

UF Water Institute Annual Report
June, 2014
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1. Center/Institute Overview

a. Narrative description of Center/Institute mission and goals

Mission: The UF Water Institute brings together talent from throughout the University to address complex water issues through innovative interdisciplinary research, education, and extension programs.

Vision: Interdisciplinary UF Water Institute Teams, comprised of leading water researchers, educators and students, develop new scientific breakthroughs; creative engineering, policy and legal solutions; and pioneering educational and outreach programs that are renowned for addressing state, national, and global water problems.

Goals: The overarching goals of Water Institute research, education and outreach programs are to:

- Improve basic knowledge of the physical, chemical, and biological processes in aquatic systems (rivers, lakes, estuaries, wetlands, soil and ground waters).
- Enhance understanding of the interactions and interrelationships between human attitudes and activities, and aquatic systems.
- Develop and promote the adoption of improved methodologies for water resource management, policy and public awareness (including quantity, quality and ecosystem services) based on a foundation of science, engineering, management and law.

Since its inception in 2006, the Water Institute has brought together interdisciplinary faculty and graduate student teams to develop proposals to external agencies worth over \$110 Million. These efforts have created new collaborative linkages among Water Institute faculty, students and external stakeholders; identified and prioritized critical water issues requiring interdisciplinary expertise; and provided expertise and support for addressing these issues. The Water Institute staff facilitates interactions among interdisciplinary teams; decreases transaction costs associated with interdisciplinary proposal writing and project execution; plans and executes Water Institute meetings, workshops, seminars, and symposia; and maintains a comprehensive [Water Institute website](#) with a searchable faculty expertise, awards, and publication database.

b. Areas of research strength and focus

Water Institute research is organized under four thrust areas: [Water, Land Use, and Ecosystems](#); [Water and Climate](#); [Water Resources Sustainability](#); and [Water and Society](#). Within these thrust areas current funded research foci include improving the science foundation for the protection of spring and wetland ecosystems; planning for a resilient water supply in a changing climate; understanding and predicting impacts of alternative land uses on water quality, with an emphasis on nutrients; and impacts of sea level change on coastal aquifers, water resources, and ecosystems. Research emerging from these research projects is transferred to practice via Water

Institute facilitated scientist-stakeholder working groups such as the [Florida Water and Climate Alliance](#) (FloridaWCA) and [UF-IFAS Extension](#).

c. Summary of Center/Institute participants

i. Center/Institute faculty members

A total of 205 faculty members are currently affiliated with the UF Water Institute. A complete listing of these faculty members, along with contact information and a summary of their research interests can be found in the Water Institute’s on-line searchable Faculty expertise database: <http://waterinstitute.ufl.edu/FacultyExpertise/Expertise.aspx>

ii. Demographics (by college, dept.) of faculty participants

Table 1 provides a summary of Water Institute affiliate faculty membership by college. Table A1 in Appendix A provides a summary of faculty membership by Department.

Table 1: Summary of Faculty Membership by College

College	Total No.
IFAS	128
College of Liberal Arts and Sciences	33
College of Engineering	23
College of Design, Construction and Planning	6
College of Law	4
Warrington College of Business Administration	4
College of Health and Human Performance	2
Florida Museum of Natural History	1
Pharmacy - Medicinal Chemistry	1
College of Public Health and Health Professions	1
Florida Sea Grant	1
International Center	1
Total	205

iii. Water Institute Faculty Fellows Program

In 2013 the Water Institute created a new Faculty Fellow awards program to recognize UF faculty who are making outstanding research, extension, or education contributions to the Water Institute. The purpose of the award is to recognize recent contributions that contribute significantly to UF’s interdisciplinary communities of science in water and to provide incentives for Fellows’ continued contributions to the goals of the Water Institute. Faculty Fellows receive a salary supplement of \$2,000 per year for a duration of three years. Funds used for the salary supplement are earned from retained indirect costs from external grant awards funded through the Institute. Faculty Fellows for the 2013 class are [Dr. Matthew Cohen, School of Forest Resources and Conservation, UF-IFAS](#) and [Dr. Rafael Munoz-Carpena, Department of Agricultural and Biological Engineering, UF-IFAS](#). Fellow nominations for the 2014 class are currently under review and winners will be announced shortly.

d. Peer comparison: Identify top five centers/institutes in the US with similar missions

The following are an alphabetized list of leading centers and institutes in the US with similar missions to the UF Water Institute:

