

Fundamentals of Paleomagnetism (Spring 2014)

GEO 171T (27989); GEO 191 (28119)

Location: EPS 1.102
Time: Tue 1100 – 1150 am
Professors: Brian Horton and Jack Holt
Offices: JGB 5.220A (Horton); EPS 1.112B (Holt)
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Textbooks and Reading Materials:

Assigned readings will originate from published scientific articles and textbook chapters.

Butler, R.F., 1992, *Paleomagnetism*. <http://www.geo.arizona.edu/Paleomag/book/>

Tauxe, L., 2012, *Essentials of Paleomagnetism*. http://magician.ucsd.edu/Essentials_2/

Overview:

This is a seminar style class meant for advanced undergraduates and graduate students.

Course Content:

This seminar will explore the fundamentals of paleomagnetism, providing a background for new practitioners of paleomagnetic techniques. The UT Paleomagnetism Laboratory offers a key platform for hands-on practical experience and application of fundamental principles.

Course Credit:

Each class meeting will involve a 50 minute presentation of that week's assigned reading. One student will make a summary presentation (ppt or pdf) with relevant figures. A second student will be responsible for helping to lead and stimulate further discussion. The instructors will provide guidelines for additional discussions and background materials as necessary. Grades will be based on participation and presentation quality. We anticipate that each student will be responsible for ~2 presentations and leading ~2 discussions.

Policy on Grades:

Final Grades will be cumulative based on presentations, discussions, and weekly preparation and participation. Grades will be assigned on the A, B, C, D, F scale.

The University Honor Code:

"The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community."

Students are expected to read and to strictly adhere to the University's written policies on academic dishonesty. Cheating or plagiarism will result in a zero for the semester.

A note to students with disabilities: students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 512-471-6259.

TENTATIVE SCHEDULE

1	14-Jan	Introduction, Logistics, Lab Tour
2	21-Jan	Magnetism
3	28-Jan	Earth's Magnetic Field
4	4-Feb	Magnetic Mineralogy
5	11-Feb	Curie (Blocking) Temperature
6	18-Feb	Magnetization in Rocks; Spherical (Fisher) Statistics
7	25-Feb	Thermal Demagnetization
8	4-Mar	Alternating Field Demagnetization
	<i>11-Mar</i>	<i>Spring break</i>
9	18-Mar	Demagnetization plots, Lab Methods
10	25-Mar	Paleomagnetic Lab Methods
11	1-Apr	Applications, Paleomagnetic Poles, Tectonic Rotations
12	8-Apr	Magnetostratigraphy, Geomagnetic Polarity TimeScale
13	15-Apr	Case studies: UT datasets
14	22-Apr	Case studies: UT datasets
15	29-Apr	Case studies: UT datasets