

GEO. 420K - INTRODUCTION TO FIELD AND STRATIGRAPHIC METHODS
TUESDAY/THURSDAY SECTIONS, SPRING 2016

LECTURE: Tuesday and Thursday, 2:00 - 3:00 p.m.; JGB 2.218

LAB: Friday 2:00 - 5:00 p.m. in JGB 3.116 (#26740), JGB 3.120 (#26745), JGB 3.204 (#26750), JGB 3.222 (#26755)

INSTRUCTORS: Dr. Joel Johnson, EPS 3.136
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TEACHING ASSISTANTS:

JGB 3.116	Adam Goldsmith	atom.goldsmith@utexas.edu
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OFFICE HOURS: Johnson: W 3-5 and by appointment
Marrett: T.B.A.

GRADING:

Field Projects	55%	There will be no makeup exams or projects.
Labs	15%	
Lab Exam(s)	15%	
Class Exam(s)	15%	

PREREQUISITES: A grade of C or better in Geo. 416K, 426P, and 416M (Geo. 426P may be taken concurrently with 420K) for B.S. Geology, or C or better in Geo. 416M and Geo. 416K for G.E.H., Geophysics, Hydrogeology and B.A. Geology. If you do not have these prerequisites and have not already done so, see one of us immediately.

OTHER ITEMS: By registering for Geo. 420K, students agree to be available for field trips on at least **6 (six)** weekends. See the attached schedule for the dates trips are planned. In addition some Friday labs will be conducted off campus, but during normally scheduled lab hours.

Announcements, information pertinent to field trips, labs, etc. will be posted on the 420K Canvas site. Check it often for information about materials for upcoming labs and field trips.

Academic dishonesty will not be tolerated. Anyone in violation of University policy (see Student Handbook) will receive a failing grade and is subject to additional punitive measures, which may include expulsion from the University.

REQUIRED TEXT: Coe, A. L., Geological Field Techniques. Wiley-Blackwell, 323 pp.
Lisle, R.J., Brabham, P.J. and Barnes, J.W., Basic Geologic Mapping, 5th edition, Wiley-Blackwell, 216 pp.
Geo420K Lecture, Lab and Field Trip Manual, available from UT Duplicating Center the 2nd week of class.

WEB SITE: UT Canvas site for Geo420K

REQUIRED ITEMS: See Attached list. These items are available in a supply packet at the University Coop.

GEO420K – FIELD TRIP DATES
Monday/Wednesday Sections, SPRING 2016

By registering for GEO 420K, you agree to be available for field trips on at least 6 weekends. The field trip weekends this semester are:

- Trip 1: February 6 or 7 – Dr. Helper
- Trip 2: February 20 AND 21– Drs. Helper & Marrett
- Trip 3: March 5 or March 6 – Dr. Helper
- Trip 4: March 26 or 27 – Dr. Kerans
- Trip 5: April 9 or 10 – Dr. Kerans
- Trip 6: April 23 or 24 – Dr. Kerans

These dates are provided to you now so that you can plan your Spring semester weekend activities accordingly. Unlike other courses, the field trips are not supplementary to the classroom work; *they are 55% of your grade*. **Your attendance and participation in all field exercises are required for a passing grade, without exceptions.** Specific information for each trip, *including which days you are expected to attend*, will be posted on the class Canvas site and can be found in the Lab/Field Trip Manual.

A list of materials needed for the field exercises, all contained in the required course packet available from the Co-Op, is attached.

GEO. 420K – FIELD TRIP DATES
Tuesday/Thursday Sections, SPRING 2016

By registering for GEO 420K, you agree to be available for field trips on at least 6 weekends. The field trip weekends this semester are:

- Trip 1: January 30 or 31 – Dr. Marrett
- Trip 2: February 13 AND 14– Drs. Marrett & Helper
- Trip 3: February 27 or 28 – Dr. Marrett
- Trip 4: April 2 or 3 – Dr. Johnson
- Trip 5: April 16 or 17 – Dr. Johnson
- Trip 6: April 30 or May 1 – Dr. Johnson

These dates are provided to you now so that you can plan your Spring semester weekend activities accordingly. Unlike other courses, the field trips are not supplementary to the classroom work; *they are 55% of your grade*. **Your attendance and participation in all field exercises are required for a passing grade, without exceptions.** Specific information for each trip, *including which days you are expected to attend*, will be posted on the “Trips” pages of the class Canvas site and can be found in the Lab/Lecture Manual.

