

College of Sciences Research and Facilities Annual Report 2021-2022





COLLEGE OF SCIENCES

Research

2021-2022

WELCOME

The College of Sciences (COS) welcomes you to visit [COS Research and Facilities](#) where Faculty and Staff will find answers to many of your Pre-Award proposal preparation, Post-Award departmental and COS Facilities questions.

COS Pre-Award assists faculty during the proposal submission process and helps identify resources to make our researchers more competitive, including managing several internal programs.

COS Post-Award supports faculty and staff acting as liaison with other UCF offices to ensure a smooth management of grants and contracts.

COS Facilities provides support to Faculty and Staff in all areas of Facilities & Safety, including classroom and lab safety, building access, property and inventory control, space utilization, renovation, and new construction.

Thanks to our research faculty and support staff for all you do to continue pursuing excellence in research in our community and beyond.



Cheers,

ENRIQUE DEL BARCO, PH.D.

Associate Dean for Research



Meet the **TEAM**

Pre-Award

CosPreAward@ucf.edu



MONIQUE GREGORY
Manager, Pre-Award



CORAL GEAN ABEL
Contracts and Grants Specialist IV



JODI REINHART
Contracts and Grants Specialist IV



GISELA VERA
Contracts and Grants Specialist IV

Post-Award

CosPostAward@ucf.edu



VENESSA G. NIEVES
Manager, Post-Award



JESSICA BROOKS
Post Award Specialist III



LISA HAAS
Post Award Specialist II



SANDRA RIVERA
Post Award Specialist III



PUCK WINCHESTER
Post Award Specialist II

Facilities

CosFacilities@ucf.edu



JENNIFER STEELE
Manager, Facilities Utilization



RAEVAUN CLARKE
Facilities Specialist II



COS Research at a glance

\$138 MILLION PROPOSALS SUBMITTED

309 PROPOSALS SUBMITTED
with COS faculty as lead PI

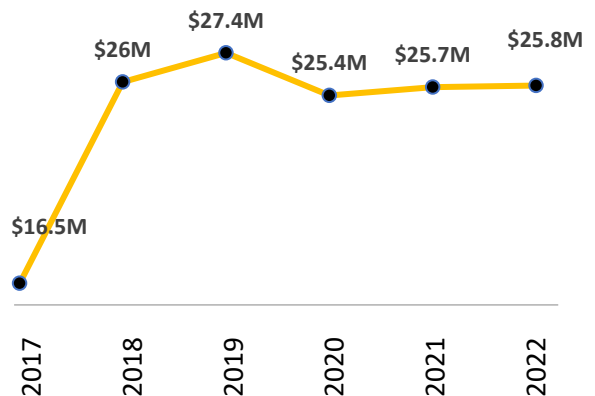
133 PROPOSAL COLLABORATIONS
with COS faculty as Co-PIs

\$26 MILLION AWARDED

#2 COLLEGE FOR PROPOSALS SUBMITTED

#3 COLLEGE FOR AWARDS

One more year and **thanks to our research faculty**, the College of Science (COS) continues to thrive in seeking excellence in research. For the fifth consecutive year we have maintained our external sponsored awards **above \$25M**, making COS rank among the very top colleges at UCF. In addition, COS continues to showcase an incredible level of scholarly production across a very diverse set of disciplines, which includes a growing number of interdisciplinary collaborations between units and with other UCF colleges.



These summary figures demonstrate that COS researchers strongly contribute to UCF's progression towards becoming one of the top-25 public research universities in the nation, gaining international visibility and recognition in a broad range of disciplines.

This report focuses on research and facilities, support operations, and different aspects of our impressive performance in research. Also, it is intended to help COS faculty better understand the infrastructure created to assist researchers in the college and the nature of research performed within our walls.





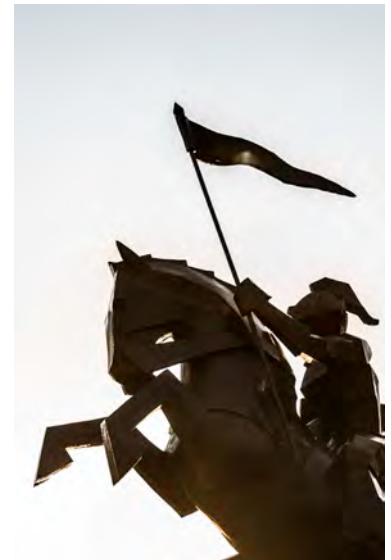
Breakdown of External Proposals by College

College Proposals

	<u>No.</u>	<u>Amount</u>
COMPONENT UNITS	0	\$ 0
ACTIVITY AND SERVICE FEES	1	\$ 18,436
GRADUATE STUDIES	1	\$ 37,121
COLLEGE OF BUSINESS	5	\$ 314,148
ADMINISTRATION AND FINANCE	4	\$ 380,669
COMMUNICATIONS AND MARKETING	14	\$ 2,123,840
OFFICE OF RESEARCH	11	\$ 2,869,117
ACADEMIC AFFAIRS ADMIN	6	\$ 3,400,842
ADV MATERIALS PROC ANAL CTR	19	\$ 4,363,520
CTR RESEARCH COMPUTER VISION	25	\$ 8,392,310
COLLEGE OF ARTS & HUMANITIES	40	\$ 10,644,855
COLLEGE OF HOSPITALITY MGMT	23	\$ 11,236,855
PRESIDENTIAL DIVISION	29	\$ 11,312,094
STUDENT DEV AND ENROLL SVCS	5	\$ 14,356,037
FSEC - COLLEGE	41	\$ 14,812,585
COLLEGE OF NURSING	34	\$ 15,950,087
COLLEGE OF HLTH PROF AND SCI	57	\$ 20,199,210
INST FOR SIMULATION AND TRNG	63	\$ 37,171,866
CTR RES ELECTRO OPTICS LASERS	139	\$ 52,240,118
COLLEGE OF COMM INNOV AND EDUC	106	\$ 58,643,071
NANOSCIENCE TECHNOLOGY CENTER	106	\$ 74,812,066
<u>COLLEGE OF SCIENCES</u>	<u>309</u>	<u>\$ 137,773,600</u>
FLORIDA SPACE INSTITUTE	40	\$ 154,798,113
COLLEGE OF MEDICINE	160	\$ 162,986,799
COLLEGE OF ENGR AND COMP SCI	460	\$ 207,119,396
Totals	1698	\$1,005,956,758

This table provides a breakdown of the external funding sought by each college in the 2021-2022 fiscal year. **UCF shows a decrease of 15%** with respect to the previous year, for a total proposal submission amount of over **\$1 billion**. Out of \$138 million in submitted proposals by COS, \$26 million were funded. This provides evidence of improved efficiency in our college, with an impressive **19% success rate**, which is definitively above the success rate of most national funding competitions

Let's **CHARGE** on!





Breakdown of External Awards by College

College Awards

	<u>Amount</u>
ACTIVITY AND SERVICE FEES	\$18,436
COLLEGE OF BUSINESS	\$230,502
ACADEMIC AFFAIRS ADMIN	\$285,308
GRADUATE STUDIES	\$331,350
ADMINISTRATION AND FINANCE	\$384,704
COLLEGE OF HOSPITALITY MGMT	\$533,018
COLLEGE OF ARTS & HUMANITIES	\$1,198,181
COMMUNICATIONS AND MARKETING	\$1,523,960
COLLEGE OF NURSING	\$1,603,430
ADV MATERIALS PROC ANAL CTR	\$1,719,486
OFFICE OF RESEARCH	\$2,404,259
CTR RESEARCH COMPUTER VISION	\$4,717,756
FSEC - COLLEGE	\$4,887,270
COLLEGE OF HLTH PROF AND SCI	\$6,448,570
STUDENT DEV AND ENROLL SVCS	\$7,328,512
PRESIDENTIAL DIVISION	\$8,347,759
NANOSCIENCE TECHNOLOGY CENTER	\$8,414,807
INST FOR SIMULATION AND TRNG	\$12,545,956
COLLEGE OF MEDICINE	\$15,644,752
COLLEGE OF COMM INNOV AND EDUC	\$17,578,664
CTR RES ELECTRO OPTICS LASERS	\$19,362,760
COLLEGE OF SCIENCES	<u>\$25,805,673</u>
FLORIDA SPACE INSTITUTE	\$28,786,712
COLLEGE OF ENGR AND COMP SCI	<u>\$44,760,439</u>
Totals	<u>\$214,862,265</u>

This table provides a breakdown of the external funding sought by each college in the 2020-2021 fiscal year. **UCF shows an increase of 1%** with respect to the previous year, for a total proposal submission amount of over **\$1 billion**. Out of \$138 million in submitted proposals by COS, \$26 million were funded. This provides evidence of improved efficiency in our college, with an impressive **19% success rate**, which is definitively above the success rate of most national funding competitions

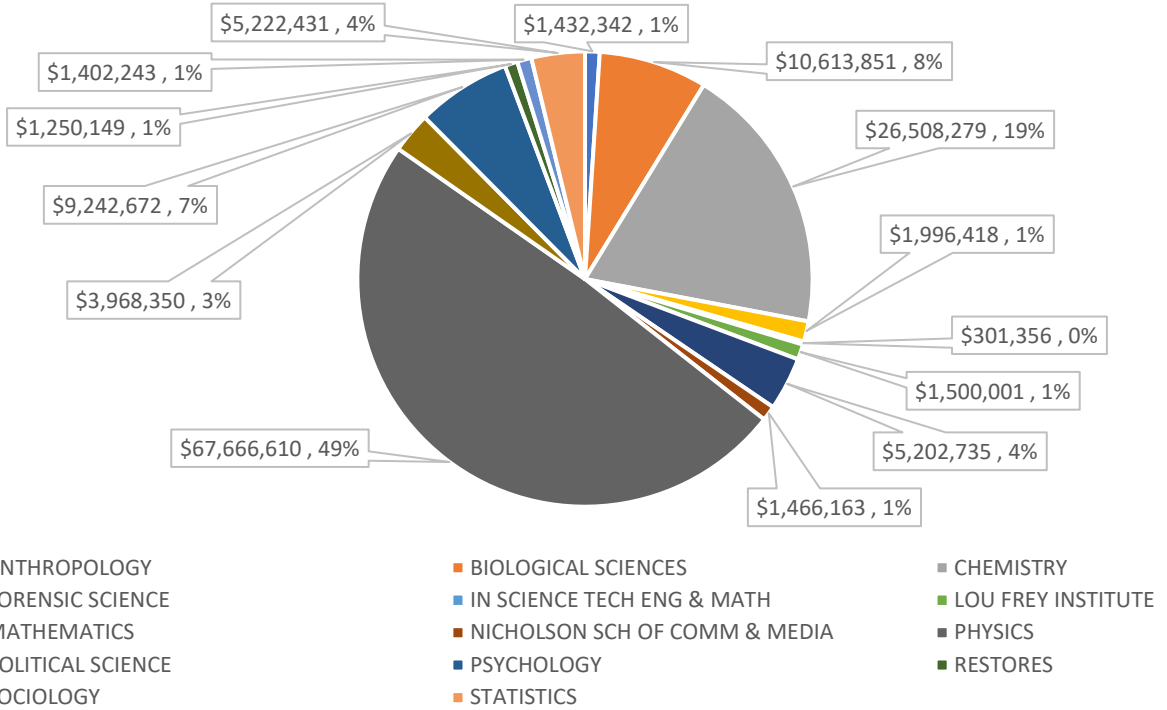
Let's **CHARGE** on!



