Astronomy 101 Section 1 **7 December, 2016**
Unit V Study Guide

The final will include roughly 70 questions from all five units. For Units I-IV, students should review the previous study guides and the mid-term exams. This study guide focuses on Unit V. As always, the sample questions cover the more important concepts likely to appear on the exam. Students should also study the review questions at the end of each chapter of the textbook.

What are some of the requirements of life as we understand it?

How is the habitable zone defined around a star? What are some of the reasons that the boundaries are fuzzy?

Which stars have the largest and smallest habitable zones?

Why might the evolution of complex lifeforms on a planet orbiting a massive star be unlikely?

Give a brief timeline noting the formation of the Universe, the Solar System, and simple and complex life on Earth.

Define the following: Brown dwarf. Exoplanet. Hot Jupiter.

How can astrometry be used to detect exoplanets?

How can radial velocities reveal the presence of exoplanets?

What is the transit method for detecting exoplanets?

How can exoplanets be detected using direct imaging?

What other methods have astronomers used to detect exoplanets?

What methods to detect planets around other stars have been most successful?

Describe and compare the biases in the following methods to detect exoplanets: radial velocities, transits, direct imaging.

What physical properties of an exoplanet can we determine if we detect it with the radial velocity method?

What physical properties of an exoplanet can we measure if it transits the star it orbits?

The history of searching for exoplanets is full of false detections. Describe one.

What is the objective of the Kepler mission? What method has it used to achieve this objective?

How do the orbital properties of explanets detected by the Kepler mission or with radial velocities differ from the Solar System? How might these differences be related to the biases of the detection methods?

What is the Drake Equation? If its result is so uncertain, how is it still useful?

What is Fermi's Paradox?

How might one detect life on an exoplanet?

How might aliens detect intelligent life on Earth?