FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—NEW COURSE PROPOSAL[1]

UGPC APPROVAL _____
UFS APPROVAL _____
SCNS SUBMITTAL _____
CONFIRMED _____
BANNER POSTED _____
CATALOG _____

DEPARTMENT: GEOSCIENCES

COLLEGE: COLLEGE OF SCIENCE

RECOMMENDED COURSE IDENTIFICATION:

PREFIX ___GLY_ COURSE NUMBER _6352_____ LAB CODE (L or C) _____

(TO OBTAIN A COURSE NUMBER, CONTACT MJENNING@FAU.EDU)

COMPLETE COURSE TITLE: COMPARATIVE CARBONATE SEDIMENTOLOGY

EFFECTIVE DATE
(first term course will be offered)
SPRING 2015

CREDITS[2]: 3

TEXTBOOK INFORMATION: No single textbook will be assigned for the course. A number of papers and book chapters will be assigned for class discussions.

GRADING *(SELECT ONLY ONE GRADING OPTION)*: REGULAR ____X__ SATISFACTORY/UNSATISFACTORY _____

COURSE DESCRIPTION, NO MORE THAN THREE LINES: The course is dedicated to study of carbonate deposits in the process of formation, methods of studies, examination of sediment types and factors that control their distribution, and tracking depositional environments, rocks, and calcareous organisms into the recent geologic past (Pleistocene and Holocene).

PREREQUISITES *:	COREQUISITES*:	REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*:
GLY2010, GLY2100, GLY3603, GLY4200, GLY4500, GLY4750, GLY4790, GLY3731, CHM2045, or equivalents and/or permission of the instructor.		

** PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.*

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE: PH.D. IN THE RELEVANT FIELD

Faculty contact, email and complete phone number:
Dr. Anton Oleinik
aoleinik@fau.edu
(561) 297-3297

Please consult and list departments that might be affected by the new course and attach comments.[3]

Approved by:	*Date:*
Department Chair:	3/11/14
College Curriculum Chair:	02/12/14
College Dean:	3/13/14
UGPC Chair:	3/24/14
Graduate College Dean:	3/24/14
UFS President:	
Provost:	

1. **Syllabus** must be attached; see guidelines for requirements: *www.fau.edu/provost/files/course syllabus.2011.pdf*
2. Review **Provost Memorandum: Definition of a Credit Hour** *www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf*
3. **Consent** from affected departments (attach if necessary)

Email this form and syllabus to *UGPC@fau.edu* **one week before** the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.

Course Syllabi for Comparative Carbonate Sedimentology

1. **Course title/number, number of credit hours**
   Comparative Carbonate Sedimentology, GLY 6352, 3 credits

2. **Course prerequisites**
   GLY 2010 – Evolution of the Earth, GLY 2100 – History of the Earth and Life, GLY 3603 – Paleontology, GLY 4200 – Mineralogy and Crystal Chemistry, GLY 4500 – Sedimentation and Stratigraphy, GLY4750 Field Methods, GLY 4790 Geology Field Camp, GLY3731 – Coastal and Marine Science; CHM 2045 General Chemistry 1, or equivalents and/or permission of the instructor.

3. **Course logistics**
   a. Term – **Spring 2015**
   b. Notation if online course – N/A
   c. Class location and time (if classroom-based course) – location to be determined, Saturdays 10:00 AM - 12:50 PM,

4. **Instructor contact information**
   a. Instructor's name – Dr. Anton Oleinik
   b. Office address – PS 358
   c. Office hours – Tuesdays and Thursdays 5:00 – 6:00 PM and by appointment.
   d. Contact telephone number – office (561) 297-3297
   e. E-mail address – aoleinik@fau.edu

5. **TA contact information (if applicable)**
   N/A

6. **Course description**
   South Florida is the only region of subtropical carbonate deposition within the continental United States. It contains a variety of shelf and coastal carbonate deposits and spectacular coral reefs and provides unique opportunities for field study of marine and coastal sites of carbonate sedimentation. The course is dedicated to study of carbonate deposits in the process of formation, methods of studies, examination of sediment types and factors that control their distribution, and tracking depositional environments, rocks, and calcareous organisms into the recent geologic past (Pleistocene and Holocene). Recent geologic past of South Florida is a key to understanding of impacts of changing climate on the Florida Peninsula. Using hands-on field approach the course will teach students detailed geologic history of Florida platform during Pleistocene and Holocene. Field studies of carbonate depositional environments will be

oriented towards illustrating main concepts of carbonate deposition: carbonate grains composition, major controls on carbonate deposition, diagenetic changes in carbonates, and the geological record of carbonate rocks.

