Physics In And Through Cosmology

| **Monday July 9** | **Tuesday July 10** | **Wednesday July 11** | **Thursday July 12** | **Friday July 13** |
|---|---|---|---|---|
| **History and Structure of Universe** | **History Structure of Universe** | **Evolution of the Universe** | **Evolution of the Universe** | **Standard Model of Particles and Interactions** |
| 8:30 Welcome and Orientation (50Aud)<br>Ice breaker | Warm up (50 Aud)<br>Objects in Universe | Warm up (7-211)<br>CMB Color Code | Warm up (50 Aud)<br>Trey Jalbert - Red Shift Light Sources | Warm up (50 Aud)<br>Misconceptions |
| 9:00 The CMB Story (50 Aud)<br>George Smoot | Tour of the Universe (50 Aud)<br>Nao Suzuki | Gravitational Lensing (7-211)<br>Catherine (Mia) Ihm<br>Acceleration of Gravity – Vernier (Rollie) | Dark Matter and Dark Energy (7-211)<br>Nakhil Padmanabhan<br>50 Auditorium | The Standard Model of Fundamental Particles and Interactions<br>Stu Loken (50 Aud) |
| 11:00<br>Hands-On Universe<br>Rich Lohman<br>Bldg 7-211 | Hands-On Universe<br>Rich Lohman | Vernier – Gravity<br>Rollie Otto<br>Universe Adventure<br>Laurie Kerrigan | Sean Fottrell<br>Supernova's Age of the Universe, Hubble Constant and Acceleration (7-211) | Cosmic Ray Detectors<br>Sean Fottrell<br>Blg 6-2202 |
| 12:00 Lunch | Lunch | Lunch<br>Summer Lecture | Lunch | Lunch |
| 12:30 Rich Lohman<br>HOU Continued | Rich Lohman<br>HOU | Summer Lecture<br>Laurie Kerrigan – Tolet Paper record of History of Universe (50 Aud) | Glen Melnik – Relativity and Time Dialation (7-211) | Howard Matis – Cosmic Ray Detector Systematics (50 Aud) |
| 2:30 Wrap Up (2-100B)<br>Concept Map | Wrap Up (2-100B) | Rollie Otto – Black Body Spectrum, Heat and Temperature | Wrap Up (2-110B)<br>Laurie Kerrigan - Particle Chart Hand-Out | Wrap Up<br>LN Ice Cream - Rollie |
| 3:00 Planning meeting | Planning meeting | Planning meeting | Planning meeting | Planning meeting |

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Saturday July 14 – Optional Field Trip to Mt Diablo with Cosmic Ray Detectors (Howard Matis)

| **Monday July 16** | **Tuesday July 17** | **Wednesday July 18** | **Thursday July 19** | **Friday July 20** |
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| **Standard Model of Particles and Interactions** | **Evolution of Energy and Matter in the Universe** | **Chemical Evolution of the Universe** | **What's missing TBD** | **What's Next - Neutrinos** |
| 8:30 Warm Up (50 Aud)<br>Chantel Harley<br>Scavanger Hunt | Warm Up (50 Aud)<br>Jennifer Coughlin<br>Hands-On Radioactivity | Warm Up (50 Aud)<br>Jennifer Coughlin<br>Hands-On Radioactivity | Warm Up (50 Aud)<br>Laurie Kerrigan – Jeopardy (50 Aud) | Warm Up (50Aud)<br>Laurie Kerrigan – Jeopardy (50 Aud) |
| 9:00 Standard Model of Fundamental Particles and Interactions<br>Stu Loken | Energy Matter and Antimatter<br>(50 Aud)<br>Eric Linder | Nucleosynthesis<br>(Bldg 88)<br>Peggy McMahan | Big Bang and Hubble<br>Joe Hennawi<br>(50 Aud) | Neutrino Experiments<br>Kevin Lesko<br>(50 Aud) |
| 10:30 Cosmic Ray Detectors – Sean Fottrell (7-211) | Nuclear Science<br>Radioactive Decay, Isotopes (Bldg 88)<br>Jennifer Coughlin<br>Peggy McMahan | Nuclear Science<br>Radioactive Decay, Isotopes (Bldg 88)<br>Jennifer Coughlin<br>Peggy McMahan | Eric Linder taking questions. (50 Aud)<br><br>Student Teacher Team Time | Evaluate Final Concept Maps<br>Turn in 1 minute movie |
| 12:00 Lunch | Lunch | Lunch<br>Summer Lecture Series | Lunch | Lunch |
| 1:00 Cosmic Ray wrap up – Sean Fottrell<br>Introduce Group Project<br>Introduce Rubric<br>(50Aud) | Teacher Student Teams<br>Draft Concept Map<br>(50 Aud) | 1:30 pm<br>Teacher Student Teams<br>(50 Aud) | 1:30 pm<br>Brain Mendez – Topic<br>Teacher Student Teams<br>Final Concept Map | 1:30 pm<br>View 1 minute movies<br><br>Final Evaluation Foms |
| 2:30 Wrap Up<br>Rollie Otto -<br>Marshmallow Nuclei<br>- | Wrap Up<br>Rollie Otto<br>Uranium Bowl to Lead | Wrap Up (2-100B)<br>TBD | Wrap Up<br>TBD | Wrap Up<br>Program Assessment<br>Concept Map Comparison |
| 3:00 Planning meeting | Planning meeting | Planning meeting | Extended | Debrief |

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