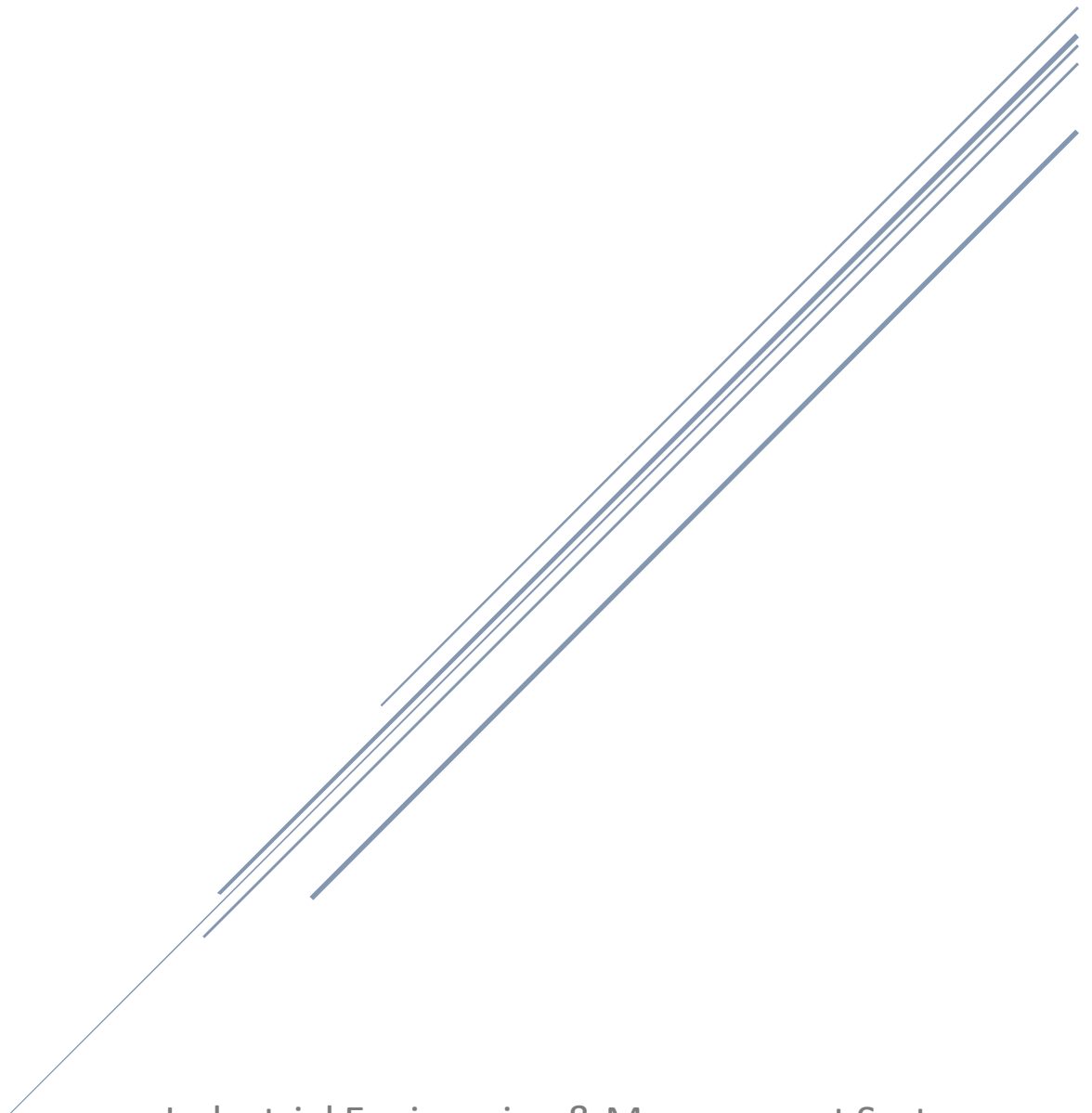


VISION, MISSION, GOALS & ACCOMPLISHMENTS AS IEMS CHAIR (2012-2017)

Waldemar Karwowski



Industrial Engineering & Management Systems
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IEMS Vision, Mission, Goals

Our Vision

The Department of Industrial Engineering and Management Systems aspires to achieve the highest level of innovation in teaching and research, linked to comprehensive partnerships with industry regionally, nationally, and internationally.