7. **Course objectives/student learning outcomes**

The purpose of the course is to give students an in-depth understanding of sediments and sedimentary processes within Modern and Late Cenozoic carbonate depositional environments, animal-sediment interactions, and the significance of these processes for sedimentary geology and stratigraphy through a detailed examination of carbonate sediments and depositional environments in southern Florida.

The main objective is to provide a hands-on field experience with the present day environments of carbonate deposition and use these data for interpretation of the Holocene and Pleistocene carbonate environments and geologic history.

The course is targeted for Geology, Environmental Studies, and Biology graduate students.

8. **Course evaluation method**

Evaluation for this course will be determined by your performance in class (participation in discussions and preparation), written field reports and class assignments/exercises. Your overall grade for the course will be apportioned as follows:

Course attendance/participation 15%
Field Trips reports (short papers) = 2 x 10 = 20%
Micropaleontology/Carbonate constituents Lab exercise - 15%
Carbon & Oxygen isotopes Homework Exercise - 5%
Experimental short projects - 2 x 10 = 20%
Research Paper/project - 25%

9. **Course grading scale (optional)**

Final grades to be determined according to the following guidelines:

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

10. Policy on makeup tests, late work, and incompletes

Deadlines for projects and assignments
All deadlines are final, there will be no extensions.

11. Special course requirements (if applicable)

N/A

12. Classroom etiquette policy (if applicable)

University policy on the use of electronic devices states: "In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions."

13. Disability policy statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) -- in Boca Raton, SU 133 (561-297-3880); in Davie, MOD 1 (954-236-1222); in Jupiter, SR 117 (561-799-8585); or at the Treasure Coast, CO 128 (772-873-3305) – and follow all OSD procedures.

14. Honor Code policy statement

Academic misconduct includes but is not limited to cheating, fabrication, plagiarism, or facilitating academic dishonesty. Academic misconduct will not be tolerated in this course. This class provides opportunities for collaborative work; however, everything that you turn in must be your own expression of your understanding of the material. Academic misconduct in

any part of the course may lead to failing the particular assignment and the course, and it may result in disciplinary sanctions (see http://www.fau.edu/ctl/AcademicIntegrity.php)

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 at http://www.fau.edu/regulations/chapter4/Reg_4.001_5-26-10_FINAL.pdf

15. Required texts/readings

No single textbook will be assigned for the course. A number of papers and book chapters will be assigned for class discussions. Assigned readings will be available as copies, in the university library, or as PDF files on the G:\CourseMaterial\GLY6934 CARBONATE SEDIMENTS.

16. Supplementary/recommended readings (optional)

17. Course topical outline

Tentative Class Schedule

(Variations from this syllabus may and most probably will occur in order to better meet the needs of this particular group and to accommodate weather changes. Any changes will be announced in class or via email.)

Primary Field trips (exact dates to be determined):
Pleistocene carbonate bedrock - Key Largo Limestone - Windley Key Quarry
Carbonate sand beaches and shoals, mud mounds, shallow hard ground (exposed rock surfaces) - Long Key and Bahia Honda

Outer Reef: storm effects, coral morphology, rubble piles. Patch reefs and tidal channels. - Florida Reef Tract (Keys Marine Lab)
Lagoonal Environments - Lime mud deposition in Florida Bay, mud banks accumulation and morphology, sediment distribution in the mangrove islands.
Florida Bay (Keys Marine Lab)

Additional trips (time and weather permitting):
Diagenesis of carbonate sediments - Dolomitic crusts at the Sugarloaf Key
Rodriguez Money Key (organism zonation and preservation of hardparts)
Composition of Neogene limestone and carst topography (Devils Den and Blue Springs)
Tidal and supratidal depositional environments - Worm reefs and Mangroves - Bear Cut, Miami
Oolitic shoal deposition and non-skeletal carbonate particles. Burrows and bioturbations. Miami Limestone - Greynolds Park and Anemone Garden
Rocky shore environments - Rocky shore environments

Deadlines for projects and assignments
All deadlines are final, there will be no extensions.

