Fau	NEW/CHANGE PROGR Graduate Prog		UGPC Approval UFS Approval Banner Posted
FLORIDA ATLANTIC ·	Department Environmental Science Prog	gram	Catalog
UNIVERSITY	College C.E.S. Science		
Program Name		New Program	Effective Date
Environmental So	sience	✓ Change Program	(TERM & YEAR)
	•	Change Program	Fall 2018
Please explain	the requested change(s) and offer ra	ationale below or on an	attachment
among courses equivalency amo Environmental S 1. New course (2. New course I 3. Changed adm of support from a 4. Curriculum up a. Changed th course from each b. Moved cour c. Add a new r d. Consider Di to be equivalent e. Added to th f. Added to Ele	required) Fundamentals of Environmental Directed Independent Research (EVS 691 nission requirement from "Obtain approva a prospective primary advisor who is a modates. The curriculum structure from requiring one of the formal	ronmental Science. The norse Cores the key subject of Research (EVS 6917, 1 of 16, 0-3 credit S/U). The sember of the Environmental Science of the Environmental Science of Course from 4 of 6 Core so ander of courses coming from the environmental science on in environmental science of Course of Courses coming from the Environmental Science of Courses coming from the Environmental Science of Courses coming from the Environmental Science of Courses coming from the Environmental Research (EVS 69 and Directed Independent For Statistics for Urban Planning (BOT 6159C, 4 credits), 2000 for the Environmental Science of Course o	new structure better provides t areas in the discipline of credit S/U). Science Program" to "Letter al Science Program faculty". Subject areas to requiring one om an Electives category. See from a Core to Electives. 17, 1 credit S/U) (see 1.). Research (EVS 6916) (see 2.) Ing (URP 6211, 3 credits). Advanced Methods of
Faculty Contact/	Email/Phone		nents that may be affected by
Dale Gawlik, dgaw	rlik@fau.edu, 73333	the change(s) and attach	
		Biology, Geosciences, Tea Urban and Regional Planni	ching and Learning, School for ng
Approved by	Q A N DeA		Date
Department Chair	Tale Banky		11- Feb - 2018
College Curricului	m Chair		11-2-18
College Dean _			11-2-18
UGPC Chair —			
UGC Chair —			
Graduate College	Dean		·
UFS President			
FEUMUEL			

Email this form and attachments to $\underline{\text{UGPC@fau.edu}}$ one week before the UGPC meeting so that materials may be viewed on the UGPC website prior to the meeting.

FAUprogramchangeGR, created December 2017

GRADUATE COLLEGE

FEB 1 3 2018

Notes: Courses highlighted in yellow are existing courses that are new to the Environmental Science Program. Courses highlighted in green are new courses going through the approval process concurrently with the program changes below.

Master of Science with Major in Environmental Science

This interdisciplinary environmental program is administered in the Charles E. Schmidt College of Science. Participating faculty have appointments in all departments in the College of Science, as well as departments in the Dorothy F. Schmidt College of Arts and Letters, the College for Design and Social Inquiry, Harbor Branch Oceanographic Institute, the Harriet L. Wilkes Honors College, the College of Engineering and Computer Science and the College of Business. The M.S. in Environmental Science is also available as a combined, accelerated program with the B.S. in Biological Sciences. Complete details about this combined program appear in the Biological Sciences Department section.

Students are required to take most of the coursework spread across the six-four core subject areas listed below. The exact courses taken are to be determined by students and their advisory committees.

Admission Requirements

In addition to meeting all of the University and College admission requirements for graduate study, each applicant for the M.S. with Major in Environmental Science must <a href="https://have.acm.nie.gov/have-ac

- 1. Have a mMinimum GRE score of 151 verbal and 151 quantitative. GRE scores more than five years old will not be accepted.
- 2. Have a mMinimum 3.0 average for the last 60 credits of undergraduate work.
- 3. <u>Letter of support from a prospective primary advisor who is a member of the Environmental Science Program faculty.</u>
- 4. Obtain approval from the Environmental Science Program.

