Semester Field Study Program Information

Please provide the following information:

Field Study Program Name: Interdisciplinary Field Program

Field Study (FSTY) Course ID: FSTY 1025 Field Study (FSTY) Course CRN: TBD Semester Program will be Offered: Summer 2019

Session (Select Session that most closely aligns with program dates)*: Thru Term

Click Here for Session Dates ("Classes Begin" and "Classes End")

Location of Field Study: Various locations throughout the USA (this is a mobile program)

Program Director/Contact Name: Julia Cox, Paul Schroeder

Program Director/Contact Phone Number: 706-542-2652

Program Director/Contact Email Address: juliaec@uga.edu; schroe@uga.edu

Program Start Date (First meeting with enrolled students): 6/6/2019 Program End Date (Last meeting with enrolled students): 8/4/2019 Travel Start Date: 6/6/2019 Travel End Date: 8/4/2019 Anticipated Number of Total Students Participating in Program: 16-24 Anticipated Number of UGA Students: 16-24 Anticipated Number of Transient Students: 0-2 Anticipated Number of Undergraduate Students in the Program: 16-24 Total Number of Credit Hours Taken by Each Undergraduate Student: 9-15 Anticipated Number of Graduate Students in the Program: 0 Total Number of Credit Hours Taken by Each Graduate Student: NA

Please list each course offered through the program on a separate	row below:								<u>Lecture</u>	Field/ Lab
Course Title	Course Prefix	Course Number	Credit Hours	Schedule Type	Instructor(s)	Department of Instructor(s)	Course Start Date	Course End Date	Class Day(s)/ Times/ (Total Number of Class Days)	Class Day(s)/ Times/ (Total Number of Class Days)
Introduction to Anthropology (Honors)	ANTH	2120H	3	Lecture	Jennifer Thompson, Jeff Speakman	Crop & Soil Science, CAIS	6/6/2019	8/2/2019	varied schedule (58 class days)	varied schedule (58 class days)
Indians of North America	ANTH	4020	3	Lecture	Jennifer Thompson, Jeff Speakman	Crop & Soil Science, CAIS	6/6/2019	8/2/2019	varied schedule (58 class days)	varied schedule (58 class days)
students must choose in order to receive 3 credit hours ANTH										
Ecological Basis of Environmental Issues (Honors)	ECOL	1000H	3	Lecture	John Kominoski, Kaitlin Farrell	Other Universities	6/6/2019	8/2/2019	varied schedule (58 class days)	varied schedule (58 class days)
Ecological Basis of Environmental Issues Lab	ECOL	1000L	1	Supervised Lab	John Kominoski, Kaitlin Farrell	Other Universities	6/6/2019	8/2/2019	varied schedule (58 class days)	varied schedule (58 class days)
Ecology of North America	ECOL	4160	4	Directed Study	John Kominoski, Kaitlin Farrell	Other Universities	6/6/2019	8/2/2019	varied schedule (58 class days)	varied schedule (58 class days)
students must choose in order to receive 3-4 credit hours ECOL										
Physical Geology (Honors)	GEOL	2350H	4	Lecture	Dvoracek, Schroeder, Milewski	CAIS, Geology	6/6/2019	8/2/2019	varied schedule (58 class days)	varied schedule (58 class days)
Historical Geology (Honors)	GEOL	2360H	4	Lecture	Dvoracek, Schroeder, Milewski	CAIS, Geology	6/6/2019	8/2/2019	varied schedule (58 class days)	varied schedule (58 class days)
Geology of North America	GEOL	4330	3	Lecture	Dvoracek, Schroeder, Milewski	CAIS, Geology	6/6/2019	8/2/2019	varied schedule (58 class days)	varied schedule (58 class days)
students must choose in order to receive 3-8 credit hours GEOL										

^{*}Please work with department schedulers and OIE to ensure that all academic courses are scheduled in the same Session as the program FSTY course.

Please see additional spreadsheet for details

For questions, please contact the Office of Curriculum Systems at csfieldstudy@uga.edu or 706-542-6358.

UGA IFP 2018 Contact Hours Details

(Details for IFP 2019 will be very similar)

					GEOL	GEOL	GEOL	ECOL	ECOL	ECOL	ANTH	ANTH	ANTH	1
Day	Date	Time	Activity	Contact Hour Notes	Direct	Independent	Total	Direct	Independent	Total	Direct	Independent	Total	
					125	30.5	140.25	87.75	25	100.25	72.25	7.75	76 125	Total Instructional Hours
	1 Sun Jun 3		Ocmulgee, travel to coast		123	30.3	140.23	67.73	23	100.23	12.23	1.13	70.123	110013
			715 Staff arrival											
			730 Meet at Geology/Geography parking lot; load truck											
			745 Brief organizational meeting in room 200 A; introductions and instructions, distribute notebooks, hand lenses, etc	class meeting	0.25			0.25			0.25			
			Cooks + truck depart for Ocmulgee to prepare picnic lunch		0.23			0.23			0.23			
			830 Departure from UGA											
			Arrive Sparta granite outcrop; first field activity, go over proper use of field notebooks, rock hammers (3.5 mi SE 1000 of Sparta center)	lecture and field activity (instrutor-led)	1.5			0.5						
			1200 Leave Sparta outcrop	recture and neid activity (mstrutor-ied)	1.3			0.3						
			1300 Arrive Ocmulgee National Monument. Eat lunch.											
			1400 Tour mounds and museum	lecture and tour (instrutor-led)							2.25			
			1630 Departure from Ocmulgee NM											
			take I-16 east to exit 98. Then take GA57 south to Glennville, Ludowici, then Townsend (about 3 hrs).											
			1900 Arrive at campsite, Townsend, GA. Dinner Organizational meeting and instructions for packing truck in AM. Camping gear not needed and should be loaded											
			2000 first. Provided on Sapelo: bed linens and pillows. Towels NOT provided.											
	2 Mon Jun 4		To Sapelo Depart Sapelo Depart Meridian											
			7:00 am 8:30 am											
			Ferry 12:00 pm 3:30 pm											
		Schedule	4:30 pm 5:30 pm 2018/06/04 Mon 12:46 AM 6.58 H											
			2018/06/04 Mon 07:08 AM 0.74 L											
		Tides	2018/06/04 Mon 01:13 PM 5.88 H 2018/06/04 Mon 07:05 PM 1.15 L											
		Tides	615 Breakfast (bags to truck at 0615). Pack lunch.											
			730 Leave campsite and head to dock for ferry											
			745 Arrive Sapelo ferry dock (Meridian, GA). Load gear and people onto ferry.											
			830 Ferry departs for Sapelo.											
			900 Arrive on Sapelo and ride to UGA Marine Institute.											
			Unpack, assign rooms (Auditorium building code: 1 4 5) (break room code 8 9 10) laundry code 2122 1030 Lecture: Introduction to Earth Systems & Plate Tectonics (DOUG)	lecture										
			1130 Lunch break	iceture										
			1230 Lecture: Introduction to Ecology (JOHN); assign salt marsh papers	lecture				1						
			ASSIGN PAPERS: Southeast Water and Soil, Salt Marsh Eutrophication											
			1330 Break	lecture							_			
			1345 Lecture: Introduction to Anthropology (JENN) 1445 Break	iecture							1			
			1500 Lecture/Lab: Geochemistry & Mineralogy (JULIE)	lecture and lab	3									
			pick up Paul from ferry											
			1800 Dinner											
			1930 Distribute ipads, give instructions and assignments	class meeting	0.25			0.25			0.25			
			2030 trip to the beach											
	3 Tue Jun 5		Sapelo											
			Depart Sapelo Depart Meridian		Ī									
		Tuesday	7:00 am 8:30 am Ferry 2:30 pm 3:30 pm		Ī									
		Schedule	4:30 pm 5:30 pm											
			2018/06/05 Tue 01:34 AM 6.43 H 2018/06/05 Tue 07:52 AM 0.79 L											
			2018/06/05 Tue 07:52 AM 0.79 L 2018/06/05 Tue 02:02 PM 5.95 H											
		Tides	2018/06/05 Tue 07:55 PM 1.27 L		Ī									
			700 Breakfast, Pack lunch.		Ī									
			800 FIELD EXCURSION: Salt marsh	lecture and field activity (instrutor-led)	0.5			1.5						
			1000 Return from field, clean up 1100 Lecture: Key Concepts in Anthropology (JENN)	lecture							,			
			1200 Lunch Break		Ī						1			
			1300 Lecture/Lab: Rock Cycle and Igneous Processes (DOUG)	lecture and lab	2.5									
			1530 Break											
			1545 Lecture/Lab: Marine Invertebrates & Geologic Time (JOHN & JULIE)	lecture and lab	1.25			1						
			1800 Dinner 1930 Lecture: Weathering and Sedimentary Processes (PAUL)	lecture	1.5									
			1730 Lecture, weathering and Sedimentary Processes (PAUL)	iecture	1.5									
					Ī									
•					•	•					•	•	1	•

