Final Review
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Enjoy the Pizza
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Tell Me What You Have Learnt!
The Entire Course on One Slide!

- The cosmic scale
- Commonly observed phenomena such as seasons, phases of moon, path of celestial objects in our sky, and tides
- Solar System patterns and exceptions
- Unique features of each world in the SS
- The search for exoplanets and extraterrestrial life
Format & Preparation

When?  Wednesday, December 12, 10:15 am – 12:15 am

Where?  This room (Aderhold Learning Center, 5)

What?  80 Multiple Choice + 40 True / False Questions
        “Critical thinking” questions – last 10 multiple choice

How?  1.  Review previous exams & homework
      2.  Review class notes & slides, use book for reference
      3.  Discuss material with friends
      4.  Read the textbook
      5.  Use the online tutorial
The Cosmic Scale

• What is your cosmic address?
• What can you tell me about the key yardsticks we used in this course (AU, lightyears)?
• How big / old / plentiful is the universe and the Solar System?
• What is your very personal connection to astronomy?
What are some ways you are moving right now?

Why is Polaris special?

What path do objects follow in our sky and why?
  – Does the Sun always rise in the East?
  – Is it always overhead at noon?

What causes seasons on Earth and why?
  – How is Mars different?
Phases of the Moon & Tides

• What direction does the Earth spin? What direction does the Moon orbit the Earth?
• Why does the Moon go through phases and what are the phases?
• How can you tell the phase of the Moon based on its position in the sky at a given time?
  – e.g. when does a full moon rise?
• Why does the Moon always show us the same face?
• Why is the Moon more responsible for tides than the Sun?
Eclipses

• What conditions are required for eclipses to occur?
• What is the phase of the Moon during a solar/lunar eclipse?
• What causes special eclipses such as annular eclipses?
  – What is the one “coincidence” in astronomy that is related to this?
  – What are some seeming “coincidences” that are actually natural consequences of physics?
The Copernican Revolution

- Which astronomers contributed to the Copernican revolution and how?
- What are the Kepler’s laws of planetary motion?
- What key evidence was held against the Copernican theory, in support of the Geocentric Model?
The Fundamental Laws

• What is the scientific method?
• What are Newton’s Laws of Motion?
• What does Newton’s Law of Gravity tell us about mass and weight?
• What are the conservation laws?
• What is temperature?
Light, Matter, and Telescopes

• Remember RIVUXG & ROYGBIV?  
  – Which one travels the fastest?
• What is an absorption / emission line?
• Which wavelengths of light reach the ground?
• What gives things on Earth their color?
• Why do we need space telescopes?
• What technique does the CHARA Array use?
• What are the inverse square and square laws?
Solar System Patterns & Stars

• How significant is the Sun in the Solar System?
  – Why are extrasolar planets so hard to detect and even harder to see?

• What is the overall structure of the Solar System?

• What is (are) the most important parameter(s) of stars?

• What forces compete to keep a star’s size stable?

• What are the spectral sequence and the H-R diagram?
• What is unique about every planet in the Solar System?
• Which is the hottest and why?
• What are some characteristics of Terrestrial and Jovian planets?
• What are the main features on each planet or moon we discussed?
• What is the energy source for the planets of the solar system?
• What is unique about every planet in the Solar System?
Solar System Phenomena

• What causes planetary magnetic fields?
• What is the greenhouse effect and what gases are most responsible for it?
• How does the Coriolis effect work and how does it impact winds?
• What forces shape planetary surfaces?
• What makes our sky blue?
Exoplanets & Life

• What kind of planets have been discovered in other solar systems?
• How does each detection technique work?
• What is the habitable zone?
• How long has Earth had life?
• What are life’s requirements and what signatures does it leave?
Thank You
for your attention this semester

I hope you enjoyed the ride as much as I did!