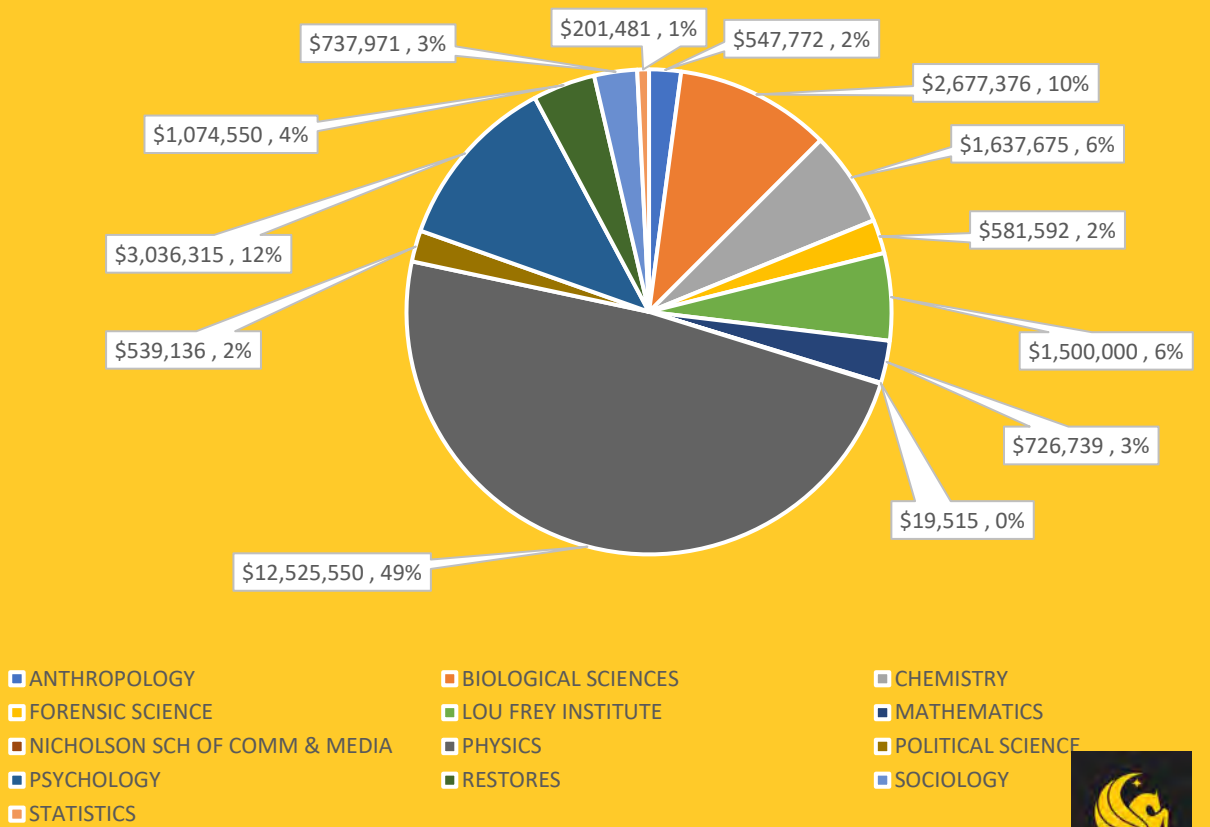


Proposals Submitted/Awarded by Unit

PROPOSALS SUBMITTED



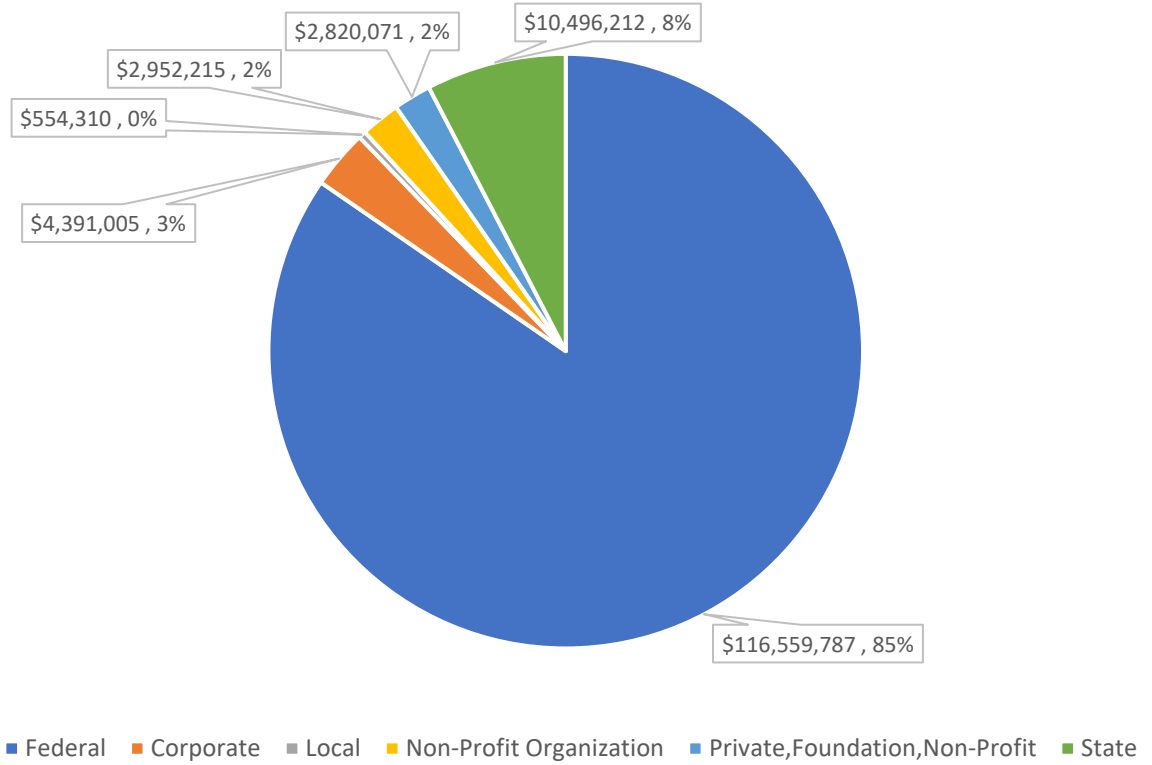
PROPOSALS AWARDED



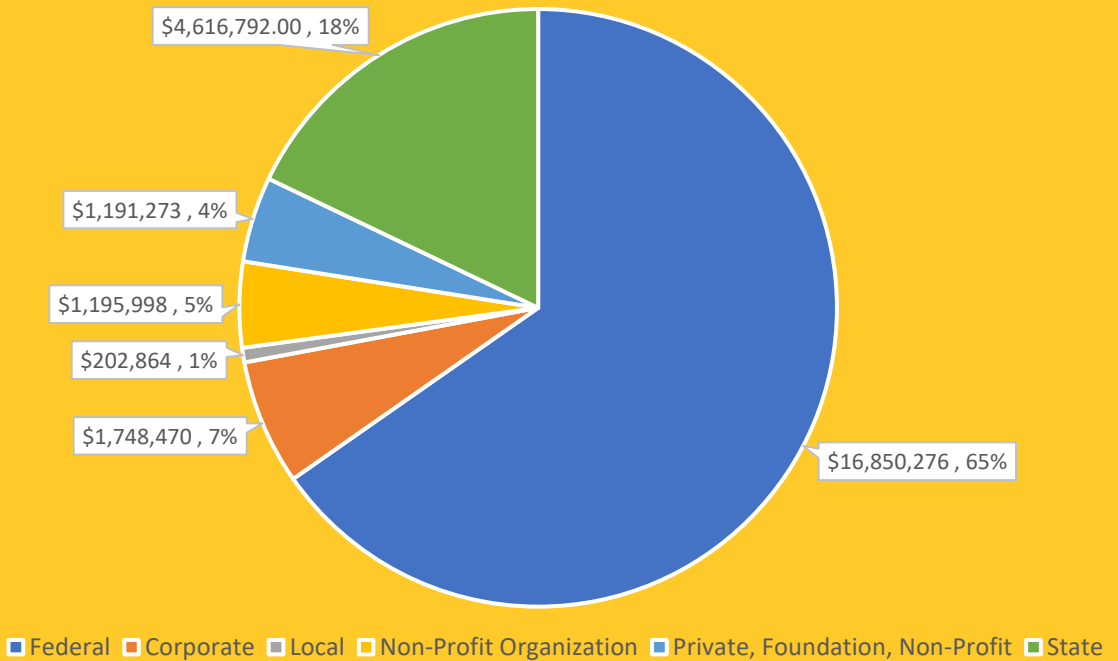


Proposals Submitted/Awarded by Sponsor Type

PROPOSALS SUBMITTED



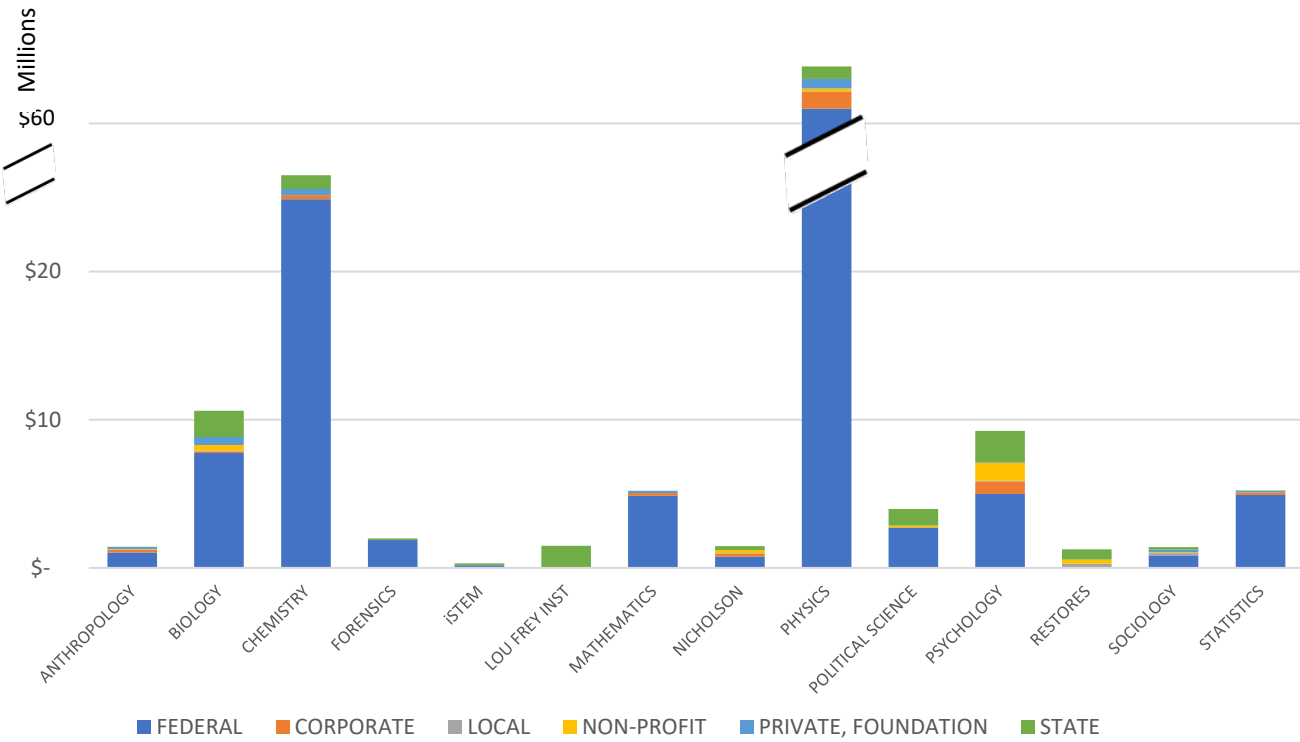
PROPOSALS AWARDED



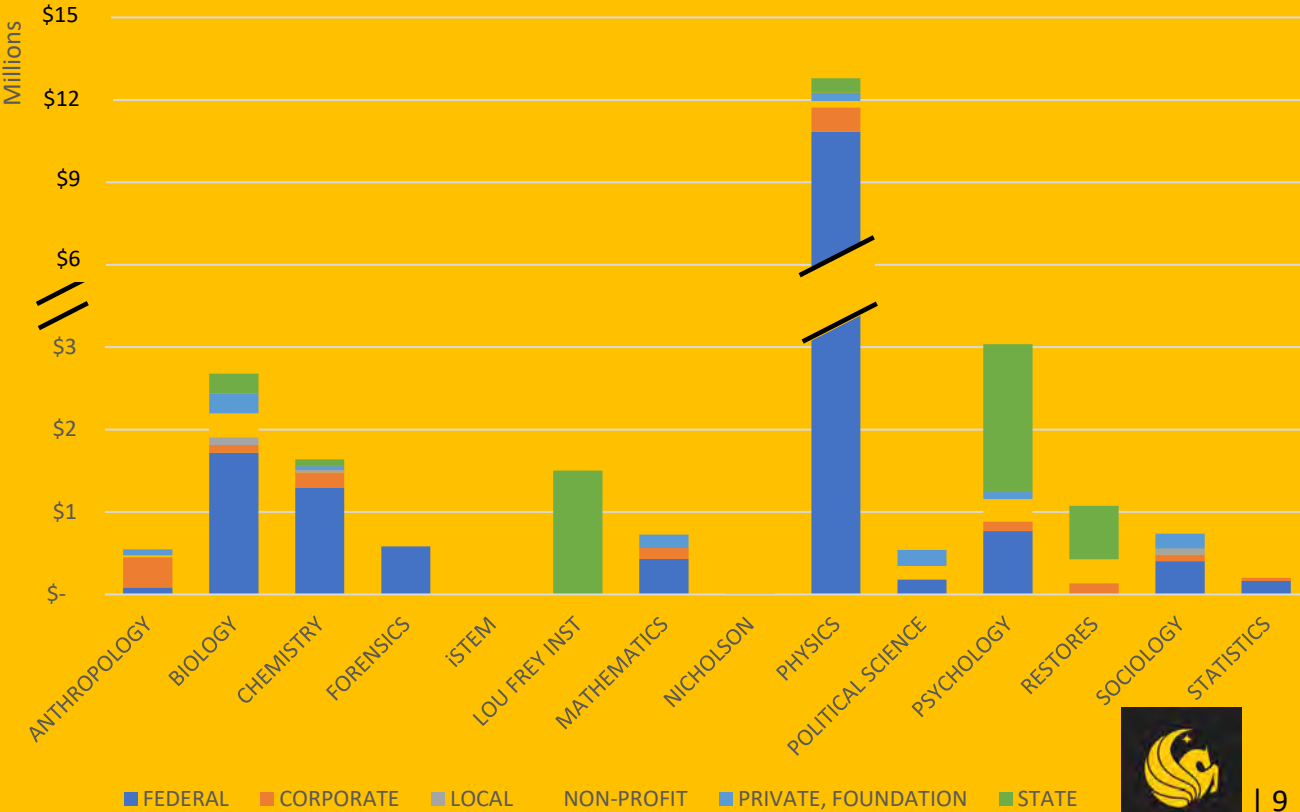


Proposals Submitted/Awarded by Sponsor/Unit

PROPOSALS SUBMITTED



PROPOSALS AWARDED





Proposals Submitted/Awarded by Sponsor/Unit

PROPOSALS SUBMITTED

	FEDERAL	CORPORATE	LOCAL	NON-PROFIT	PRIVATE, FOUNDATION	STATE	TOTAL
ANTHROPOLOGY	\$ 1,048,153	\$ 197,697	\$ 5,999	\$ 27,709	\$ 132,692	\$ 20,092	\$ 1,432,342
BIOLOGY	\$ 7,751,904	\$ 121,928	\$ 35,979	\$ 382,550	\$ 540,621	\$ 1,780,870	\$ 10,613,851
CHEMISTRY	\$ 24,882,340	\$ 280,036	\$ 8,757	\$ 665	\$ 392,442	\$ 944,039	\$ 26,508,279
FORENSICS	\$ 1,885,955	\$ -	\$ -	\$ 443	\$ -	\$ 110,021	\$ 1,996,418