4 Wed Jun 6		Sapelo					Ī	Ī			l l	Ī
	Wednesday	Depart Sapelo Depart Meridian 7:00 am 8:30 am										
	Ferry	12:00 pm 3:30 pm										
	Schedule	4:30 pm 5:30 pm										
		2018/06/06 Wed 02:22 AM 6.34 H 2018/06/06 Wed 08:42 AM 0.76 L										
		2018/06/06 Wed 02:52 PM 6.14 H										
	Tides	2018/06/06 Wed 08:53 PM 1.29 L										
		00 Breakfast, Pack lunch.										
		00 Lecture: Methods and Ethics in Anthropology (JENN) 00 FIELD EXCURSION: Hog Hammock Tour	lecture guided tour							1		
		00 Uunch break	guided tour							3		
		00 Lecture: Introduction to Cultural Anthropology (JENN)	lecture							1		
	14	00 Break										
		15 Lecture: Stress, Deformation & Metamorphism (DOUG)	lecture	1								
		15 Break 30 Lab: The Rock Cycle (DOUG & JULIE)	lecture and lab	2.5								
	13.	pick up Adam from ferry	recture and lab	2.3								
	18	00 Dinner										
	19	30 Videos: The Beaches are Moving, current volcanism	videos and class discussion	1.5								
5 Thu Jun 7		Sapelo Depart Sapelo Depart Meridian										
	Thursday	7:00 am 8:30 am										
	Ferry Schedule	2:30 pm 3:30 pm 4:30 pm 5:30 pm										
	Schedule	2018/06/07 Thu 03:12 AM 6.32 H										
		2018/06/07 Thu 09:35 AM 0.63 L										
	Tides	2018/06/07 Thu 03:42 PM 6.43 H 2018/06/07 Thu 09:55 PM 1.18 L										
		00 Breakfast. Pack big lunch (long day).										
	8	00 Lecture: Hydrology and Groundwater Resources (ADAM)	lecture	1.5								
	9	30 FIELD EXCURSIONS (split into two groups):										
		Trawl in Doboy Sound (half group goes to Nannygoat) Nannygoat Beach - water table (half of group does trawl)	field activity (instructor-led) field activity (instructor-led)	1.5			1.5					
	13	Nannygoat Beach - water table (half of group does trawl) 00 Lunch break	field activity (instructor-led)	1.5								
		30 FIELD EXCURSION: Shell Ring, Racoon Bluff, Cabretta Beach if time										
		00 Shell Ring (quick stop at Chocolate after Shell Ring)	field activity (instructor-led)							2		
		Racoon Bluff										
	16	SOMEONE NEEDS TO LEAVE THE FIELD TO PICK UP STEPHANIE AT 4:00 30 Cabretta	field activity (instructor-led)	,			0.5					
		30 return	neid activity (mstructor-red)	1			0.3					
		00 dinner										
	20	00 Study time & Mandatory Staff Meeting										
6 Fri Jun 8		Sapelo - Exam 1										
		Depart Sapelo Depart Meridian 7:00 am 8:30 am										
	Friday Ferry	7 12:00 pm 3:30 pm										
	Schedule	4:30 pm 5:30 pm 2018/06/08 Fri 04:03 AM 6.35 H 2018/06/08 Fri 10:29 AM 0.40 L 2018/06/08 Fri 04:33 PM 6.80 H 2018/06/08										
	Tides	Fri 10:58 PM 0.92 L										
	7	00 Breakfast. Pack lunch.										
		00 EXAM	exams	1			1			1		
		00 rest of day off for laundry, cleaning, relaxing on beach										
	11	30 depart to pick up Kait at airport staff grades exams and field notebooks										
	18	00 dinner on the beach!										
7 Sat Jun 9		Okefenokee, Kolomoki Depart Sapelo Depart Meridian					1					
	Saturday	8:00 am 9:00 am					1					
	Ferry	12:30 pm 3:30 pm										
	Schedule	4:30 pm 5:30 pm 2018/06/09 Sat 04:55 AM 6.43 H					1					
		2018/06/09 Sat 11:22 AM 0.10 L					1					
	Tides	2018/06/09 Sat 05:26 PM 7.23 H 2018/06/09 Sat 11:57 PM 0.57 L										
		2018/06/09 Sat 11:57 PM 0.57 E 30 Breakfast. Bags to trucks at 0615.					1					
		00 Final cleaning					1					
	7	30 Departure for ferry dock					1					
	8	00 Ferry to mainland					1					
	8	30 Arrive Meridian dock. Pack truck with gear. Visit Meridian Visitor Center (opens 7:30am Tues-Fri, 8am Sat)	self-guided visitor center		0.	25	1	0.25			0.25	
	9	00 depart for Folkston GA (use Apple map app to navigate to 2700 Suwannee Canal Rd, Saint George GA)						1				
		30 Okefenokee NWR Visitor Center, Swamp Island Drive, hiking trails	lecture and field activity (instructor led)	1.25			1.25					
	13	00 depart for Kolomoki (call Kolomoki to tell them ETA - they are staying open late for us)		1			Í	I		l	ı İ	I

