FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—COURSE CHANGE REQUEST[1]

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

DEPARTMENT: GEOSCIENCES	COLLEGE: SCIENCES
COURSE PREFIX AND NUMBER: GLY 5457	CURRENT COURSE TITLE: ENVIRONMENTAL GEOPHYSICS
CHANGE(S) ARE TO BE EFFECTIVE (1ST TERM): SPRING 2014	TERMINATE COURSE (LAST FINAL ACTIVE TERM):
CHANGE TITLE TO: EVERYTHING BUT PREFIX STAYS THE SAME CHANGE PREFIX FROM: TO: CHANGE COURSE NO. FROM: 5457 TO: 6456 CHANGE CREDITS[2] FROM: TO: CHANGE GRADING FROM: TO: CHANGE DESCRIPTION TO:	CHANGE PREREQUISITES/MINIMUM GRADES TO*: CHANGE COREQUISITES TO*: CHANGE REGISTRATION CONTROLS TO: *Please list both existing and new pre/corequisites, specify AND or OR, and include minimum passing grade.
Attach syllabus for ANY changes to current course information	
Should the requested change(s) cause this course to overlap any other FAU courses, please list them here.	Please consult and list departments that might be affected by the change(s) and attach comments.[3]

Faculty contact, email and complete phone number:
Dr. Comas Xavier, xcomas@fau.edu, 954-236-1569

Approved by:	*Date:*
Department Chair:	11/22/2013
College Curriculum Chair:	01/13/2014
College Dean:	1/14/14
UGPC Chair:	1/22/14
Graduate College Dean:	1-29-14
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.

MEMO:

This course was originally designed and proposed as a 6 thousand level course. A course number of GLY 6456 was already given originally but for some reason the course stayed as a 5 thousand level course. I'm requesting to use the 6 thousand level prefix as originally proposed and as shown in our doctoral curriculum program:
http://www.geosciences.fau.edu/programs/doctoral_curriculum.php

The course is intended to be implemented so rigorously at a level only suitable for graduate students to take, hence 6000 level.

Environmental Geophysics

Department of Geosciences
Charles E. Schmidt College of Science
Florida Atlantic University

Instructor:

Dr. Xavier Comas
Email: xcomas@fau.edu

Prerequisites:

Graduate standing in Geology or related discipline; or permission by instructor

Number of credits:

3

Office Hours:

Tuesday (1:00-6:00 pm)*, or by appointment. Davie West, room 330.
* As scheduling conflicts may arise occasionally, students may wish to call to schedule an appointment prior to the meeting.

Schedule:

Wednesday (6:30-9:20 pm). Davie West, room to determine.

Class textbook: (recommended)

"*An Introduction to Applied and Environmental Geophysics*", 2nd Edition; by J. M. Reynolds, New York, Wiley and Sons, 2011, 712 pp.

Course description:

The course gives an introduction to near-surface geophysical methods for mapping the ground at shallow depths. Emphasis is given to electromagnetic and electrical methods such as ground penetrating radar (GPR) and resistivity imaging with an emphasis on environmental applications. A field-based case study using an integrated array of real geophysical data sets collected in a local site will be conducted to give students a practical approach to applied geophysical methods

Course Objectives:

1) To provide an overview of the theoretical basis and principles of near-surface geophysical methods; 2) to examine the most common applications and how these methodologies can help understanding certain environmental issues; 3) to present an overview of geophysical data collection and processing of real data sets (with emphasis on ground penetrating radar and resistivity imaging); 4) to become familiar with case studies and exercises related to geophysical data processing

Method of instruction:

Combination of theory and practical exercises in the classroom and fieldtrip/s to one or more local fieldsites. Practical exercises will be initiated in the classroom

towards the end of selected lecture sessions (see intended course calendar for details). Students will be responsible for completing the exercises and submitting as homework assignments.

Contents:

The general course structure will be as follows:

1) Introduction: general overview of geophysical methods with emphasis on near-surface techniques
2) Electrical methods: theoretical and practical basis of electrical methods (e.g. resistivity, self-potential, and induced polarization)
3) Electromagnetic methods: theoretical and practical basis of electromagnetic methods (e.g. ground penetrating radar and terrain conductivity)
4) Seismology: theoretical basis of seismic methods with emphasis on environmental applications (e.g. refraction and reflection methods)
5) Potential field methods: theoretical basis of potential methods with emphasis on environmental applications (e.g. gravimetric and geomagnetic methods)

Assessment procedure:

Midterm:	25%
Assignments	35%
Field project (write up and presentation):	35%
Quizzes:	5%

Grading scheme:

A	93-100%
A-	90-92.9%
B+	87-89.9%
B	83-86.9%
B-	80-82.9%
C+	77-79.9%
C	70-76.9%
D	63-69.9%
F	63% or lower

Make-up policy:

You must have an exceptional circumstance in order to qualify for a make-up exam. Make-up exams will only apply to the midterm if requested prior to the exam with a justification. No make-ups will be granted for quizzes.