iSTEM	\$ 177,356	\$ -	\$ -	\$ -	\$ -	\$ 124,000	\$ 301,356
LOU FREY INST	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,500,001	\$ 1,500,001
MATHEMATICS	\$ 4,852,359	\$ 202,776	\$ -	\$ -	\$ 147,600	\$ -	\$ 5,202,735
NICHOLSON	\$ 754,592	\$ 198,810	\$ 49,117	\$ 202,910	\$ 1,800	\$ 258,933	\$ 1,466,163
PHYSICS	\$ 61,988,215	\$ 2,336,084	\$ -	\$ 365,180	\$ 1,300,482	\$ 1,676,649	\$ 67,666,610
POLITICAL SCIENCE	\$ 2,732,194	\$ 1,250	\$ -	\$ 126,259	\$ -	\$ 1,108,647	\$ 3,968,350
PSYCHOLOGY	\$ 4,982,306	\$ 855,176	\$ 49,117	\$ 1,205,447	\$ 40,004	\$ 2,110,622	\$ 9,242,672
RESTORES	\$ -	\$ 28,249	\$ 266,571	\$ 291,184	\$ 1,750	\$ 662,394	\$ 1,250,149
SOCIOLOGY	\$ 849,220	\$ -	\$ 138,770	\$ 66,619	\$ 184,365	\$ 163,269	\$ 1,402,243
STATISTICS	\$ 4,938,444	\$ 168,999	\$ -	\$ -	\$ 78,314	\$ 36,674	\$ 5,222,431
TOTAL	\$ 116,843,037	\$ 4,391,005	\$ 554,310	\$ 2,668,965	\$ 2,820,071	\$ 10,496,212	\$ 137,773,600