Thesis Option

A student curriculum consists of a minimum of 36 graduate credits taken in the following four five categories:

Core Subject Areas: 2212-2728-graduate credits from the core subject areas-with at least one course from each of the four different core subject areas.

Electives: No more than 6-15 graduate credits of electives taken outside the core areas will be counted toward the degree. No more than Up to 3 graduate credits combined of Directed Independent Study (EVS 6905) and Directed Independent Research (EVS 6916) may be counted toward this degree.

Thesis: 6-12 credits (EVS 6971).

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GRADUATE COLLEGE

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Environmental Science Colloquium Series (EVS 6920): 2 credits or more. Students must take 1 credit during their first semester in the program.

Fundamentals of Environmental Research (EVS 6917): 1 credit.

Non-Thesis Option

A student curriculum consists of a minimum of 36 graduate credits taken in the following four five categories:

Core Subject Areas: 2512-304 graduate credits from the core subject areas with at least one course from each of the four different core subject areas.

Directed Independent Study: 3 credits (EVS 6905) and Directed Independent Research (EVS 6916): 3 credits combined, required. Up to 3 additional credits may be taken as electives.

Electives: No more than 6-18 graduate credits of electives taken outside the core areas will be counted toward the degree.

Environmental Science Colloquium Series (EVS 6920): 2 credits or more. Students must take 1 credit during their first semester in the program.

Fundamentals of Environmental Research (EVS 6917); 1 credit.

Colloquium		
Environmental Science Colloquium Series (May be taken more than once.)	EVS 6920	1

Core Subject Areas		
Physical Science		
Chemistry for Environmental Scientists	CHS 6611	3
Environmental Geochemistry	GLY 5243	3
Advanced Environmental Geochemistry	GLY 6246	<u>3</u>
Global Environmental Change	GLY 6746	3
Methods of Hydrogeology	GLY 6838	3
Coastal Environments	GLY	3

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	6737	
Data Science		
Spatial Data Analysis	GIS 6306	3
Experimental Design and Biometry	PCB 6456	4
Statistics for Urban Planning	<u>URP</u> 6211	<u>3</u>
Ecology and Conservation		
Environmental Restoration	EVR 6334	3
Biogeography	GEO 5305	<u>3</u>
Ecological Theory	PCB 6406	3
Conservation Biology	PCB 6045	<u>3</u>
Advanced Ecology	PCB 6046	3
Sustainability		
Human-Environmental Interactions	GEA 6277	3
Culture, Conservation and Land Use	GEO 6337	3
Sustainable Cities	URP 6406	3
Environmental Policy and Programs	URP 6429	3

Electives		
Flora of South Florida	BOT 5155	2
Flora of South Florida Lab	BOT 5155L	2
Plant Ecology	BOT 6159C	4
Coastal Plant Ecology	BOT 6606	3
Coastal Plant Ecology Lab	BOT 6606L	2
<u>Symbiosis</u>	BSC 6365	3
Scientific Communication	BSC 6846	3
Ecological Modeling	EVR 6070	3

Restoration Implementation and Management	EVR 6358	<u>3</u>
Geographic Analysis of Populations	<u>GEO</u> <u>5435C</u>	3
Plants and People	GEO 6318	<u>3</u>
Digital Image Analysis	GIS 5033C	<u>3</u>
Remote Sensing of the Environment	GIS 5038C	3
Principles of Geographic Information Systems	GIS 5051C	3
Applications In Geographic Information Systems	<u>GIS</u> 5100C	<u>3</u>
Programming In Geographic Information Systems	<u>GIS</u> 5103C	<u>3</u>
Advanced Remote Sensing	GIS 6039	3
Topics in Geoinformation Science	GIS 6120	3
Hyperspectral Remote Sensing	GIS 6127	3
Environmental Geophysics	GLY 5457	3
Shore Erosion and Protection	GLY 5575C	<u>3</u>
Marine Geology	GLY 5736C	3
Advanced Topics In Applied, Coastal And Hydrogeology	GLY 5934	3
Regolith Geology	GLY 6707	<u>3</u>
Modeling Groundwater Movement	GLY 6836	<u>3</u>
Coastal Hazards	GLY 6888	3
Natural History of the Indian River Lagoon	OCB 6810	3
Marine Global Change	OCE 6019	3
Freshwater Ecology	PCB 6307	3

