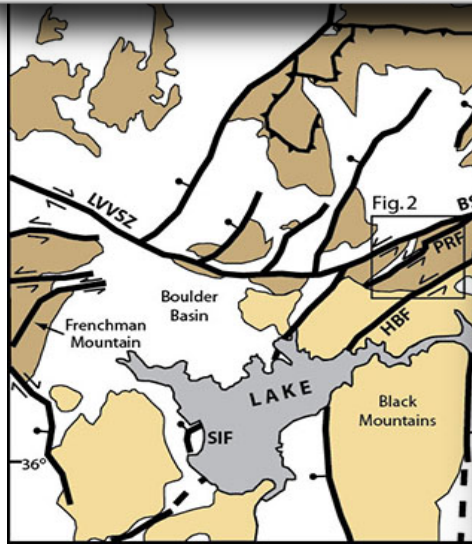
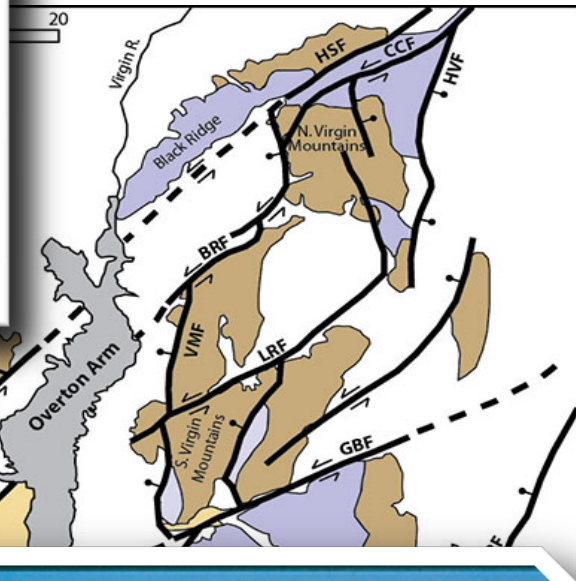
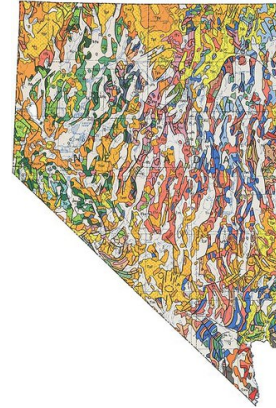


GEOS 220C Field Experiences - Nevada Spring, 2014

Course Syllabus



http://www.appstate.edu/~marshall/research/NV_faulting.html

GEOS 220C
GEOLOGIC FIELD EXPERIENCES - NEVADA
Spring, 2014

Instructor: Dr. James Mills
Office: Julian 214
Phone: 658-4669 or 4654 (Secretary)
E-mail: jmills@depauw.edu

Meeting Time:

Lecture: 9:10 – 10:10 am MWF
Julian 226

Lab: 8:30-11:20 am Thursday
Julian 226

Nature of the Course: Geologic Field Experiences is just that, learning how geologists collect, interpret and communicate geologic data collected from the outcrop.

Attendance: To acquire the fundamental skills taught in this class, attendance at each lecture, lab and field trip is crucial. If you must miss a class, please let me know well in advance if at all possible.

Textbooks:

Geologic Field Techniques, 2010, Coe, A.L., ed., Coe, A.L., Argles, T.W., Rothery, D.A., Spicer, R.A., Wiley-Blackwell Publishers, ISBN 978-1-4443-3062-5, 323 p.

The Field Description of Igneous Rocks, 2nd ed., Jerran, D., and Petford, N., Wiley-Blackwell Publishers, ISBN 978-0-470-02236-8, 238 p.

Communicating Rocks: Writing, Speaking, and Thinking About Geology, 2012, Copeland, P., Pearson Publishers, ISBN 978-0-321-68967-2, 149 p.

Required Classroom Supplies: Handlens, Calculator, Protractor, Colored Pencils, Rulers

Required Field Supplies: Rock pick, acid bottle, field book (a more detailed list of field gear will be given out early in the semester).

Course Fee: A \$200 (approximate) fee will be charged to your student account. The course fee will help cover the costs of course materials (other than those listed above), transportation to and from field areas (including Nevada) and lodging in field areas.

Grading: As this course is a field-based course, grades will be derived from the exercises, writings, and quizzes you turn in and take. Your final grade will be determined using the grade scale below;

<i>A</i>	<i>93-100%</i>	<i>C</i>	<i>76-74%</i>
<i>A-</i>	<i>92-90%</i>	<i>C-</i>	<i>73-70%</i>
<i>B+</i>	<i>89-87%</i>	<i>D+</i>	<i>69-67%</i>
<i>B</i>	<i>86-84%</i>	<i>D</i>	<i>66-64%</i>
<i>B-</i>	<i>83-80%</i>	<i>D-</i>	<i>63-60%</i>
<i>C+</i>	<i>79-77%</i>	<i>F</i>	<i><60%</i>

Academic Integrity: Any act that places a student in unfair advantage with respect to the rest of the class will be treated according to the University procedures outlined in the Student Handbook.