Our Mission

Our mission is to produce Industrial Engineering leaders who design and improve operations in industry, business, and government for the global economy of the 21st century. Specifically, we seek:

- *To provide graduates with the necessary knowledge and skills to assume challenging jobs in leading private and public organizations, pursue advanced studies, or start-up their own businesses.*
- *To provide employers with graduates who are technically competent, have basic management and interpersonal skills, and the ability to professionally grow and develop their careers.*
- *To provide the society with graduates who conduct themselves professionally and ethically and who appreciate the impact and importance of their work on society.*

SHORT TERM GOALS (2017-2019)

The following are short term goals that I would like to pursue in the first two years of my next term as Chair of IEMS Department:

UCF Goal 1: Offer the best IE undergraduate education available in Florida.

1. Develop a transition plan to deliver all junior and senior UG courses online to increase UG degree efficiency.
2. Promote and expand IE BS-to-MS program by involving the IEMS chapter of Alpha Pi Mu, and student chapters of Institute of Industrial and Systems Engineers, and International Council of Systems Engineering
3. Increase analytical decision-making and quantitative content of applicable UG courses.
4. Develop and implement a mentoring program for matching talented UG students and UG honors students interested in research experience with IEMS faculty.
5. Develop a plan to promote STEM innovations and pockets of excellence in support of students' education by leveraging success of eli², CECS Idea and Innovation Labs, and new Leadership Certificate.

UCF Goal 2: Achieve international prominence in IEMS programs of graduate study and research.

1. Develop a proposal and apply for a new (regular tuition-based) online *MS in Systems Engineering* program that will target current CECS/ BS students as well as working professionals.
2. Develop and implement a cohort-based PhD path for alumni of the Professional MS in Engineering Management program.
3. Implement a plan for scaling our "traditional" (regular tuition-based) MS in Engineering Management program.
4. Facilitate and support development of large interdisciplinary, multi-faculty and multi-year grant research proposals.

5. Promote and reward IEMS faculty who excel in funded research, publish in top-tiered peer-review journals, have well-designed web presence, and place their graduate students in top career positions.
6. Develop and implement a comprehensive plan to recruit high quality PhD domestic students from institutions that do not have graduate programs, as well as fully-funded international students (utilizing ORC doctoral fellowship and philanthropic funds).
7. Engage PhD students to publish in top peer-reviewed journals and provide opportunities for PhD students to attend and present at scientific conferences.

UCF Goal 3: Provide international focus to IEMS curricula and research programs.

1. Maintain and support dual degree BS IE program in collaboration with USIL at Lima, Peru.
2. Implement incentives for faculty traveling to international conferences to visit universities abroad and promote IEMS graduate programs and recruit students.
3. Establish a global focus of IEMS website.

UCF Goal 4: Become more inclusive and diverse.

1. Develop and implement a comprehensive plan to increase opportunities for minority students to engage in undergraduate and graduate IEMS programs and research.

UCF Goal 5: Be America's leading partnership university.

2. Develop a cohort-based PhD program for alumni of professional MS in Engineering Management program.
3. Expand and transform IEMS Industry Advisory Board to facilitate supporting IEMS long term goals.
4. Provide opportunities for IEMS alumni and industry partners to engage in teaching, and knowledge transfer and dissemination.

LONG TERM GOALS (2017-2022)

By the end of my next term as IEMS Chair (2022), I envision for the IE graduate program to be ranked in the top 30 graduate programs in the US.

Specifically, during my next appointment, I would like to pursue the following long-term goals:

UCF Goal 1: Offer the best IE undergraduate education available in Florida.

1. Implement a transition plan to deliver all junior and senior UG courses online to increase UG degree efficiency.
2. Develop BS to MS accelerated program in Engineering Management that targets all non-industrial engineering CECS / BS students.
3. Continually modernize UG curriculum to reflect advances in industrial and systems engineering knowledge domain, and changes in the economy and job demands in the US and internationally.
4. Implement STEM innovations and pockets of excellence in support of students' education by leveraging successes of the Engineering Leadership and Innovation Institute (eli²), IdeaLab and Innovation Lab, and the new Leadership Certificate.