	1330 gas stop Flash Foods 1736 S Georgia Pkwy W, Waycross, GA 31503		1 1	İ	ı	1	1 1	1	İ
		lecture and guided tour						1.5	
	1830 Arrive in camp, Kolomoki Mounds SP								
	1900 Dinner								
	2000 Camp meeting: crew assignments, logistics								
	ASSIGN PAPERS: Nutrient pollution (assign ECOL 4160 lead 15-min discussion of nutrient phases)								
Sun Jun 10 EDT-	C->CDT Providence Canyon								
	600 Breakfast (Bags to the van at 0545)								
	700 Leave for Providence Canyon								
	Arrive Providence Canyon. Overlook, hike canyon, discuss stratigraphy, diagenesis, groundwater erosion, stream								
	800 erosion and deposition	lecture and field activity (instructor led)	3			1			
	1200 Leave Providence Canyon (navigate to Eufala, Montgomery AL)								
	ASSIGN VIDEO: Earth Revealed - Rivers & Landforms (2 videos)	videos and class discussion in van	1.25						
	ASSIGN VIDEO: A Tale of Two Rivers	videos and class discussion in van				1.25			
	1130 (CDT) Enter Alabama and Central Daylight Time								
	1300 (CDT) Gas stop near Montgomery.								
	Travel on US80 business route to cross historic Edmund Pettus bridge.								
	1600 (CDT) Stop, Mississippi Visitors Center								
	1800 arrive camp - LeFleur's Bluff State Park, Jackson MS								
	1830 dinner								
	1930 Lecture: Hominid evolution	lecture						1	
	ASSIGN PAPER: Economic importance of Bats								
	·				1				
on Jun 11 CDT					1				
on Jun 11 CD1	600 Breakfast (bags to van at 0545)						1		
	700 Departure				1				
	800 Mississippi River overlook, lecture (Mississippi River, Gulf of Mexico dead zone, Pleistocene loess deposits)	lecture	0.5	1	1	0.5			
	900 Depart	-	0.5	1	1				
	To get to Poverty Point from I-20, take the Delhi exit (exit 153) and travel N on LA-17, E on LA-134 and N on LA-			1	1				
	577 (follow the signs)						1		
	1000 Arrive Poverty Point, video, museum, tram tour and atl atl toss.	guided tour					1	2.25	
	1230 Leave Poverty Point.								
	ASSIGN VIDEO: HHMI Evolution lectures (2 lectures)	videos and class discussion in van	2.25	1	1				
	ASSIGN VIDEO: Haynesville	videos and class discussion in van	1.5						
	1830 Arrive in camp - Loyd Park, Grand Prairie TX								
	1900 Dinner			1	1				
	2000 LECTURE (ECOLOGY): Nutrient biogeochemical cycles (ECOL 4160 leaders for 15 min max)					1			
ue Jun 12 CDT	T->MDT Permian Basin, drive to Guadalupe Mtns								
	615 Breakfast (bags to van at 0600)								
	715 Leave camp								
	ASSIGN VIDEO: Gasland	videos and class discussion in van	1.75						
	Eastland Cty rest area at exit 361 - new and nice rest area								
	915 GOOD GAS STOP ON I-20 at town of CISCO approx at exit 330								
	ASSIGN VIDEO: Your Inner Fish (55 mins)	videos and class discussion in van	1	1	1				
	ASSIGN VIDEO: Your Inner Monkey (55 mins) and Ardipithecus	videos and class discussion in van		1	1			1	
	1300 Permian Basin Petroleum Museum in Midland TX (group tour)	guided tour	2					0.5	
	1530 Depart for camp						1		
	1730 (MDT) Enter Mountain Daylight time (NM and far west TX)			1	1				
	1745 (MDT) Arrive in camp Pine Springs Campground, Guadalupe Mtns NP						1		
	1830 (MDT) Dinner			1	1				
	1930 (MDT) Lecture: Paleozoic reef communities and Permian Basin paleogeography	lecture	1		1				
	1 0 0 1 7			1	1				
ed Jun 13	Guadalupe Mtns/Carlsbad Caverns (all times MDT)			1					
-	630 Breakfast; pack lunches			1	1				
	730 Depart for McKittrick Canyon (entrance gate opens 8AM MDT (not CDT))						1		
	800 have students sketch reef profile before hiking up slope; hiking safety talk	lecture and field activity (instructor-led)	1.5	1	1	1.5	1		
	hike Permian Reef trail (8.4 mi roundtrip, 2000' elevation gain); geologic markers along trail (look for and sketch	7.	1	1	1				
	fossils; note reef facies changes)			1	1				
	students should identify and sketch a marine invertebrate fossils they find on the trail (at least one per phylum,								
	class)			1	1				
	Ask students to sketch an elevation profile of the vegetation from the base to the summit of the mountain. How does this vegetation profile compare to those on the Sapelo beach and salt marsh profiles? Think about abiotic								
	does this vegetation profile compare to those on the Sapelo beach and saft marsh profiles? I fink about abiotic factors that influence the biotic communities.								
	1300 return to vans			1	1				
	1330 Guadalupe Mtns Visitor Center	self-guided tour		0.25	1	0.2	5		0.25
	1000 Communicate Million Collect	son paraco tom		0.23	1	0.2	ή Ι		0.23
	1430, return to comp				1				
	1430 return to camp				I	.1			
		lecture				1			
		lecture				1			
	1530 Lecture: Economic importance of bats and conservation/disease ecology, ASSIGN PAPER: Achaeology-ecology 1700 dinner	lecture				1			
	1530 Lecture: Economic importance of bats and conservation/disease ecology, ASSIGN PAPER: Achaeology-ecology 1700 dinner 1830 Drive to Carlsbad Caverns for bat flight program.					1			
	1530 Lecture: Economic importance of bats and conservation/disease ecology, ASSIGN PAPER: Achaeology-ecology 1700 dinner	lecture ranger-led program				1			

12 Thu Jun 14	Carlsbad Caverns, drive to Santa Fe (all times MDT)		1 1		1	1 1		1	1	
	615 breakfast (bags to truck 600), make lunches									
	715 depart camp							'		
	730 stateline (evaporites) roadcut	lecture and field activity (instructor-led)	0.75							
	900 Arrive Carlsbad Caverns, lecture on cave carbonate dissolution and deposition (what is source of acid here?)		0.25							
	930 Natural Entrance self-guided tour (opens at 8:30; last entrance 3:30 (4pm if using elevator))	self-guided tour	0.23		3			'		
	students should sketch a number of depositional feature in their field notebooks	sen guidea tom			,			'		
	1230 leave for Santa Fe							'		
	ASSIGN VIDEO: Valles Caldera	video and class discussion in van	0.5			0.5				
	1430 gas stop Roswell (Chisum Travel Center on L heading out of town)									
	1800 Arrive in camp - Rancheros de Santa Fe (ask for permission to use laundry room after hours)							'		
	1830 Dinner									
	1000 Y Y/O PL	1.1								
	1930 Lecture: U.S. Physiographic provinces; Federal government agencies and public land use; petroleum production	lecture	1.5							
13 Fri Jun 15	Day Off in Santa Fe							'		
15 111 7411 15	PICK UP MAIL TODAY									
	Walmart stop if necessary									
	Drop off and park in Basiclica public lot (corner of Cathedral Place and E Alameda, entrance on Paseo de Peralta)									
	Have breakfast at Santa Fe Burrito Co! (111 Washington Avenue) opens 7:30am weekdays, 8am weekends									
	gas up vans before tomorrow							'		
14 Sat Jun 16	Bandelier National Monument and Valles Caldera (All times MDT)									
	615 Breakfast									
	715 Leave camp Arrive Bandelier National Monument (MUST arrive before 9am to drive into park, otherwise must take shuttle).									
	830 tour ruins, museum (2 mile roundtrip hike) - meet David Grant Noble at visitor center at 8:30am	guest lecture, guided tour						3.25		
	1200 Leave Bandelier for Valles Caldera	,,,								
	1245 Valles Caldera overlook; caldera volcanics lecture	lecture	1							
	1400 Meeting NSF-CZO Field Station managers to discuss current CZO operations.	guest lecture	0.5			0.5				
	1530 Valles Caldera visitor center	self-guided visitor center		0.2	15		0.25			
	if time: roadstops at South Mtn rhyolite dome, pumice, and obsidian outcrops along NM4 west of caldera									
	1600 head to camp									
	1800 Dinner									
	LECTURE (ECOLOGY) 4160 students assigned to give 5-10 minute overview of 1) Archaeology-ecology and									
	1930 ecological succession and legacy of environmental disturbances	lecture				1.25				
	NOTE clothing for tomorrow should be appropriate for Acoma visit. No tank tops or short shorts. Respectful									
	clothing please. Also, pottery and jewelry will be on sale at Acoma. Many vendors only take CASH.									
15 Sun Jun 17	Acoma Pueblo, Chaco Pueblo Bonito (All times MDT)									
	600 Breakfast (bags to truck 545)									
	Leave camp for Acoma Pueblo. Travel South on I-25 to Albuquerque. Then travel West on I-40 for approximately									
	55 minutes. Exit at Exit 102; continue to the roundabout and cross over I-40 following the signs to Acomita/Rest									
	Area. At the last roundabout exit at the second right and head to the bottom of the small hill with a Stop sign, turn right and follow the signage to Sky City Cultural Center/Haak'u Museum. You will travel through the small village									
	of Acomita for approximately 5 miles then turn left and follow the signs to Sky City Cultural Center/Haak'u	•								
	700 Museum approximate drive is 15 miles from I-40.									
	ASSIGN VIDEO: The Mystery of Chaco Canyon	video and class discussion in van						1		
	arrive Sky City Cultural Center/Haaku Museum for check-in (NOTE: there is NO note-taking allowed in the museum or during the tour. Also, photography only allowed with camera permit - can be obtained with entrance							'		
	900 ticket)							'		
	930 Acoma guided tour begins (board shuttle to begin)	guided tour						2		
	1200 Museum	self-guided museum							0.5	
	depart for Chaco (I-40W to exit 53, take 371 to Hwy 9 and 57 to Chaco. (Another option - I-40W to Exit 79, take Hwy 605 to 509 to Hwy 9 and 57). See map in excursions folder. Route involves 20 miles of dirt road on 57.									
	1230 CALL CHACO FIRST TO CHECK ON ROAD CONDITIONS 505-786-7014.									
	gas stop Grants exit 79							'		
	ASSIGN VIDEO: What Was Chaco	video and class discussion in van						1		
	1300 Arrive Chaco visitor center	self-guided visitor center						'	0.25	
	1500 tour Una Vida, Pueblo Bonito, Casa Rinconada	guided tour (instructor-led)						2.5		
	Arrive at camp, Gallo Group Camp (on the right as you enter the park before the visitor's center. Drinking water				1			1		
	1730 available at the visitor's center parking lot. Water in the camp ground not potable due to mineral content.)							'		
	1800 Dinner (also pack lunches tonight to save time tomorrow)							'		
	1930 lecture - Ancient Puebloans, Paleoclimatology	lecture	0.5		1			1		
					1					
16 Mon Jun 18	Chaco Pueblo Alto hike (All times MDT)				1			1		
	600 Breakfast (bags to truck 545)				1			1		
	Leave on Pueblo Alto hike (5.4 mile loop) (trails open 7am) - compare sandstone features to Sapelo beach; also				1			1		
	700 ask students to think about predominant erosional factors here - what causes box canyons?	lecture and field activity (instructor-led)	2		1	1		1		
	1200 Last hikers return to vans		1 1		I	1		1	l l	l

