

Curriculum Structure SIO 162 – Winter 2016

Instructor: Kevin M. Brown (kmbrown@ucsd.edu), Munk 320

TA: To be announced

Mid-term 30% of the mark, Homework/field reports 30% of the marks. Final 40% of the Marks

Recommended Book:

Structural Geology

<http://www.macmillanhighered.com/Catalog/>

Robert J. Twiss (*University of California, Davis*), Eldridge M. Moores (*University of California, Davis*), ISBN-10: 0-7167-4951-3, ISBN-13: 978-0-7167-4951-6

Class involves two overnight weekend field trips: These are very weather dependent and I have selected two potential weekends for each trip. If things look bad I will substitute local day trips.

Jan. 30-31, or Feb 6-7 Anza Borrego: Meet in parking lot P103 (SW of Galbraith Hall) at 7:00am. Vans will leave promptly at 7:30am. We will spend Saturday taking in the geology at Split Mountain Gorge and Sunday in Painted Canyon. You can expect to be back at UCSD around 6:00-7pm on Sunday.

Feb 19-21 or 26-28, Death Valley: Departure time and place: **TBD**. Departing as early as possible on Friday (the 6th) is recommended. Here we will explore geology and structures found in Snowball Earth Stratigraphy, the pull-apart basin of Death Valley, Titus Canyon, and Mosaic Canyons. Expected return to UCSD is 10:00pm on Sunday.

Supplies you should bring:

-Standard Camping Gear: Tent, Sleeping Bag, Sleeping Pad

If you don't have these try to coordinate with your classmates or they can be rented from the Outback Rental Shop on upper campus.

If you want go pro level and sleep under the stars a tarp is recommended.

-Sack Lunch for Saturday (Anza Borrego only). We will stop for dinner on our way to Death Valley. Food and water will be provided for the rest of the trips.

If anyone has restrictions concerning food please let us know in advance.

-Clothing for hot days and cool/cold nights

-Full water bottle

-Compass (a limited number of Bruntons will be available)

-Camera

-Notebook and pencils

-Flashlight/Head Lamp

-Daypack

And for your own safety:

-Sturdy shoes or Hiking boots

-Sun protection (sunscreen, hats, sunglasses)

-Finally, be aware of your surroundings. Cliffs, steep embankments, and even minor rockfalls can be dangerous. Also avoid reaching into crevices or under rocks where you can't see as these are frequent stops for rattlesnakes and scorpions.

Class Time Table

Week 1 – Class Introduction and Introduction to Brittle Structures (slump beach walk).

Week 2 – Detailed descriptions of brittle structures, Lab brittle structures.

Week 3 – Detailed descriptions of ductile structures, Lab ductile structures.

Week 4 – Strike slip and normal fault structures

Week 5 – Thrust structures (Con) , **Beach walk to the Cove to look at the Rose canyon fault (Tide dependent could be following week),**

Week 6– Rock mechanics, Mohr's circle, stress/strain, **Midterm**–

Week 7– Rock mechanics, Mohr's circle, stress/strain (Con)

Week 8– Dynamic friction, Earthquake dynamics mechanisms and constitutive relationships.

Week 9- Dynamic friction (Con). Ductile deformation mechanisms and constitutive relationships.

Week 10 - Ductile deformation mechanisms and constitutive relationships (con).
Revision lecture.