

 FLORIDA ATLANTIC UNIVERSITY	NEW/CHANGE PROGRAM REQUEST Graduate Programs		UGPC Approval _____ UFS Approval _____ Banner Posted _____ Catalog _____
	Department Environmental Science College Science		
Program Name Environmental Science MS	<input type="checkbox"/> New Program <input checked="" type="checkbox"/> Change Program	Effective Date (TERM & YEAR) Spring 2020	
Please explain the requested change(s) and offer rationale below or on an attachment <p>Two proposed changes to the Environmental Science MS Degree Program were approved by the Environmental Science Program Committee on 21 March 2019. The first change is to add courses from Civil Engineering to provide a curriculum that meets the needs of students who are interested in Environmental Science, but who also want a strong background in Environmental Engineering. Few Environmental Science Programs offer a curriculum that spans these two areas despite the fact that large aquatic environmental projects typically a large engineering component. The employment demand for students with such training is likely to increase as the scope and size of environmental projects continues to grow. The Department of Civil, Environmental and Geomatics Engineering supports this curriculum change.</p> <p>The second change is to the catalog wording to clarify existing policies on the minimum acceptable course grade and the use of Directed Independent Research or Study as an elective.</p>			
Faculty Contact/Email/Phone Dale Gawlik/dgawlik@fau.edu/73333		Consult and list departments that may be affected by the change(s) and attach documentation Department of Civil, Environmental and Geomatics Engineering	
Approved by Department Chair <u>Dale Gawlik</u> College Curriculum Chair <u>Christopher Beetle</u> 2019.09.18 10:06:52 -04'00' College Dean <u>William David Kulis</u> UGPC Chair <u>[Signature]</u> UGC Chair <u>[Signature]</u> Graduate College Dean <u>[Signature]</u> UFS President _____ Provost _____		Date 13 Sept 2019 _____ September 19, 2019 10/7/19 10/8/19 10-9-19 _____ _____	

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

GRADUATE COLLEGE

SEP 24 2019

Received

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. A grade of "C" or better (unless otherwise noted in the course description) is required in all courses taken as part of the requirements for a Master of Science degree in Environmental Science. However, the minimum University-wide, cumulative GPA requirement for degree-seeking graduate students is a 3.0 ("B" grade average). For more information about this program, visit [here](#).

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. Up to 3 additional graduate credits of combined Directed Independent Study (EVS 6905) and Directed Independent Research (EVS 6916) may be counted toward the 'Electives' requirement for students enrolled in the Non-Thesis Option.

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

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Core Subject Areas

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Physical Science		
Environmental Systems and Processes	ENV 6668	3
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 in Hydrogeology	GLY 6838	3
Coastal Environments	GLY 6737	3
Data Science		
Design and Analysis for Engineering Data	CGN 5716	3
Spatial Data Analysis	GIS 6306	3
Experimental Design and Biometry	PCB 6456	3
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		
Sustainability and Pollution Prevention	ENV 6932	3
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	2
Coastal Plant Ecology Lab	BOT 6606L	2
Symbiosis	BSC 6365	3
Scientific Communication	BSC 6846	3
Terrestrial Laser Scanning	CEG 5304C	3
Advanced Energy Engineering/Energy Engineering	CGN 5715	3
Stormwater Modeling and Management	CWR 5308	3
Open-Channel Hydraulics	CWR 6235	3
Dynamic Hydrology	CWR 6525	3
Water Resource System Engineering	CWR 6818	3
Modeling Methods in Water Resources and Environmental Engineering	EES 6025	3
Water and Wastewater Treatment	ENV 5510	3

Air Pollution and Control	ENV 6115	3
Ecological Modeling	EVR 6070	3
Restoration Implementation and Management	EVR 6358	3
Geographic Analysis of Population	GEO 5435C	3
Plants And People	GEO 6317	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 6749	3
Environmental Philosophy	PHM 6035	3
Advanced Methods of Environmental Education	SCE 6344	3
Perspectives of Environmental Education	SCE 6345	3
Thermal Infrared Remote Sensing	SUR 6387C	3
Introduction to GIS in Planning	URP 6270	3
Environmental Planning and Society	URP 6421	3
Environmental Analysis in Planning	URP 6425	3
Introduction to Transportation Planning	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 Fishes	ZOO 6456	3
Natural History of Fishes Lab	ZOO 6456L	2
Seminar in Ichthyology	ZOO 6459	1-2

Seminar in Emerging Topics in Avian Ecology	ZOO 6544C	1
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Notes: New text is marked in red. Courses highlighted in yellow are existing courses that are new to the Environmental Science Program.