	depart after final stop at visitors center (follow route to US 550, Nageezi via 7950 and 7900 (13 miles of dirt road 1230 on the way out))	1		ĺ				1		
	gas stop Aztec (Roadrunner Fuels 800 S Main Ave, Aztec, NM 87410) - comment on San Juan Basin oil and gas arrive Mesa Verde visitor center (outside park entrance); purchase tour tickets for Balcony House (more 1530 adventurous) or Cliff Palace (larger)	lecture visitor center (self-guided)	0.5						0.5	
	arrive Morefield group campground. Check in at store first. Then select group campsite(s) - the first two sites on 1600 the right work well (sites #16&17). 1800 dinner.	visitor center (sen-guided)							0.3	
	1930 Lecture - Colorado River hydrology (Adam) ASSIGN PAPERS: Drying of the West, Unplugging the Colorado River	lecture	1.25							
Tue Jun 19	Mesa Verde pit houses and cliff dwellings (All times MDT) 630 Breakfast, make lunches									
	730 Leave camp							1		
	830 Mesa Top Loop - pit houses and Sun Temple	lecture and tour (instructor-led)						2.5		
	1100 Museum self-guided tour	self-guided tour		0.25		0.	25	2.3	1	
	1400 Balcony House tour (must purchase tickets in advance)	ranger-led tour		0.23		0.		1	•	
	1500 Cedar Tree Tower - hike Farming Terrace trail (0.5 mile loop)	instructor led field activity	0.25			0.25		0.5		
	Park Point overlook - overview of Four Corners geology (go to right at top lookout for overlook of Mesa Verde							1		
	1630 canyons, Sleeping Ute, Shiprock)	lecture	0.75					0.25		
	1730 Return to camp 1800 Dinner							1		
	Evening hike to Point Lookout to watch sunset (2.2 miles roundtrip from campground amphitheater parking lot); 1930 No lecture on top. ASSIGN PAPERS: Fossil and Renewable Energy papers.									
MDT										
Wed Jun 20 MST	Four Corners, Grand Canyon South Rim 630 Breakfast (Bags to truck at 0615)			1	1			1		
	730 Leave camp									
	900 depart for Goosenecks	field activity (instructor led)	1							
	1100 Goosenecks State Park (overlook incised meander) 1200 head to Arizona via Monument Valley	lecture	0.5					0.5		
	1430 (MST) Grand Canyon Desert View Watchtower (MST) Arrive Ten-X (Kaibab NF) campground, south of Tusayan. Group sites through the gate to right of	lecture	0.5			0.5				
	1630 campground host. 1700 Dinner; pack lunches for tomorrow									
	1830 Lecture Grand Canyon geology also cover hiking safety, hydration, hyponutremia. For hike: no sandals, must have at least 2L of water (use one	lecture	1							
All ti	bottle for gatorade), must have a hat and coverage for neck. Pack clean clothes & shower stuff for after hike.									
Thu Jun 21 MST	Grand Canyon Mapping. (All times MST)							1		
	430 Breakfast (lunches packed last night)							1		
	500 Leave camp							1		
	530 Arrive at Bright Angel Trailhead around sunrise							1		
	600 Start mapping	field activity (instructor-led and self-guided)	2.5	2.5				1		
	1000 Three Mile House (complete mapping here)			1				1		
	1100 Start return, those going to Indian Gardens should be there.			1				1		1
	1200 Those going to Indian Gardens should be back at three mile house. Trip leader ALWAYS! in front.			1				1		
	1300 Direct hikers back to Bright Angel Lodge; a van-full can head to showers in Mather Campground 1400 Indian Garden hikers should be above mile and a half house				1			1		
	1500 All hikers should be out and headed for showers.							1		
	1600 Most should be on way to camp, last hikers may be at showers.				1			1		
	1700 Dinner			1				1		
	1830 Instructions for geologic map completion	lecture	0.5					1		
Fri Jun 22	Day off Flagstaff			1				1		
Juli 22	PICK UP MAIL TODAY			1	1			1		1
	Schedule vehicle servicing? Find out when they will be due.							1		
All ti	mas							1		
Sat Jun 23 MST				1				1		
	ASSIGN PAPER: Desert plant adaptations							1		
	530 Breakfast (bags to truck at 0515)			1				1		1
	630 depart			1				1		
	Grand Canyon overlook stops (Grandview, Lipan); lecture GC environmental issues (air quality, U mines, water	lecture				1		1		1
							1	4	I	
	700 quality)	lecture				1		ļ l		
		lecture	1							
	700 quality) 830 Little Colorado gorge overlook (9.4 miles west on SR 64 from US Highway 89)		1							
	700 quality) 830 Little Colorado gorge overlook (9.4 miles west on SR 64 from US Highway 89) Lecture - global carbon cycling		1							

	1215 leave Cameron for Page via US89		I I	1		1		
	1345 arrive Glen Canyon Dam visitor center (tour scheduled for 1415 MST, must arrive 30 mins early)	visitor center, self-guided		0.25		0.25		
	Do not bring bags, food, or anything to drink other than water (camera, clear water bottle, wallet, cell phone ok). Water fountains are not working in the Visitor Center this year, so bring water!	guided tour	0.75		0.75			
	1600 arrive camp Wahweap	garaca tour	0.73		0.75			
	1700 Dinner							
	1830 swimming, laundry, complete maps							
all ti								
22 Sun Jun 24 MDT								
	600 (500 MST) Breakfast (bags to truck 545); turn in GC maps							
	700 (600 MST) depart camp							
	Instructions for cook truck: head through Kanab and Hurricane, UT to approach Zion NP from the SW							
	(use Zion South Entrance to avoid tunnel). Also NOTE Zion Watchman campground may not want to let the truck							
	into the campground due to its size (RVs not allowed). If this occurs, beg the person at the gate to let us unload the	è						
	truck at the campsite and then park the truck in overflow. arrive Grand Staircase entrance at Cottonwood Canyon Road (17.7 miles from AZ/UT border, about 10.5 miles							
	west of Big Water); Meet Ken Bradshaw, Soil Scientist with GSENM (got his PhD at UGA) to discuss the							
	730 monument, BLM, etc	guest lecture	0.25		0.5		0.5	
	head N toward Bryce via Cottonwood Canyon Rd through Grand Staircase-Escalante National Monument (est 1996 by Clinton & was very contentious; first nat monument run by BLM)							
	Cottonwood Canyon Rd is a rough 47 mile dirt road! Do not attempt if wet or rain in forecast! COOK							
	TRUCK should NOT take this road.							
	900 hike Cottonwood Narrows slot canyon (3.5 mile loop or leave 1 van at southern trailhead parking area) The southern trailhead is 24.4 miles up Cottonwood Canyon Rd (CCR) from US-89 (northern trailhead is 1 mile	field activity (instructor-led)	1		1			
	further). Set your odometer!!							
	1130 Cannonville GSENM visitor center (closed Mon and Tues), brief stop							
	1300 arrive Bryce - hike Navajo Trail (1.3 mi loop from Sunset Pt) (note paleosols)	lecture and field activity (instructor-led)	1	1				
	1500 Bryce Canyon visitor center	visitor center (self-guided)		0.25		0.25		
	1530 depart for Zion 1700 Mt Carmel Junction (gas)							
	1800 arrive campground (Watchman campground in Zion NP)							
	1830 dinner (make lunches for tomorrow - pack plenty for long hiking day)							
	1930 LECTURE (ECOLOGY): Fossil and Renewable Energy Resources				1			
	Instructions for measuring stream discharge		0.5					
	divide into stream gauge/hiking teams for tomorrow							
23 Mon Jun 25	Zion Canyon. (All times MDT)							
	Student teams allowed to choose their hike locations from these choices: Angel's Landing, Hidden Canyon,							
	Observation Point, The Narrows; Completion of Virgin River discharge measurement by each team required. GEOL and ECOL focus questions to be assigned.							
	Sandals not recommend for Narrows hike. Hiking shoes work well. Keep cameras etc in waterproof containers 500 Breakfast							
	530 walk to visitors center for shuttle							
	600 shuttle service starts up canyon	field activity (self-guided)		2.5		2.5		
	1600 last hiker boards shuttle back to camp	, ,						
	1700 Arrive in camp.							
	1800 Dinner							
	1900 Exam review		0.25		0.25		0.25	
24 Tue Jun 26 MDT	>PDT Exam 2, drive to Las Vegas (gain 1 hr in Nevada)							
	For power plant tour today: students need to wear power plant appropriate clothes and solid shoes which means							
	no open-toed shoes, no flip flops; no shorts. Short-sleeved shirts are A-OK							
	630 Breakfast (bags to truck at 0615) 730 EXAM 2		1		1		1	
	1045 depart camp (check out time is 11am)		1				1	
	brief stop LaVerkin Overlook to discuss Hurricane Fault (western boundary of CO Plateau) (skip if running late)							
	1115 head toward St. George and Las Vegas 1130 (PDT) enter Nevada, gas stop in Mesquite							
	(PDT) arrive Harry Allen Generating Station for tour (tour scheduled 1pm PDT with plant							
	1245 manger)	guest lecture and guided tour	1.5		1.5			
	Take exit 64, to US-93/Great Basin Highway, Go under freeway to the west; Take an immediate	•						
	right on a frontage road that parallels I-15 northeast; Turn left at power plant sign; Travel							
	(carefully/slowly because of tortoise protections) northwest for about 2 miles and follow							
	signs to the plant. Security will check you in; all bags must be left on the bus; cell phone							
	photos and cameras are OK. 1600 (PDT) check into Las Vegas Hostel (check in starts 3pm)							
	park vans and truck in fenced lot adjacent to hostel. Hostel desk clerk has the key.							
	1630 (PDT) evening off (pool, dinner out, sight seeing at strip)							
	Nobody walks/explores alone. Split into groups depending on desired restaurant and sight seeing. Downtown							
	Container Park has good meal options. 2200 (PDT) curfew							
	2200 (1 <i>D1)</i> custow							
			1			I	1	1

