Instructor: Peter Crowley
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ENMNH 310

Lectures: M W F 10:00
Lab: Monday 1-4

Grading: Labs 30%
Quizzes 60%
Class participation 10%

• There will be 4 self-scheduled quizzes during the semester. They may be taken during the weeks of February 21, March 21, April 11 and May 9 (exam period).
• Labs are due one week after they are assigned. Late work will not be accepted!!

Course Schedule
Mon Jan 24 Introduction: expectations and geophysical anomalies
Wed Jan 26 Earth as a meteorite
Fri Jan 28 Chondritic meteorites
Mon Jan 31 Isotope geochronology: General Principles- age of what?
Wed Feb 2 U/Pb geochronology: Zircon concordia dating
Fri Feb 4 Thermochronology: Ar/Ar
Mon Feb 7 Gravity: mass, gravity, and the geoid
Wed Feb 9 Gravity anomalies: diurnal free air and Bouguer corrections
Fri Feb 11 Model gravity anomalies
Mon Feb 14 Gravity, topography and isostacy
Wed Feb 16 Isostatic compensation, batman gravity
Fri Feb 18 Flexural rigidity and gravity

Quiz I: covers cosmology, geochronology & gravity
Mon Feb 21 Heat flow and thermal conduction: principles
Wed Feb 23 Oceanic heat flow
Fri Feb 25 Thermal convection in the earth
Mon Feb 28 Near surface heat flow and climate change
Wed Mar 2 Electrical methods: principles
Fri Mar 4 Electrical methods: resistivity
Mon Mar 7 Electrical methods: vertical and horizontal profiles
Wed Mar 9 Earthquake seismology. Seismic waves, location
Fri Mar 11 Earthquake seismology: First motion studies
**Spring Break**

**Quiz II: covers heatflow & electrical methods**
- **Mon** Mar 21  Ray theory: seismic refraction
- **Wed** Mar 23  Refraction seismology: structure of the earth
- **Fri** Mar 25  Shallow refraction seismology: single layers
- **Mon** Mar 28  Shallow refraction seismology: dipping & multiple layers
- **Wed** Mar 30  Shallow refraction seismology: delay time method
- **Fri** Apr 1  Reflection seismology: Principles
- **Mon** Apr 4  Reflection seismology: interpretation
- **Wed** Apr 6  Seismic tomography
- **Fri** Apr 8  Earth's magnetic field

**Quiz III: covers seismicity and seismology**
- **Mon** Apr 11  Magnetic properites of materials: Rock, mineral and soil magnetism
- **Wed** Apr 13  Magnetic reversals, ocean floor magnetism and the polarity time scale
- **Fri** Apr 15  Paleomagnetism: magnetic cleaning, isolation of characteristic magnetism
- **Mon** Apr 18  Paleomagnetism: magnetic carriers
- **Wed** Apr 20  APW paths
- **Fri** Apr 22  Magnetic surveys and anomalies I
- **Mon** Apr 25  Magnetic surveys and anomalies II
- **Wed** Apr 27  Environmental magnetism I
- **Fri** Apr 29  Integrated Geophysical analysis: oceanic lithosphere
- **Mon** May 2  Integrated Geophysical analysis: MOR
- **Wed** May 4  Integrated Geophysical analysis: subduction I
- **Fri** May 6  Integrated Geophysical analysis: subduction II

**Quiz IV: covers magnetism, paleomagnetism, oceanic lithosphere**

Want pages: 120-126
265-305
446-478

McSween (1997) Fanfare for Earth, Chapter 3: Play it again Johannes, nebular accretion of earth and planets p. 54-75


Butler (1992) Paleomagnetism, Chapters 2, 5, 10. Published on line by author.