

Astronomy 2291 – Final Exam

The Final Exam will be on **Thursday, December 17, 2:00-3:45pm** in the usual room.

The final is comprehensive, covering the entire semester, and consist of 5 questions, all quantitative problem solving with a component of qualitative interpretation/explanation.

Your study guide should consist of the study guides for the 3 in-class exams, your homeworks and in-class exams, and this supplemental topic list of the list covered since Exam 3. This together with the other materials constitutes your complete study guide for the final

Asteroids, Trans-Neptunian Objects, and Dwarf Planets:

- Composition and main types of asteroids, typical mean densities
- Asteroid orbital families
- Kirkwood Gaps in the Main Belt due to resonances with Jupiter
- Composition and mean densities of Trans-Neptunian Objects (TNOs)
- Kuiper Belt and Scattered Disk, resonant families
- Definition of Dwarf Planets

Comets:

- Composition and structure (nucleus, coma, ion tail, and dust tail)
- Short Period Comets: definition and likely origin in the Kuiper Belt
- Long Period Comets: definition and likely origin in the Oort Cloud

Meteoroids, Meteorite & Meteors:

- Types of meteoroids and origin as asteroid fragments
- Meteors as release of Kinetic Energy when entering the atmosphere

Exoplanets:

- Detection Methods (Direct Imaging, Astrometric Wobble, Radial Velocities, Microlensing, and Planetary Transits)
- Technical challenges and limits of different methods

Life in the Universe:

- Habitable Zones
- Detection of life on other planets

Problems (note some are repeated from the last study guide):

- Chapter 10: 10.2
- Chapter 11: 11.2, 11.7a, 11.7c
- Chapter 12: 12.2, 12.3, 12.4, 12.6