Freshwater Ecology Lab	PCB 6307L	2
Marine Ecology	PCB 6317	3
Marine Ecology Lab and Field Studies	PCB 6317L	2
Environmental Physiology	PCB 6749C	4
Environmental Philosophy	<u>PHM</u> 6035	3
Advanced Methods of Environmental Education	SCE 6344	<u>3</u>
Perspectives of Environmental Education	SCE 6345	3
Introduction to GIS in Planning	URP 6270	<u>3</u>
Environmental Planning and Society	<u>URB</u> 6421	3
Environmental Analysis in Planning	<u>URP</u> 6425	<u>3</u>
Introduction to Transportation	<u>URP</u> 6711	<u>3</u>
Urban and Regional Theory	<u>URP</u> 6840	3
Women, Environment, Ecofeminism, Environmental Justice	WST 6348	3
Marine Invertebrate Zoology	ZOO 6256	<u>3</u>
Marine Invertebrate Zoology Lab	ZOO 6256L	2
Natural History of the Fishes	<u>ZOO</u> 6456	3
Natural History of the Fishes Lab	<u>ZOO</u> 6456L	2
Seminar in Ichthyology	ZOO 6459	<u>1-</u> <u>2</u>
Seminar in Emerging Topics in Avian Ecology	<u>ZOO</u> 6544C	1

Core Subject Areas		
Chemistry		
Chemistry for Environmental Scientists	CHS 6611	3
Environmental Geochemistry	CLV	3
Geographic Information Systems		
Introduction to GIS in Planning	URP 6270	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
Remote Sensing of the Environment	GIS 5038C	3
Digital Image Analysis	GIS 5033C	3
Advanced Remote Sensing	GIS 6039	3
Hyperspectral Remote Sensing	GIS 6127	3
Topics in Geoinformation Science	GIS 6120	3
Modeling		
Modeling Groundwater Movement	GLY 6836	3
Ecological Modeling	EVR 6070	3
Ecological Theory	PCB-6406	3
Statistics		
Environmental Design and Biometry	PCB-6456	4
Conservation and Ecology		
Biogeography	GEO 5305	3
Plants And People	GEO 6317	3
Environmental Restoration	EVR 6334	3
Flora of South Florida	BOT 5155	2
Flora of South Florida Lab	BOT 5155L	2
Coastal Plant Ecology	BOT 6606	2

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Coastal Plant Ecology Lab	BOT 6606L	2
Conservation Biology	PCB-6045	3
Marine Ecology	PCB-6317	3
Advanced Ecology	PCB-6046	3
Marine Ecology Lab and Field Studies	PCB 6317L	2
Scientific Communication	BSC-6846	3
Freshwater Ecology	PCB-6307	3
Freshwater Ecology Lab	PCB 6307L	2
Symbiosis	BSC-6365	3
Environmental Physiology	PCB 6749C	4
Marine Geology	GLY 5736C	3
Advanced Topics in Applied, Coastal and Hydrogeology	GLY 5934	3
Regolith Geology	GLY 6707	3
Coastal Environments	GLY 6737	3
Shore Erosion and Protection	GLY 5575C	3
Global Environmental Change	GLY 6746	3
Environmental Geophysics	GLY 6457	3
Methods in Hydrogeology	GLY 6838	3
Natural History of the Indian River Lagoon	OCB 6810	3
Marine Global Change	OCE 6019	3
Seminar in Ichthyology	ZOO 6459	1-2
Marine Invertebrate Zoology	ZOO 6256	3
Marine Invertebrate Zoology Lab	ZOO 6256L	2

The Biology of Sea Turtles	ZOO 6406	3
Natural History of Fishes	ZOO 6456	3
Natural History of Fishes Lab	ZOO 6456L	2
Seminar in Avian Ecology	ZOO 6544C	1
Policy and Planning		
Human-Environmental Interactions	GEA 6277	3
Culture, Conservation and Land Use	GEO 6337	3
Geographic Analysis of Population	GEO 5435C	3
Coastal Hazards	GLY 6888	3
Introduction to Transportation Planning	URP 6711	3
Environmental Analysis in Planning	URP 6425	3
Environmental Policy and Programs	URP 6429	3
Sustainable Cities	URP 6406	3
Urban and Regional Theory	URP 6840	3
Women, Environment, Ecofeminism, Environmental Justice	WST 6348	3
Environmental Philosophy	PHM 6035	3

For more information about this program, visit here.