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Natural History of Fishes Lab	ZOO 6456L	2

Seminar in Ichthyology	ZOO 6459	1-2
Seminar in Emerging Topics in Avian Ecology	ZOO 6544C	1

Dale Gawlik

From: Yan Yong
Sent: Thursday, September 12, 2019 5:47 PM
To: Dale Gawlik
Cc: Dan Meeroff; Brian Bencoter
Subject: RE: Environmental Science Program changes
Attachments: EnvSciCatalogChg12Sept2019-redline.pdf

Hi Dale,

This email is to confirm that CEGE fully supports the Environmental Science Program changes shown in the attached file.

Thank you,

Yan

Yan Yong

Professor and Chair
Department of Civil, Environmental & Geomatics Engineering
Florida Atlantic University
Office: (561)297-3445

From: Dale Gawlik <dgawlik@fau.edu>
Sent: Thursday, September 12, 2019 4:42 PM
To: Yan Yong <yongy@fau.edu>
Cc: Dan Meeroff <dmeeroff@fau.edu>; Brian Bencoter <bbenscot@fau.edu>
Subject: RE: Environmental Science Program changes

Hi Yan,

Thanks for the quick turnaround. I made the change you suggested and attached the corrected version. As Chair, can you confirm that the Department of Civil, Environmental and Geomatics Engineering supports these program changes?

Best

Dale

Dr. Dale E. Gawlik
Director, Environmental Science Program
Professor, Department of Biological Sciences
Florida Atlantic University
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Boca Raton, FL 33431
561.297.3333
dgawlik@fau.edu
<http://cescos.fau.edu/gawliklab>
<http://science.fau.edu/envirosoci>

From: Yan Yong
Sent: Thursday, September 12, 2019 3:16 PM
To: Dale Gawlik <dgawlik@fau.edu>
Cc: Dan Meeroff <dmeeroff@fau.edu>; Brian Bencoter <bbenscot@fau.edu>
Subject: RE: Environmental Science Program changes

Hi Dale,

Thank you for reaching out. Since you newly proposed course Thermal Infrared Remote Sensing is exactly the same as the following existing CEGE course:

Thermal Infrared Remote Sensing (SUR 6387C) 3 credits

Prerequisite: GIS 4035C with minimum grade of "C" or permission of instructor

Temperature is one of the most important physical variables. Temperature information with an appropriate spatial and temporal coverage is a key to addressing most of the environmental challenges on both local and regional scales. Measuring temperature remotely by thermal infrared is a new technology, which has found a wide area of applications. In this course, students learn the basic theory of sensors and data processing and analysis. They also investigate new applications of thermal infrared remote sensing on civil infrastructure and environmental systems monitoring.

I suggest that you replace SUR6384 with SUR 6387C in your proposal.

Best,

Yan

Yan Yong
Professor and Chair
Department of Civil, Environmental & Geomatics Engineering
Florida Atlantic University
Office: (561)297-3445

From: Dale Gawlik <dgawlik@fau.edu>
Sent: Thursday, September 12, 2019 1:27 PM
To: Yan Yong <yongy@fau.edu>
Cc: Dan Meeroff <dmeeroff@fau.edu>; Brian Bencoter <bbenscot@fau.edu>
Subject: Environmental Science Program changes

Hi Yan,

Attached is a pdf showing proposed changes to the Environmental Science MS Degree Program that are aimed at meeting the needs of students who are interested in Environmental Science, but who also want a strong background in Environmental Engineering. Few Environmental Science Programs offer a curriculum that spans these two areas despite the fact that large aquatic environmental projects typically a large engineering component. Would the Department of Civil, Environmental and Geomatics Engineering support these program changes?

Best
Dale

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

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