

Astronomy 141 -- Winter 2012  
End-of-Quarter Study Guide

This study guide covers the lectures from the last week of classes (Mar 5-8). The rest of the class is already covered by the previous study guides published for Quizzes 1 thru 4.

This list, together with the other four study guides from Quizzes 1 through 4, constitutes a complete study guide for the Final Exam.

#### SETI

- What is SETI?
- Why are radio wavelengths the best place to search for ET radio signals?
- What is the "Water Hole"?
- What is a "Targeted" SETI search strategy?
- What is a "Piggy-Back" SETI search strategy?
- What are SETI projects searching for?
- What is the "Wow!" signal?
- What kind of radio emission has Earth been radiating and for how long?
- How has the amount of radio emission from Earth been changing over time?
- What is the Arecibo Message?

#### Interstellar Travel and Colonization

- What are the main challenges of interstellar space travel?
- How does the need to carry your fuel make interstellar travel hard?
- What is the requirement for near-light speed?
- What are various serious concepts for near-light star ships?
- What is interstellar colonization?
- How fast is colonization?
- What are the typical timescale to colonize an entire galaxy?

#### The Fermi Paradox

- What is the Fermi Paradox?
- What is the basic principle behind the Fermi Paradox (speed of colonization)?
- What are the different proposals to solve the Fermi Paradox?
- What is the UFOs are Real Hypothesis?
- What is the Zoo Hypothesis?
- What is the Doomsday Hypothesis?
- What is the Rare Earth Hypothesis?

#### Extraterrestrial Life

- What are the basic characteristics of life on Earth?
- What is the difference between a Universal and Parochial characteristic?
- What is Convergent Evolution versus Radical Diversity?
- What are alternatives to Carbon Chemistry?
- What are the problems of Silicon as an alternative to Carbon?
- What are alternatives to Liquid Water?