

UNIVERSITY OF CENTRAL FLORIDA

FY11 ANNUAL REPORT

OFFICE OF RESEARCH AND COMMERCIALIZATION



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The Carnegie Foundation has recognized UCF for its “very high research activity.” UCF joins some of the most prestigious universities in the nation, including Harvard, MIT, Johns Hopkins and Stanford.

On the cover: A small-scale, fully instrumented propulsion gas turbine located in UCF’s Siemens Energy Center is used for the characterization of algal-derived biofuels. Exhaust temperature, turbine inlet temperature, pressure ratio and thrust measurements are used to validate various fuels. The turbine is supported by funding from the U.S. Air Force.

Right: The solar charging station not only gives students and faculty a free place to charge their electric vehicles, but also feeds electrical energy back into the campus’ main power grid.





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UCF researchers were awarded \$106.6 million in external research funding in fiscal year 2011. The College of Engineering and Computer Science received the most funding (\$16.9 million) followed by the Institute for Simulation and Training (\$15.7 million) and the College of Sciences (\$14.2 million).

Right: UCF's Institute for Simulation and Training's Media Convergence Lab received funding from the National Science Foundation to develop a simulation platform that allows middle school students to use their bodies to interact with the solar system.

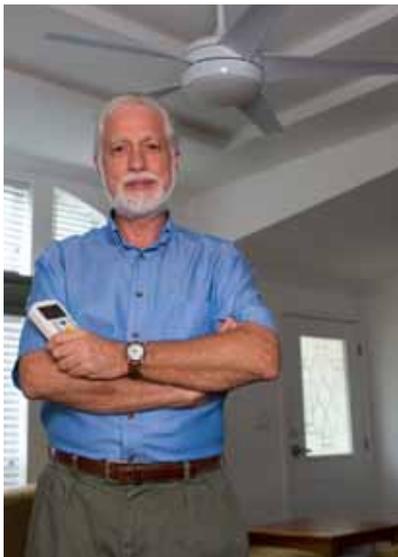








Far left: Graduate student Judith Dickson uses a transmission electron microscope in UCF's Advanced Materials Processing and Analysis Center to examine the microstructure of advanced materials.



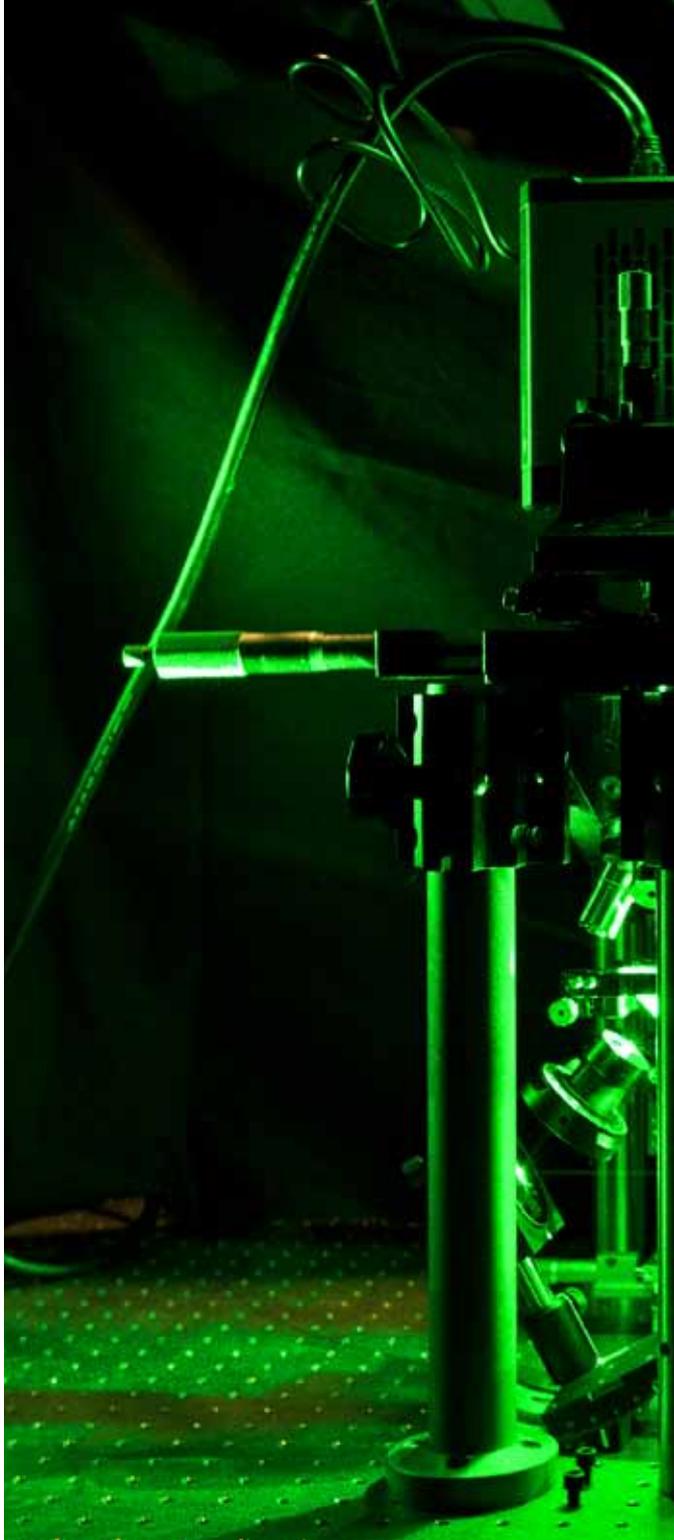
Top: Thomas O'Neal, associate vice president for research and commercialization and executive director of the UCF Business Incubation Program, appeared before congress to share insight about UCF's success with industry partnerships and the potential for nanoscience technology.