January 31
Micropaleontology/Carbonate constituents Lab exercise
Carbon & Oxygen isotopes Homework Exercise

February 28
Carbonate sand beaches and shoals field trip report
Insoluble constituents of carbonate sediment exercise report

March 31
Windley Key Quarry/Pleistocene Reef field report

April 8
Production of Calcium carbonate by calcareous algae exercise report

April 22
Term Paper

Course Procedures and Assignments: The course will consist of several field trips to various areas of present and Pleistocene carbonate sedimentation (for localities, please see "Tentative Schedule" section). Reading materials for particular trips, assignments, instructions, and research papers are posted on Geosciences drive G:\CourseMaterial\GLY6934 CARBONATE SEDIMENTS

and/or distributed as Xerox copies, or suggested references that you will have to obtain from the campus library. Sediment samples collected during field trips will be examined in the laboratory and, together with your field observations, will be used to prepare a field report, experimental projects, and research paper.
You will be completing 2 exercises - Micropaleontology and Carbon and Oxygen Isotopes. **Micropaleontology lab exercise** will be your first exercise during the course and it is designed to introduce you to small fossilized hard parts that contribute to the accumulation of carbonate sediments. This knowledge will be essential for the preparation of **field reports** and **term paper**. **Carbon and Oxygen isotopes homework exercise** is designed to introduce you to a powerful tool for extracting information about depositional environments and paleoclimate based on the rations of stable isotopes of Oxygen and carbon that contained in the carbonate skeletal hard parts. You will also complete **two experimental projects** on Carbonate production from green algae and insoluble components in carbonate sediments. Deadlines for the reports, exercises, experimental studies, and term paper are posted in the schedule.
All deadlines are final, there will be no extensions.

Facilities: When completing Lab assignments and Exercises, you will be using equipment and supplies in the room SE345. You will be working on the projects at your convenience, so there should not be shortages of equipment. General facilities available for completion of your projects are - binocular microscopes, low-temperature ovens, scale, hydrochloric acid, various glassware, and fume hood. Please note that we have two really good new Nikon binocular stereomicroscopes. I can probably bring one more - my personal older Nikon binocular microscope for anyone to use. The rest of the binocular microscopes are smaller and less convenient to use. The microscopes will be used on a first come- first serve basis. Sets of wet sieves (I have 5 sets), microfossil trays, microfossil slides, cover glasses, dissecting picks and pick up brushes will be available for students to use. Please KEEP EVERYTHING ORGANIZED and put the equipment and supplies back, EXACTLY as you found it after each use. Most of these are expensive and very hard to replace.

References
Field trips for the course and all course work will be dealing with carbonate sediments in South Florida. For that reason, I made a collection of articles related to the subject of carbonate sediments, sedimentation, and sedimentary environments in South Florida. These papers in PDF format are in the References folder in G:\CourseMaterial\GLY6934 CARBONATE SEDIMENTS. In addition, several papers will be provided with your exercises. There is wide range of papers on different subjects and topics. The papers are subdivided by geography of the region and general subject to make it easier for you to find a topic. Many of these papers are from 1950 - 1980-s for it was the "golden age" of studying of carbonate sediments in South Florida. Some f these papers are due to critical review and re-evaluation and it maybe up to you to make that step. I strongly suggest you to use these papers for your projects and read them before

field trips to have yourselves prepared. I also encourage you to use any other literature on carbonates you may find useful. List of some books and papers will be provided to you in the same folder.

Term Paper

Unlike the field reports and exercises where explanations will be provided to you, you will have to choose your own topic for your Term Paper. I strongly recommend thinking about choosing your topic early and start collecting material or making observations during field trips. You can concentrate on comparison of two different types of sediments, for example from the Florida Bay side and Florida Reef Tract, composition and systematics of microfossils, sedimentation patterns using remote sensing methods and ground truthing, preservation of skeletal hardparts, or anything that you become interested in. Suggestions for wring a term paper are in the directory "Scientific Writing" on drive G:\CourseMaterial\GLY6934 CARBONATE SEDIMENTS. For those of you who have Carbonate sediments, environments, or stratigraphy as part of your MS thesis, I will allow to submit a term paper on the topic that may be unrelated to field trips that we are going to conduct during the course of the semester, but it has to be an integral part of your thesis - i.e. a chapter. You will have clearly demonstrate to me that it will be solid and essential contribution to your thesis.