Master of Science with Major in Environmental Science

This interdisciplinary environmental program is administered in the Charles E. Schmidt College of Science. Participating faculty have appointments in all departments in the College of Science, as well as departments in the Dorothy F. Schmidt College of Arts and Letters, the College for Design and Social Inquiry, Harbor Branch Oceanographic Institute, the Harriet L. Wilkes Honors College, the College of Engineering and Computer Science and the College of Business. The M.S. in Environmental Science is also available as a combined, accelerated program with the B.S. in Biological Sciences. Complete details about this combined program appear in the Biological Sciences Department section.

Students are required to take most of the coursework spread across the four core subject areas listed below. The exact courses taken are to be determined by students and their advisory committees.

Admission Requirements

In addition to meeting all of the University and College admission requirements for graduate study, each applicant for the M.S. with Major in Environmental Science must have a:

- 1. Minimum GRE score of 151 verbal and 151 quantitative. GRE scores more than five years old will not be accepted.
- 2. Minimum 3.0 average for the last 60 credits of undergraduate work.
- 3. Letter of support from a prospective primary advisor who is a member of the Environmental Science Program faculty.

Thesis Option

A student curriculum consists of a minimum of 36 graduate credits taken in the following five categories:

Core Subject Areas: 12-27 graduate credits with at least one course from each of the four core subject areas.

Electives: No more than 15 graduate credits of electives will be counted toward the degree. Up to 3 graduate credits combined of Directed Independent Study (EVS 6905) and Directed Independent Research (EVS 6916) may be counted toward this degree.

Thesis: 6-12 credits (EVS 6971).

Environmental Science Colloquium Series (EVS 6920): 2 credits or more.

Fundamentals of Environmental Research (EVS 6917): 1 credit.

Non-Thesis Option

A student curriculum consists of a minimum of 36 graduate credits taken in the following five categories:

Core Subject Areas: 12-30 graduate credits with at least one course from each of the four core subject areas.

Directed Independent Study (EVS 6905) and Directed Independent Research (EVS 6916): 3 credits combined.

Electives: No more than 18 graduate credits of electives will be counted toward the degree.

Environmental Science Colloquium Series (EVS 6920): 2 credits or more.

Fundamentals of Environmental Research (EVS 6917): 1 credit.

Core Subject Areas		
Physical Science		
Chemistry for Environmental Scientists	CHS 6611	3
Environmental Geochemistry	GLY 5243	3
Advanced Environmental Geochemistry	GLY 6246	3
Global Environmental Change	GLY 6746	3
Methods of Hydrogeology	GLY 6838	3
Coastal Environments	GLY 6737	3
Data Science		
Spatial Data Analysis	GIS 6306	3
Experimental Design and Biometry	PCB 6456	4
Statistics for Urban Planning	URP 6211	3
Ecology and Conservation		
Environmental Restoration	EVR 6334	3
Biogeography	GEO 5305	3
Ecological Theory	PCB 6406	3

Conservation Biology	PCB 6045	3
Advanced Ecology	PCB 6046	3
Sustainability		
Human-Environmental Interactions	GEA 6277	3
Culture, Conservation and Land Use	GEO 6337	3
Sustainable Cities	URP 6406	3
Environmental Policy and Programs	URP 6429	3