- [Center for Watershed Sciences](#) – U.C. Davis
- [Colorado Water Institute](#) - Colorado State University
- [Desert Research Institute](#) - Nevada System of Higher Education
- [Institute for Water and Watersheds](#) – Oregon State University
- [Texas Water Resources Institute](#) – Texas A&M University

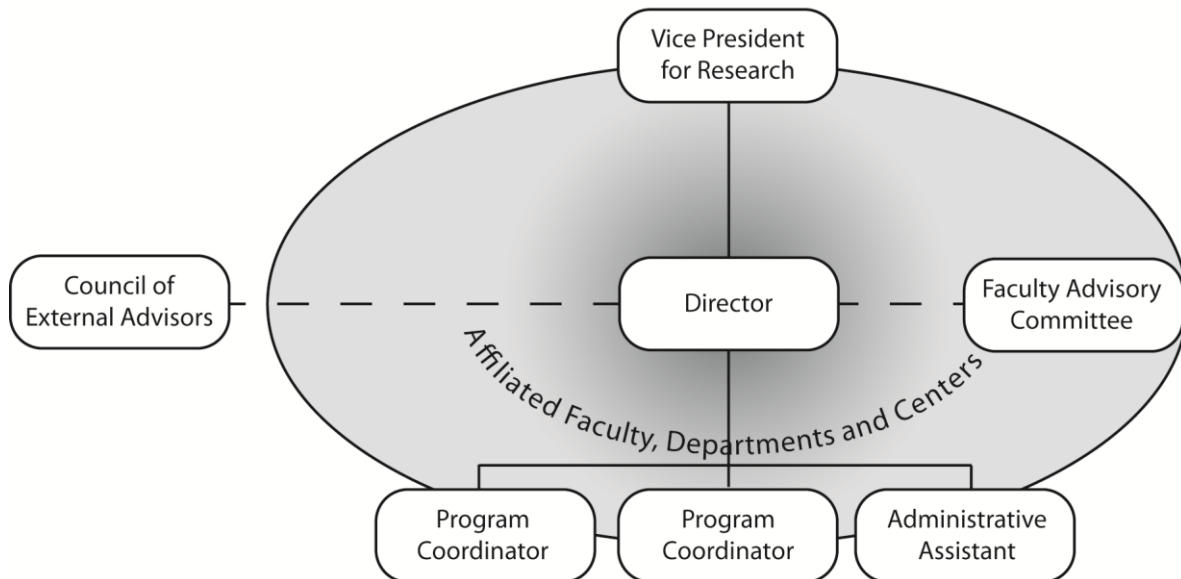
2. State of the Center/Institute

a. Center/Institute leadership

i. Organizational chart

The Water Institute is led by a full-time director, who reports to the Vice President for Research (Figure 1). Two program coordinators assist the director in the development, execution and evaluation of Water Institute programs. An administrative assistant serves as office accountant, office manager, and website/database developer.

Figure 1: Organizational Chart for University of Florida Water Institute



ii. Internal and external advisory committees

An internal Faculty Advisory Committee (FAC) for the Water Institute consists of 15 members of the Water Institute Affiliate Faculty. Ten members of the FAC are elected by members of the Water Institute Affiliate Faculty on staggered 3 year terms. Five members are appointed by the Water Institute director to ensure balance among disciplines. The current FAC membership is listed in Table 2 below. A list of previous FAC members is provided at:

http://waterinstitute.ufl.edu/archives/FAC_Archives.asp

An ad-hoc External Council of Advisors consists of speakers who have participated in the Water Institute Distinguished Scholar Seminar Series. These individuals are representatives of leading academic institutions in a wide range of water-related fields, many of whom are National Academy members and two of whom are Stockholm Water Prize winners. In addition to presenting an interdisciplinary seminar Distinguished Scholars meet with the Water Institute Faculty Advisory Committee to discuss Water Institute programs and directions, as well as ideas regarding future strategic initiatives and partnerships, and meet with interested Water Institute affiliated faculty and graduate students to discuss research/education issues. A list of individuals who have participated in the Distinguished Scholar Seminar Series is provided at:

<http://waterinstitute.ufl.edu/seminars/seminars.asp>.