5 Wed Jun 27 PDT	Dooth Valley and Owano Valley (all times PDT)					İ		
	Death Valley and Owens Valley (all times PDT) 600 Breakfast (set up in hostel kitchen), (bags to truck at 0545)							
	700 Leave camp.							
	ANTH: Assign Manzanar reading and podcast; Assign TED talk "How language shapes the							
	way we think" (pod will show up as a song in Music)	video and class discussion in van					1	
	815 Gas stop Pahrump, brief lecture on Basin&Range/Great Basin	video and class discussion in van	0.5				1	
	ASSIGN VIDEO: Cadillac Desert I-III	video and class discussion in van	0.5		1			
	1000 Badwater Basin	lecture and field activity	0.5		0.5			
	1100 Visitors center at Furnace Creek	vistior center (self-guided)	0.3	0.25	0.3	0.25		0.25
	1200 Leave Visitors center. ASSIGN VIDEO: Cadillac Desert I-III (continued)	video and class discussion in van	1	0.23	1	0.23		0.23
	1400 Gas stop Lone Pine, Alabama Hills granite weathering (if time)	video and class discussion in van	,		, i			
	For Alabama Hills stop, head W on Whitney Portal Rd, drive 2.5 miles to Movie Flat Rd and							
	turn right. After 1.5 miles go right at the Y in the road. There will be Natural Arch trailhead							
	parking area immediately on your left.							
	Manzanar National Historic Site (open daily 9-4:30), 5001 Highway 395							
	1500 Independence, CA 93526							
	video, museum, driving tour of grounds	instructor-led tour					2	
	1700 Depart for Big Pine							
	From highway 395 in Big Pine, CA, turn west on Crocker Street, proceed 8 miles west - campground will be on							
	your left after you have entered the forested area.							
	1800 Arrive Big Pine Canyon, we have both Clyde Glacier and Palisade group sites		1					
	1830 Dinner		1					
	1930 LECTURE (ECOLOGY): Life history adaptation	lecture			1.25			
(TI Y 20	Ancient Bristlecone Pines		1					
6 Thu Jun 28								
	600 Breakfast (bags to truck 615) Make lunches 700 Leave camp. ASSIGN VIDEO: Living History The Ancient Bristlecone Pine	video and class discussion in van	1		0.5			
	800 Ancient Bristlecone Pine Forest (visitor center open daily 10am-4pm)	video and class discussion in van	1		0.5			
	ECOLOGY: Discuss organismal life history traits - longevity	lecture			1			
	hike Discovery Trail (1 mile loop) (or Methuselah Trail (4 mile loop) if time) (could also add	iceture			1			
	Cabin loop trail)	field activity (self-guided)		0.5		1		
	1030 depart for Tonopah	ness activity (sen-guidea)		0.5		1		
	arrive Crescent Dunes Solar Plant - tour scheduled for 1pm with Joe Long							
	Plant Manager							
	1300 Mobile: 404-655-0247	guest lecture and guided tour	1.5		1.5			
	1530 depart for camp (get gas in Tonopah first)	g	1		1			
	Assign video: A Place Without People	video and class discussion in van	1				1	
	Arrive Mammoth Lakes Campground. From US 395, take California route 203 toward		1					
	1800 Mammoth Lakes.		1					
	1830 dinner							
	1930 lecture on regional geology, geothermal energy; ASSIGN PAPERS: California water crisis	lecture	1.25					
	students could pack bathing suit, towel for dip in Mono Lake							
7 Fri Jun 29	Mono Lake, Mammoth Geothermal Plant		1					
	PICK UP MAIL TODAY							
	630 Breakfast 730 Leave camp		1					
	730 Leave camp 815 arrive Mono Lake South Tufa area, meet Dave Marquart for tour (tour time set for 830)		1 1		1		0.5	
	A L2 arrive group Lake South Luta area, meet Dave Marquart for four (four time set for X30)	guest lecture and guided tour			1.5	I	0.5	
		8	0.5		1.5			
	Navy Beach for a swim, if time	B	0.5		1.5			
	Navy Beach for a swim, if time		0.5	0.05	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation	visitor center (self-guided)	0.5	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth		0.5	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934-</ceanes@ormat.com>		0.5	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Jct Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope</ceanes@ormat.com>	visitor center (self-guided)	0.5	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Jct Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R)</ceanes@ormat.com>		0.5	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Jet Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time</ceanes@ormat.com>	visitor center (self-guided)	0.5	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Ict Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp</ceanes@ormat.com>	visitor center (self-guided)	0.5	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 489344770) (Ict Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner</ceanes@ormat.com>	visitor center (self-guided)	0.5	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Jet Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner Lookout Mountain for view of Long Valley, lecture, obsidian collecting. Directions here:</ceanes@ormat.com>	visitor center (self-guided) guest lecture and guided tour	1	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 489344770) (Ict Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner</ceanes@ormat.com>	visitor center (self-guided)	0.5	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Jet Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner Lookout Mountain for view of Long Valley, lecture, obsidian collecting. Directions here: 1830 https://volcanoes.usgs.gov/volcanoes/long_valley/long_valley_sub_page_18.html</ceanes@ormat.com>	visitor center (self-guided) guest lecture and guided tour	0.5	0.25	1.5	0.25		0.25
Sat Jun 30	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Jet Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner Lookout Mountain for view of Long Valley, lecture, obsidian collecting. Directions here:</ceanes@ormat.com>	visitor center (self-guided) guest lecture and guided tour	1	0.25	1.5	0.25		0.25
3 Sat Jun 30	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Jet Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner Lookout Mountain for view of Long Valley, lecture, obsidian collecting. Directions here: 1830 https://volcanoes.usgs.gov/volcanoes/long_valley/long_valley_sub_page_18.html</ceanes@ormat.com>	visitor center (self-guided) guest lecture and guided tour	1	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Jet Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner Lookout Mountain for view of Long Valley, lecture, obsidian collecting. Directions here: 1830 https://volcanoes.usgs.gov/volcanoes/long_valley/long_valley_sub_page_18.html Day off Mammoth Lakes</ceanes@ormat.com>	visitor center (self-guided) guest lecture and guided tour	1	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Ict Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner Lookout Mountain for view of Long Valley, lecture, obsidian collecting. Directions here: 1830 https://volcanoes.usgs.gov/volcanoes/long_valley/long_valley_sub_page_18.html Day off Mammoth Lakes Olmsted Point, Tuolomne Grove hike</ceanes@ormat.com>	visitor center (self-guided) guest lecture and guided tour	1	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 489344770) (1ct Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner Lookout Mountain for view of Long Valley, lecture, obsidian collecting. Directions here: 1830 https://volcanoes.usgs.gov/volcanoes/long_valley/long_valley_sub_page_18.html Day off Mammoth Lakes Olmsted Point, Tuolomne Grove hike 630 Breakfast (bags to truck at 0615)</ceanes@ormat.com>	visitor center (self-guided) guest lecture and guided tour	1	0.25	1.5	0.25		0.25
8 Sat Jun 30 9 Sun Jul 1	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Jet Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner Lookout Mountain for view of Long Valley, lecture, obsidian collecting. Directions here: 1830 https://volcanoes.usgs.gov/volcanoes/long_valley/long_valley_sub_page_18.html Day off Mammoth Lakes Olmsted Point, Tuolonne Grove hike 630 Breakfast (bags to truck at 0615) 730 Leave camp for Yosemite</ceanes@ormat.com>	visitor center (self-guided) guest lecture and guided tour lecture	1	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Ict Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner Lookout Mountain for view of Long Valley, lecture, obsidian collecting. Directions here: 1830 https://volcanoes.usgs.gov/volcanoes/long_valley/long_valley_sub_page_18.html Day off Mammoth Lakes Olmsted Point, Tuolomne Grove hike 630 Breakfast (bags to truck at 0615) 730 Leave camp for Yosemite ASSIGN VIDEO: Earth Revealed Glaciers</ceanes@ormat.com>	visitor center (self-guided) guest lecture and guided tour	0.5	0.25	1.5	0.25		0.25
	Navy Beach for a swim, if time 1100 Mono Lake visitor center - ECOLOGY: Endangered Species Act and Watershed Conservation 1200 depart for Mammoth Mammoth Pacific Geothermal tour (Cheryl Eanes <ceanes@ormat.com>; 760-934- 4893x44770) (Jet Old Hwy 395 & Hwy 203 - can see plant from 203 - turn L on Antelope 1300 Springs, then R on Casa Diablo. Go to metal bldg on R) Horseshoe Lake if time 1600 return to camp 1700 early dinner Lookout Mountain for view of Long Valley, lecture, obsidian collecting. Directions here: 1830 https://volcanoes.usgs.gov/volcanoes/long_valley/long_valley_sub_page_18.html Day off Mammoth Lakes Olmsted Point, Tuolonne Grove hike 630 Breakfast (bags to truck at 0615) 730 Leave camp for Yosemite</ceanes@ormat.com>	visitor center (self-guided) guest lecture and guided tour lecture	1	0.25	1.5	0.25		0.25

