## Online course W12

### The Planets

Astronomy & Earth and Planetary Science  
Summer session C 2012 (8 weeks)  
Instructors: Burkhard Militzer

<table>
<thead>
<tr>
<th>Week 1</th>
<th><strong>Our place in the Universe</strong> (Chapter 1)</th>
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<tbody>
<tr>
<td>L1</td>
<td>Introduction; tour of the solar system; outstanding questions; why study other planets?</td>
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<tr>
<td>L2</td>
<td>The scale of the universe; powers of ten: Grapefruit Sun.</td>
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**Discovering our solar system** (Chapters 2 and 3)

| L3     | Observing the night sky and the moon; rotation |
| L4     | Copernican revolution; What is science? A hypothesis? Uncertainty |

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<tr>
<th>Week 2</th>
<th><strong>Forces, motion, energy, gravity</strong> (Chapter 4)</th>
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<tbody>
<tr>
<td>L5</td>
<td>Kepler’s and Newton’s laws, forces, energy</td>
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<tr>
<td>L6</td>
<td>Conservation laws, orbits, tides</td>
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**Light, and seeing the solar system; formation of solar system** (Ch 5-8)

| L7     | Properties of light; spectroscopy; Doppler effect and thermal emission |

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<thead>
<tr>
<th>Week 3</th>
<th><strong>Terrestrial planets</strong> (Chapter 9.1, 9.2, 9.3, 9.5)</th>
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<tbody>
<tr>
<td>L8</td>
<td>Birth of solar system, formation of planets, age of solar system</td>
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<tr>
<td>L9</td>
<td>Surfaces</td>
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<tr>
<td>L10</td>
<td>Interiors</td>
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**Week 4**  
**Earth** (Chapter 9.6)  

*Midterm #1* (online)  

G1  
Guest lecture I: Roland Burgmann (EPS)  
“Earthquakes in Your Backyard”.  

G2  
Guest lecture II: Bruce Buffet (EPS)  
“What drives the Earth Dynamo”  

**Week 5**  
**Mars** (Chapter 9.4)  

L11  
Mars  

*Terrestrial Atmospheres* (Chapter 10)  

L12  
Strata and heating  

L13  
Greenhouse effect and global warming  

**Week 6**  
**Jovian Planets** (Chapter 11)  

L14  
Planets’ interior structure and evolution  

L15  
Moons of giant planets  

*Small objects in the solar system* (Chapter 12)  

L16  
Asteroids and Comets  

L17  
Pluto and Kuiper Belt  

**Week 7**  
**Extrasolar planets** (Chapter 13)  

L18  
Exoplanets part I  

L19  
Exoplanets part II  

G3  
Guest lecture III: Paul Kalas (Astronomy)  
“The first image of an extrasolar planet”
**Week 8**  
**Sun and Big Bang** (Chapter 14)

L20    Our Sun and stellar evolution

L21    The big bang, fate of the solar system

**Life in the solar system** (Chapter 24)

L22    On Life I: DNA, origins, and the meaning of it.

L23    On Life II: Drake equation, SETI and interstellar travel

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**Final Exam** (written exam, to be taken on campus on Aug. 8, 6-8 pm, or with one of the proctoring services available nation wide)