Table 2: Water Institute Faculty Advisory Committee

Faculty Member	Department	Term
Mike Annable	Professor, Environmental Engineering Sciences, College of Engineering	Past Chair, (Term Ends 6/1/2016)
Mike Binford	Professor and Chair of Geography, Geography, College of Liberal Arts and Sciences	(Term Ends 6/1/2015)
Treavor Boyer	Assistant Professor, Environmental Engineering Sciences, College of Engineering	(Term Ends 8/1/2017)
Mark Clark	Associate Professor, Soil and Water Science, IFAS	(Term Ends 6/1/2016)
Matthew Cohen	Associate Professor, School of Forest Resources and Conservation, IFAS	Chair Elect (Term Ends 6/1/2015)
Kathryn Frank	Assistant Professor, Urban and Regional Planning, College of Design, Construction and Planning	(Term Ends 6/1/2015)
Tom Frazer	Professor, Fisheries and Aquatic Sciences, IFAS	(Term Ends 6/1/2015)
Peter Frederick	Research Professor, Wildlife Ecology and Conservation, IFAS	(Term Ends 8/1/2017)
Tracy Irani	Professor and Chair of Family Youth and Community Sciences, IFAS	(Term Ends 6/1/2016)
Jim Jawitz	Professor and Associate Chair, Soil and Water Science, IFAS	Chair (Term Ends 6/1/2016)
Andrew Kane	Associate Professor of Environmental and Global Health, Environmental Global Health, College of Public Health and Health Professions	(Term Ends 6/1/2015)
Sandra Russo	Director, Program Development, UF International Center	(Term Ends 8/1/2017)
Katrina Schwartz	Assistant Professor, Political Science, College of Liberal Arts and Sciences	(Term Ends 6/1/2016)
Elizabeth Sreaton	Professor, Geology, College of Liberal Arts and Sciences	(Term Ends 8/1/2017)
Arnoldo Valle-Levinson	Professor, ESSIE, Dept. of Civil and Coastal Engineering, College of Engineering	(Term Ends 8/1/2017)

b. Research performance in 2013/2014

i. Research Highlights

During 2013-2014 the 205 faculty affiliated with the Water Institute led water-related research projects totaling \$134 Million. The most actively engaged Water Institute faculty (i.e. ~40 faculty members actively participating in Water Institute coordinated proposals and funded projects, and participating in the Water Institute Graduate Fellows program) led water-related projects totaling \$33 Million during 2013-2014. For more information on these projects see the on-line searchable [Water Institute research database](#).

During 2013-2014 the Water Institute coordinated and submitted 11 new interdisciplinary proposals totaling \$24 Million (see Table 3 below). These proposals resulted in over \$3 Million in new funding, the opportunity for an additional \$7 Million through a task ordering contract with the South Florida Water Management District, with \$3.5 Million in proposals still pending.

Table 3. Water Institute Grant Proposals Submitted 2013-2014

PI	Date	Title	Amount	Co-PIs	Agency	Status
Graham, Wendy, WI	6/30/2103	Peer Review of the Santa Fe and Ichetucknee River MFL document	\$45,000	Cohen, Matthew Clark, Mark Frazer, Tom Martin, Jonathan	Suwannee River Water Management District	Funded
Cohen Matthew, SFRC	7/18/2013	Kanapaha Water Reclamation Facility Denitrification Study	\$28,000	Graham, Wendy Henson, Wesley	Gainesville Regional Utilities	Funded
Dukes, Michael, ABE	8/1/2013	BMP Literature Review and Synthesis	\$20,000	Graham, Wendy McKee, Kathleen	FDACS	Funded
Reddy, K. Ramesh, SWS	11/13/2013	Springs Protection Initiative [SPI] - Collaborative Research Initiative on Sustainability and Protection of Springs [CRISPS]	\$3,000,000	Graham, Wendy Cohen, Matthew Jawitz, James Frazer, Tom Kaplan, David Kramer, M	St. Johns River Water Management District	Funded
Reddy, K. Ramesh., SWS	2/4/2014	Collaborative Research Initiative on Everglades Stormwater Treatment Areas [CRESTA]	Up to \$7,000,000 (task order)	Graham, Wendy Adams, Carrie, Kaplan, David Gerber, Stefan Martinez, Chris Ogram, Andy Phlips, Edward	South Florida Water Management District	Funded
Munoz-Carpena, Rafael, ABE	11/19/2013	CNH: Fast and slow - Reconciling conflicting response times of human decisions and natural systems	\$1,464,606	Kiker, Gregory Murcia, Carolina Ballesteros, Andrea Brown, Mark	NSF	Pending

