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?

Spaceship Earth

- 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?

Solar System Objects

- What is unique about every planet in the Solar System?
  - e.g. 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 & moons of 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!