Electives		
Flora of South Florida	BOT 5155	2
Flora of South Florida Lab	BOT 5155L	2
Plant Ecology	BOT 6159C	4
Coastal Plant Ecology	BOT 6606	3
Coastal Plant Ecology Lab	BOT 6606L	2
Symbiosis	BSC 6365	3
Scientific Communication	BSC 6846	3
Ecological Modeling	EVR 6070	3
Restoration Implementation and Management	EVR 6358	3
Geographic Analysis of Populations	GEO 5435C	3
Plants and People	GEO 6318	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
Advanced Remote Sensing	GIS 6039	3
Topics in Geoinformation Science	GIS 6120	3
Hyperspectral Remote Sensing	GIS 6127	3
Environmental Geophysics	GLY 5457	3
Shore Erosion and Protection	GLY 5575C	3
Marine Geology	GLY 5736C	3
Advanced Topics In Applied, Coastal And Hydrogeology	GLY 5934	3
Regolith Geology	GLY 6707	3
Modeling Groundwater Movement	GLY 6836	3
Coastal Hazards	GLY 6888	3
Natural History of the Indian River Lagoon	OCB 6810	3
Marine Global Change	OCE 6019	3
Freshwater Ecology	PCB 6307	3
Freshwater Ecology Lab	PCB 6307L	2
Marine Ecology	PCB 6317	3
Marine Ecology Lab and Field Studies	PCB 6317L	2
Environmental Physiology	PCB 6749C	4
Environmental Philosophy	PHM 6035	3
Advanced Methods of Environmental Education	SCE 6344	3

Perspectives of Environmental Education	SCE 6345	3
Introduction to GIS in Planning	URP 6270	3
Environmental Planning and Society	URB 6421	3
Environmental Analysis in Planning	URP 6425	3
Introduction to Transportation	URP 6711	3
Urban and Regional Theory	URP 6840	3
Women, Environment, Ecofeminism, Environmental Justice	WST 6348	3
Marine Invertebrate Zoology	ZOO 6256	3
Marine Invertebrate Zoology Lab	ZOO 6256L	2
Natural History of the Fishes	ZOO 6456	3
Natural History of the Fishes Lab	ZOO 6456L	2
Seminar in Ichthyology	ZOO 6459	1- 2
Seminar in Emerging Topics in Avian Ecology	ZOO 6544C	1

For more information about this program, visit here.



Environmental Science Program Charles E. Schmidt College of Science

> 777 Glades Road Boca Raton, FL 33431 tel: 954.236-1267

fax: 954.236-1099 envirosci@fau.edu www.fau.edu

Memorandum

To:

University Graduate Program Committee

From:

Dale Gawlik, Director, Environmental Science Program

Subject:

Program changes for Environmental Science and new courses

Date:

9 February 2018

This memo requests approval to (1) create two new courses, (2) change an admission requirement from "Obtain approval from the Environmental Science Program" to "Letter of support from a prospective primary advisor who is a member of the Environmental Science Program faculty", and (3) make six updates to the curriculum structure in order to ensure that courses within each Core area are highly and equally relevant to an Environmental Science education. This updated was needed because new courses were added to each core subject area as the Program matured, thereby increasing disparity in how much courses within a Core addressed the essence of an education in Environmental Science. Some courses were at the heart of a particular Core area whereas others added strength but were more peripheral.

The new structure ensures that courses within each core are equally of high importance to a degree in Environmental Science and that the breadth of Core areas reflects the key subject areas within the discipline. The changes are to:

- a) Change the curriculum structure from requiring one course from 4 of 6 core subject areas to requiring one course from each of 4 core subject areas, with the remainder coming from an Electives category.
- b) Move courses that are not essential to an education in environmental science from a Core to Electives.
- c) Add a new required course Fundamentals of Environmental Research (EVS 6917, 1 credit S/U).
- d) Consider Directed Independent Study (EVS 6905) and Directed Independent Research (EVS 6916) to be equivalent.
- e) Added to the Data Science Core the existing course Statistics for Urban Planning (URP 6211, 3 credits).
- f) Added to Electives the existing courses Plant Ecology (BOT 6159C, 4 credits), Advanced Methods of Environmental Education (SCE 6344, 3 credits), and Perspectives of Environmental Education (SCE 6345, 3 cr)

The Environmental Science Program Committee voted unanimously for the changes described above. Letters of support from affected departments are provided.

Subject: Re: Email supporting

From: William Brooks <wbrooks@fau.edu>

Date: 2/2/2018 11:24 AM

To: Dale Gawlik < dgawlik@fau.edu>

Dear Dale,

The Biology Graduate program fully supports the recommended change.