Cohen, Matthew, SFRC	12/5/2013	Organic-Inorganic Carbon Dynamics and Dissolution Potential: Control of "Chemical" Stream Power in the Evolution of Carbonate Terrains	\$818,101	Graham, Wendy Martin, Jonathan	NSF	Pending
Martinez, Christopher, ABE	4/30/2014	Integrating NASA Earth Systems Data into Decision-Making Tools of Member Utilities of the Florida Water and Climate Alliance	\$1,748,987	Misra, Vasu Adams, Alison Asefa, Tirusew Morris, Kevin	NASA	Pending
Graham, Wendy, WI	6/6/2014	Technical Review of Options to Move Water from Lake Okeechobee to the Everglades	\$250,000	Mary Jane Angelo Tom Frazer Peter Frederick Karl Havens Ramesh Reddy	Florida Senate	Pending
Graham, Wendy, WI	8/13/2014	Agricultural Water Security and Upper Florida Aquifer Sustainability: An Integrated Assessment of Economic and Environmental Benefits	\$5,000,000	Kaplan, David Adams, Damian Cohen, Matt, Monroe Martha	USDA	In process
Graham, Wendy, WI	2/5/2013	The Santa Fe River Basin Critical Zone Observatory: Exploring linkages between geology, hydrology, ecosystems and humans in a carbonate terrain	\$4,999,523	Cohen, Matthew Martin, Jonathan Gulley, Jason Kramer, Marc	NSF	Not Funded
Martinez, Christopher, ABE	4/4/2013	The Utility of Indices of Drought for Water Management in the Southeastern USA: What Type and Scale are Most Relevant to End-Users?	\$199,853	Graham, Wendy Ingram, Keith Breuer, Norman Srivastava, Puneet	NOAA	Not Funded
Borisova, Tatiana, FRED	5/24/2013	A Pilot Program for improving BMAP success through County Cooperative Extension Agent training and evaluation	\$81,706	Shukla, Sanjay Reddy, K. Ramesh Clark, Mark W. McKee, Kathleen	FL DEP	Not Funded
Irani, Tracy, FYCS	9/10/2013	WSC-Category 2 Collaborative- Resolving the Water Wars: Integrated Decision-Support Models to Manage Competing Water Uses in the ACF	\$1,005,274	Pine III, William Wright, David L.	NSF	Not Funded

Munoz-Carpena, Rafael, ABE	9/10/2013	WSC-Category 2- Collaborative Research. Engineering resilience in a complex water-subsidized basin: drivers, emergent properties and cascading decisions	\$3,229,104	Kiker, Gregory Southworth, Jane Huffaker, Ray Brown, Mark T.	NSF	Not Funded
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ii. Seminars and conferences hosted by the Center/Institute

The Water Institute Distinguished Scholar Seminar Series invites high profile scholars to UF to conduct a Water Institute seminar of interest to a broad audience; meet with the Water Institute Faculty Advisory Committee to discuss strategic planning and partnering opportunities; and meet with interested Water Institute faculty and graduate students to discuss specific research/education issues. Eight speakers were hosted during 2013-2014 (see Table 4 for details). For a complete listing of speakers, who represent leading experts in the fields of engineering, biophysical sciences, social sciences and law see <http://waterinstitute.ufl.edu/seminars/seminars.asp> .

Table 4: 2013-2014 Distinguished Scholar Seminar Speakers

Date	Distinguished Scholar Seminar Speaker
April 28, 2014	Carlos Duarte , Research Professor with the Spanish National Research Council (CSIC) at the Mediterranean Institute for Advanced Studies (IMEDEA) in Mallorca, Spain, and Director of the Oceans Institute at The University of Western Australia
March 31, 2014	Christine A. Klein , Chesterfield Smith Professor of Law, Director, LL.M. Program in Environmental & Land Use Law, University of Florida Levin College of Law
January 16, 2014	Ellen E. Martin , Ph.D., Professor, Department of Geological Sciences, FCI Faculty Fellow
January 16, 2014	Rafael Munoz-Carpena , Ph.D., Ph. D. Professor, Agricultural and Biological Engineering Department, Water Institute Faculty Fellow
November 15, 2013	Dr. Matthew J. Cohen , Associate Professor, Forest Water Resources, School of Forest Resources and Conservation, University of Florida
November 15, 2013	Dr. Timothy Martin , Professor, Tree Physiology, Project Director of Pinemap (NIFA), School of Forest Resources and Conservation, University of Florida
November 04, 2013	Buster Simpson , Environmental Artist
September 06, 2013	Dr. Linda S. Lee , Professor and Associate Head - Agronomy Dept; Program Head - Ecological Sciences & Engineering Interdisciplinary Graduate Program; Faculty Affiliate - Division of Environmental Ecological Engineering, Purdue University

