


 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>NEW/CHANGE PROGRAM REQUEST</b> <b>Graduate Programs</b>	UGPC Approval _____ UFS Approval _____ Banner Posted _____ Catalog _____
	<b>Department</b> Environmental Science  <b>College</b> Science	
<b>Program Name</b> Environmental Restoration Certificate	<input type="checkbox"/> <b>New Program</b>  <input checked="" type="checkbox"/> <b>Change Program</b>	<b>Effective Date</b> (TERM & YEAR)  Fall 2019
<b>Please explain the requested change(s) and offer rationale below or on an attachment</b>  <p>The Certificate is designed to help prepare graduate students to pursue the professional certification offered by the Society for Ecological Restoration. Fewer students that expected have received the Certificate because of difficulty in meeting the heavy course requirements and satisfying the independent research requirement. The proposed revisions are consistent with the original certificate goal but simplify the Certificate requirements so as to make it more attractive to students. Specifically, the proposed changes reduce the required credits from 21 to 18, which is more consistent with other FAU certificates, reduces the number of core courses from 3 to 2, updates the elective course list, and eliminates the independent research project and resulting manuscript and presentation.</p>		
<b>Faculty Contact/Email/Phone</b>  Scott Markwith; smarkwit@fau.edu; 561-297-2102	<b>Consult and list departments that may be affected by the change(s) and attach documentation</b>  Geosciences, Biological Sciences	
<b>Approved by</b> Department Chair <u></u> College Curriculum Chair <u></u> College Dean <u></u> UGPC Chair _____ UGC Chair _____ Graduate College Dean _____ UFS President _____ Provost _____	<small>Digitally signed by Dale Gawlik          DN: cn=Dale Gawlik, o=Florida Atlantic University, ou,          email=dgawlik@fau.edu, c=US          Date: 2018.12.05 13:01:51 -05'00'</small>	<b>Date</b> <u>5 Dec 2018</u> <u>11/01/19</u> <u>1-14-19</u>

Email this form and attachments to [UGPC@fau.edu](mailto:UGPC@fau.edu) one week before the UGPC meeting so that materials may be reviewed at the UGPC website prior to the meeting.

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JAN 15 2019

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**Environmental Restoration Certificate**

The Environmental Science Program offers the Environmental Restoration ~~certificate~~ Certificate for graduate students who wish to pursue an environmental restoration position upon graduation, ~~or for~~ professionals looking to increase their knowledge base, ~~and/or~~ advance professionally, ~~or change careers~~ and anyone considering applying to become a Certified Ecological Restoration Practitioner (CERP). The Society for Ecological Restoration (SER) administers the CERP program, which includes a rigorous assessment of academic credentials, including courses in ecological restoration, biological science, physical science, resource management and conservation, and quantitative science. FAU's Environmental Restoration Certificate can help students fulfill those requirements by bolstering their credentials in the assessed disciplines by drawing upon courses from environmental science, geosciences, biology, chemistry, urban and regional planning, and civil engineering. Students interested in SER's professional certification should consult with an Environmental Science Program advisor to review their academic credentials and tailor their Environmental Restoration Certificate plan of study to maximize the certificate's benefits to their academic credentials. The certificate is interdisciplinary, drawing on courses from environmental science, geosciences, biology, urban and regional planning and civil engineering. The certificate also includes considerable opportunity for experiential learning in the form of course field trips to actual restoration projects; internship opportunities with local, state and federal agencies conducting restoration; and primary research experiences with future, ongoing and recent environmental restoration projects in South Florida. These opportunities also provide the prospect of meeting, networking and interacting with professionals from public and private environmental restoration organizations.

The certificate consists of a minimum of ~~24~~ 18 credits, including ~~three~~ two core courses, ~~one~~ internship or DIS resulting in the completion of a restoration-related project, completion of a manuscript of publishable quality and colloquium presentation based on the internship/DIS project, and ~~three~~ four electives chosen from a minimum of ~~three~~ three of the ~~two~~ four elective focal areas (both elective foci must be represented). All courses must be completed with a grade of "C" or better to be counted toward the certificate.

**Ecological Restoration Core:**

Core Courses		
Environmental Restoration	EVR 6334	3
Restoration Implementation and Management	EVR 6358	3
Conservation Biology	PCB 6045	3

**Other Requirements**

1. One internship with a public or private restoration organization or DIS focused on environmental restoration research. Internship (preferred) or DIS should be taken under Directed Independent Study (EVS 6905 or GEO 6908) for 3 credits.
2. A final draft of a formal, scientific journal style manuscript of publishable quality based upon the restoration-related project completed under the internship or DIS.
3. Present the internship/DIS-based paper in a 15-minute presentation during the Environmental Science Colloquium Series (EVS 6920) course.

Successful fulfillment of the manuscript and formal presentation will be assessed by a minimum of two of the members of the Restoration Certificate Committee of the Environmental Science Program Committee or their designees.