Left: A ceiling fan made energy efficient by an ingenious twist of its blades moved into record books as the most successful commercial product ever developed and licensed at UCF, with 1.7 million fans sold. The fan was developed by Danny Parker, a researcher at UCF's Florida Solar Energy Center.

UCF's success in moving technology from the laboratory to the marketplace and helping emerging businesses continues to elevate the university's reputation.

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Right: Dr. Aristide Dogariu and his team at UCF's College of Optics and Photonics Center for Research and Education in Optics and Lasers (CREOL) are using a microscope capable of laser illumination for optical trapping and force experiments. In 2011, CREOL was ranked seventh among the nation's top electrical and computer engineering programs by PhDs.org.





*“Earning the Carnegie Foundation’s
top classification is a testimony to our
institutional commitment to fueling
Florida’s innovation economy.”*

—Dr. John C. Hitt, UCF President

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Despite operating in the midst of one of the most severe statewide and national economic downturns in decades, the UCF Business Incubation Program helped create almost 1,500 new jobs with earnings in excess of \$62 million annually in the metro Orlando area.

Right: Hoverfly Technologies, Inc.—one of the UCF Business Incubation Program’s client companies—designs and sells proprietary flight-control systems for unmanned vehicles that enable nearly hands-free flight and effortless video capture in the air.





GrowFL gives second-stage companies the tools they need to grow to the next level.

Top: MBF Industries, Inc., manufactures specialty vehicles for homeland security, law enforcement, the military and medical industries, among others. MBF CEO John Baker says the professionalism of the GrowFL team helped them quickly grasp the needs of his company and offer tangible tools for growth.

Left: Richard Sweat, president and CEO of .decimal, Inc., a manufacturer of custom devices to target radiation therapy credits GrowFL with helping his company's expansion into Japan and Canada.



FISCAL YEAR 2011 MILLIONAIRES

	NAME	ACADEMIC UNIT	TOTAL
1	Thomas O'Neal	Office of Research and Commercialization	\$6,961,269.95
2	Lynn Hansen	Student Development and Enrollment Services	\$5,500,000.00
3	Ernest Smart	Institute for Simulation and Training	\$3,020,083.00
4	Stephanie Lackey	Institute for Simulation and Training	\$2,281,459.00
5	Martin Richardson	College of Optics and Photonics	\$2,127,706.00
6	Brian Plamondon	Institute for Simulation and Training	\$2,082,572.00
7	Ahmed Radwan	College of Engineering and Computer Science	\$1,732,702.00
8	Mubarak Shah	College of Engineering and Computer Science	\$1,682,913.00
9	Eunice Choi	College of Business Administration	\$1,618,779.00
10	Jayanta Kapat	College of Engineering and Computer Science	\$1,615,053.60
11	Alexander Cole	Burnett School of Biomedical Sciences	\$1,557,387.00
12	David Block	Florida Solar Energy Center	\$1,532,419.00
13	Larry Chew	College of Engineering and Computer Science	\$1,456,688.00
14	Eduardo Salas	College of Sciences	\$1,335,863.00
15	Lixing Gu	Florida Solar Energy Center	\$1,320,000.00
16	Henry Daniell	Burnett School of Biomedical Sciences	\$1,244,615.00
17	Glenn Martin	Institute for Simulation and Training	\$1,210,452.00
18	Deborah Beidel	College of Sciences	\$1,181,004.00
19	Kenneth Reynolds	College of Health and Public Affairs	\$1,049,925.00
20	Florian Jentsch	College of Sciences	\$1,045,398.85
21	Talat Rahman	College of Sciences	\$989,000.00
22	Anne Culp	College of Education	\$981,750.00
23	Eric Van Stryland	College of Optics and Photonics	\$953,486.75

