Please have the appropriate administrator in your school or district, or Executive Director, certify support for your participation in Project ASTRO by completing and signing below.

#### Administrator Support (Required)

I will support the participation of (applicant) \_\_\_\_\_ in project ASTRO, including allowing him/her to spend Friday, August 7<sup>th</sup> away from the classroom to attend the first day of the training workshop. (The school will take financial responsibility for any costs incurred for substitute teachers, if applicable.) I understand that a local astronomer will be visiting our school/organization.

Our school/organization will contribute \$\_\_\_\_\_ (\$45 recommended) to cover registration and materials for the 2-day workshop.

**NOTE:** No one will be excluded because of lack of funds, but contributions to help our project are appreciated.

*If your school/organization would like to contribute funds to the program, please make the check to the Astronomical Society of the Pacific, and either fax to our office or bring it to the August workshop. Thank You.*

Signature:

Date:

Tele:

Name: (print)


Title:



# Appendix C

## SFSU Academic Credit Registration Form – Teachers

Copies of this form will be available at the workshop.



**COLLEGE OF  
EXTENDED LEARNING**  
SAN FRANCISCO STATE UNIVERSITY  
www.cel.sfsu.edu

**REGISTRATION WORKSHEET/FORM**  
Use this form  
• to register in person  
• as a staff-assisted phone registration worksheet

TERM: Winter Spring Summer Fall 20\_\_

Please print clearly in black or blue ink.

SFSU Identification Number \_\_\_\_\_

Last Name \_\_\_\_\_

Address — Number, Street and Apartment if applicable \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Email Address: \_\_\_\_\_

Phone Numbers:  
Day Area Code \_\_\_\_\_ Number \_\_\_\_\_  
Evening Area Code \_\_\_\_\_ Number \_\_\_\_\_

Date of Birth: \_\_\_\_\_ Month \_\_\_\_\_ Day \_\_\_\_\_ Year \_\_\_\_\_

Social Security Number (New Students Only) \_\_\_\_\_

First Name \_\_\_\_\_

Other Name /ID Number Used at SF State \_\_\_\_\_

Middle Initial \_\_\_\_\_

\_\_\_\_\_ Ethnic Code (see code list below)

(Your voluntary response to this question is requested so that we may comply with the Federal Civil Rights Act of 1964 and the California Title IX Education Amendment of 1972.)

**Ethnic Codes**

|                                      |                      |
|--------------------------------------|----------------------|
| 1 American Indian or Alaskan Native  | K Korean             |
| 2 Black Non-Hispanic                 | S Southeast Asian    |
| 3 Mexican-American, Mexican, Chicano | 5 Other Asia         |
| A Central American                   | 6 Pacific Islanders  |
| B South American                     | 7 White Non-Hispanic |
| 4 Other Hispanic                     | F Filipino           |
| C Chinese                            | 8 Other              |
| J Japanese                           | D Declined to state  |

| Schedule Number | Course Abbreviation & No. | Section | Title                            | Units | Fee   | Instructor's Approval Signature<br><small>required after course has begun</small> |
|-----------------|---------------------------|---------|----------------------------------|-------|-------|---|
| 94813           | ASTR 600                  |         | Teaching Astronomy<br>Grades 3-9 |       | \$100 |   |
|                 |                           |         |                                  |       |       |   |
|                 |                           |         |                                  |       |       |   |
|                 |                           |         |                                  |       |       |   |
|                 |                           |         |                                  |       |       |   |
| Total           |                           |         |                                  |       | \$    |   |

**Type of Payment**

Money Order(s)     Subsidy — see policies section at [www.cel.sfsu.edu](http://www.cel.sfsu.edu)     Check(s) — must be bank imprinted with account holder's name and address.

Employer or Agency \_\_\_\_\_    Make checks payable to SFSU COLLEGE OF EXTENDED LEARNING or SFSU CEL.

Check # \_\_\_\_\_    Acct. holder \_\_\_\_\_

No cash accepted

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I agree to abide by the academic, payment & refund policies governing these courses as printed in this catalog. If my payment by check or credit card is not paid by the bank, I am still responsible for all course fees. I authorize the College of Extended Learning to change my record, if necessary, to reflect the above information. Refund checks must be requested by calling the College of Extended Learning during office hours before the day the class begins.

Signature \_\_\_\_\_    Date \_\_\_\_\_

For information concerning special services to accommodate a physical, perceptual, learning, or other disability, please contact the Disability Programs & Resource Center on the SF State main campus at (415) 338-2472 voice/TTY.  
COLLEGE OF EXTENDED LEARNING REGISTRATION, San Francisco State University, 1600 Holloway Avenue, San Francisco, CA 94132-4160