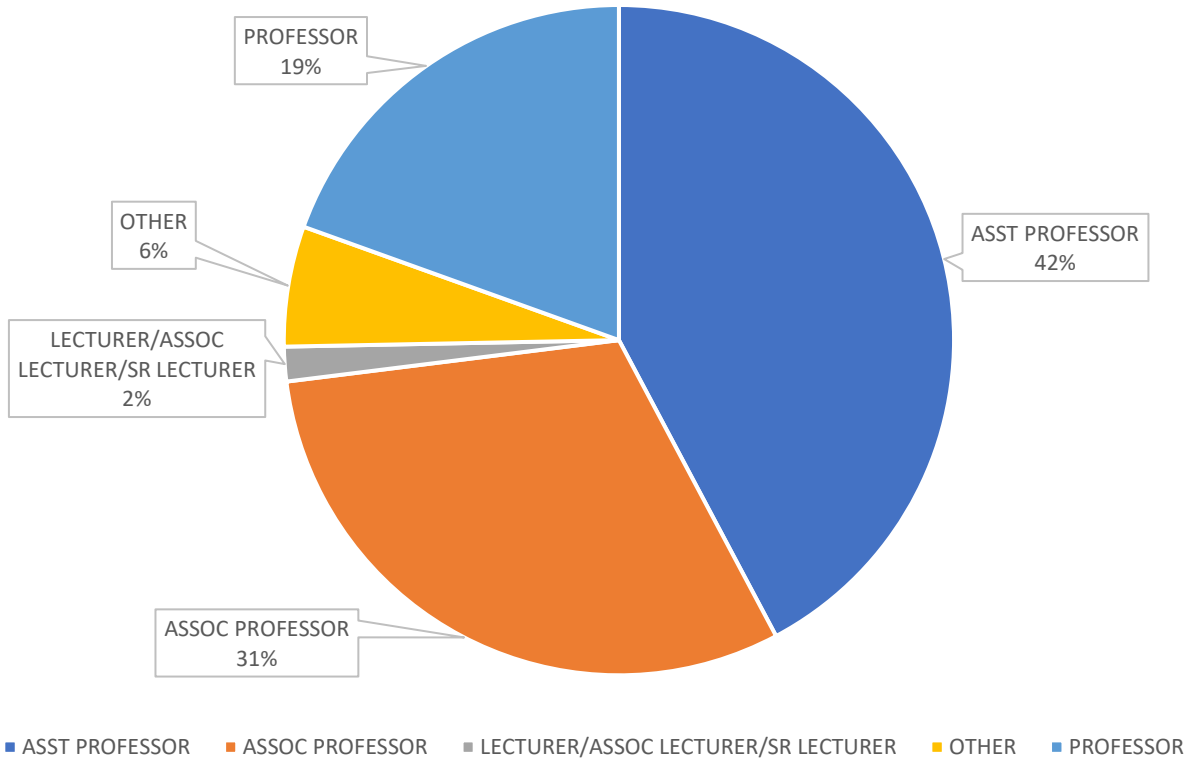
PROPOSALS AWARDED

JNIT	FEDERAL	CORPORATE	LOCAL	NON-PROFIT	PRIVATE, FOUNDATION	STATE	TOTAL
ANTHROPOLOGY	\$ 83,076	\$ 365,576	\$ 6,000	\$ 19,556	\$ 73,569	\$ -	\$ 547,777
BIOLOGY	\$ 1,719,072	\$ 94,558	\$ 92,462	\$ 289,258	\$ 241,426	\$ 240,599	\$ 2,677,376
CHEMISTRY	\$ 1,296,915	\$ 181,152	\$ 31,667	\$ -	\$ 47,169	\$ 80,773	\$ 1,637,675
FORENSICS	\$ 581,592	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 581,592
iSTEM	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
LOU FREY INST	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,500,000	\$ 1,500,000
MATHEMATICS	\$ 428,731	\$ 133,608	\$ -	\$ -	\$ 164,400	\$ -	\$ 726,739
NICHOLSON		\$ 15,015		\$ 4,500		\$ -	\$ 19,515
PHYSICS	\$ 11,229,120	\$ 589,184	\$ -	\$ 156,432	\$ 200,900	\$ 349,915	\$ 12,525,550
POLITICAL SCIENCE	\$ 181,501	\$ (750)	\$ -	\$ 163,717	\$ 194,668	\$ -	\$ 539,136
PSYCHOLOGY	\$ 766,928	\$ 116,775	\$ -	\$ 271,351	\$ 84,825	\$ 1,796,437	\$ 3,036,315
RESTORES	\$ -	\$ 134,297	\$ -	\$ 291,184	\$ -	\$ 649,069	\$ 1,074,550
SOCIOLOGY	\$ 401,860	\$ 79,055	\$ 72,735	\$ -	\$ 184,321		\$ 737,971
STATISTICS	\$ 161,481	\$ 40,000	\$ -	\$ -	\$ -	\$ -	\$ 201,481
Total	\$ 16,850,276	\$ 1,748,470	\$ 202,864	\$ 1,195,998	\$ 1,191,278	\$ 4,616,792	\$ 25,805,678

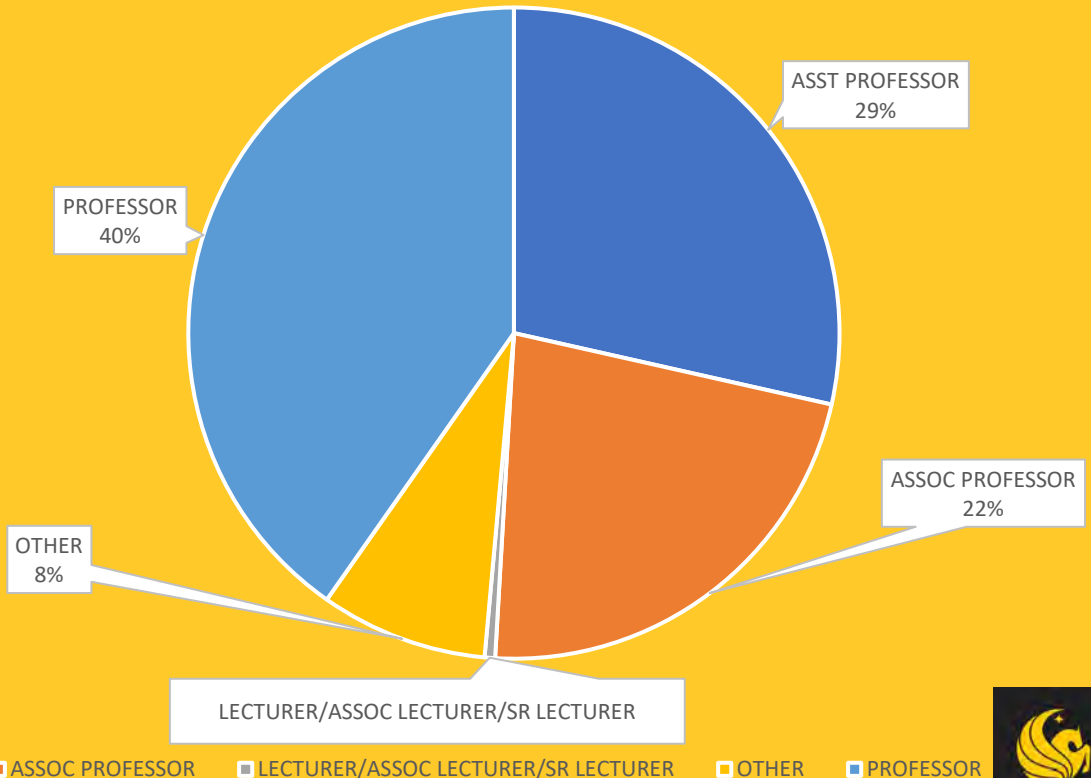


Proposals Submitted/Awarded by PI Type

PROPOSALS SUBMITTED



PROPOSALS AWARDED



Proposals Submitted/Awarded by PI/Unit

PROPOSALS SUBMITTED

UNIT	ASSISTANT PROFESSOR	ASSOCIATE PROFESSOR	ASSOCIATE LECTURER/LECTURER	OTHER	PROFESSOR	TOTAL
ANTHROPOLOGY	\$ 430,871	\$ 802,287	\$ 65,575	\$ 121,895	\$ 11,713	\$ 1,432,342
BIOLOGY	\$ 4,998,267	\$ 3,571,498	\$ 182,758	\$ 747,348	\$ 1,113,981	\$ 10,613,851
CHEMISTRY	\$ 14,925,445	\$ 8,053,496	\$ 1,247,165	\$ -	\$ 2,282,174	\$ 26,508,279
FORENSICS	\$ -	\$ 944,059	\$ -	\$ 693,866	\$ 358,493	\$ 1,996,418
ISTEM	\$ -	\$ -	\$ -	\$ 301,356	\$ -	\$ 301,356
LOU FREY INSTITUTE	\$ -	\$ -	\$ -	\$ 1,500,001	\$ -	\$ 1,500,001
MATHEMATICS	\$ 1,337,954	\$ 1,497,376	\$ -	\$ -	\$ 2,367,405	\$ 5,202,735
NICHOLSON	\$ 819,727	\$ 416,022	\$ 37,485	\$ 28,809	\$ 164,120	\$ 1,466,163
PHYSICS	\$ 28,896,712	\$ 19,948,020	\$ 62,000	\$ 2,864,970	\$ 15,894,907	\$ 67,666,610
POLITICAL SCIENCE	\$ -	\$ 2,787,291	\$ 1,250	\$ 390,601	\$ 789,209	\$ 3,968,350
PSYCHOLOGY	\$ 3,478,928	\$ 1,284,397	\$ 698,244	\$ 1,289,680	\$ 2,491,424	\$ 9,242,672
RESTORES	\$ 747,856	\$ -	\$ -	\$ -	\$ 502,293	\$ 1,250,149
SOCIOLOGY	\$ 269,810	\$ 656,370	\$ -	\$ -	\$ 476,063	\$ 1,402,243
STATISTICS	\$ 2,335,005	\$ 2,466,753	\$ -	\$ -	\$ 420,673	\$ 5,222,431
TOTAL	\$58,240,574	\$42,427,569	\$2,294,476	\$7,938,526	\$26,872,456	\$137,773,600

