

Introduction to the Introduction to Geology
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1. This is first stop in dept for some, only stop for others. Look right and left. Majors, engineers. All are starting from zero or almost zero. And that is what we assume.
2. Basic knowledge of earth, regardless of path [PPT: Big questions]: age of Earth, solid/liquid/both, what makes rocks, and what are they made of, and how old are they, configuration of continents, how do mountains form and erode away? Course is designed to give you the basics that will allow you to major, or at least to be informed.
3. Segue to overview of Syllabus, and introduce teaching staff.
4. Emphasis on experiential learning. Labs, Field trips.
5. Boiler plate requirements.
6. Earthquake predictions
 - a. What causes EQs? Brittle deformation shallow in the crust. Most EQs are caused by frictional slip on faults.
 - b. Richter scale and EQ magnitude
 - i. Richter scale was a logarithmic scale of ground motion. Each Richter unit corresponds to 10x more ground motion.
 - ii. In modern times, we are more interested in energy released. Each Richter unit = $10^{1.5} = 32x$ more energy. So we use moment magnitude (M_w), which is related to the amount of work done when a fault slips over a finite area. But moment magnitude is scaled to correspond to the old Richter units. Hence the confusion.
 - iii. EQs of large M_w occur much less frequently than smaller EQs, but each one releases much more energy. Ex: For Japan 2011 (M_w 9.0) vs. Haiti 2010 (M_w 7.0), the ratio is $10^{3/2*2}=1000x$ more energy!
 - c. Assignment: How many EQs with $M_w \geq 6.0$ will occur between the end of class on Monday (when this prediction is due) and the stroke of midnight before the last lecture.
 - d. USGS National Earthquake Information Center (NEIC) is a good starting point.

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