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

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

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

GRADUATE COLLEGE

FER 1 2 2018

Received

From: Dale Gawlik

Sent: Friday, February 2, 2018 11:03 AM

To: William Brooks

Subject: Email supporting

Hi Randy,

The Environmental Science Program Committee voted to add the course Plant Ecology BOT 6159C as an elective in the Env. Sci. MS degree program (see attached proposed catalog changes). As Chair of the Department of Biology Graduate Programs would you reply with an email indicating the department supports this?

Thanks for your consideration.

Dale

Dr. Dale E. Gawlik, Director
Environmental Science Program
Professor of Biological Sciences
Florida Atlantic University
777 Glades Road
Boca Raton, FL 33431-0991
561.297.3333
dgawlik@fau.edu
http://cescos.fau.edu/gawliklab
http://science.fau.edu/envirosci

quest to support URP 6211 in Env. Sci. MS degree curriculum
Subject: Re: Request to support URP 6211 in Env. Sci. MS degree curriculum From: Steven Bourassa <sbourassa@fau.edu> Date: 2/2/2018 11:19 AM To: Dale Gawlik <dgawlik@fau.edu> CC: Diana Mitsova <dmitsova@fau.edu></dmitsova@fau.edu></dgawlik@fau.edu></sbourassa@fau.edu>
Yes, that's fine with us.
Original message From: Dale Gawlik <dgawlik@fau.edu> Date: 2/2/18 11:16 AM (GMT-05:00) To: Steven Bourassa <sbourassa@fau.edu> Cc: Diana Mitsova <dmitsova@fau.edu> Subject: Request to support URP 6211 in Env. Sci. MS degree curriculum</dmitsova@fau.edu></sbourassa@fau.edu></dgawlik@fau.edu>
Hi Steven,

The Environmental Science Program Committee voted to add Statistics for Urban Planning (URP

6211) to one of the five core subject areas for the Environmental Science MS degree; specifically the Data Science core (see attached proposed catalog changes). Students in our degree program are required to take at least one course in each core area.

Would the School of Urban and Regional Planning support this change? An email response to this query would suffice.

Thanks for considering my request.

Dale

Dr. Dale E. Gawlik, Director **Environmental Science Program Professor of Biological Sciences** Florida Atlantic University

777 Glades Road
Boca Raton, FL 33431-0991
561.297.3333
dgawlik@fau.edu
http://cescos.fau.edu/gawliklab
http://science.fau.edu/envirosci

Subject: RE: Request to support SCE 6344 and 6345 in Environmental Science MS
degree curriculum
From: Barbara Ridener <bridener@fau.edu> Date: 2/2/2018 11:43 AM</bridener@fau.edu>
To: Dale Gawlik <dgawlik@fau.edu></dgawlik@fau.edu>
CC: Bryan Nichols <nicholsb@fau.edu></nicholsb@fau.edu>
Hi Dale,
Yes. We would definitely support this.
Thank you,
Barbara
Barbara R. Ridener, Ph.D.
Chair and Associate Professor
Department of Teaching and Learning
Florida Atlantic University

From: Dale Gawlik

Sent: Friday, February 02, 2018 11:42 AM
To: Barbara Ridener < BRIDENER@fau.edu>

Subject: Request to support SCE 6344 and 6345 in Environmental Science MS degree

curriculum

Hi Barbara,

The Environmental Science Program Committee voted to add Advanced Methods of Environmental Education (SCE 6344) and Perspectives of Environmental Education (SCE 6345) as electives for the Environmental Science MS degree (see attached proposed catalog changes).

Would the Department of Teaching and Learning support this change? An email response to this query would suffice.

Thanks for considering my request.

Dale

Dr. Dale E. Gawlik, Director

Environmental Science Program

Professor of Biological Sciences

Florida Atlantic University

777 Glades Road

Boca Raton, FL 33431-0991

561,297,3333

dgawlik@fau.edu

E: Request to support SCE 6344 and 6345 in Environmental Sc...

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http://science.fau.edu/envirosci