Elective Foci (Choose a total of ~~three~~ four electives from a minimum of three of the four elective focal areas, ~~one from one elective focus area and two from the other focus area~~):

Biological Science Electives		
Flora of South Florida and Flora of South Florida Laboratory	BOT 5155 and BOT 5155L	4
Coastal Plant Ecology and Coastal Plant Ecology Lab	BOT 6606 and BOT 6606L	4
Advanced Plant Physiology and Advanced Plant Physiology Lab	BOT 6506 and BOT 6506L	4

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Advanced Ecology	PCB 6046	3
Freshwater Ecology and Freshwater Ecology Laboratory and Field Studies	PCB-6307 and PCB-6307L	5
Marine Ecology and Marine Ecology Laboratory and Field Studies	PCB-6317 and PCB-6317L	5
Ecological Theory	PCB 6406	3
Environmental Physiology	PCB 6749C	4
Physiology of Marine Animals	PCB 6775	3
Coral Reef Ecosystems and Coral Reef Ecosystems Lab	OCB 6266 and OCB 6266L	4
The Biology of Sea Turtles	ZOO 6406	3
Biology of Sharks and Their Relatives	ZOO 6409	3

<b>Physical Science Electives</b>		
Paleoenvironmental Reconstruction	EVR 6115	3
Environmental Geochemistry	GLY 5243	3
Methods in Hydrogeology	GLY 6838	3
Benchmark Developments in Hydrogeology	GLY 6897	3
Shore Erosion and Protection	GLY 5575C	3
Coastal Environments	GLY 6737	3
Chemistry for Environmental Scientists	CHS 6611	3
Soil Stabilization and Geosynthetics	CEG 6124	3
Open-Channel Hydraulics	CWR 6235	3
River Mechanics and Sediment Transport	CWR-6236	3
Stream, Lake and Estuarine Pollution	EES-6357	3
Contamination of Aquatic Sediment	ENV-6441	3

<b>Resource Management and Conservation Electives</b>		
Scientific Communication	BSC 6846	3
Marine Fisheries Ecology and Management	OCB 6715C	4
Conservation Biology	PCB 6045	3
Culture, Conservation, and Land Use	GEO 6337	3
Environmental Analysis in Planning	URP 6425	3
Environmental Policy and Programs	URP 6429	3

<b>Quantitative Science Electives</b>		
Experimental Design and Biometry	PCB 6456	4
Statistics for Urban Planning	URP 6211	3
Data Processing and Modeling of Marine Systems	OCB 6673	3
Digital Image Analysis	GIS 5033C	3
Remote Sensing of the Environment	GIS 5038C	3

Principles of Geographic Information Systems	GIS 5051C	3
Applications in Geographic Information Systems	GIS 5100C	3
Programming in Geographic Information Systems	GIS 5103C	3
Photogrammetry and Aerial Photography Interpretation	GIS 6028C	3
LiDAR Remote Sensing and Applications	GIS 6032C	3
Advanced Remote Sensing	GIS 6039	3
Geospatial Databases	GIS 6112C	3
Hyperspectral Remote Sensing	GIS 6127	3
Spatial Data Analysis	GIS 6306	3

## Dale Gawlik

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**From:** William Brooks  
**Sent:** Wednesday, December 5, 2018 10:15 PM  
**To:** Dale Gawlik; Zhixiao Xie  
**Cc:** Scott Markwith  
**Subject:** Re: Proposed changes to Ecological Restoration Certificate

Agree to support outlined changes.

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### W. Randy Brooks, PhD

Professor of Biology  
Chair, FAU Biology Undergraduate & MS Graduate Program Committees  
Boca Raton, FL 33431, Phone: 561-297-3888, Email: [wbrooks@fau.edu](mailto:wbrooks@fau.edu)

<http://biology.fau.edu/directory/brooks/index.php>

<http://biology.fau.edu/academics/graduate/ms-programs.php>

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**From:** Dale Gawlik  
**Sent:** Wednesday, December 5, 2018 1:04 PM  
**To:** William Brooks; Zhixiao Xie  
**Cc:** Scott Markwith  
**Subject:** Proposed changes to Ecological Restoration Certificate

Hi Randy and Zhixiao,

The Environmental Science Program is proposing to streamline the graduate Ecological Restoration Certificate to make it more attractive to students. Will your respective departments support the changes outlined in the attached Program Change form? I also attached Word docs showing the catalog wording (one clean and one redline).

Best

Dale

Dr. Dale E. Gawlik

GRADUATE COLLEGE

**JAN 15 2019**

Director, Environmental Science Program  
Professor, Department of Biological Sciences  
Florida Atlantic University  
777 Glades Road  
Boca Raton, FL 33431  
561.297.3333  
[dgawlik@fau.edu](mailto:dgawlik@fau.edu)  
<http://cescos.fau.edu/gawliklab>  
<http://science.fau.edu/envirosci>

## Dale Gawlik

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**From:** Zhixiao Xie  
**Sent:** Monday, December 10, 2018 11:45 AM  
**To:** Dale Gawlik  
**Cc:** Tobin Hindle; Scott Markwith  
**Subject:** RE: Proposed changes to Ecological Restoration Certificate

Dale,

As detailed by Scott below, the only revision comment by the Geosciences Department is for ES to consider to add EVR 6115 as one elective. With that, the Department supports the certificate revision.

Thank You,  
Zhixiao

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Dr. Zhixiao Xie  
Professor and Chair  
Geosciences Department  
Florida Atlantic University  
Tel: 561-297-2852

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**From:** Scott Markwith  
**Sent:** Monday, December 10, 2018 11:36 AM  
**To:** Dale Gawlik <dgawlik@fau.edu>  
**Cc:** Zhixiao Xie <xie@fau.edu>  
**Subject:** Re: Proposed changes to Ecological Restoration Certificate

Dale,

In the process of Geosciences' review of the certificate revisions, Erik requested that his EVR 6115 Paleoenvironmental Reconstruction course be added to the electives. Attached are revised documents adding his course to the physical science electives.

Scott

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Scott H. Markwith, Ph.D.  
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<http://www.biogeographylab.com>

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JAN 15 2019

Received

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**From:** Dale Gawlik  
**Sent:** Wednesday, December 5, 2018 1:04:34 PM  
**To:** William Brooks; Zhixiao Xie  
**Cc:** Scott Markwith  
**Subject:** Proposed changes to Ecological Restoration Certificate



Hi Randy and Zhixiao,

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Dale

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