WRITING REQUIREMENT

(W Certification): To satisfy the ‘W’ requirement for this course, you must achieve a 70% average on all writing assignments. ‘W’ courses are designed to enhance your abilities in *1) the logical development of argument, clear and precise diction, and a coherent prose style, 2) the development of general skills of expository writing as they apply in academic disciplines and 3) the reasonable, appropriate and effective use of special or technical language.*

Course Goal:

Through observation and data collection, and application of the scientific method, be able to develop working hypotheses of the origin, evolution, and structure of rock units and their relationship to each other as observed in the field.

To achieve this goal, you will need to develop several new skills;

- 1) *Identify various types of rocks.*
- 2) *Identify various types of geologic structures such as folds and faults.*
- 3) *Identify various rock fabrics such as foliations and lineations.*
- 4) *Learn how to describe rocks and rock units in the field.*
- 5) *Learn how to use various geologic instruments such as the ‘Brunton Compass’ and other resources such as aerial photographs and topographic maps.*
- 6) *Learn how to manipulate and interpret geologic data through the construction of geologic maps and cross sections.*
- 7) *Learn how to use the scientific method to discriminate viable and unviable hypotheses.*

8) *Learn how to communicate your findings through the preparation of scientific reports.*

Projects:

To accomplish the above goal, a new exercise will be introduced each week. Lecture days will be devoted to learning background material for each week’s project. Lab periods will be used to develop field skills and to learn about the geology of the field area.

As a general rule, each lab will be due in one week at the beginning of the next Tuesday lab period. Projects will be downgraded 20% for each day they are late.

Project Grading:

Brunton work	5%
Nature Park Stratigraphy	5%
Geologic Mapping with Google Earth	5%
Shades State Park Exercise	5%
Igneous Rock Exercise	5%
Geologic Cross Sections	5%
Preliminary Geologic Map – Hoover Dam	5%
Rocks of Las Vegas Exercise	5%
Las Vegas Spring Break Project	60%
Total	100%

Readings: See the attached weekly schedule.

ADAAA Statement:

DePauw University is committed to providing equal access to academic programs and university administered activities with reasonable accommodations to students with disabilities, in compliance with the Americans with Disabilities Act and Amendments (ADAAA). Any student who feels she or he may need an accommodation based on the impact of a disability or learning challenge is strongly encouraged to contact Pamela Roberts, Coordinator of Student Disability Services for further information on how to receive accommodations and support. Student Disability Services is located at 101 E. Seminary St., [765-658-6267](tel:765-658-6267).

Geologic Field Experiences – GEOS 220C

Spring, 2014

Week	Date	Topic	Reading
1	Jan. 27 th	Introduction to the course, Equipment Needs	Coe Chp. 2
	29 th	Taking Field Notes, Making Sketches	Coe Chp. 2
	30 th	LAB: <i>Introduction to the Brunton Compass</i>	Coe, Chp. 4
	31 st	Taking Field Notes, Paleontology	Coe, Chp. 4, 5 (skim)
2	Feb. 3 rd	Geologic Time and Stratigraphic Columns	Coe, Chp. 6
	5 th	Working the Outcrop	Coe, Chp. 3, 6
	6 th	LAB: <i>Nature Park Stratigraphy</i>	
	7 th	Topographic maps	
3	10 th	Google Earth and Digital Geologic Mapping	
	12 th	Adobe Illustrator	
	13 th	LAB: <i>Google Earth Mapping Exercise</i>	
	14 th	Adobe Illustrator	
4	17 th	Making a Geologic Map	Coe, Chp. 10
	19 th	Geologic Report Writing	Coe, Chp. 10 Copeland, Chps. 1, 2, 4
	20 th	LAB: <i>Shades State Park Exercise</i>	
	21 st	Geologic Report Writing	Coe, Chp. 10 Copeland, Chps. 1, 2, 4
5	24 th	Igneous Rocks	J-P, Chp. 3, 6, 7, 9
	26 th	Igneous Rocks	J-P, Chp. 3, 6, 7, 9
	27 th	LAB: <i>Igneous Rocks Exercise</i>	J-P, Chp. 3, 6, 7, 9
	28 th	Sedimentary and Metamorphic Rocks	Coe, Chps. 6, 9
6	March 3 rd	Geologic Structures and Cross Sections	Coe, Chp. 8
	5 th	Geologic Structures – Folds, Faults, Joints and Foliations	Coe, Chp. 8
	6 th	LAB: <i>Geologic Cross Section Exercise</i>	
	7 th	Geology of the Great Basin and Environs	
7	10 th	Geology of Nevada, Part I	J-P, Chps. 6, 7, 9
	12 th	Geology of Nevada, Part II	J-P, Chps. 6, 7, 9
	13 th	LAB: <i>Google Map of a Portion of the Hoover Dam Region</i>	
	14 th	Geology of Nevada, Part III	J-P, Chps. 6, 7, 9

