FLORIDA ATLANTIC UNIVERSITY

NEW COURSE PROPOSAL
Undergraduate Programs

Department Geosciences

College Charles E Schmidt College of Science
*(To obtain a course number, contact **erudolph@fau.edu**)*

UUPC Approval 1/30/23
UFS Approval _____
SCNS Submittal _____
Confirmed _____
Banner Posted _____
Catalog _____

Prefix GLY **Number** 4351	*(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)* **Lab Code** C	**Type of Course** Lecture/Lab	**Course Title** Ancient Carbonate Platforms
Credits *(See Definition of a Credit Hour)* 3 **Effective Date** *(TERM & YEAR)*	**Grading** *(Select One Option)* **Regular** ◉ **Sat/UnSat** ○	**Course Description** *(Syllabus must be attached; see Template and Guidelines)* This course will introduce students to the geology of the carbonate platforms including: types of platforms, types of sediment, platform sediment zonation, and interpretation of carbonate sedimentary record. It includes a nine to eleven day field trip to western Texas and southern New Mexico.	
Prerequisites, with minimum grade*		**Corequisites** N/A	**Registration Controls** *(Major, College, Level)* Permission of the Instructor

Default minimum passing grade is D-.** **Prereqs., Coreqs. & Reg. Controls are enforced for all sections of course

WAC/Gordon Rule Course

☐ **Yes** ☑ **No**

WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to proposal. See WAC Guidelines.

Intellectual Foundations Program (General Education) Requirement *(Select One Option)*

None

General Education criteria must be indicated in the syllabus and approval attached to the proposal. See Intellectual Foundations Guidelines.

Minimum qualifications to teach course

Terminal degree in the subject area (or related field)

Faculty Contact/Email/Phone

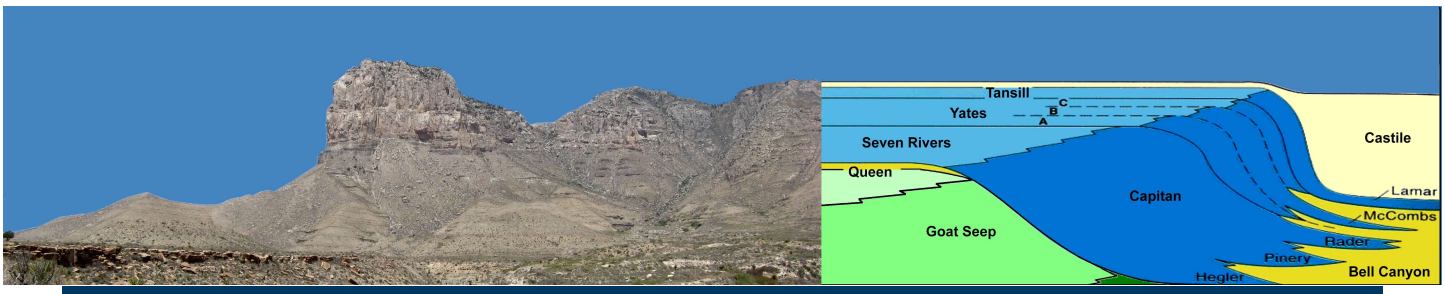
Dr. Anton Oleinik/aoleinik@fau.edu/7-3297

List/Attach comments from departments affected by new course

Approved by / ***Date***

Department Chair	[signature]	12/08/2022
College Curriculum Chair	[signature]	1/17/23
College Dean	[signature]	1/17/23
UUPC Chair	Ethlyn Williams	1/30/23
Undergraduate Studies Dean	Dan Messoff	1/30/23
UFS President		
Provost		

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.



DEPARTMENT OF GEOSCIENCES
CHARLES E. SCHMIDT COLLEGE OF SCIENCE

Department of Geosciences

GLY 4351C

Summer, Spring or Fall Semester, 2023

Ancient Carbonate Platforms

Prerequisites: ***Permission of the Instructor***

Syllabus & Schedule

LECTURES:
FIELD TRIP:

CREDIT: 3 credits

INSTRUCTOR: Dr. Anton Oleinik
Office: SE 464
(561) 297-3297
E-mail: aoleinik@fau.edu

OFFICE HOURS:

Dr. Oleinik Days of the week 12:30 – 5:00 pm
By appointment, open door policy
24/7 during the Field Trip

GRADUATE TEACHING ASSISTANT: TBA

TEXTBOOK:
Not Required, Reading Materials will be provided in PDF format via Canvas

CATALOG COURSE DESCRIPTION

Introduce students to the geology of the carbonate platforms including types of platforms, types of sediment, platform sediment zonation, and interpretation of carbonate sedimentary record. Includes nine to eleven-days field trip to western Texas and southern New Mexico.