iii. Peer-reviewed journal publications by Center/Institute members

The Water Institute does not have the resources to maintain an exhaustive list of peer reviewed articles published by all Water Institute Affiliate faculty members at this time. A partial listing, which is searchable by thrust area, ecosystem, author, title, or year can be found at http://waterinstitute.ufl.edu/news/publications/Pubs_textSearch2.asp

iv. Sponsored research awards received by Center/Institute faculty in 2013/2014 that correspond with Center/Institute mission and focus

In FY2013-2014 the 205 Water Institute affiliated faculty members received new sponsored water-related research awards totally approximately \$22.4 million.

c. Extension, Outreach and Communication Activities

UF-IFAS Extension: In July 2012 the UF Water Institute began working with UF-IFAS Extension to support its efforts to formulate a statewide plan for Water Programs. As a part of this process Water Institute staff planned and executed a [Water Summit](#) designed to engage county and state faculty in the development of an implementation plan for the UF-IFAS Extension Water Initiative. A two-day Water Summit, held in December 2012, engaged over 70 county and state faculty members and formed action teams that are currently developing plans of action and funding focused around each of three priority areas: Water Conservation, Water Quality, and Public Awareness of Water Issues.

The UF Water Institute directly supports the UF-IFAS Extension Public Awareness of Water Issues priority area. Water Institute staff are currently coordinating a UF-IFAS effort to develop statewide Watershed Stewards Program. The goal of this program is to develop a citizen volunteer corps that will educate communities and implement water improvement projects in their local areas while maintaining a relationship and ongoing training with UF-IFAS extension faculty. Other UF-IFAS water extension programs including Water Schools for agricultural stakeholders and Water Schools for decision-makers are also being developed with assistance from Water Institute Staff.

In addition the Water Institute is working with Dr. Michael Dukes, Agricultural and Biological Engineering and Dr. Kelly Morgan, Soil and Water Science on an FDACS grant funded project to provide a synthesis of Agricultural BMP research conducted by UF-IFAS and other SE land grant institutions, produce executive summaries of BMP effectiveness by commodity, and identify knowledge gaps and develop priorities for extension BMP programs and future research needs.

Biennial Water Institute Symposium: The [4th UF Water Institute Symposium](#) continued the success of previous symposia providing a venue for exploring the multidisciplinary scope of critical science, policy and management issues fundamental to securing Florida's water future. The two-day event brought 330 scientists, engineers, faculty, students, water related professionals and private citizens together from academic, industry, agricultural, environmental, governmental and non-governmental organizations, to focus on issues surrounding "**Water Supply Planning in a Non-Stationary World.**" Over 150 contributed oral and poster presentations and several panel discussions in 5 major themes tackled complex issues related to water supply planning from multiple perspectives. In addition, the final plenary session included a panel of leaders of Florida's agencies responsible for water planning and management, followed by a panel exploring the role of grass-roots versus political leadership in establishing a Water Ethic in Florida.

d. Graduate Education Programs

[The Water Institute Graduate Fellows \(WIGF\) program](#) supports interdisciplinary faculty-graduate fellow teams to conduct integrative research in emerging areas of water science, including the social, natural, and engineering sciences. The Deans of the UF-IFAS College of Agricultural and Life Sciences, UF College of Liberal Arts and Sciences, and the Directors of the

School of Natural Resources and Environment, and the Engineering School of Sustainable Infrastructure and the Environment have committed UF Graduate School Fellowships for biennial cohorts of 6 Ph.D. students to participate in this program. The Water Institute leverages this UF investment using gifts provided by the Swisher Foundation and the Sherwood-Stokes Foundation to support field, laboratory and computer analyses by the student cohorts. In addition Water Institute staff members coordinate integrative activities to support the cohorts' development into a cohesive interdisciplinary cadre of professional researchers.

The first WIGF cohort is led by Dr. Mark Brown from Environmental Engineering Sciences. This 6 Ph. D. student cohort began their program in Fall 2011 and is focused on developing the new knowledge, and creative engineering, management and policy solutions needed to establish and achieve numeric nutrient criteria for Florida's waters. The 2013 WIGF cohort is led by Dr. Jon Martin from Geological Sciences. A 7 Ph. D. student cohort began their program in Fall 2013 and is focused on improving the understanding of potential impacts of sea level change on coastal aquifers, water resources, and ecosystems. A new cohort is currently being solicited for Fall 2015.