PROPOSALS AWARDED

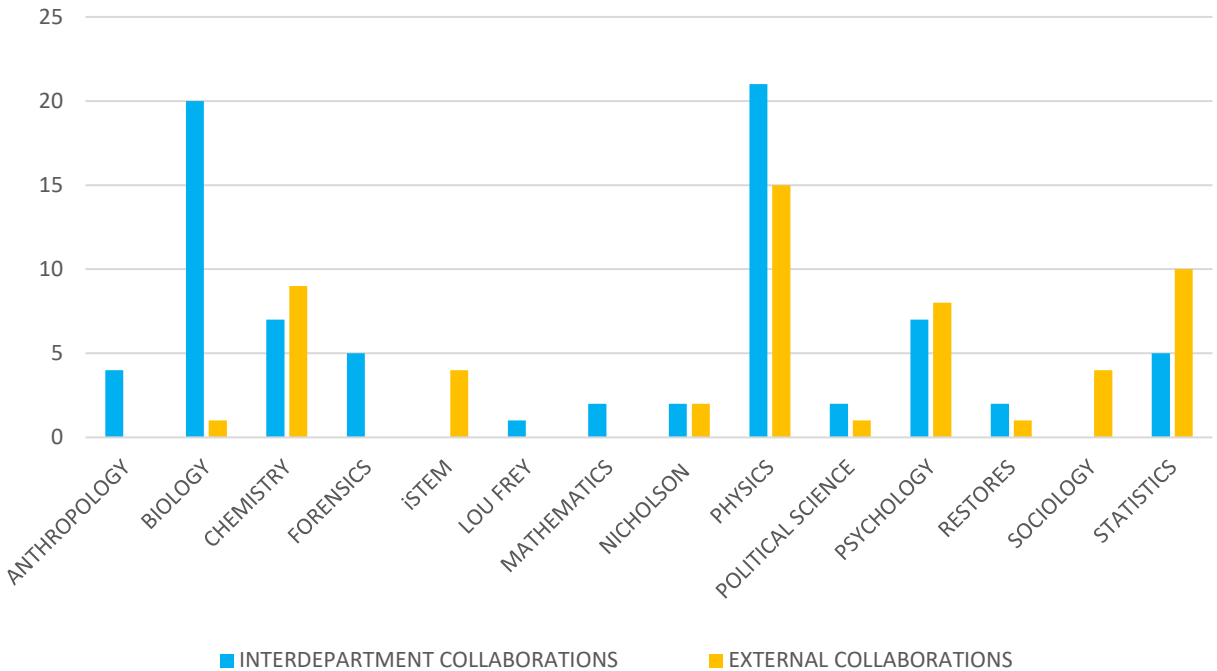
UNIT	ASSISTANT PROFESSOR	ASSOCIATE PROFESSOR	ASSOCIATE LECTURER/LECTURER	OTHER	PROFESSOR	TOTAL
ANTHROPOLOGY	\$ 95,853	\$ 304,197	\$ 92,846	\$ 15,064	\$ 39,812	\$ 547,772
BIOLOGY	\$ 1,448,465	\$ 581,690	\$ -	\$ 369,991	\$ 277,230	\$ 2,677,376
CHEMISTRY	\$ 329,994	\$ 709,547	\$ -	\$ 60,035	\$ 538,099	\$ 1,637,675
FORENSICS	\$ -	\$ 471,504	\$ -	\$ -	\$ 110,088	\$ 581,592
ISTEM	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
LOU FREY INSTITUTE	\$ -	\$ -	\$ -	\$ 1,500,000	\$ -	\$ 1,500,000
MATHEMATICS	\$ 167,399	\$ 35,000	\$ -	\$ -	\$ 524,340	\$ 726,739
NICHOLSON	\$ 4,500	\$ -	\$ -	\$ -	\$ 15,015	\$ 19,515
PHYSICS	\$ 2,906,431	\$ 2,225,191	\$ 40,000	\$ -	\$ 7,353,929	\$ 12,525,550
POLITICAL SCIENCE	\$ 99,826	\$ 163,717	\$ (750)	\$ 194,668	\$ 81,675	\$ 539,136
PSYCHOLOGY	\$ 1,529,164	\$ 799,451	\$ 1,881	\$ 2,500	\$ 703,319	\$ 3,036,315
RESTORES	\$ 580,947	\$ 111,081	\$ -	\$ -	\$ 382,522	\$ 1,074,550
SOCIOLOGY	\$ 98,010	\$ 378,874	\$ -	\$ -	\$ 261,087	\$ 737,971
STATISTICS	\$ 99,595	\$ -	\$ -	\$ -	\$ 101,886	\$ 201,481
TOTAL	\$ 7,360,183	\$ 5,780,251	\$ 133,978	\$ 2,142,258	\$ 10,389,003	\$ 25,805,673





Proposals Submitted in Collaborations

Collaboration of researchers with complementary/interdisciplinary expertise is essential for the advancement of modern science. Our college PIs have been particularly active in submitting proposals with colleagues in other units within the institution, some of which have resulted in externally funded awards.



UCF Strategic Investment Program Awards

Strategic Investment Program Awards: The funds are a combination of central funds and matches from colleges and units for UCF faculty that encompasses multiple and diverse approaches directed at promoting competitiveness in attracting external funding and enhancing the visibility and recognition of our faculty members. Each fund involved a review process with awards determined by President Alexander N. Cartwright and Provost Michael D. Johnson. The results of the Jump Start Fund and Academic Excellence Fund are available in the table below.

Jump Start			
Unit	Project Title	PI	Amount
PHYSICS	Jump Starting A New UCF Facility Supported by NSF – User Facility for Attosecond Soft X-Rays and Terahertz (UFAST)	Fang, Li	\$500,000
CHEMISTRY	Liquid Chromatography Triple Quadrupole Mass Spectrometry (LC/MS-MS) Instrumentation	Campiglia, Andres	\$350,000

Academic Excellence			
Unit	Project Title	PI	Amount
RESTORES	Knight's Digital Twin	Beidel, Deborah	\$1M recurring/ \$2.5M non-recurring
PHYSICS	Space Education and Industrialization (SPICE)	Britt, Daniel	\$1.5M recurring/ \$3M non-recurring
PHYSICS	Zero-Carbon Energy Economy and Society	Ishigami, Masahiro and Peale, Robert	\$1M recurring/ \$5M non-recurring

Top Proposals

Top Proposals: The PIs below submitted the largest proposals to external sponsors.

Unit	Project Title	PI	Role	Amount
*PHYSICS	Lunar-VISE: An investigation of the Moon's non-mare silicic volcanism	Donaldson Hanna, Kerri	PD/PI	\$21,129,588
*PHYSICS	Lunar-VISE: An investigation of the Moon's non-mare silicic volcanism	Dove, Adrienne	Co-PD/PI	\$13,029,913
PHYSICS	Center for Molecular Systems for Low Power Nonvolatile Memory (C-MoleS)	Rahman, Talat	PD/PI	\$2,339,430
PHYSICS	MOBILIZE: Modular Multistage Beneficiation of Lunar Regolith	Britt, Daniel	PD/PI	\$1,999,820
CHEMISTRY	Upgrading In Vitro Diagnostics Using Catalytic Nanoparticles	Xia, Xiaohu	PD/PI	\$1,875,773
CHEMISTRY	Development of General Methods and Strategies to Access Functional Alkoxysilanes	Lee, Kangsang	PD/PI	\$1,853,870
CHEMISTRY	Mechanisms of novel biological nitrogen chemistries	Caranto, Jonathan	PD/PI	\$1,823,190
CHEMISTRY	Direct Methods to Access Functional Arylalkoxysilanes	Lee, Kangsang	PD/PI	\$1,812,346
POLITICAL SCIENCE	DISES: Same storm, different boats: examining the distributional effects of coastal disturbances	Baggio, Jacopo	PD/PI	\$1,583,373
CHEMISTRY	GOALI: Development of Catalytic Methods to access Functional Arylalkoxysilanes	Lee, Kangsang	PD/PI	\$1,188,580
PHYSICS	Center for Molecular Systems for Low Power Nonvolatile Memory (C-MoleS)	Del Barco, Enrique	Co-PD/PI	\$1,181,530
PHYSICS	Center for Molecular Systems for Low Power Nonvolatile Memory (C-MoleS)	Ishigami, Masahiro	Co-PD/PI	\$1,181,530
PHYSICS	Center for Molecular Systems for Low Power Nonvolatile Memory (C-MoleS)	Neupane, Madhab	Co-PD/PI	\$1,181,530

NOTE: Asterisk indicates it has since been awarded.



UCF

Top Proposals (continued)

Top Proposals: The PIs below submitted the largest proposals to external sponsors.

Unit	Project Title	PI	Role	Amount
CHEMISTRY	Center for Molecular Systems for Low Power Nonvolatile Memory (C-Moles)	Jurca, Titel	Co-PD/PI	\$1,169,715
PHYSICS	Center for Molecular Systems for Low Power Nonvolatile Memory (C-Moles)	Le, Duy	Co-PD/PI	\$1,169,715
PHYSICS	Center for Molecular Systems for Low Power Nonvolatile Memory (C-Moles)	Turkowski, Volodymyr	Co-PD/PI	\$1,169,715
PHYSICS	Center for Molecular Systems for Low Power Nonvolatile Memory (C-Moles)	Vaida, Mihai	Co-PD/PI	\$1,169,715
PHYSICS	Lunar-VISE: An investigation of the Moon's non-mare silicic volcanism	LaMee, Adam	Co-PD/PI	\$1,056,479
*PSYCHOLOGY	Cognitive Science to Radiology: Using EEG and Eye-tracking to Determine Why, How, and When Novices and Radiologists Miss Signs of Breast Cancer in Multiple-abnormality Mammography and Tomosynthesis	Adamo, Stephen	PD/PI	\$1,027,800
MATHEMATICS	RAISE: IHBEM: Increasing Predictive Accuracy of Epidemiological Models by Integrating Human Behavior Patterns, Diverse Data Sources and Modeling Approaches	Shuai, Zhisheng	PD/PI	\$1,000,001
PHYSICS	Science Team Support Lucy Phase E	Britt, Daniel	PD/PI	\$957,731
BIOLOGICAL SCIENCES	CAREER: Divergence in sympatry: understanding the role of color polymorphism, ecological niche, and mating behavior in the evolution of reef fish biodiversity	Gaither, Michelle	PD/PI	\$951,816

NOTE: Asterisk indicates it has since been awarded.

Most **Proposals** Submitted

Top Proposals: The PIs below submitted the largest number of proposals to external sponsors.