Field Component:

Only reasonably safe sites accessible to public will be visited during field trips. Changes in the Field Trip schedule and objectives are possible due to the weather conditions in the area. Field trips may and most probably will require snorkeling, boating and getting in the water. Please remember to be dressed appropriately. Field trips, typically, will be one or two days. Two days trips will involve either overnight camping or staying at the Keys Marine lab. Suggested readings for each field trip, equipment lists, report guidelines, and instructions are posted on G:\CourseMaterial\GLY6934 CARBONATE SEDIMENTS.

There will be some additional costs associated with the access of field sites and staying in the field. For example, the entrance fee to the Windley Key quarry is $1.50 per person on Fridays, Saturdays and Sundays, free on Monday and Thursday. Entrance fees to the Long Key State Park - $4.65 per vehicle or $1.50 per person. For the group of 7 people, I was quoted $10.

Additional fees will be required for an overnight camping, or staying in the motel and park services, such as snorkeling and/or glass bottom boat trips, if we decide to take these. For example, one night in the Keys Marine Lab is $35 per person. Boat use in the Keys marine Lab is $200 - 300 per day for the entire group (shared cost). Please see the fee schedule for the Keys Marine Lab in Appendix. If we decide to rent mini vans for the trips, there will be an extra-charge for the rental vehicles. We can drive our own vehicles and carpool.

Field Gear

You will need to have some very basic geology field gear to use in the field. Please note that I do not loan my gear to people.

1. Working gloves (cheap cloth type, can be purchased in Home Depot or Lowe's)
2. Field notebook (if you do not have an "official" geology field notebook, you can Use any notebook you feel comfortable with to take notes)
3. Pencil(s)
4. Hand lens
5. Pocket knife
6. Hat and sun lotion
7. Zip lock bags (medium size) for loose sediment collecting
8. Snorkeling gear (fins, mask, snorkel). A wetsuit might be a very good idea, especially if water is chilly. We will try to snorkel extensively in several areas. Snorkeling will depend on weather conditions and boat availability.
9. If we decide to camp, you will need basic camping gear - tent, Air mattress and sleeping bag.
10. Camera is always a plus, but be careful not to expose it to salt water if we going to go snorkeling or on the boat.

Safety

Most of our marine stops will be in the water of wading depth. For those in deeper water, especially requiring snorkeling, the buddy system will be strictly enforced.

Boats and snorkeling:

- Do not get in the water until your instructor or captain of the vessel tells you to
- Never dive from the boat head down with your face mask on
- Remove your fins before boarding the boat and use the ladder
- Do not swim far away from the boat
- Do not dive if you feel pressure on your ears. Ask your instructor to show you how to equalize the pressure.
- Consult with your instructor about plants and animals you should avoid.
- Do not overexert

Sunburn, heat exhaustion, and sunstroke

Field trips in the shallow water subtropical setting are physically demanding and require special considerations. You can easily get a severe burn or be adversely affected by the sun without knowing it. Even with an overcast sky, the reflection from the water is a danger. Use the sunscreen (sun block) cream and/or wear a long-sleeved shirt and hat in the boat. Do not take chances if you want to make the whole trip without discomfort or injury.

Snorkeling

We will be doing some snorkeling in the general area of Florida Keys. The water may be chilly, particularly in February and March, so I strongly suggest using wetsuits. They also protect your skin from excessive UV exposure. According to the University regulations, in order to participate in class snorkeling activities, each one of you mush fill out and sign the Diving and Boating safety committee form, Appendix B and the first page (**First page only!**) of the Appendix C. You will find these forms in PDF format in the same directory as the syllabus on drive G:\CourseMaterial\GLY6934 CARBONATE SEDIMENTS. These needed for the waiver of liability and emergency contact only. You will not be applying for the Scientific Diving Program. These forms, signed and dated should be given to me (you can leave it in my mailbox) **prior** (!) to any snorkeling activities during field trips. Those who will not fill out forms will not be allowed to snorkel (= could not collect samples = could not complete course assignments = ...).

