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GEOL 430.01: Geotectonics and Earth History

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We journey through the tectonic history of the planet from its beginnings to the present. Each week we cover a new aspect in the approximate order given below. Each week, beginning Feb 9, students will research the topic of the week by finding, copying, reading, and highlighting a related article in the recent geological literature (~past five years), most likely in “Geology” magazine. These are on floor 5 in the UM Mansfield Library. On Friday of each week (starting week of Feb 9), discuss your article in class, and argue its points with the rest of us. Then turn in your marked-up copy. You get a √ for the article, and a √+ for the article plus discussion. The midterm and final will be take home tests, which will consist of choosing a tectonic assertion from a list and writing a 5-7 page paper defending or refuting it citing references from the recent literature, such as we will be reading each week. The key to this course is participate!

Approximate schedule:

Week of

Jan 26  Formation of the Solar System
Feb  2  Formation of Earth-Moon system, magma ocean, earliest crust
        9  Archean greenstone belts and gneiss terranes
        16 Paleoproterozoic miogeoclines, orogenic belts, supercontinent
        23 Mesoproterozoic rift basins and dike swarms
Mar  1  Grenville problem and Rodinia
        8 Neoproterozoic-Early Cambrian breakup of Rodinia
        15 Early Paleozoic sea-floor spreading (Iapetus) and Caledonian orogenies
        22 Making Pangaea. Midterm due Mar 26, 9 am
        29 Spring Break
Apr  5  Breaking Pangaea. Icosahedral fractures?
        12 A funny thing about the Pacific basin – seafloor spreading and subduction
        19 Cordilleran collisions.
Apr 24  Saturday field trip Rogers Pass-Helena area.
        26 Alpine-Himalayan continental collisions
May  3  Hot spots and mantle convection
        10 Finals

EVALUATION

Weekly readings and discussions √ = 5; √+ = 10 points each; ten such for 100 possible points.
Midterm  50 points
Final 50 points

Total possible 200 points

Field trip April 24, extra credit 10 points.