Unit	PI	Role	No. of Proposals
BIOLOGICAL SCIENCES	Walters, Linda	9 – PD/PI 2 – Co-PI	11
PSYCHOLOGY	Roque, Nelson	8 – PD/PI 2 – Co-PI	10
PHYSICS	Dove, Adrienne	7 – PD/PI 2 – Co-PI	9
RESTORES	Beidel, Deborah	6 – PD/PI 2 – Co-PI	8
PHYSICS	Britt, Daniel	4 – PD/PI 4 – Co-PI	8
SOCIOLOGY	Donley, Amy	8 – PD/PI	8
PHYSICS	Karalidi, Theodora	6 – PD/PI 2 – Co-PI	8
BIOLOGICAL SCIENCES	Lewis, Kristy	6 – PD/PI 2 – Co-PI	8
BIOLOGICAL SCIENCES	Mansfield, Kate	6 – PD/PI 2 – Co-PI	8



Top Awards

Top Awards: The PIs below are among the largest recipients of funding from external sponsors.

Unit	PI	Amount
PHYSICS	Fernandez, Yan	\$3,299,125
PHYSICS	del Barco, Enrique	\$1,420,991
PSYCHOLOGY	Lighthall, Nichole	\$742,833
PHYSICS	Britt, Daniel	\$720,697
LOU FREY INSTITUTE	Garton, Kimberly	\$600,000
LOU FREY INSTITUTE	Spinale, Christopher	\$495,000
LOU FREY INSTITUTE	Masyada, Stephen	\$405,000
PHYSICS	Fang, Li	\$364,371
PHYSICS	Rahman, Talat	\$300,431
BIOLOGICAL SCIENCES	Gaither, Michelle	\$297,000
RESTORES	Rozek, David	\$291,184
PHYSICS	Peale, Robert	\$278,000
FORENSIC SCIENCE	Hanson, Erin	\$275,220
PSYCHOLOGY	Newins, Amie	\$264,025
RESTORES	Rozek, David	\$264,025
PHYSICS	Feng, Xiaofeng	\$261,215
PSYCHOLOGY	Dunn, Michael	\$261,022
PHYSICS	Karalidi, Theodora	\$239,163
PHYSICS	Karalidi, Theodora	\$228,684
PHYSICS	Vaida, Mihai	\$224,793
PHYSICS	Dove, Adrienne	\$201,500
RESTORES	Beidel, Deborah	\$198,019



Other Award Categories

Top Collaborative Awards: The PIs below are among the largest recipients of funding from external sponsors that involved interdepartmental collaborations within COS and external collaborations with other colleges at UCF.

HIGHEST FUNDED INTERNAL COLLABORATION				
Unit	Project Title	PI	Role	Amount
LOU FREY INSTITUTE	Lou Frey-Civic Literacy Excellence Initiative	Garton, Kimberly	Co-PD/PI	\$600,000
LOU FREY INSTITUTE	Lou Frey-Civic Literacy Excellence Initiative	Spinale, Christopher	Co-PD/PI	\$495,000
LOU FREY INSTITUTE	Lou Frey-Civic Literacy Excellence Initiative	Masyada, Stephen	PD/PI	\$405,000
HIGHEST FUNDED EXTERNAL COLLABORATION				
Unit	Project Title	PI	Role	Amount
PHYSICS	Florida Space Institute: Management and Operations	Fernandez, Yan	Co-PD/PI	\$3,299,125

CAREER Awards: The PIs below received prominent National Science Foundation awards to recognize their potential to expand novel ideas in their areas of research.

CAREER				
Unit	Project Title	PI	Role	Amount
PHYSICS	CAREER: Understanding and Tuning the Electrohydrogenation Mechanisms for Ambient Nitrogen Fixation	Feng, Xiaofeng	PD/PI	\$261,215
PHYSICS	CAREER: Ultrafast electron and molecular dynamics investigations on 2D nanostructured photocatalytic materials for the generation of fuels from renewable sources	Vaida, Mihai	PD/PI	\$224,793
PHYSICS	CAREER: Building an Online Learning for Mastery System That Creates a Student-centered STEM Learning Environment	Chen, Zhongzhou	PD/PI	\$141,390
PHYSICS	CAREER: Probing Nematic Superconductivity in Topological Semimetals	Nakajima, Yasuyuki	PD/PI	\$113,152
PHYSICS	CAREER: Correlated topological Phases in Rare-Earth-Based Compounds	Neupane, Madhab	PD/PI	\$111,442

NOTE: Multi-year awards (incrementally funded). This is the amount awarded only for FY 21-22.



Other Award Categories

Top Awards from Various Sponsor Types: The PIs below are among the largest recipients of funding from various types of external sponsors.

HIGHEST FUNDED FEDERAL AWARD				
Unit	Project Title	PI	Role	Amount
PHYSICS	FSI-MANAGEMENT AND OPERATIONS	Fernandez, Yan	Co-PD/PI	\$3,299,125
HIGHEST CORPORATE AWARD (PACUNAM)				
Unit	Project Title	PI	Role	Amount
ANTHROPOLOGY	ANTH- RF: UCF El Mirador West LiDAR Project- donation	Kovacevich, Brigitte	PD/PI	\$175,000
ANTHROPOLOGY	ANTH- RF: UCF El Mirador West LiDAR Project- donation	Callaghan, Michael	Co-PD/PI	\$175,000
HIGHEST NON-PROFIT AWARD (CENTRAL FLORIDA CARES)				
Unit	Project Title	PI	Role	Amount
RESTORES	RESTORES Training Programs	Rozek, David	PD/PI	\$291,184
HIGHEST PRIVATE/FOUNDATION (URBAN INSTITUTE)				
Unit	Project Title	PI	Role	Amount
SOCIOLOGY	SOC-The Gulf's Climate Migrants and their Receiving Communities: Migrant Outcomes and Local Institutional Capacity	Rivera, Fernando	PD/PI	\$154,321



Top Equipment Award

Top Equipment Award: The PIs below are among the largest recipients of funding to support the purchase of Major Research Instrumentation (MRI) which serves to increase access to multi-user scientific and engineering instrumentation for research and research training.

HIGHEST FUNDED EQUIPMENT AWARD (\$1.7M)			
Project Title: MRI: Acquisition of a high-power 2-um laser system as the backbone of an ultrafast x-ray/THz facility			
Unit	PI	Role	Amount
PHYSICS	Fang, Li	PD/PI (30%)	\$520,530
PHYSICS	Chini, Michael	Co-PD/PI (15%)	\$260,265
PHYSICS	Vaida, Mihai	Co-PD/PI (15%)	\$260,265
PHYSICS	Chang, Zenghu	Co-PD/PI (15%)	\$260,265
PHYSICS	Donaldson Hanna, Kerri	Co-PD/PI (5%)	\$86,755
PHYSICS	Bennett, Christopher	Co-PD/PI (4%)	\$69,404
PHYSICS	Dove, Adrienne	Co-PD/PI (2%)	\$34,702
PHYSICS	Neupane, Madhab	Co-PD/PI (2%)	\$34,702

Creative Activities

Creative Activities: The PIs below are among leading innovators in their field and provide immeasurable impact both nationally and internationally.

CREATIVE ACTIVITIES		
Unit	Project Title	PI
NICHOLSON SCHOOL OF COMMUNICATION AND MEDIA: FILM	<i>Dreaming in Somali (feature documentary)</i>	Kalin, Betsy
<p style="text-align: center;"><i>Dreaming in Somali</i></p> <p><i>is a collaborative documentary between the filmmakers and Somali-American women in the Twin Cities, Minnesota. The film follows these determined women in their daily lives while they advocate for fundamental change. As New Americans, the women navigate complex issues around their identities and their place as leaders in politics, policing, education, mental health, and nonprofit organizations. The participants provide insight into how the prevalent idea of “Minnesota Nice” neglects the lived experiences of many within the largest Somali community in the country who face racism, Islamophobia, economic inequality, and daily microaggressions. Supported by the Center for Independent Documentary, the National Endowment for the Humanities, ITVS, and Twin Cities PBS.</i></p>		
NICHOLSON SCHOOL OF COMMUNICATION AND MEDIA: FILM	<i>Goodbye, White Guy (Feature Film: 99 mins)</i>	Philip Peters
<p><i>Filming of Goodbye, White Guy took place entirely in India, over a period of 25 days with a seven-person crew, all UCF students, covering sixty-three locations, and generating over sixty hours of material. The film was made completely through a long-form improvisation process, without the use of any kind of screenplay or outline, or even premise. During pre-production, performers researched and created detailed characters without any knowledge of what the others will be playing. The actual plot of the film was then created during the filming in Chennai and Pondicherry in India. Performers would find themselves improvising interactions with other Indian performers as well as within the unfamiliar geography of southern India. Out of this conflictual and often frustrating process emerged roughly shaped fragments of a narrative. The camera is the one that discovers a reality that does not exist anywhere else except within that space of contact. The camera becomes more of a research tool, a microscope in a cinematography lab, or a magnifying glass under which otherwise unperceivable, ungraspable fragments appear with all their meanings.</i></p>		

Creative Activities

Creative Activities: The PIs below are among leading innovators in their field and provide immeasurable impact both nationally and internationally.

CREATIVE ACTIVITIES		
Unit	Project Title	PI
NICHOLSON SCHOOL OF COMMUNICATION AND MEDIA: FILM	<i>Clanging on Calle Ocho</i>	Elizabeth (Lisa) Danker Kritzer
<p><i>Proceeding from the clanging of pots in Miami that followed news of Fidel Castro’s death in 2016, this experimental documentary shot on 16mm film, is a personal reflection on U.S.–Cuba relations.</i></p> <p><i>Festival Selections:</i></p> <ul style="list-style-type: none"> -San Diego Underground Film Festival, San Diego, CA -Engauge Film Festival, Northwest Film Forum, Seattle, WA -Antimatter Media Art Festival, Deluge Contemporary Center, Victoria, British Columbia, Canada -Third Horizon Film Festival, Little Haiti Cultural Center, Miami, FL - Florida Experimental Film and Video Festival (FLEX), Tampa, FL 		
NICHOLSON SCHOOL OF COMMUNICATION AND MEDIA: FILM	<i>Red Earth The Movie</i>	Georg Koszulinski
<p><i>An experimental sci-fi feature, Red Earth imagines a world in the late Anthropocene, where large parts of Earth have become inhospitable to life. The story follows three generations of Martians, from the first colonists to the first expedition to return to an Earth decimated by interplanetary war. Now in post-production. http://reearthmovie.com/</i></p>		



Creative Activities

Creative Activities: The PIs below are among leading innovators in their field and provide immeasurable impact both nationally and internationally.