UCF Goal 2: Achieve international prominence in IEMS programs of graduate study and research.

1. Achieve excellence in three promising research areas: 1) operations research/analytics /simulation, 2) engineering management (innovation, business incubation & ecosystems), and 3) human systems integration / systems engineering.
2. Significantly increase faculty research productivity in terms of research proposals, research funding received, and quality and quantity of peer-review journal papers submitted and published annually.
3. Lead a UCF-wide Faculty Research Cluster and CECS Research Center of Excellence
4. Expand our PhD program and increase the quality of incoming students to produce successful PhD graduates for academia, government and industry.
5. Realize full potential of the MS Track in Healthcare Systems Engineering program by assuring high student enrollment (30+) on annual basis, and converting it into separate MS in Healthcare Systems Engineering program.
6. Deliver professional MS in Engineering Management program on an annual basis.
7. Develop and implement a plan to hire outstanding 5 research-oriented faculty members by 2022.

UCF Goal 3: Provide international focus to IEMS curricula and research programs.

1. Expand dual degree BS IE program and develop new joint MS IE and MSEM programs and research in collaboration with USIL at Lima, Peru and other partners from abroad.
2. Develop new joint MS in Industrial Engineering, MS in Engineering Management, and PhD programs with international partners.

UCF Goal 4: Become more inclusive and diverse.

1. In collaboration with the *UCF Office of Diversity and Inclusion* develop and implement a plan to increase diversity of IE students by 1% per year for the next 5 years.
2. Leverage future joint MS in Industrial Engineering, MS in Engineering Management, and PhD programs in partnership with universities abroad.

UCF Goal 5: Be America's leading partnership university.

1. Implement a cohort-based PhD program for alumni of the professional MS Engineering Management program.
2. Develop a mechanism for industry to fund projects that support their employees pursuing MS and Ph.D. degrees.

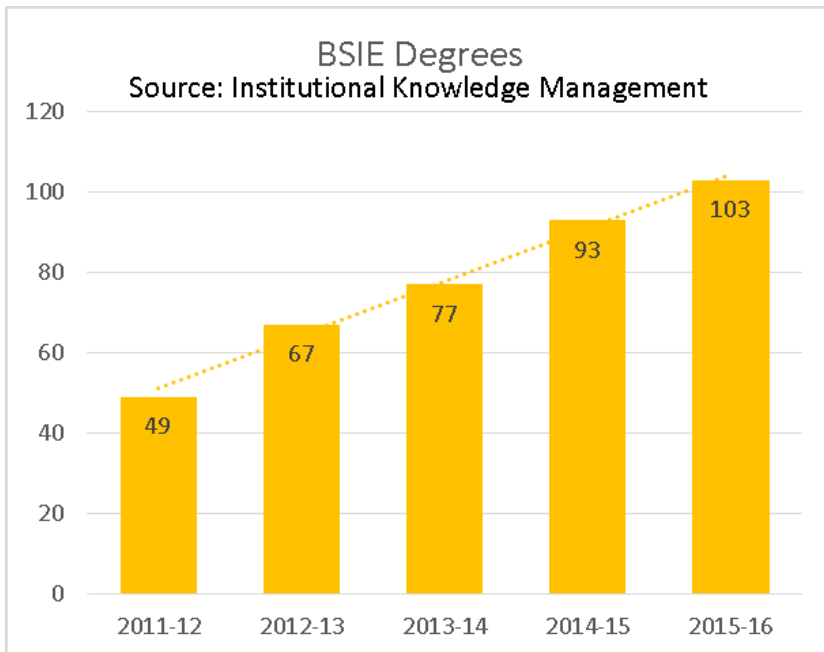
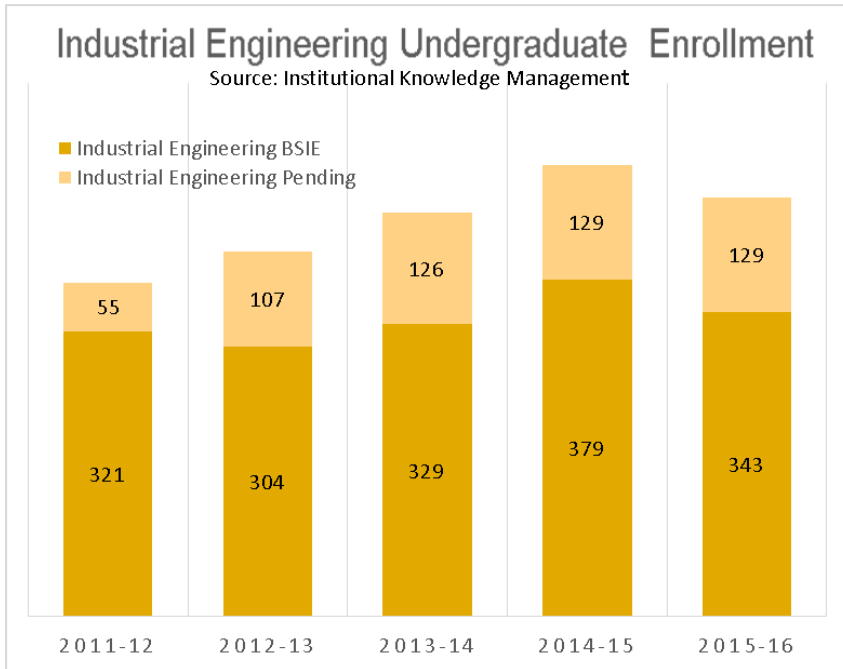
Major Accomplishments as IEMS Chair