Left: UCF's Advanced Materials and Analysis Center (AMPAC) uses a Lindberg/SM 3-Zone tube furnace to test materials at temperatures up to 900 degrees in an inert atmosphere. AMPAC is available for industry use.

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Above: A subject stands silhouetted before a “cave” immersion projection system used in training scenarios.

Right: UCF research scientist Ammarin Daranpob uses a moosehorn tool to estimate the percentage of the sky obscured by tree canopy, which directly affects the ability of the prevailing winds to transfer momentum to the flood.

FISCAL YEAR 2011 RESEARCH AWARDS BY ACADEMIC UNIT

	ACADEMIC UNIT	TOTAL
1	College of Engineering and Computer Science	\$16,906,950
2	Institute for Simulation and Training	\$15,726,088
3	College of Sciences	\$14,163,913
4	Burnett School of Biomedical Sciences	\$9,944,485
5	Florida Solar Energy Center	\$8,956,445
6	College of Optics and Photonics	\$7,659,154
7	Office of Research and Commercialization	\$7,506,310
8	Student Development and Enrollment Services	\$6,385,175
9	College of Education	\$4,672,097
10	College of Health and Public Affairs	\$4,647,297
11	Administration and Other	\$2,353,379
12	NanoScience Technology Center	\$2,161,737
13	Advanced Materials Processing and Analysis Center	\$1,778,026
14	Florida Space Institute	\$1,569,803
15	College of Nursing	\$684,026
16	College of Arts and Humanities	\$527,705
17	College of Medicine	\$485,034
18	College of Business Administration	\$247,753
19	Rosen College of Hospitality Management	\$207,319
	Total	\$106,582,695



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10-YEAR PROPOSALS/SUBMISSIONS

YEAR	TOTAL AWARD	TOTAL SUBMISSION
2002	\$75,209,415	\$332,358,529
2003	\$88,828,913	\$398,440,003
2004	\$82,864,107	\$450,971,246
2005	\$99,995,506	\$352,616,338
2006	\$100,855,364	\$502,203,008
2007	\$118,216,069	\$1,011,340,993
2008	\$119,193,453	\$655,748,598
2009	\$121,911,236	\$569,968,662
2010	\$133,283,165	\$857,962,524
2011	\$106,582,695	\$700,218,912

FISCAL YEAR 2011 FUNDING

TYPE	TOTAL FUNDING
Industry	\$36,931,943
State	\$12,240,143
Federal	\$57,410,609

Top Right: New types of semiconductor lasers are grown in the molecular beam epitaxial growth system located at CREOL. Researchers are looking into new and different device structures in order to improve commercially available laser diodes.

Bottom Right: Dr. Saleh Nasar, a Burnett School of Biomedical Sciences professor, developed technology to test for the MAP bacterium (*Mycobacterium avium paratuberculosis*), which is linked to Crohn's disease.

10-YEAR FEDERAL FUNDING

YEAR	FEDERAL AWARD
2002	\$40,395,896
2003	\$47,380,459
2004	\$40,692,263
2005	\$43,769,439
2006	\$47,010,550
2007	\$57,062,596
2008	\$57,313,368
2009	\$60,200,812
2010	\$75,771,465
2011	\$57,410,609



2011 POINTS OF PRIDE

ACCREDITATION

The Office of Research and Commercialization received accreditation from the Association for Assessment and Accreditation of Laboratory Animal Care International and the Association for the Accreditation of Human Research Protection Program.

ADVANCED MATERIALS PROCESSING AND ANALYSIS CENTER/ NANOSCIENCE TECHNOLOGY CENTER

Dr. Lei Zhai's research team was nominated for the first-ever Katerva Prize for engineering the world's lightest toxin that also detects pollutants and toxic substances. Dr. Ming Su received an NSF CAREER award to develop a new method for detecting cancer by using nanoparticles as thermal barcodes.