A list of materials needed for the field exercises, all contained in the required course packet available from the Co-Op, is attached.

LECTURE AND LAB SCHEDULE - GEO. 420K, MW Sections, 2016

<u>Date</u>	<u>Lecture</u>	<u>Lab</u>
1/20	Overview and Introduction The Geologic Compass – Strike/Dip, Bearing/Plunge (M. H.)	1. Compass/Pace and Compass Map*
1/25	Base Maps, Grids and Location Methods (M. H.)	2. Topographic Maps & GPS
1/27	The Global Positioning System (M. H.)	
2/1	Metamorphic Rocks: Textures and Fabrics in Tectonites (M. H.)	3. Describing Metamorphic Rocks
2/3	Field Trip 1 Preparation – Precambrian Geology of the Llano Uplift	
Field Trip 1: Precambrian Geology, Llano Co. (2/6 or 2/7)		
2/8	Geologic Map Patterns; Strike Lines (M. H.)	4. Geologic Maps I
2/10	Dip Calculation and Unit Thicknesses from Maps (M. H.)	
2/15	Introduction to Faulting (R. M.)	5. Geologic Maps II
2/17	Field Trip 1 Debrief; Trip 2 Prep. (M. H.)	
Field Trip 2: Mapping Project 1 (2/20 AND 2/21)		
2/22	Introduction to Folding (R. M.)	6. Geologic Maps III/ Folds and Faults
2/24	Cross Section Construction (R. M.)	
2/29	Down Plunge Viewing/Geologic Maps as Cross Sections (R. M.)	7. Cross Sections
3/2	Field Trip 2 Debrief; Trip 3 Preparation (M.H.)	
Field Trip 3: Mapping Project 2 (3/5 or 3/6)		
3/7	Digital Mapping Tools and Techniques (M. H.)	8. No Lab
3/9	Field Trip 3 Debrief (M. H.)	
3/12 - 3/20 SPRING BREAK		
3/21	Sedimentary Rock Description: Essential Elements	9. Rock and Rock Unit Descriptions
3/23	Vertical Successions in Clastic Strata & Trip 4 Prep.	
Field Trip 4: Tertiary Clastics (3/26 or 3/27)		
3/28	Basic Stratigraphy and Approaches to Subsurface Mapping	10. Net Sand Isopach Mapping
3/30	Texas GOM history and Tertiary Regional Context	
4/4	Scales of Cyclicity and Correlation of Sedimentary Rocks	11. Cyclicity/ Fisher Plots
4/6	Logging Carbonate Strata; Trip 4 Debrief & Trip 5 prep.	
Field Trip 5: Cretaceous Carbonate Section Correlation (4/9 or 4/10)		
4/11	Cretaceous Stratigraphy of Central Texas	12. Unconformities, Correlation & Facies
4/13	Biostratigraphy, Sed. Structures, Trace Fossils, Fauna	
4/18	Basin Classification and Associated Basin Fill, Late Paleozoic Ouachita Orogen	13. Maps, time-stratigraphic relations & geologic reconstructions
4/20	Field Trip 5 Debrief & Trip 6 Prep.	
Field Trip 6: Measuring Features in Sedimentary Rocks (4/23 or 4/24)		
4/25	Chronostratigraphy and Age Dating of Sedimentary Rocks	14. Exam Review
4/27	Lithostratigraphy, Chronostratigraphy, and Tools for Correlation	
5/2	Trip 6 Debrief	15. Lab Final
5/4	Course Evaluation and Review	
5/11 or 5/16; 2-5 PM or 9-12 noon	Final Exam	

* Lab conducted outdoors, prepare accordingly.