		hike up slope on N side of road - observe/sketch textural features of granite and evidence of glaciation Tuolomme Grove hike (1 mi hike to grove, 2+ miles roundtrip, 500' elevation loss/gain) - contrast climate and 1230 slope conditions here to east side of Sierras; discuss ecology of giant sequoias 1630 Leave for camp. 1700 Arrive in camp. Lone Pines Stanislaus NF. 1800 Dinner (pack lunches for early hike tomorrow) LECTURE (ECOLOGY) - California's Water Crisis: papers, Water Footprint, Yosemite's 1930 Twin, water-energy-food nexus	lecture and field activity (instructor-led)				1.25	2			
30 Mon Jul 2		Yosemite Valley - Glacial features, magmatic evolution									
		500 Breakfast 600 Leave camp									
		Glacier Point Overlook - sketch glacial erosional features; discuss granite jointing and exfoliation (drivers take 800 vans to Yosemite Village or Happy Isles) hike Panorama Trail to Illidouette, Nevada, Vernal Falls (8.3 mi one-way) - observe current predominant (post-	lecture and field activity (instructor-led)	1							
		900 glacial) erosional processes (have hikers wait/meet at trail junctions to keep group together)	field activity (instructor-led and self-guided)	0.5	1.5		0.5	1.5			
		1400 arrive Happy Isles trailhead in valley; take shuttle to Yosemite Village 1430 Yosemite Village - visitor center and museum; focus on exhibits related to human history in Yosemite depart for camp	museum and visitor center (self-guided)		0.25			0.25		1	
		1700 1830 Dinner									
		1930 lecture: Environmental Anthropology	lecture						1.5		
31 Tue Jul 3	Tides	630 Breakfast (bags to truck at 0615) 730 Lecture - west coast tectonics and geology of the gold rush	lecture	1							
		830 depart									
		900 Coulterville-Mariposa Mother Lode roadcuts (mariposite, serpentine) (budget 1hr for stops, 1 hr for drive) 1100 head west from Mariposa (get gas, coffee in Mariposa)	field activity (instructor-led)	1							
		1230 stop fruit stand near Manteca, discuss water issues, subsidence send Pink or Purple van to Firestone Auto Care in San Rafael (appt at 4pm) 1700 arrive Olena Campground 1800 Dinner	lecture	0.75			0.5		0.25		
		1930 Lecture - wrap up CA water & prepare for intertidal project					1.5				
32 Wed Jul 4	Tides	Point Reyes NS- Miwok village, McClure's Beach 2018/07/04 Wed 02:43 AM 4:53 H 2018/07/04 Wed 02:43 AM 0:54 L 2018/07/04 Wed 14:56 PM 4:80 H 2018/07/04 Wed 10:43 PM 2:79 L 630 breakfast 730 depart McClure's Beach - Coastal Processes Exercises (Erosion, Rock Intertidal/Competition, Ocean									
		830 currents)	lecture and field activity (instructor-led)	0.5			1.5	2			
		Chimney Rock and Lighthouse (The stairs leading down to the Lighthouse, the exhibits in the lower Lighthouse chamber, and the Equipment Building are only open (weather permitting):									
		1300 Fridays through Mondays from 10 am to 4:30 pm) 1400 South or North Beach (high energy beach)	lecture and field activity (instructor-led)	0.75			0.5				
		1500 Bear Valley Visitors Center (opens 9AM on weekends and holidays, 10AM weekdays) 1600 Earthquake Trail and Miwok Village (Kule Loklo Trail) Hikes 1700 return to camp	visitor center (self-guided) lecture and field activity (instructor-led)	0.5	0.25		0.25	0.25	0.5	0.25	
		1800 dinner 1930 lecture - earthquakes, seismicitiy wrap up intertidal Zone exercise	lecture	0.75			0.5				
33 Thu Jul 5	Tides	Muir Woods, San Francisco Bay area geology PICK UP MAIL TODAY Point Reyes Station 2018/07/05 Thu 03:46 AM 4.12 H 2018/07/05 Thu 10:29 AM 0.92 L 2018/07/05 Thu 51.39 H 5.03 H 2018/07/05 Thu 11:54 PM 2.35 L 600 breakfast, make lunch 700 depart 800 Muir Woods (parking reservation is for 8am - parking passes in van folders) 1200 Mussel Rock landslide optional stop: Twin Peaks if weather clear OR Marina Green 1400 Battery Spencer chert outcrop	ranger guest lecture, tour lecture and field activity (instructor-led) lecture and field activity (instructor-led)	1.5			2	1			
		1445 Marin Headland Visitor Ctr (Open Daily - 9:30 AM to 4:30 PM)	visitor center (self-guided)			ļ		0.25		0.5	