GOAL 1: Undergraduate Education

Offer the Best Undergraduate Education in Florida

Undergraduate Program Outcomes

- Undergraduate enrollment increased to over 450 UG students – **190% increase since 2008.**
- **UCF ranked #12 in nation** for BSIE degrees awarded 2014-15 according to ASEE



- First-year retention 89%
 - Six-year graduation rate 70%
 - Transfer student graduation rate 65%
- **20% of our undergraduate students have internships with industry.**
 - Successful **Academic Program Review** 2011-2012 and **ABET Accreditation** 2008 and 2014.
 - UCF Industrial Engineering **BS dual degree in Universidad San Ignacio de Loyola, Lima, Peru.** UCF's first international dual degree program at the baccalaureate level. Twelve students graduated from the first cohort in August 2016.
 - Restructured entire IEMS office operations, and hired new staff members including a new position of coordinator, academic advising for undergraduate program. The profession staff improved the quality and effectiveness of the essential services provided to students and faculty.

Undergraduate Program Actions

- Converted from a 2 semester senior design experience to a 1-semester model and generated funding for the students and the UCF IE Foundation.
- *Work Analysis and Design* and *Facilities Planning* courses combined following the trends of top ranked Industrial Engineering program and to allow a better flow of course sequences to facilitate graduation rates.
- *Stochastic Methods for Operations Research* course added to strengthen knowledge base of undergraduates on important subject materials for industrial engineers.
- Refined the prerequisites and co-requisites required for mainstream IE courses to allow flexibility in student's schedules resulting in reducing time to graduation.
- *Linear and Matrix Algebra* added to strengthen math content of BSIE program.

Major Undergraduate Awards

Order of Pegasus

- Rana Riad, BSIE, 2014
- James Briggs, BSIE, 2016
- Catherine Ninah, 2017 CECS nominee