LECTURE AND LAB SCHEDULE - GEO. 420K, TTH Sections, 2016

<u>Date</u>	<u>Lecture</u>	<u>Lab</u>
1/19	Overview and Introduction (R. M.)	
1/21	The Geologic Compass – Strike/Dip, Bearing/Plunge (R. M.)	1. Compass/Pace and Compass Map*
1/26	Metamorphic Rocks: Textures and Fabrics in Tectonites (M. H.)	2. Describing Metamorphic Rocks
1/28	Field Trip 1 Preparation – Precambrian Geology of the Llano Uplift	
Weekend Trip 1: Precambrian Geology, Llano Co. (1/30 or 1/31)		
2/2	Base Maps, Grids and Location Methods (M. H.)	3. Topographic Maps & GPS
2/4	The Global Positioning System (M. H.)	
2/9	Interpreting Geologic Map Patterns; Strike Lines (R. M.)	4. Geologic Maps I
2/11	Field Trip 1 Debrief; Trip 2 Prep. (R. M.)	
Weekend Trip 2: Mapping Project 1 (2/13 AND 2/14)		
2/16	Dip Calculation and Unit Thicknesses from Maps (R. M.)	5. Geologic Maps II
2/18	Introduction to Faulting (R. M.)	
2/23	Introduction to Folding (R. M.)	6. Geologic Maps III/ Folds and Faults
2/25	Field Trip 2 Debrief; Trip 3 Prep. (R. M.)	
Weekend Trip 3: Mapping Project 2 (2/27 or 2/28)		
3/1	Cross Section Construction (R. M.)	7. Cross Sections
3/3	Down Plunge Viewing/Geologic Maps as Cross Sections (R. M.)	
3/8	Digital Mapping Tools and Techniques (M. H.)	8. No Lab
3/10	Field Trip 3 Debrief (R. M.)	
3/12 - 3/20 SPRING BREAK		
3/22	Sedimentary Rock Description: Essential Elements	9. Rock and Rock Unit Descriptions
3/24	Basic Stratigraphy and Approaches to Subsurface Mapping	
3/29	Vertical Successions in Clastic Strata	10. Net Sand Isopach Mapping
3/31	Texas GOM history and Tertiary Regional Context; Trip 4 Prep.	
Weekend Trip 4: Tertiary Clastics (4/2 or 4/3)		
4/5	Scales of Cyclicity and Correlation of Sed. Rocks	11. Cyclicity/ Fisher Plots
4/7	Biostratigraphy; Sedimentary Structures, Trace Fossils, Fauna	
4/12	Cretaceous Stratigraphy of Central Texas	12. Unconformities, Correlation & Facies
4/14	Logging Carbonate Strata; Trip 4 Debrief & Trip 5 prep.	
Weekend Trip 5: Cretaceous Carbonate Section Correlation (4/16 or 4/17)		
4/19	Chronostratigraphy and Age Dating of Sedimentary Rocks	13. Maps, time-stratigraphic relations & geologic reconstructions
4/21	Lithostratigraphy, Chronostratigraphy, and Tools for Correlation	
4/26	Basin Classification and Associated Basin Fill, Late Paleozoic Ouachita Orogen	14. Exam Review
4/28	Field Trip 5 Debrief & Trip 6 Prep	
Weekend Trip 6: Measuring Features in Sedimentary Rocks (4/30 or 5/1)		
5/3	Trip 6 Debrief	15. Lab Final
5/5	Course Evaluation and Review	
5/11 or 5/16; 2-5 PM or 9-12 noon Final Exam		

* Lab conducted outdoors, prepare accordingly.

GEO 420K - EQUIPMENT LIST

THESE MATERIALS ARE REQUIRED and are available in a single course packet for sale at the UT Co-Op. This packet contains the least expensive versions of the items that YOU WILL NEED for the class. **PLEASE PURCHASE THE COURSE PACKET** and *don't shop for alternatives*.

REQUIRED MATERIALS

Field notebook with waterproof paper (e.g. surveyor's field book)
Geologic hammer
Hand lens - 10X Mag. or better
Small squirt bottle for acid (acid will be provided)
Six-inch ruler with mm and inch scale (best if with a protractor)
Protractor, smaller is better
Mechanical Pencil: Pentel 0.5 mm or equivalent with F or 2H hardness lead
Colored pencil set - 6 colors minimum; hard lead, shouldn't smudge
2 technical (drafting) pens (#0 and #00)
Proper field clothes, particularly hat and shoes/boots
Clipboard with cover (standard 8 1/2 x 11" size, without a large metal clip)
Erasers/liquid paper
Canteen (1 or 2 one-quart canteens)
Watch
Knapsack or carrying bag
Grain size scale card – available in the JSG undergraduate office

DESIRABLE MATERIALS:

Rainwear
Aspirin, chap stick, bandaids, sunscreen or tanning lotion, insect repellent, etc.
Toilet paper

PROHIBITED ITEMS:

Firearms
Alcoholic beverages in University vehicles
Controlled substances and narcotics