MISC. POLICIES

Geosciences Computer Lab Policies:
Before using the Geosciences Computer Laboratories, all students are responsible for reading the computer lab/resources policies at
http://www.geosciences.fau.edu/computer.html
In particular, printing by graduate students is now limited and you will be unable to print if you reach your
limit.

In conjunction with KML's new Strategic Plan and Mission Statement, we are releasing our new 2012 Rate Sheet which will take effect October 1, 2012. We are keenly aware of the funding challenges all of us in the science and education communities are facing. Therefore, if you have already scheduled use of KML for 2013, we will honor the rates we quoted previously. If you need clarification or have questions, please don't hesitate to contact us anytime.

v.070112

RATE SCHEDULE

Effective October 01, 2012

Keys Marine Laboratory
PO Box 968
Long Key, FL 33001
(305) 664-9101 Fax (305) 664-0850

Facility Use:

Dorms and Support Facilities:	$35/day/person
Classroom or Meeting Room *only*:	$55/half day/group $110/full day/group
Wet or Dry Lab Facilities *only*:	$40/day/approved project up to 3 people $15/day/each additional person
Long Term Housing(Bay House):	$35/day/person, 2 week minimum at daily rates
	$550/one person/month $110/each additional person/month

Seawater System Fees: Shallows Space & Holding Tanks – call for pricing and availability

Boat Use: (operator included, fuel billed at cost for amount used per trip)

Full Day	6 hours water time (additional hours $55/per hour)
Half Day	3 hours water time (over 3 hours billed at Full Day rate)

30' Island Hopper (Reef/Ocean Use)
"R/V Diodon" 24 person capacity (22 students + 2 operators) $330/full day $55/hour + fuel
NOTE w/15+ students in dorms fuel costs to select field sites included...inquire for details.

25' Parker (Reef/Ocean Use)
"R/V NoteMola" 12 person capacity (11 scientists/students + 1 operator) $220/day $115/half-day (minimum) + fuel

24' T-Craft (Florida Bay Use)
"R/V Tiburo" 9 person capacity (8 scientists/students + 1 operator) $220/day $115/half-day (minimum) + fuel

18' Parker (Florida Bay/Ocean,*captained)*
"R/V NariMari" 5 person capacity (4 scientists/students + 1 operator) $165/day $85/half-day (minimum) + fuel

Boat Only Near-shore, research groups only...requires instruction from staff prior to use.

18' Parker 5 person capacity (max 750lbs.) $110/day $60/half-day + fuel

13' Whaler 2 person capacity $65/day $35/half-day + fuel

***Self captained vessels invoiced in Half-Day increments...Full Day = 6 hours, Half Day = 3 hours*

Boat use is subject to weather conditions, service availability, and KML staff discretion.

Personnel Support: $30/hr project support; $40/hr scuba dive support - KML personnel are available for collecting assistance, technical assistance, clerical assistance, etc. with prior arrangement. This fee is included in boat use as operator and guide only; additional diving, technical support or assistance will be charged at these rates.

Facility Tours: $45 **Copies:** $0.25 per page **Faxes:** $3/per (Calling card required for long distance.)

Gasoline/Oil: Direct Cost **Air Tank Fills (approved AAUS divers):** $4/per (air only) $6/per (w/KML supplied tank)

Telephone: No long distance calls without credit card. **No exceptions.**

Specimens: Please contact office for specimen collection rates which vary with species requested. Boat trips, staff time, holding tanks, care/feeding, packing/shipping contribute directly to fee calculation.

Other: Costs for all other consumable items will be billed at a rate determined in advance and will be based on current replacement costs. This includes such items as bait, oil, laboratory supplies, chemicals, shipping units, etc. Please consult with KML Manager prior to arrival. If you require services not listed, please inquire with Manager in advance of arrival.

Official invoices are processed after departure and mailed from USF/FIO St. Pete offices. Preliminary invoices available from KML office, please schedule charge review appointment with office prior to departure

**Cancellation Policy - Thirty (30) day advance notice required.
Full charges invoiced if cancelled without 30 day notice.**