In addition to coordinating the WIGF program, the UF Water Institute also provides administrative services to the [Hydrologic Sciences Academic Cluster \(HSAC\)](#), an interdisciplinary program designed to broaden the skills of science and engineering students who are interested in all aspects of water. Currently 58 faculty members and 34 graduate students from 9 departments and 3 colleges participate in the HSAC. Water Institute support services include coordinating HSAC faculty meetings, managing student applications to the program, maintaining an on-line database for the HSAC student, faculty and meeting records, and maintaining the [HSAC website](#). In addition The UF Water Institute Director serves as a permanent voting member on the Hydrologic Sciences Academic Cluster Faculty Coordinating Committee

3. Center/Institute Plans for 2014/2015

- Successfully complete high-profile academic review of Everglades Restoration options commissioned by the Florida Senate Committee on Environmental Preservation & Conservation
- Successfully launch and coordinate high-profile \$3 Million Springs Research Initiative with the St Johns River Water Management District
- Pilot a Watershed Stewards Program in partnership with UF/IFAS Extension in Hillsborough County
- Continue to manage and build a portfolio of moderate-sized interdisciplinary Water Institute research projects
- Continue to submit proposals for multi-million dollar interdisciplinary grants from national/international funding agencies
- Continue to bring in internationally known water experts to a well-attended Distinguished Scholar Seminar Series
- Build and strengthen the Water Institute Graduate Fellows Program
- Maintain an up-to-date website that showcases Water Institute faculty programs and publications
- Pursue recurring LBR funding from the Florida Legislature taking advantage of the incoming Speaker of the House (Crisafulli) and the incoming President of the Senate (Gardiner) interests in water issues.

Appendix A:

Table A1: Summary of Faculty Membership by Department/School/Center

Dept/School/Center	Total No.
4H and Youth Programs	1
African Studies	1
Agricultural and Biological Engineering	15
Agricultural Education and Communications	5
Agronomy	4
Anthropology	2
Aquatic and Invasive Plants	1
Biology	4
Building Construction	2
Bureau of Economic and Business Research	1
Center for Tourism	1
Center for Womens Studies	1
Center for Written and Oral Communication	1
Chemical Engineering	1
Civil Engineering	4
Coastal and Oceanographic Engineering	2
College of Law	4
Computer and Information Science and Engineering	1
Economics	1
Entomology and Nematology	2
Environmental Engineering Sciences	11
Environmental Global Health	1
Environmental Horticulture	7
ESSIE, Dept. of Civil and Coastal Engineering	1
Everglades Research and Education Center	3
Family Youth and Community Science	1
Fisheries and Aquatic Sciences	8
Florida Center for Solid and Hazardous Waste Management	1
Florida Sea Grant	1
Florida-Friendly Landscaping™ Program	1
Food and Resource Economics	6
Fort Lauderdale Research and Education Center	1
Geography	5
Geology	11
Gulf Coast Research and Education Center - Bradenton	1
History	1

Horticultural Science	1
Horticultural Sciences Department	1
Indian River Research and Education Center - Ft Pierce	3
International Center	1
Lake Alfred Citrus Research and Education Center	2
Landscape Architecture	2
Latin American Studies	1
Materials Sciences and Engineering	1
Mechanical Engineering	1
Microbiology and Cell Science	1
Natural History	1
Pharmacy - Medicinal Chemistry	1
Public Utilities Research Center	1
Religion	3
School of Architecture DCP	1
School of Forest Resources and Conservation	13
Sociology, Criminology & Law	1
Soil and Water Science	25
Southwest Florida Immokalee	1
Subtropical Agricultural Research Station - Brooksville	1
Tourism, Recreation & Sport Management	1
Tropical Conservation and Development Program	1
Tropical Research and Education Center Homestead	7
UF/IFAS Center for Public Issues Education	1
UF/IFAS Extension	1
UF/IFAS Extension - Citrus County	1
UF/IFAS Extension - Osceola County	1
UF/IFAS Extension - Volusia County	1
UF/IFAS Extension Administration	2
UF/IFAS West Florida Research and Education Center	1
Urban and Regional Planning	1
Veterinary Medicine	3
Warrington College of Business Administration	1
Water Institute	1
Wildlife Ecology and Conservation	5
Tropical Conservation and Development	1
Grand Total	205