CARNEGIE RANKING

The Carnegie Foundation for the Advancement of Teaching ranked UCF as an institution with "very high research activity."

CENTER FOR RESEARCH AND EDUCATION IN OPTICS AND LASERS

Endgadget.com, one of the most popular technology sites, featured Dr. Dennis Deppe's miniature laser, which emits more intense light than any other in use—it's ideal for CD players, laser pointers and high-speed data transmission.

COLLEGE OF EDUCATION

The state-of-the-art Morgridge International Reading Center opened to serve as a resource for advancing literacy through research, collaboration and community involvement.

COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

Since 1986, more than 200 students have participated in the college's National Science Foundation Research Experience for Undergraduates program, making it the longest running REU in the nation.

COLLEGE OF HEALTH AND PUBLIC AFFAIRS

The National Institutes of Health awarded Dr. Tom Wan and Judith Ortiz \$1.6 million to assess health care provided by clinics located in rural, medically underserved areas of the country.

COLLEGE OF MEDICINE

Featured on the cover of the March edition of *Nature Medicine*, Dr. Ella Bossy's research found that an overactive protein triggers brain nerve cells to die, which has implications for treating Huntington's disease.

The Bill & Melinda Gates Foundation awarded Dr. Henry Daniell a two-year, \$761,302 grant to develop a new polio vaccine.

COLLEGE OF SCIENCES

Dr. Dan Britt, of the Planetary Sciences Group, was elected as chairperson for the Division of Planetary Sciences of the American Astronomical Society.

FLORIDA COMPANIES TO WATCH

Fifty second-stage companies were honored by GrowFL, the Florida Economic Gardening Institute and the Edward Lowe Foundation. The winners generate \$420 million in annual revenue and employ nearly 2,000 full-time employees. Since 2009, award winners have created 510 new jobs.

FLORIDA HIGH TECH CORRIDOR/ UCF MATCHING FUNDS

The matching grants program provided \$1.5 million matched by \$4.5 million in industry funding to support 36 UCF research and industry collaborations.

FLORIDA SOLAR ENERGY CENTER

The center is installing solar photovoltaic cells, which will reduce energy costs on 90 Florida schools that serve as emergency shelters.

FLORIDA SPACE INSTITUTE*

Richard Eastes' and Andrey Krywonos' Global-scale Observations of the Limb and Disk (GOLD), a specialized camera-like instrument called an ultraviolet imaging spectrograph that will record light emitted by the atmosphere, is in contention for a future NASA space flight.

GROWFL

Helped to create 3,317 jobs (1,451 direct, 823 indirect and 1,043 induced). In addition:

- \$510 million annual economic impact
- \$2,678 million increase in Florida's gross domestic product
- \$18.7 million increase in state and local net tax revenue
- Helped companies grow employment 10.9 percent faster than similar non-GrowFL companies
- \$2,362 per direct jobs created

INSTITUTE FOR SIMULATION AND TRAINING

The Discovery Channel's "Daily Planet" featured Ron Tarr's study on distracted driving, which used a full motion-based driving simulator with a real truck cab.

MEGAWATT VENTURES*

In its first year, created six new companies focused on commercializing energy technologies. One of these companies, Mud Power, won \$100,000 to develop microbial fuel cells (MFCs) for use in powering sub-surface instrument deployments.

NATIONAL ENTREPRENEUR CENTER*

Moved to a new location at the Orlando Fashion Square.

Coached and trained more than 10,000 business people and connected with more than 130,000.

OFFICE OF TECHNOLOGY TRANSFER

- 112 Disclosures
- 158 Patent applications
- 76 Patents issued
- 9 Trademarks
- 2 Copyrights
- 14 Licenses and options

UCF BUSINESS INCUBATION PROGRAM*

Combined direct impacts of client and graduate companies:

- Jobs created: 1,378 jobs
- Total economic output: \$156.4 million
- Earnings: \$81.2 million

Combined direct and indirect impacts:

- Jobs created: 2,729 jobs
- Total economic output: \$317.6 million
- Earnings: \$116.3 million
- Graduated 20 clients and welcomed 64 new clients

VENTURE LAB

- 150 Clients
- 16 Grant proposals
- 75 Business plans

**Data from January 2011 through December 2011.*

**Data from November 2009 through August 2011.*





UCF OFFICE OF RESEARCH & COMMERCIALIZATION

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