	1600 pillow basaslt outcrop near Pt Reyes Station 1700 return Olema campground 1800 dinner	lecture and field activity (instructor-led)	1						
	1930 lecture - seismic building codes; hazard map assignment (due in AM) Announce dress code for Saturday. Must wear boots and long pants for quarry tour		1						
34 Fri Jul 6	Day off San Francisco 2018/07/06 Fri 105:04 AM 3.78 H 2018/07/06 Fri 11:14 AM 1.31 L 2018/07/06 Fri 61:11 PM 5.32 H Tides 2018/07/06 Tri 61:11 PM 5.32 H 2018/07/07 Sat 12:59 AM 1.75 L drop off and pickup at Fisherman's Wharf 615 send Pink or Purple van to Firestone Auto Care in San Rafael (appt at 7am)								
35 Sat Jul 7	Oroville, drive to Tulelake 630 Breakfast (bags to truck 615); make lunches Must wear boots and long pants for quarry tour								
	1030 Arrive Oroville	video and class discussion in van				0.75			
	Table Mountain Quarry 2216 Table Mountain Blvd Oroville, CA 95966 Phone: 530-534-4517 1300 Depart for camp 1700 Arrive in camp (Hawks Nest, Tulelake, CA) 1800 dinner	guided tour	1.25		1.25				
	1930 lecture: Cascade volcanies		1.25						
36 Sun Jul 8	Wildlife Refuge visitor center (The center is open seven days a week, 9:00 am - 4:00 pm, phone: (530) 667-2231) Captain Jack's Stronghold (Ranger led tour scheduled for IFP at 10am), 0.5mi inner loop or 1000 1.5mi outer loop	lecture visitor center (self-guided) ranger-led guided tour lecture	0.75		0.75	0.5	1.5		
	1730 Return to camp (Hawks Nest, Tulelake, CA) 1800 Dinner	self guided visitor center and field activity		1.5	1.5	1.5			
	Reminder to pack a bathing suit for tomorrow!	iecture			1.3				
37 Mon Jul 9	Crater Lake lectures - Native American belief&ceremony, Mazama geology 1300 Hike Cleetwood Trail to lake shore (trailhead 4.5 miles east of North Junction)	visitor center (self-guided) lecture lecture	0.5	0.25	0.25	0.25	0.25	0.25	
38 Tue Jul 10	Exam 3, Warm Springs Museum 630 Breakfast (bags to van at 0615); Make lunches 730 Exam 1100 Depart - Head N on Hwy 97 past Redmond and Madras to Warm Springs. Warm Springs Museum (Anthropology) OPEN Tuesday - Saturday 9 am - 5 pm CLOSED Sunday and Monday Pay	guided tour	1		1		2		

39 Wed Jul 11	Mount St. Helens hike			1 1	i I	1 1	I
	PICK UP MAIL TODAY BATTLEGROUND						
	500 Wake, dress, eat breakfast						
	530 Begin on Ptarmigan Trail to Monitor Ridge	field activity (self-guided)	4				
	1500 Complete hike 1600 recovery time, return to camp at Battle Ground Lake						
	1800 dinner						
	1930 no lecture tonight						
40 Thu Jul 12	Day Off Portland						
	Surface parking at City Center Parking 433 SW Naito Pkway next to McCall Waterfront Park and Oak/SW 1st Ave MAX station (MAX light rail Red Line goes to PDX airport)						
	(0 0 1 /						
41 Fri Jul 13	Johnston Ridge, Toutle River						
	630 breakfast, make lunch 800 depart for Spirit Lake Hwy (Hwy 504, exit 49 from I-5)						
	900 MSH Visitor Center at Silver Lake (WA State Parks facility) \$5/person, open daily 9-5	lecture and visitor center (instructor-led)	2				
	1130 Johnston Ridge Visitor Center (USDA facility) \$8/person	visitor center (self-guided)					
	1400 Hummocks Trail (2.3 mi loop)	lecture and field activity (instructor-led)		2.5			
	1730 Return to camp						
	1800 Dinner 1930 Lecture - ecological succession	lecture		1.25			
	1730 Lecture - ecological succession	iecture		1.23			
42 Sat Jul 14	drive to Olympic Peninsula						
	07/13 Thu 03:15 AM 7.48 H 07/13 Thu 09:58 AM -0.82 L						
	07/13 Thu 04:36 PM 7.13 H						
Tides	07/13 Thu 10:19 PM 2.27 L						
	630 breakfast, make lunch (bags to truck 615)						
	assign geology readings on volcano and EQ hazards of PNW 730 soil lecture and exercise in camp	lecture and instructor-led field activity		2.5			
	1000 depart			2.0			
	1200 Mima Mounds	instructor-led field activity	0.5	0.5			
	1400 Squaxin Island Museum 1600 depart	guest lecture and guided tour				2	
	Anth: Assign Makah video; Oldham Makah Whaling	video and class discussion in van			0.2		
	1800 arrive camp Kalaloch (Olympic NP)	rideo and cass discussion in van			0.2.		
	1830 dinner						
	1930 lecture - tribal sovereignty and cultural preservation	lecture			1.:	5	
43 Sun Jul 15	Olympic National Park,						
45 Sun Jul 15	07/14 Fri 04:01 AM 7.0 H						
	07/14 Fri 10:36 AM -0.36 L 07/14 Fri 05:16 PM 7.26 H						
	07/14 Fri 11:13 PM 2.08 L						
Tides							
	630 breakfast, make lunch head to Ruby Beach, Geology hazards discussion, assign readings/video on Columbia River and basalts,						
	730 Channeled Scablands	lecture and field activity (instructor-led)	1	1			
	1000 depart for Neah Bay						
	1200 Makah Museum 1430 Cape Flattery Trail	guided tour field activity (self-guided)			3	0.5	
	1530 depart	neid activity (seri-guided)			0.5	0.5	
	1730 return to camp						
	1800 dinner						
	1930 Geology lecture - large igneous provinces, flood basalts		1.25				
44 Mon Jul 16							
44 Mon Jul 10	07/15 Sat 04:54 AM 6.44 H						
Tides	07/15 Sat 11:17 AM 0.22 L 07/15 Sat 05:59 PM 7.42 H						
Tides	630 breakfast, make lunch (bags to truck 615)						
	Assign Gravlee and Holmes readings (Medical Anthropology; Food & Ag Systems)						
	730 depart						
	830 Hoh River Rain forest (hike and visitor center)	lecture and field activity (instructor-led)		3			
	Hike loops: Hall of Mosses (0.8mi) and Spruce Nature Trail (1.2mi) 1200 depart						
	Assign video: Food Chains	video and class discussion in vans			1.:	,	
	1600 arrive Riverbend Campground (1040 Clubhouse Ln SE, Olympia, WA 98513) - showers and laundry				· ·		
	send one van to pick up John at airport						
	1800 dinner						
	1930 ANTHRO LECTURE Social sustainability of Ag & Food Systems (moved from CA)	lecture			1.2)	
			1 1	1 1	ı I	1 1	1

45 Tue Jul 17	Drive to Spokane 630 Breakfast (bags to truck at 0615); Make lunches 730 Leave camp (I-5N to I-90E) 900 Stop at Snoqualmie Pass rest stop (Red Mtn Coffee) EXIT 53 on I-90 East **Assign video: "Nova - Mystery of the Megaflood" gas stop in Kittitas, fruit stand (discuss glacial soils & irrigation in eastern WA) EXIT 115, on 1045 N side of I-90 1300 Dry Falls State Park or Palouse Falls State Park (Lake Missoula Flood) 1530 Palouse soil sampling stop 1730 Arrive in camp (Riverside SP, Bowl and Pitcher Area) 1800 Dinner 1900 lecture: stream ecology 2000 complete soil analyses	video and class discussion in vans lecture lecture and field activity (instructor-led) lecture and field activity (instructor-led)	1		0.5	1	1		
46 Wed Jul 18	Spokane River water quality project PICK MAIL TODAY IN SPOKANE 630 breakfast 730 lecture: water quality chemistry 900 tour at Spokane River WWTP 1130 upstream and downstream sampling and testing 1630 time to write up results 1800 Dinner 1930 wrap-up and discuss results ***best to gas up vans today***	guided tour field activity (instructor-led)	0.5 1.25 1.25 0.75	1.25	0.5 1.25 1.25 0.75	1.25			
47 Thu Jul 19 PDT	Description of the composition	video and class discussion in van video and class discussion in van field activity (instructor-led) lecture guided tour	1		1.5		1 2		
all ti 48 Fri Jul 20 MD [*]		field activity (self-guided) lecture field activity (self-guided)	1	2	1.25	2			
49 Sat Jul 21	Browning, drive to Bozeman 615 breakfast (bags to truck 600) 715 Anthropology lecture - mapping key concepts 815 depart for Browning						1		