COURSE DESCRIPTION

Carbonate rocks are important economically as they have widespread uses for building industry, fresh water aquifers, oil and gas reservoirs, heavy metal accumulation, and even pharmaceutical industry. Majority of carbonate sediments throughout geologic history, just as they are today, had formed on carbonate platforms as a flat-topped units of carbonate sediment in the shallow tropical waters. Their existence and buildup was significantly supported by the deposition of calcareous skeletal remains of marine organisms and diagenesis or resulting carbonate rocks. As climate changed and continents move, some of the ancient carbonate platforms became emergent from the sea, as layers of ancient limestone and today provide an outstanding geologic sites to learn carbonate geology. A number of different morphologies of carbonate platform are recognized, each with its unique sedimentation processes and patterns. Carbonate platforms are unique because they are very sensitive to the long-term environmental fluctuations, such as climate, sea-level, and biodiversity changes through geologic time, and offer an excellent potential to decipher these changes using evidence preserved in the ancient limestone layers.

Understanding of carbonate systems requires knowledge of larger scale depositional settings within which they develop. An understanding of the tectonic setting and the depositional geometry of a carbonate platforms is vital in developing accurate depositional models that are critical for subsurface exploration. The course will introduce students to the geology of the carbonate platforms including types of platforms, types of sediment, platform sediment zonation, and interpretation of carbonate sedimentary record.

Includes nine to eleven (with optional trip to the Sacramento Mountains) days field trip to western Texas and southern New Mexico. In addition to regular registration fees for this course, there will be a **separate fee charged for the field trip** to cover costs of camping and transportation.

COURSE OBJECTIVES

- Provide a unique hands-on experience in the field to gain professional understanding of a carbonate depositional systems, including the major controls on carbonate production and deposition.
- Detailed field study of diagnostic features of carbonate facies and depositional settings.
- An appreciation of the heterogeneous nature of carbonate sediments and how this may impact predictability variations within the subsurface.
- Familiarize students with the geologic history of carbonate platforms
- To gain understanding of preservation and diagenetic history of carbonate rocks and sediments.

METHOD OF INSTRUCTION

This is a face-to-face instruction, hands-on field course. It is not possible to learn Field Geology without going to the field. Although some data can and should be collected using remote sensing, these data would be practically useless without close-up field observations and verifications. The material for the lecture part of the course will be presented in the classroom, accompanied by PowerPoint presentations. Field exercises will be conducted during the field trip to the western Texas and southern New Mexico, where well-exposed Permian and Mississippian carbonate platforms will be studied in the field (see tentative schedule and places that we are going to visit). Instructor and graduate teaching assistant will be available at the field sites to assist students.

ATTENDANCE

Students are expected to be present at all class meetings and especially the field trip. Absence from class will have a negative impact on a student's grade. The main instruction method will be supervising hands-on geologic activities in the field and completing exercises using field data. ***Attendance and participation in all field exercises is mandatory. These cannot be completed on line. There will be no substitutions for any field trips missed for any reason.***

FIELD TRIP

It takes 2.5 to 3 days to drive from Florida to the point of destination (Guadalupe Mountains). The camping logistics is already in place as it was for the Geology Senior Field Camp. Additional camping may be required in the vicinity of the Sacramento Mountains. Depending on the number of sites visited and including 3 days drives there and back the trip may take anywhere from 9 to 11 days. It can be made longer if desired, with additional field sites included.

There will be an extra charge (fee)for the Field Trip, which pays for the rental of vehicles and associated expenses.

FIELD EQUIPMENT and CAMPING GEAR: What to bring to the Field Trip.

Department will supply you with the Tent, Therm-a-rest pad, tarp, Field notebooks, Brunton compasses, acid bottles, hand lenses, car GPS units, handheld GPS units, propane lanterns, propane stoves, first aid kits and coolers (with ice), maps and drafting supplies for the exercises in the field.

Remember, you are responsible for the rest of your own gear. The department cannot replace lost/stolen personal items.

You must bring:

Photo ID; cash/credit cards/traveler's checks; prescription medication for the entire trip; medical insurance information.

Remember that many things can be bought out there at Wal-Mart, but not photo IDs, though.

Camping Items

Flashlight & batteries (try to have smaller size personal flashlights).
Sleeping bag. A blanket in addition might not be a bad idea as well.
Pillow & pillow case (washable). You might want to bring a set of twin bed linens to use in Ft. Lewis College dorms (twin).
Cooking and eating utensils, pots & pans, bowl, plate, mug (we will provide propane stoves and propane)
Matches or lighter
Axe or some other device to chop wood if you want a camp fire.

