Geol 6315 / Geop 5356 Dynamics of Mountain Building
Classes: TTh 12:00-13:20, Geology Building 302

Contact Information
Instructor: Dr. Marianne Karplus
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  Office hours: Tuesdays 13:30-14:30 and by appointment
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Overview: We will cover some key concepts and ideas required to understand how mountains form and evolve. We will read and discuss a variety of scientific papers on the development, evolution, and destruction of mountain ranges (including foreland basins, fold-and-thrust belts, continent-continent collision, mantle dynamics). We will read papers about a variety of mountain ranges (Himalaya/ Tibet, Alps, Western US, Andes, etc.).

Class Objectives: Develop a thorough background in the basic geophysical and geologic characteristics and development of mountain ranges. Investigate a number of mountain ranges in more detail through reading the scientific literature. By the end of this class students should be able to:
  • Understand geologic and geophysical processes that contribute to mountain building.
  • Understand typical structures found in or near mountain ranges (folds, foreland basins, faults)
  • Understand how different data sets are used to build a theory of how mountains form
  • Recognize the role of the crust and mantle, lithosphere and asthenosphere in mountain building processes.
  • Be able to use lithologic and structural associations to synthesize geologic and geophysical data into a coherent tectonic history of a mountainous area
  • Read and interpret geologic and geophysical papers from the scientific literature
  • Prepare presentations and lead discussions on scientific papers with your peers.
  • Ask questions while reading new material.
  • Analyze diverse geologic and geophysical data sets found in the literature to solve tectonic problems, recognizing inconsistencies and ambiguities in interpretations of data.

Activities: This class will feature a mix of 1) professor-led activities and lectures to learn the background and basic concepts involved in mountain building processes and 2) student-led presentations and discussion of scientific papers on topics selected by the students.

Prerequisite: graduate standing OR approval. That means class members are expected to have course work in geology equivalent to an undergraduate senior geology major. Class members should also be comfortable with basic sophomore level physics and with math equivalent to at least the first semester of calculus.
Grading:

40% class presentations (everyone will do at least 2 half hour presentations)
40% final paper/project
20% discussion questions (turn in for all reading assignments) and other small assignments

Undergraduate vs Graduate Student Assessment: I will have higher expectations for presentations and projects submitted by PhD students compared to M.S. students due to the difference in experience and available time. Homework assignments will be assessed with a different scale for undergraduates vs. graduate students.

Attendance Policy and Exam Makeup Policy: This is a graduate level class. I assume this is a nonissue at this level.

Academic Integrity and Civility: Refer to http://sa.utep.edu/osccr/academic-integrity/ for the university's academic integrity policy; Plagiarism will not be tolerated on any assignments, and any assignment containing clear plagiarism given an automatic F.

Disability Statement: If you have a disability and need accommodation, you should contact the Disabled Student Services office at 747-5148 or go to Rm 106 Union East. You are responsible for obtaining accommodation letters and instructions.

Military Service: If you are in the military and service or training may take you out of town, please advise the instructor and we'll work out an accommodation if at all possible, but you'll need to let the instructor know well in advance.