Week	Date	Topic	Reading
8	17 th	Field Data Collection	Coe, Chp. 4
	19 th	Review of Las Vegas Trip Logistics	
	20 th	LAB: <i>Rocks of Las Vegas</i>	
	21 st	Leave for Las Vegas!! (March 21 st – 29 th)	
9	31 st	NO CLASS	
	April 2 nd	Geologic Report Writing	Copeland, Chp. 1, 2, 4
	3 rd	NO LABORATORY THIS WEEK	
	4 th	Geologic Report Writing	

10	7 th	Work on Las Vegas Project	
	9 th	Work on Las Vegas Project	
	10 th	LAB: <i>Stratigraphic Column</i>	
	11 th	Work on Las Vegas Project	
11	14 th	Work on Las Vegas Project	
	16 th	Work on Las Vegas Project	
	17 th	LAB: <i>Geologic Map</i>	
	18 th	Work on Las Vegas Project	
12	21 st	Work on Las Vegas Project	
	23 rd	Work on Las Vegas Project	
	24 th	LAB: <i>Cross-sections</i>	
	25 th	Work on Las Vegas Project	
13	28 th	Work on Las Vegas Project	
	30 th	Work on Las Vegas Project	
	May 1 st	LAB: <i>Work on Las Vegas Project</i>	
	2 nd	Work on Las Vegas Project	
14	5 th	Work on Las Vegas Project	
	7 th	Work on Las Vegas Project	
	8 th	FINAL REPORTS DUE – 4:00 PM	

Resources on the Geology of Southern Nevada

Maps

- Anderson, R.E., 1977, Geologic Map of the Boulder City 15-Minute Quadrangle, Clark County, Nevada; USGS Map GQ-1395, 1:62,500.
- Bell, J.W., and Smith, E.I., 1980, Geologic Map of the Henderson Quadrangle, Nevada: Nevada Bureau of Mines and Geology, Map 67, 1:24,000
- Smith, E.I., 1984, Geologic Map of the Boulder Beach Quadrangle, Nevada: Nevada Bureau of Mines and Geology, Map 81, 1:24,000.
- Mills, Jr., J.G., 1994, Geologic Map of the Hoover Dam Quadrangle, Arizona and Nevada: Nevada Bureau of Mines and Geology, Map 102, 1:24,000.
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Books, Bulletins

- Longwell, C.R., Pampeyan, E.H., Bowyer, B., and Roberts, R.J., 1979, Geology and Mineral Deposits of Clark County, Nevada: Nevada Bureau of Mines and Geology, Bulletin 62, 218 p.
- Stewart, J.H., 1980, Geology of Nevada; A Discussion to Accompany the Geologic Map of Nevada: Nevada Bureau of Mines and Geology, Special Publication 4, 136 p.
- Anderson, R.E., 1973, Large-Magnitude Late Tertiary Strike-Slip Faulting North of Lake Mead, Nevada; United States Geological Survey Professional Paper 794, 18 p.
- Longwell, C.R., 1963, Reconnaissance Geology Between Lake Mead and Davis Dam, Arizona-Nevada; United States Geologic Survey Professional Paper, 374-E, 51 p.
- Fiero, B., 1986, Geology of the Great Basin: University of Nevada Press, Reno, 198 p.

Prof. Jim Mills

*Dept. of Geosciences
Spring, 2014*

Phone: x4669 (Jim); x4654 (Secretary, Mary (Maggie) Donohue)

E-mail: jmills@depauw.edu

	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>
8-9:00				Geos 220 LAB	
9-10:00	Geos 220 9:10-10:10		Geos 220 9:10-10:10	8:30-11:20	Geos 220 9:10-10:10
10-11:00	Office Hour 10:20-11:30		Office Hour 10:20-11:30		Office Hour 10:20-11:30
11-12:00					
12-1:00	Geos 320 12:30-1:30	Geos 320 LAB	Geos 320 12:30-1:30		Geos 320 12:30-1:30
1-2:00		12:40-3:30			
2-3:00					
3-4:00					
4-5:00	Dept./Faculty Meeting				
5-6:00					
6-7:00					
7-8:00					
8-9:00					