CREATIVE ACTIVITIES		
Unit	Project Title	PI
NICHOLSON SCHOOL OF COMMUNICATION AND MEDIA: GAMES AND INTERACTIVE MEDIA	Transmedia Sculpture and Electronic Art	Mosher, Matthew
<p><i>His transmedia work in sculpture and electronic art is concept driven and uses materials and processes that best support the idea at hand. By combining programming, physical computing, 3D printing, casting, welding, and woodworking free standing sculptures and immersive installations are created. Computer coding is used to draw inputs and inspiration from both in-person interactions and internet data streams. Within this context, he examines how cultural constructs propagate ideologies, power relations, and social biases by making tangible the hybrid relationship between technology, society, and culture. In doing so his work empowers people to see the world through new perspectives. His work has shown in 7 international juried, 3 international invited, and 3 national juried exhibitions, for a total of 13 exhibitions. He also published 6 demo/art papers at international conferences, 3 of which were co-authored with UCF graduate students. He delivered the keynote address for Barcamp: The Next Web in Austria. Further, the local media has written about his work on 8 occasions. Finally, he was awarded a \$5,000 Strategic Plan Innovation Award to develop UCF's first student centered downtown gallery space, in which he was one of two co-PIs. In addition, he designed and prototyped a new smartphone web application, Kurios, for sharing and saving audio memories into physical objects. The system allows users to embed family histories into old photographs, record memories into travel souvenirs and other ephemera, preserve stories about heirlooms, and more.</i></p>		

Creative Activities

Creative Activities: The PIs below are among leading innovators in their field and provide immeasurable impact both nationally and internationally.

CREATIVE ACTIVITIES		
Unit	Project Title	PI
NICHOLSON SCHOOL OF COMMUNICATION AND MEDIA: GAMES AND INTERACTIVE MEDIA	Immersive Embodied Digital Twins of Nature and the Role of Information Fidelity in Knowledge Acquisition	Harrington, Maria
<p><i>The main research trajectory of this creative work is centered around two products developed as digital twins of nature using geospatial datasets, visualized in immersive augmented reality (AR) and virtual reality (VR) devices and used in IRB approved research studies on learning impacts. The first is The Virtual UCF Arboretum project and the second is the AR Perpetual Garden Apps. Her work has been funded by the UCF Board of Trustees, Epic Games, Carnegie Museum of Natural History, and several internal university awards. She has two NSF grants in preparation and have submitted applications to Harvard for the Charles Bullard Fellowship and one to the Smithsonian Institution Fellowship Program as a senior fellow. Her creative works have received two international awards from the Museum and Web (MuseWeb), and one national award from Association for Educational Communications and Technology, as well as the Creative Activity award.</i></p>		
PHYSICS	Robinson Observatory Renovation	Jerousek, Richard
<p><i>Leading and implementing the renovation of the Robinson Observatory, including new telescopes and new instruments for the 20-inch telescope in the main observatory dome</i></p>		
PHYSICS	Hosting the ATTO VIII International Conference on Attosecond Science and Technology at UCF	Argenti, Luca and Chini, Michael
<p><i>This conference brought award-winning scientists at the frontier of attosecond physics from around the world to UCF.</i></p>		
POLITICAL SCIENCE	Trade Links: New Rules for a New World	Bacchus, James
<p><i>James Bacchus, a founder of the WTO, posits that this global organization can survive and continue to succeed only if the trade links among WTO members are revitalized and reimagined</i></p>		

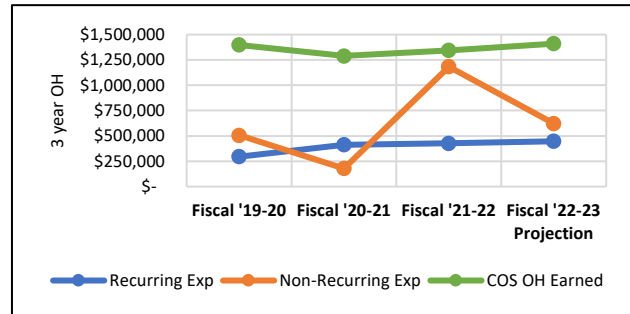
Patents Issued

Patents Issued: The PIs below developed intellectual property in their areas of expertise. These patents were issued to protect their invention.

PATENTS ISSUED		
Unit	Patent Title	Inventor
PHYSICS	Radiation-Defect Mitigation in INAS/GASB Strained-Layer Superlattice Infrared Detectors and Related Methods	Chernyak, Leonid Peale, Robert
<p><i>The invention is a method that cost-effectively restores infrared (IR) image sensors damaged by radiation. The new radiation-defect mitigation technology quickly repairs and prolongs the life of IR sensors, such as long-wavelength IR detectors deployed in near-Earth orbits. Companies can implement the method via software, without affecting the weight or volume of a detector's electronics. Additionally, the restoration process requires only the voltages and currents of commercial off-the-shelf read-out-integrated-circuits (ROICs) used by the sensor.</i></p>		
MATHEMATICS	Method and Apparatus for Acceleration of Iterative Reconstruction of a Computed Tomography Image	Katsevich, Alexander
<p><i>A method and apparatus is provided to reconstruct a computed tomography image using iterative reconstruction (IR) that is accelerated using various combinations of ordered subsets, conjugate gradient, preconditioning, resetting/restarting, and/or gradient approximation techniques. For example, when restarting criteria are satisfied the IR algorithm can be reset by setting conjugate-gradient parameters to initial values and/or by changing the number of ordered subsets. The IR algorithm can be accelerated by approximately calculating the gradients, by using a diagonal or Fourier preconditioner, and by selectively updating the preconditioner based on the regularization function. The update direction and step size can be calculated using the preconditioner and a surrogate function, which is not necessarily separable.</i></p>		

The COS Overhead Budget

Our college's overhead budget is generated by the indirect costs associated with the individual sponsored research projects' rates. A portion of the overhead is distributed by the Office of Research to COS and in turn we give back to our PIs and their Units while keeping a portion to continue research services and incentives. The graph to the left shows the steady recurring costs flow over the last several years and in our overhead earned. With this consistent projection at 5% increase, even when faced with the unexpected average, we can continue to provide incentives.



Recurring Expenditures

These expenditures are broken down into several categories. *Operations* includes the fixed costs associated with the research support team such as payroll. *Distribution* is the actual PI and Unit portions of overhead distributions that takes place biannually from the indirect costs generated and passed along from the Office of Research. *Development and Commitments* includes a wide range of support from the college including general matching funds, professional development, seed funding, travel and publication costs through our COS DT Awards program. Our partnership with Hanover Research for proposal assistance and facility upkeep and renovations for continued support and service are also included.

Recurring Overhead Costs 2021-2022	
Operations	\$ 52,978
PI/Unit Distribution	\$ 467,471
Development and Commitments	\$ 373,087
Total	\$ 893,537

Non-Recurring Expenditures

A university wide decision was made regarding the overhead loan situation and a large portion of our overhead reserve was taken as repayment. We were not singled out in this decision; this was an across-the-board solution among units.

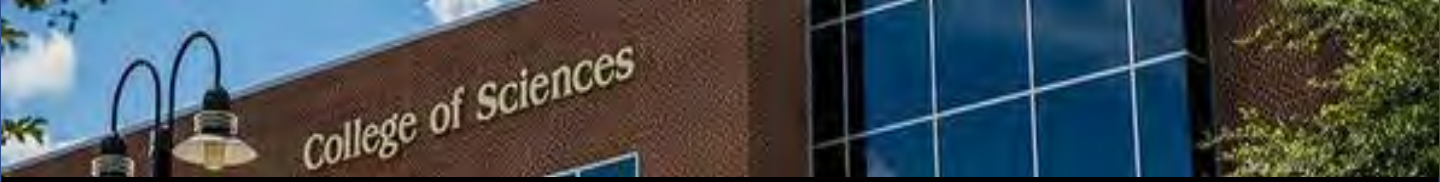
Non-Recurring Overhead Costs 2021-2022	
Research OH Loan Repayment	\$ 1,182,501

➔ Charging On Fiscal 2023...

To continue our dedication to giving back to our COS faculty, a new COS Research Seed Funding Program has been announced for the new fiscal year. Another great program is the COS Equipment Purchase/Repair Matching Program to help COS Directors and Chairs with these expensive, but essential costs. Please contact Dr. del Barco for more information.