President's Leadership Council

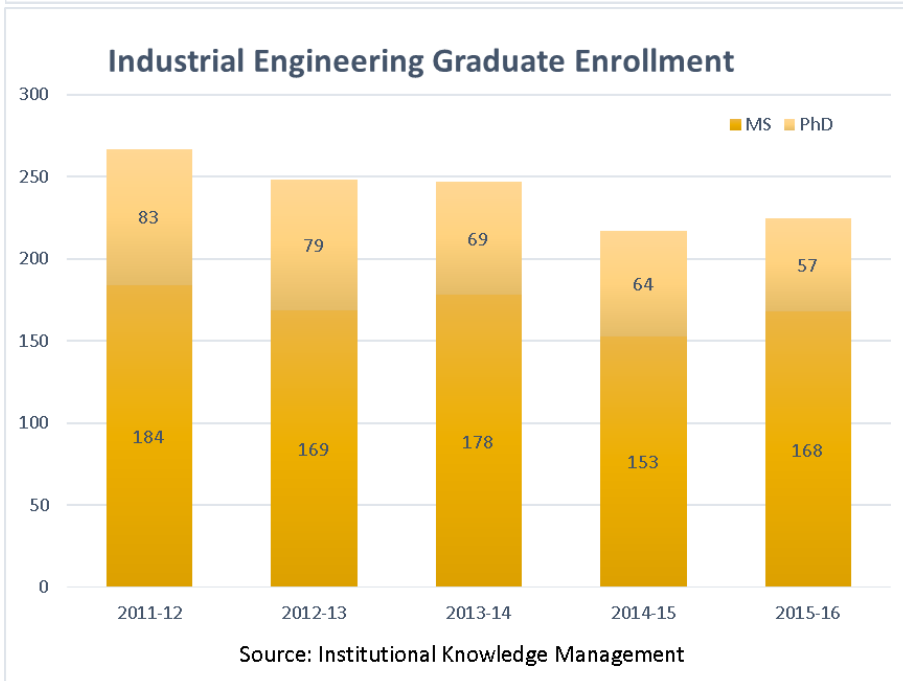
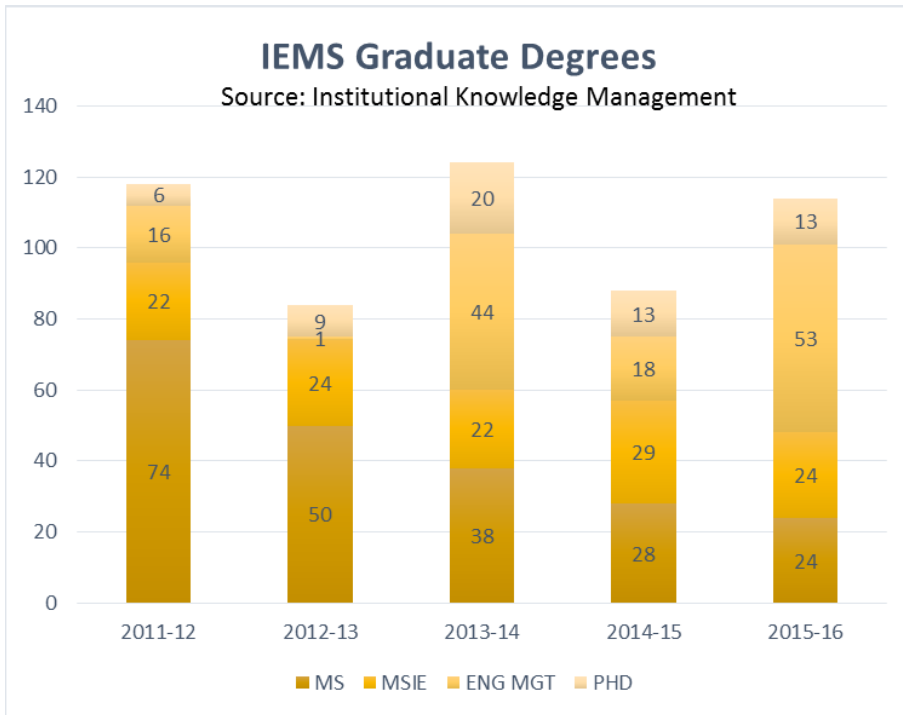
- James Briggs, BSIE, 2015-16
- Tatiana Viecco, BSIE, 2012-13
- Rana Riad, BSIE (Vice-Chair) 2012-13

Gold Award for Outstanding Chapters from Institute of Industrial & Systems Engineers -IISE Student Chapter in 2016 and prior years. The chapter hosted the 2014 IIE Southeast Regional Conference.

