

**Physical and Earth Science Study Session and Laboratory**  
**Tuesday 11:00 am - 3:00 pm**  
 (Lunch break between 12:30 - 1:30 pm)  
 Instructor: Dr. Steve Yoshinaga

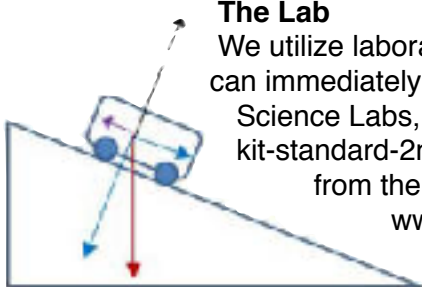
**One-Stop Shopping: A Class and Lab Bonded Together**

**Hard Work is Required, But It's Worth it**

This class will prepare students for the rigors of high school chemistry and biology. Time should be made available for reading the chapter, reading the lab handout, and doing the problems each week. A prudent student will allow for an additional 1-2 hours a week for this homework. In this course, your student will have the opportunity to develop study habits and the skills that will give them confidence in science. We will follow the Physical Science with Earth Science textbook from Glencoe (2009). There will be 31 weeks over 4 sessions. That's over hours of exploring natural laws!

**The Lab**

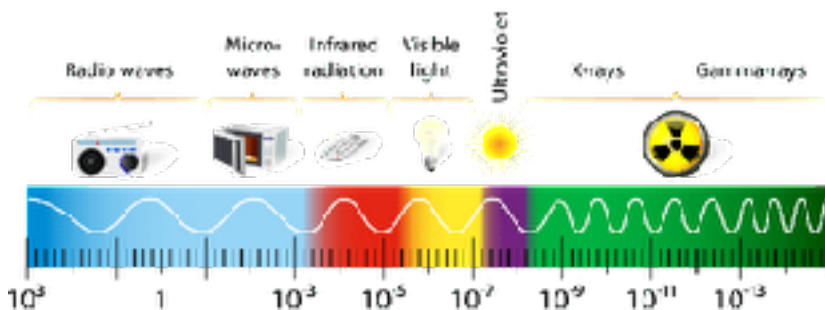
We utilize laboratory kits. The labs are coordinated with the study sessions so the students can immediately connect theory with practice. We will use the laboratory kit from Quality Science Labs, LLC (<http://www.qualitysciencelabs.com/physical-science-labs/microphysci-kit-standard-2nd-edition/>). In addition, the lab component includes 5 biotechnology labs from the Amgen Biotechnology Experience (<https://www.amgenbiotechexperience.com>). Students are expected to be prepared for each lab by reading the handout for the week. Reports will be required for several of the labs.



**Fees and Registration**

The fee is \$250 for the first 7-week course. These fees are paid to CRPD during registration starting August 28. You can pay online or at the Teen Center. There is also an annual, one-time, lab fee of \$75. It is paid directly to the instructor. Contact the instructor, Dr. Steve Yoshinaga ([steve@skybay.us](mailto:steve@skybay.us)), to get on the list if you haven't already done so. If you are on the list, you have reserved a spot.

**THE ELECTROMAGNETIC SPECTRUM**



**Instructor**

This class is taught by Steve Yoshinaga, Ph.D. in Molecular Biology. Dr. Steve was a research scientist and has published in some of the world's top research journals. He led a successful project team in the development of an immune cell modulator that is presently in clinical trials. He has taught molecular science to young students for the past 14 years. Helping "Visualize the Molecular World" is his mission. When you can visualize this wonderful molecular world, you are one step closer to uncovering its mysteries.