Extra credit policy:

No extra credit will be granted under any circumstances

Attendance:

Attendance to all lectures is required and will affect your grade.

Courtesies:

Please turn off cell phones, laptops, mp3 players and PSPs before coming to class. Lateness is disruptive to other class participants, so please be on time. Lateness may also affect your grade if you miss quizzes.

Assignments and quizzes

Weekly homework assignments: these will be set during a class and due the following class. You will be expected to contribute to presenting your assignment to other class members

Quick quizzes: these will sporadically occur in the class

Other suggested activities:

Fieldtrip/s: One or more short fieldtrip/s at a local site will serve as the basis for developing a class project that will include: 1) data collection; 2) data processing; 3) data preparation and discussion; 4) data presentation (both oral and written). The project intends to give students a practical overview of the entire routine involved in a geophysical field based study from data acquisition to final data presentation while encouraging critical thinking.

Lecture notes:

A pdf version of the lecture notes will be posted on Blackboard the day prior to each lecture. You may choose to print them out and bring them to class, or wait until the end of the class. Announcements and grades will also be posted on Blackboard.

Policies:

Americans with Disabilities Act (A.D.A.). In compliance with the Americans with Disabilities Act (ADA), students who require reasonable accommodations 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, LA 240 (954-236-1222); in Jupiter, SR 110 (561-799-8010); or at the Treasure Coast, CO 117 (772-873-3441) – and follow all OSD procedures.

Code of 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. Cheating in any form will not be tolerated. The first occurrence of any of this will result in a grade of "F". For further information please refer to:
http://www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

Bibliography:

1. "*An Introduction to Applied and Environmental Geophysics*", by J. M. Reynolds, New York, Wiley and Sons, 2005, 726 pp

2. "*Environmental and Engineering Geophysics*", 2nd Edition by P. V. Sharma, Cambridge University Press, Cambridge, 2005, 475 pp.

3. "*Fundamentals of Geophysics*", 2nd edition by W. Lowrie, Cambridge University Press, 2007, 381 pp.

4. "*The Solid Earth: An Introduction to Global Geophysics*", 2nd edition, by C. M. Fowler, R. Cambridge University Press, Cambridge, 2005, 685 pp

5. "Exploration Geophysics of the Shallow Subsurface", by H. R. Burger, Prentice Hall P T R, 1992.

6. "Basic Exploration Geophysics", by E. S. Robinson, and C. Coruh, John Wiley, 1988.

7. "*Whole Earth Geophysics: An Introductory Textbook for Geologists and Geophysicists*", by R. Lillie, Prentice-Hall, Inc., Upper Saddle River, New Jersey, 1999, 361 pp.

8. "*Applied Geophysics*", 2nd edition, by W.M. Telford, L.P. Geldart and R.E. Sheriff, Cambridge University Press, Cambridge, 1991, 770 pp.

9. "*Looking into the Earth: An Introduction to Geological Geophysics*", by M. Mussett and M. A. Khan, Cambridge University Press, Cambridge, 2001, 608 pp.

Calendar (intended):

Week	Topic	Textbook readings	Assignment
1	Introduction: general overview of geophysical methods with emphasis on near-surface techniques	Ch. 1	Reading assignment
2	Electrical methods I: theoretical and practical basis of electrical methods (e.g. resistivity, self-potential, and induced polarization)	Ch. 7	Electrical methods bibliography
3	Electrical methods II: resistivity method	Ch. 7	Lab 1
4	Electrical methods III: self-potential, and induced polarization methods	Ch. 8, 9	Lab 2
5	**FIELDTRIP I**		

6	Electromagnetic (EM) methods I: theoretical and practical basis of electromagnetic methods	Ch. 10-12	Fieldtrip I data processing
7	Electromagnetic methods II: ground penetrating radar	Ch. 13	EM methods bibliography
8	**MIDTERM**		
9	Electromagnetic methods III ground penetrating radar 2	Ch. 14	Lab 4
10	Electromagnetic methods IV: terrain conductivity	Ch. 11	Lab 5
11	**FIELDTRIP II**		
12	Seismology I: theoretical basis of seismic methods with emphasis on environmental applications	Ch. 4	Fieldtrip II data processing
13	Seismology II: refraction and reflection methods	Ch. 5, 6	Seismology bibliography
12	Potential field methods I: theoretical basis of potential methods with emphasis on environmental applications	Ch. 2, 3	Lab 6
13	Potential field methods II: gravimetric and geomagnetic methods	Ch. 2, 3	Final Project preparation
14	Final Project: Field project presentations		Final Project preparation (cont)
15	Final Project II: Field project presentations II		