

Ge 151

The Moon: Surface Architecture, Features, & History

1. Planetary scale structure

- a) Core/mantle/crust - 5.2/197
- b) Hemispheric assymetry – 2.1, 2.2/25, 26
- c) Reconstruction – 5.14 (226, 5, 4)
- d) Current relief – 5.12/ 222
- e) Lunar rx – 5.3/199, 5.5/203

2. Giant basins

- a) Imbrium – 5.10/216, 5.7/209, 5.8/211
- b) Orientale – 3.10/84, 5.9/213

3. Highlands

8.1/326, 3.8/81, 5.11/217, 4.26/165, 4.1/127

4. Maria

4.3/132, 4.2/129, 4.20/157, 4.4, 4.22, 4.23, 4.24(157-161)
3.16, 3.17 /94, 3.5a/76

5. History

5.13/223

6. Spectral reflectivity

TPR Handout

7. Comparison w/other terrestrial planets

8.1/327; 8.2/331

8. Ice on Moon?

History of the Moon

Formation

Theories

Fission

Capture

Co-accretion

Impact

Constraints

Orbital dynamics

Bulk composition

Magma Ocean

Anorthosite crust

Ferroan anorthosites

Europium anomaly

Mantle \pm Core

Seismology

Magnetics

Stratigraphy

Pre-Nectarian – Nectarian

Basin formation/Heavy Bombardment

LHB – abrupt decline of flux

Pre-basin filling

Lower Imbrian

Fra Mauro/ Imbrium

Hevelius/Oriente

Upper Imbrian – Eratosthenian

Mare filling ~ 3.85 – 3.16 Bya

Copernican

Light, fast – more cratering

Quiescent/thick lithosphere

Lunar Geology

Stratigraphy

Superposition principle

Crater counting

Radio-isotope dating

Lithologic mapping

Spectral signatures

XRF/GRS

Geophysics

Gravity and magnetics

Seismology

Seismic refraction

EM sounding

Geochemistry/petrology

Mineralogy

Chemistry