# Physical Science 2018-19

## Tentative Topics (Chapter) Laboratory

### Session 1 9052-4181 \$250

|      |  |   |
|------|--|---|
| 8/28 | <i>The Nature of Science (1, 2)</i>          | <i>Units, Measurements &amp; Safety</i>   |
| 9/4  | <i>The Dimensions of Science</i>             | <i>Molecule Making</i>                    |
| 9/11 | <i>Motion &amp; Dimensional Analysis (3)</i> | <i>Density</i>                            |
| 9/18 | <i>Laws of Motion (4)</i>                    | <i>Motion</i>                             |
| 9/25 | <i>Energy (5)</i>                            | <i>Acceleration</i>                       |
| 10/2 | <i>Work &amp; Machines (6)</i>               | <i>Newton's Second Law &amp; Friction</i> |
| 10/9 | <i>Earth-Moon-Sun (7)</i>                    | <i>Levers and Pulleys</i>                 |

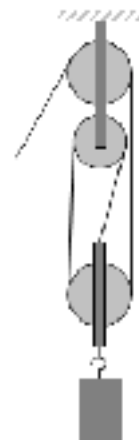
### Session 2 9052-5181 \$250

|                             |  |  |
|-----------------------------|--|--|
| 10/23                       | <i>Solar System (8)</i>                | <i>Energy</i>                              |
| 10/30                       | <i>Molecular Biology</i>               | <i>Amgen Lab 1: Volumetrics &amp; Gels</i> |
| 11/6                        | <i>Heat &amp; States of Matter (9)</i> | <i>Amgen Lab 2: Restriction Digest</i>     |
| 11/13                       | <i>Waves (10)</i>                      | <i>Amgen Lab 3: Protein Purification</i>   |
| 11/27                       | <i>Intro Sound &amp; Light (11)</i>    | <i>Work and Power</i>                      |
| 12/4                        | <i>Earth's Internal Processes (12)</i> | <i>Specific Heat of Metals</i>             |
| 12/11                       | <i>Electricity (13)</i>                | <i>Sound Waves</i>                         |
| <i>No class on 12/18/18</i> |  |  |

### Session 3 9052-1191 \$320



|      |  |  |
|------|--|--|
| 1/15 | <i>Polymerase Chain Reaction</i>       | <i>Electric Circuits</i>                 |
| 1/22 | <i>Magnetism (14)</i>                  | <i>Magnetism</i>                         |
| 1/29 | <i>Electromagnetic Radiation(15)</i>   | <i>Plane Mirrors/Lenses</i>              |
| 2/5  | <i>Energy Resources (16)</i>           | <i>Chemical Reactions</i>                |
| 2/12 | <i>Weather (17)</i>                    | <i>Making Weather</i>                    |
| 2/19 | <i>Polymerase Chain Reaction (PCR)</i> | <i>Amgen PCR Lab 1: The PCR Reaction</i> |
| 2/26 | <i>Classification of Matter(18)</i>    | <i>Amgen Lab 2: Electrophoresis</i>      |
| 3/5  | <i>Atoms &amp; Periodic Table (19)</i> | <i>Molecule Game</i>                     |
| 3/12 | <i>Earth Materials (20)</i>            | <i>Treasure Hunt</i>                     |



### Session 4 9052-2191 \$285

|      |   |   |
|------|---|---|
| 3/26 | <i>Earth's Changing Surface (21)</i>      | <i>Rock Cycle</i>                             |
| 4/2  | <i>Chemical Bonds (22)</i>                | <i>DNA Extraction/DNA Modeling</i>            |
| 4/9  | <i>The Art of Science</i>                 | <i>Functional Groups Modeling</i>             |
| 4/30 | <i>Chemical Groups</i>                    | <i>More Chemical Reactions</i>                |
| 5/7  | <i>Chemical Reactions (23)</i>            | <i>pH &amp; pH Indicators</i>                 |
| 5/14 | <i>Solutions, Acids, &amp; Bases (24)</i> | <i>Comparing Antacids/Milk of Magnesia-pH</i> |
| 5/21 | <i>Nuclear Changes (25)</i>               | <i>Modeling the Universe</i>                  |
| 5/28 | <i>Stars &amp; Galaxies (26)</i>          | <i>Best of Physical Science</i>               |