	900 Museum of the Plains Indian (9am-4:45pm, Tuesday through Saturday, Closed Sunday and Monday)	guided tour	1 1	ĺ	1 1	ĺ	2	İ	İ
	1130 Blackfeet Heritage Center (open daily 10-4), meet Ernie HeavyRunner	guest lecture & self guided tour					1	0.5	
	1300 Depart for Bozeman ASSIGN VIDEO: Climate Change: How do we know we aren't wrong (Podcast)	video and class discussion in vans	0.5		0.5				
	ASSIGN VIDEO: Rachel Carson American Experience	video and class discussion in vans	0.5		2				
	1730 Arrive camp - Hood Creek (on Hyalite Reservoir in Gallatin NF)								
	1800 dinner 1930 LECTURE (ECOLOGY): Climate Change (models, assisted migration)	lecture	0.5		1				
	ASSIGN PAPER: Yellowstone and wolves	lecture	0.5		1				
50 Sun Jul 22	Day off Bozeman optional hike to Emerald Lake (Info on Emerald Lake Hike is in the folder: 10mi RT; Approx 5h.; 2000 elev gain.)								
	- may have to share trail with mtn bikes on weekends								
	Emerald Lake trailhead from camp - Turn R out of campgound, head southeast on Hyalite Canyon Rd for 1 mile. Turn L on FS 3163. Go 1 mile, then turn L to stay on FS 3163. Go 1.3 mile to trailhead.								
	Tall 2 of 15 5105. Go 1 lille, their tall 2 to stay of 15 5105. Go 1.5 lille to tallicae.								
51 Mon Jul 23	Yellowstone 615 Breakfast (bags to van at 600); Make lunches								
	715 leave camp								
	ANTH: Assign short Yellowstone reading (Rogers 2016) & videos: Unnatural Histories: Yellowstone and How								
	wolves can change rivers 945 Earthquake Lake/Hebgen Lake	videos and class discussion in vans lecture and field activity (instructor-led)	2				1.5		
	1200 West Yellowstone Entrance		1 1						
	1300 Norris Geyser Basin	lecture and field activity (instructor-led)	1		1				
	1500 Mammoth Hot Springs 1730 arrive camp Yellowstone RV Park, Gardiner MT	lecture and field activity (instructor-led)	1		1				
	1800 dinner								
	1930 LECTURE (ECOLOGY): Yellowstone wolf reintroduction paper discussion	lecture			1		0.5		
52 Tue Jul 24	Yellowstone to Tetons								
	615 Breakfast (bags to van at 0600); Make lunches								
	715 leave camp			0.5		0.5		0.5	
	900 Canyon Village (Visitor Center, Inspiration Point) 1100 Sulfur cauldron and mud volcano	visitor center (self-guided) lecture and field activity (instructor-led)	0.5	0.5	0.5	0.5		0.5	
	1230 Old Faithful								
	1330 Grand Prismatic spring	lecture and field activity (instructor-led)	0.5		0.5				
	1400 depart Yellowstone 1600 Signal Mountain	lecture	1						
	1830 arrive camp (Gros Ventre)								
	1900 dinner								
	pick up Rachel and Julie from airport (arriving 6:50pm) 2000 make lunches for hike tomorrow								
	2000 make fundasi tot med tomotom								
53 Wed Jul 25	Tetons hike								
	500 Breakfast, pack lunches (packed last night)								
	545 hikers leave camp								
	615 arrive Jenny Lake, lecture and notebook assignment Jenny Lake shuttle (runs 7am – 7pm, \$15 roundtrip) - take shuttle to Cascade Canyon and hike	lecture	0.25		0.25				
	to Inspiration Point and up Cascade Canyon (optional hike to Lake Solitude) NOTE: If arriving								
	in time for 7AM shuttle and paying CASH the rate is \$5/person. Jenny Lake Boating 307-734-								
	700 9227	field activity (self-guided)		2		2			
	Cascade Canyon hike from shuttle dock: 4.8mi one-way to Cascade Canyon fork; 7.5mi one- way to Lake Solitude. Round-trip to Lake Solitude from shuttle is 15 miles								
	1500 last hikers should be in line to board return shuttle boat								
	1600 rest of day off in Jackson (Drop off and park in lot at N Cache and Gill)								
	1800 purchase dinner in Jackson (Pinky G's Pizza?) 1930								
	1,700								
54 Thu Jul 26	Tetons to Dinosaur								
54 Inu Jul 26	1 etons to Dinosaur 600 Breakfast (bags to van at 0545); Make lunches								1
	700 leave camp								
	730 Gas stop Hoback Junction								
	Assign video: Mass Extinction Green River overlook stop at Warrenton Bridge campground and picnic area (lecture on wildlife	video and class discussion in vans	1						
	900 migration and conservation efforts)	lecture	0.25		1		0.25		1
	Assign video: Planet Earth - Saving Species	video and class discussion in vans			2				
	1330 Gas stop Sinclair WY/UT state line	la deserva							
	1400 drive Sheep Creek Canyon loop (south of Manila, UT), stop at Uinta fault	lecture	1 1	I	1 1	I	ı İ	I	I

	1730 arrive camp		1 1	ı	1 1	1 1 1	1 1
	1800 dinner						
	1930 prepare for mapping exercise (review stratigraphy etc)		1.5				
	prepare for mapping energies (terrori strangraphy etc)		1.5				
55 Fri Jul 27	geologic mapping project						
	PICK UP MAIL TODAY Jensen						
	600 Breakfast, make lunches						
	700 leave camp for map area						
	730 begin mapping project (discuss cryptobiotic crusts - don't step on them!)	lecture and field activity (instructor-led)	6				
	1330 complete mapping						
	1400 Visitor center and dino quarry exhibit	visitor center and exhibit (self-guided)		1.5			
	1600 return to camp						
	1800 dinner						
	1930 instruction for completing maps (due in AM)		0.75				
56 Sat Jul 28	Piceance Basin						
	615 Breakfast (600 bags to truck); make lunches						
	715 Geology & Ecology lecture: the sixth extinction	lecture	0.5		0.5		
	815 Anthropology lecture: social inequality	lecture				1	
	930 brief stop petroglyphs	lecture and field activity (instructor-led)				0.5	
	1000 depart Dino NM	• • • • • • • • • • • • • • • • • • • •					
	stop in Piceance Basin to sample/discuss oil shale (Head S on Co Rd 5 at White River City						
	1100 junction) (discuss conventional vs unconventional oil/gas)	lecture and field activity (instructor-led)	1.5				
	1300 gas stop Rifle						
	1730 Arrive in Cherry Creek SP camground (Aurora, CO) - use East entrance on Parker Rd.						
	pick up Chandler from aiprot (arriving 5:25pm)						
	1800 Dinner						
	1900 Exam review		0.25		0.25	0.25	
	T (1 0						
57 Sun Jul 29	Exam 4, day off						
	700 Breakfast (645 bags to truck) 800 Exam						
	1200 rest of day off in Boulder (or Denver?)		1		1	1	
	1200 Test of day off in Boulder (of Denver?)						
58 Mon Jul 30	Denver Museum						
	630 take Jenn and John to airport (about 1 hr roundtrip)						
	730 Breakfast; make lunches						
	830 leave camp for Denver						
	900 arrive DMNS, meet Ian Miller for paleo lab tour	guided tour	2				
	1100 tour Prehistoric Journey exhibit and others of students' choosing	self-guided tour		1	1		1
	1430 depart for camp						
	1500 van and gear cleanup						
	1800 dinner						
	1' G1 1' MO (700 111 1 11)						
59 Tue Jul 31	MDT>CDT drive to Columbia, MO (720 mi, 11 hr est., lose 1 hr)						
	530 Breakfast (bags to van at 515); make lunches						
	take Nico to airport (about 1 hr roundtrip)						
	630 leave camp Good gas stop late afternoon exit 28 Kansas City MO at QT lots of bathrooms						
	1830 arrive camp (Cottonwoods RV Park)						
	From I-70, Take exit 128A in Columbia, MO. Turn left onto US Highway 63 North. Go North						
	4 Miles to the Oakland Gravel Road Exit. Turn Right at Stop Sign at top of ramp. Go 100 feet,						
	then turn Left onto Oakland Gravel Road. Cottonwoods will be on your right hand side less than	1					
	1/2 a mile down Oakland Gravel Road.						
	1900 eat dinner out (China Garden buffet), rest of night off				1		
	, , , , , , , , , , , , , , , , , , , ,			[
60 Wed Aug 1	CDT->EDT drive home (735 mi, 11 hr est., lose 1 hr)			[
	615 bags to truck						
	630 leave camp, stop for breakfast (Panera opens 5:30am)						
	rest area on I64 eastbound between exits 23&27. Also nice new Loves at exit 27.						
	stop for lunch break somewhere (Clarksville? Murfreesboro?)						
	2100 dropoff at Perimeter Mall in Atlanta						
	2300 arrive UGA campus						