Field/Geology/ Equipment/Gear

Rock hammer
Safety Goggles
Photo camera (highly advisable!) – be sure to have plenty memory for the camera!
Day backpack or bag (shoulder or waist) to keep everything in – should be able to carry at least 4 – 5 liters of water.
Belt and hammer holster are usually a good idea to keep hands free in the field
Working gloves (at least one pair to protect your hands)
Water canteen, bottle, thermos, or camelback. Essential! It may be hot and dry!
Pocket knife

Clothes and footwear

Hiking boots - should be broken in, comfortable
Shoes to wear in apartment, sneakers or trainers.
Socks, sock liners
Sun Hat
Moleskin in case of blisters (available at most pharmacies)
Poncho or rain gear.
Windbreaker
Cold weather gear - Warm sweater or fleece, flannel shirt.
Swimsuit (optional)

Optional items
Laptop computer (not recommended, fragile item)
Pocket PC/Tablet
USB drive
Binocular, monocular, or other optical device for observing objects in a distance.
Ziploc bags (pint and quart sizes), if you want to collect samples.
GPS (if you prefer to have your own)

Miscellaneous
Sunglasses
Watch (preferably with Alarm)
Sunscreen, chapstick (an important item!), skin lotion, insect repellent
Towel and washcloth
Personal Toiletries and hygiene items
Band-aids, aspirin, medical supplies as needed
Toilet paper (in case the bathroom is out)
Sheets and pillowcase for the dorm (twin size).
Light blanket (optional)

What NOT to bring/ NOT allowed

Excessive clothing (coin laundromats are available at Ft. Lewis College dorms)
Bulky luggage or hard pack luggage (positively no suitcases and large wooden deployment chests or crates!)
Expensive bulky electronics
Large and Extra large pillows
Anything delicate or fragile (or extra valuable)
Personal coolers or ice chests
Skis, bikes, lawn chairs (if you want to use any of these while in Durango, you should make arrangements of shipping these items to and from Durango by means other than the vans we going to drive there and back)
Large heavy and fragile musical instruments (pianos, organs etc.)
Fireworks
Firearms
Illegal Drugs (yes, that includes marijuana!)
Pets

Lecture Examination. One lecture examination before the field trip will be based on lecture materials, readings from the textbook, and your own field experience will be held prior to the departure on the field trip. Examination constitutes 20% of course grade. If you cannot make it to class on the day of the Examination, you have to notify me no later than the date and time stated for

the Exam in order to make the exam up. If you will miss the Exam without notification, you will receive zero points for the Exam.

Field Site papers/reports and projects/exercises - Every student will turn in the following materials:

1. Paper based on the field observations of the Anastasia Formation
2. Stratigraphy exercise, Miami Limestone
3. Structural Joints Exercise Miami Limestone
4. Paper based on the field observations at the Field site in the southern Appalachians

Reports will be based on student's observations in the field. Papers should clearly present data gathered in the field, contain student's own field sketches of the geologic features observed in the field, discuss interpretations of the geology of the site. Papers must show knowledge of geologic concepts and processes, and understanding of relevant geologic history. Specific southern Appalachian site will be randomly assigned by the instructor after the Spring Break field trip is over. See activities schedule for the submission deadline. **Deadlines for papers are FINAL! No Exceptions!** Papers will NOT be accepted after the deadline!

Guide to writing Field Site papers (Field reports) is available on Canvas.

COURSE EVALUATION/GRADING will be based on the following criteria (out of 100 points/percent):

Graded Item	Percent of the Final Grade
Permian Reef transect exercise (map)	10
Basin to backreef transect exercise (cross-section)	10
Turbidite facies field report	20
Capitan reef and back reef facies field report	20
Optional: Sacramento Mountains bioherms report	20
Lecture Examination	20

Grading Scale

Percent	Grade	Percent	Grade
93-100 %	A	73-76.9 %	C
90-92.9 %	A-	70-72.9 %	C-
87-89.9 %	B^+	67-69.9 %	D^+
83-86.9 %	B	63-66.9 %	D
80-82.9 %	B-	60-62.9 %	D-
77-79.9 %	C^+	< 60 %	F

Attainment of the lowest grade average in any category will assure that your grade is not lower than the indicated grade.

Course Schedule

LECTURES, FIELD ACTIVITIES, AND IMPORTANT DEADLINES
(*These dates are tentative and may be modified to better fit the needs of the course*)

Tentative Itinerary

Class Meeting 1 - Class Policies, Scheduling, Introduction, Principles of Carbonate Sedimentation: carbonate production, hydrographic controls, carbonate sedimentation zonation, textural classification and interpretation of carbonate sediments and rocks.