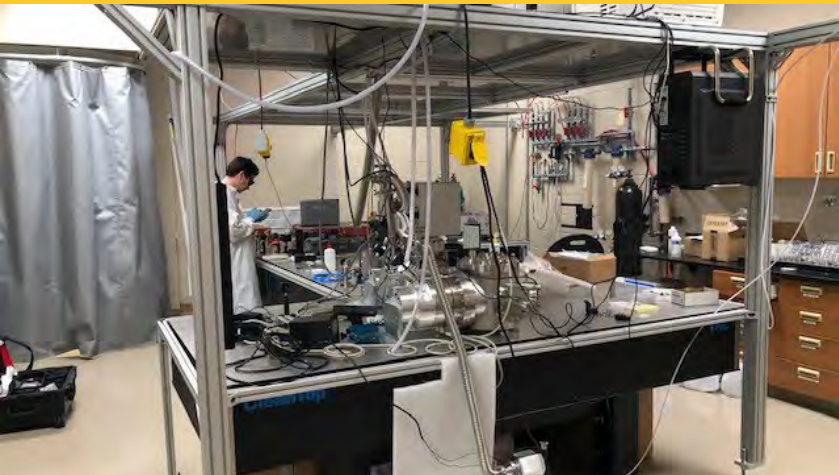
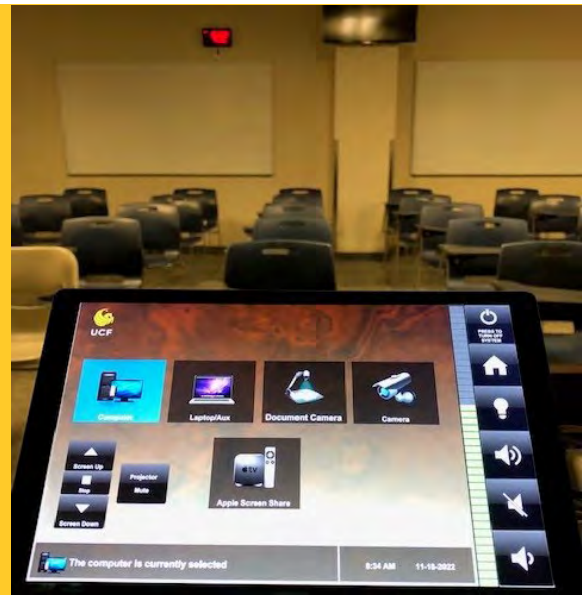
Lastly, due to the overwhelming success and demand, we will continue the Research Dissemination and Travel Awards (DT). For more information and applications, please visit [Research Dissemination and Travel Awards - College of Sciences Research and Facilities \(ucf.edu\)](https://www.ucf.edu/research-dissemination-and-travel-awards)





COS Facilities Highlights

This section of the report provides some highlights of minor projects that were completed in the last fiscal year. We were able to see upgrades to many of our buildings and spaces, funded by the Departments and Technology Fees.





Statistics Recarpeting Project



Budget: \$28K



Use: Recarpeting of Departmental Spaces



Completed: Fall 2021





**Anthropology
Traka Box**



Budget: \$20K

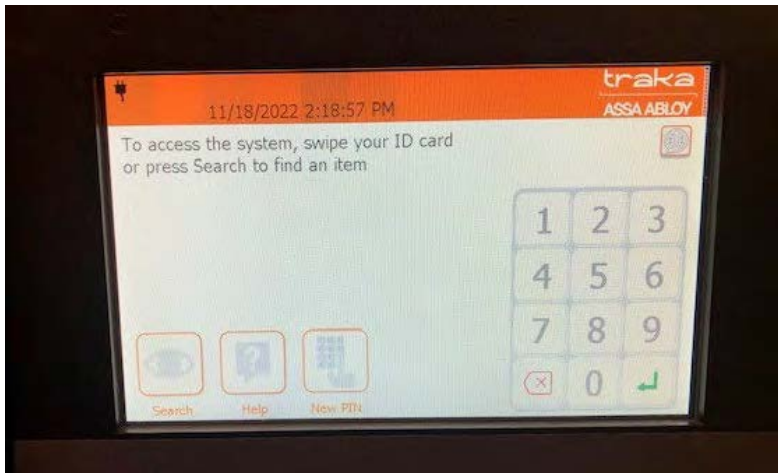


Use: Key control for
Department
Faculty and Staff



Completed: Summer 2022





Psychology Traka Boxes and Access Control



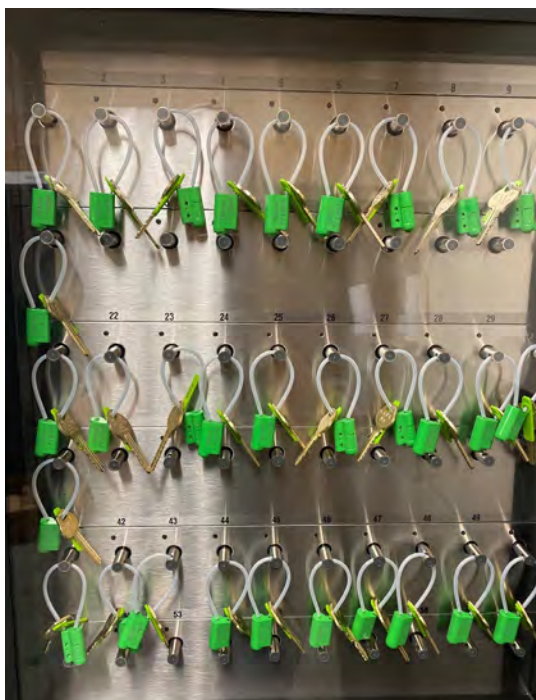
Budget: \$55K



Use: Security and key control for Faculty, Staff, and Graduate Students

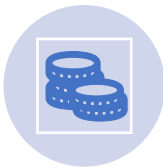


Completed: Summer 2022





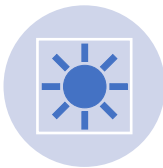
Physics Lab Air Flow Upgrade



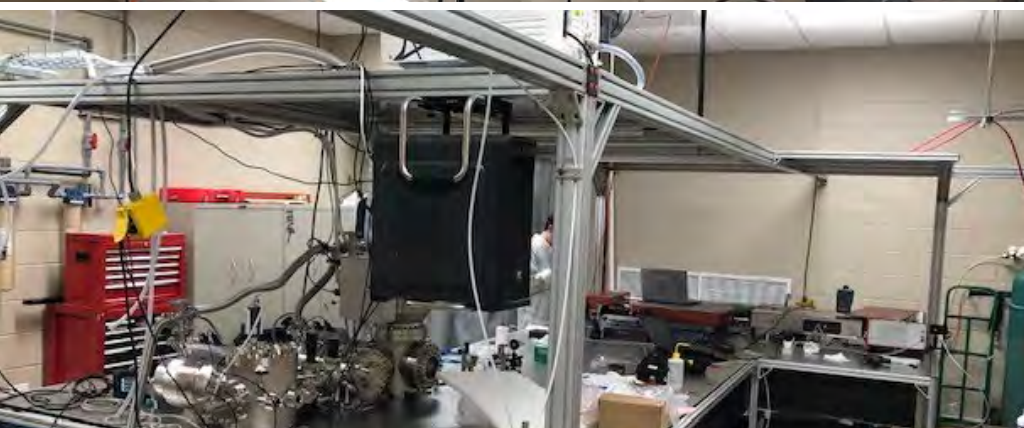
Budget: \$300K



Use: Lab upgrade to provide proper conditions for Ultrafast Spectroscopy



Completed: Summer 2022





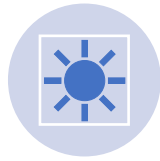
**Psychology Tech Fee
Multimedia Upgrade,
Orlando Tech Center**



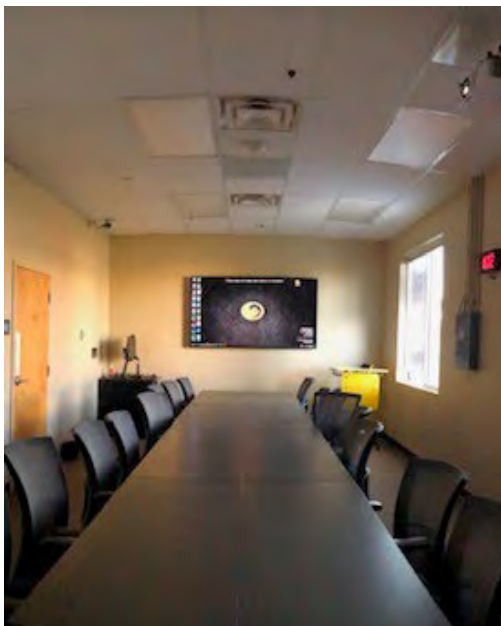
Budget: \$105K

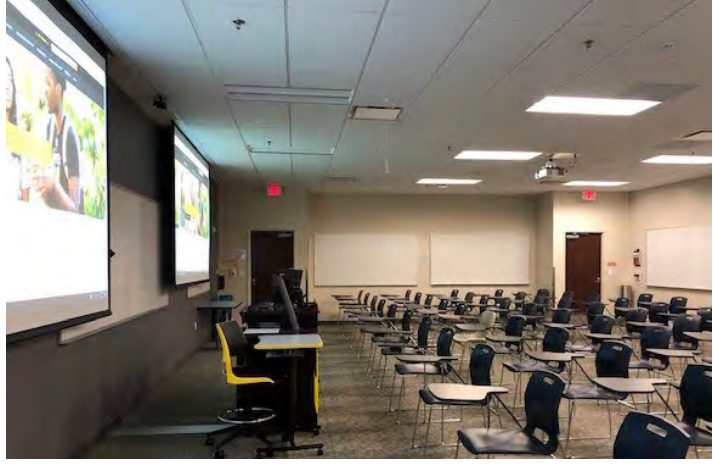


**Use: Instructional
Technology upgrades**



Completed: Summer 2022





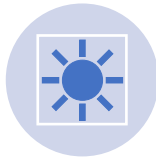
**Psychology Tech Fee
Upgrades to General
Purpose Classrooms**



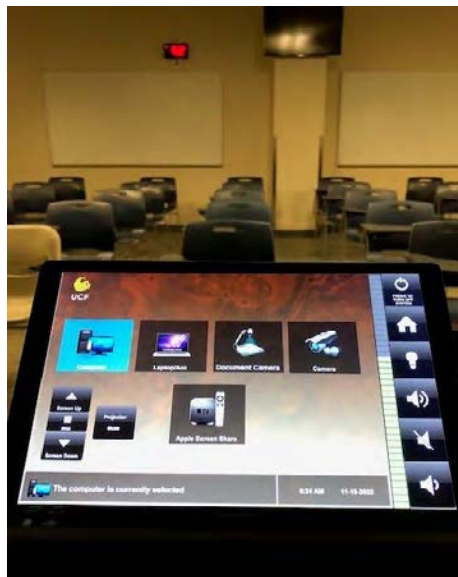
Budget: \$200K



**Use: Classroom
technology and
facilities upgrades**



Completed: Summer 2022



CHARGE ON!