Class Meeting 2 – The Stratigraphy of Carbonate Deposits: basic facies pattern, paleotectonic settings, geometry of facies, carbonate sequences on shelves, shelf margins, and asins.

Class Meeting 3 – Techniques of examining carbonate rocks: microfacies types and interpretation, diagenetic changes in carbonate sediments, clastic content in carbonates, porosity and permeability, fossil content, Paleozoic carbonate framebuilders.

Class Meeting 4 – Geology of the Permian Reef Complex, Guadalupe Mountains

Class Meeting 5 – Geology of the Mississippian – through Lower Permian shelf Margin Facies and bioherms of the Sacramento Mountains

Class Meeting 6 - Lecture Examination. Van preference sheets distributed due Emergency Contact and Cell Phone Sheets due.

Class Meeting 7 - Pre-trip van setup and loading.

Field Trip

Date	Activity
	Pick up vans from ENTERPRISE rent-a-car and prepare them for trip (load supplies, mount car top carriers), or load Department van
Day 1	Arrive at 6 a.m. Load vans. Depart FAU at 7 a.m. Travel to Big Lagoon State Park, FL, overnight camping
Day 2	Travel to Palmetto State Park, TX, overnight camping
Day 3	Travel to Carlsbad National Park, Pine Springs Campground
Day 4	Field Day 1 – Basin sediments turbidites and evaporates. Bell Canyon Fm., Cherry Canyon Fm., Brushy Canyon Fm., Castile Fm. Overnight camping in the Pine Springs Campground
Day 5	Field Day 2 – Geology of McKittrick Canyon – transect of the Permian reef. Permian reef stratigraphy and facies transect exercise Overnight camping in the Pine Springs Campground
Day 6	Backreef facies – Yates, Tansill, and Seven Rivers Fms. Carsbad caverns: formation, cave formation, structure, carbonate diagenesis. Walnut and Slaughter Canyons. Drive to Bottomless Lakes State park, intertidal to sabkha facies, collapsed sinkholes. Geology of the Artesia Group (Permian), dissolution of evaporates, formation of collapse structures. Mineralogy of evaporate deposits, analogs of the modern day evaporative flats (sabkhas). Overnight camping in the Bottomless State Park, NM
Day 7 (Optional)	Optional: Geology of the Sacramento Mountains. Drive to the Oliver Lee Park and Dog Canyon. Roadside outcrops along Highway 82 – Dry Canyon - Wolfcampian and Mississippian carbonate facies. Laborcita Fm, Holder Fm., Fresnal fault Overnight camping at the Oliver Lee Memorial State park Campground

Day 8 (Optional)	Optional: Geology of Sacramento Mountains - Paleozoic carbonate sequence of the North-Central Sacramento Mountains: shallow water facies and Mississippian-Pennsylvanian algal bioherms – Dog Canyon, and Arrow Canyon: Valmont Dolomite, Fusselman Fm., Gobbler Fm. Optional visit to the White Sands National Park Overnight camping at the Oliver Lee Memorial State park Campground
Day 7(9)	Travel to the Copper Breaks State park, TX Overnight Camping in the Copper Breaks State Park.
Day 8 (10)	Drive to the Big Lagoon State park, Florida or to Falling Waters State Park, FL Overnight Camping
Day 9 (11)	Drive back to FAU

Class Meeting 7 - Post-trip debriefing. Assignment of sites for field papers

Field Reports and completed exercises must be submitted by the deadline dates. No Exceptions.

GENERAL CLASS POLICIES/MANDATORY SECTIONS

CLASSROOM ETIQUETTE:
In order to enhance and maintain a productive atmosphere for education, personal communication devices such as pagers, beepers, and cellular telephones are to be disabled in class sessions. (University policy which applies to all classes - see FAU Academic policies (http://www.fau.edu/academic/registrar/catalog/academics.php.) Any use of these devices during a quiz or examination will be considered to be cheating, and will be penalized accordingly. Communication devices (cell phones, pages, laptop computers, etc.) must be turned off and **out of reach** during all lectures and examinations.

Attendance Policy

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance.
Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

Disability Policy

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/

Honor Code and Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001.

ACADEMIC DISHONESTY ON ALL ASSIGNMENTS AND EXAMS IS GROUNDS FOR FAILURE IN THE COURSE.

By remaining enrolled in this course past the end of Drop /Add, you are agreeing to:

- uphold The Academic Honor System of Florida Atlantic University, and
- accept accountability for the course requirements, the course expectations, and the attendance policy stated in this document.
- attend the final exam which takes place as scheduled by the University.

Please see the following link for more information:
http://www.fau.edu/ctl/4.001_Code_of_Academic_Integrity.pdf