GOAL 2: Graduate Study, Research

Achieve International Prominence in Key Programs of Graduate Study and Research

Ranked #39 in 2016 - National USWNR ranking of IEMS graduate program



Graduate Initiatives

- Restructured our graduate programs:** reduced the number of MS tracks, streamlined PhD Program to allow for timely degree completion, and restructured new PhD Admissions Committee to improve quality of incoming graduate students

- **Recruited Dr. Gavriel Salvendy and Dr. Deborah Nightingale**, members of the U.S. National Academy of Engineering (NAE).
- IEMS is leading efforts in CECS with **market-based/cost recovery graduate programs**.
- **MSEM Professional Engineering Management track** has been operating successfully since 2011.
- Fully online **cost recovery MSIE in Healthcare Systems Engineering track** began Fall 2016
- **IdeaLab, Innovation Lab, and Maker Space** constructed in the Engineering 1-2 atrium through an Engineering Leadership and Innovation Institute (eli²) initiative.

Research Productivity

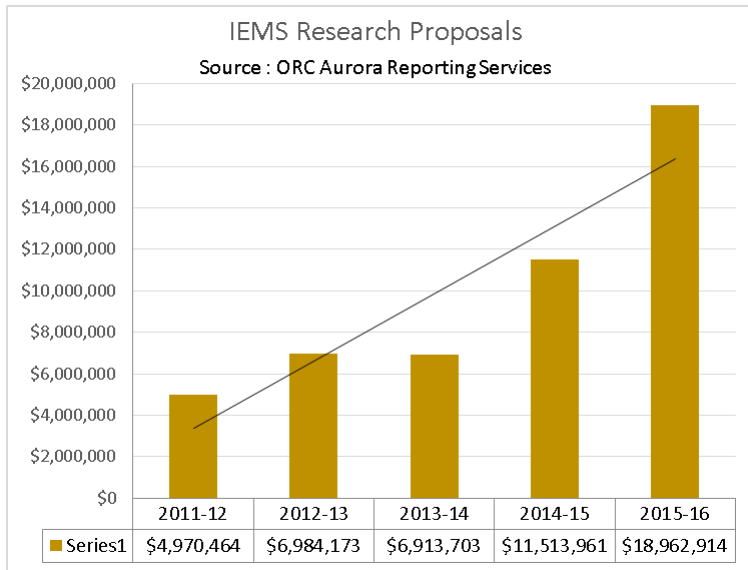


Figure 1 Research Proposals*

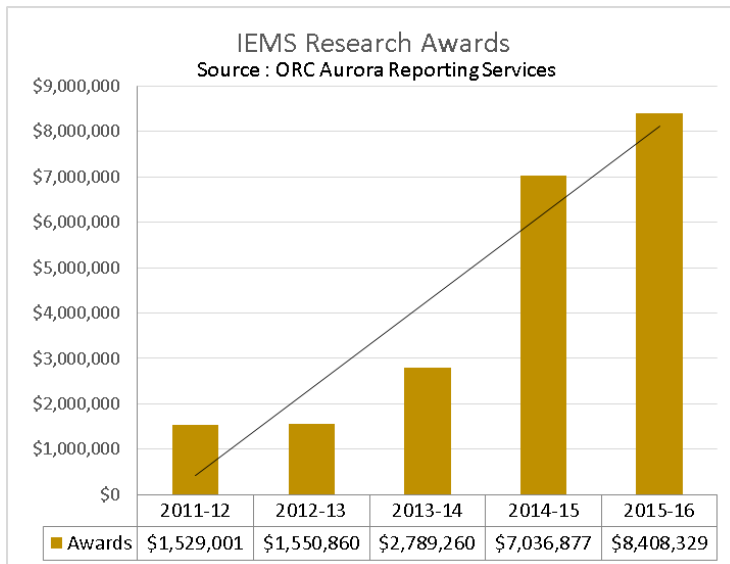


Figure 2 Research Awards*

*Note: Thomas O’Neal joined IEMS in 2015

Major Grant Efforts

Vladimir Boginski (PI),

- Collaborative Research: RIPS Type2: Vulnerability Assessment and Resilient Design of Interdependent Infrastructures, NSF, **\$1,099,460**
- Modeling and Optimization of Networked Systems in Contested Environments, Air Force Research Laboratory, **\$2,199,022**

Michael Proctor

- **ORC Millionaire Club** for over **\$14M software donations** from Presagis; FY13 = \$2,647,402; FY14 = \$2,647,402; FY15 = \$2,647,402; FY16 = \$2,647,402; FY17 = \$3,464,244

Waldemar Karwowski (PI)

- System Redesign and Improvement Infrastructure in a Veterans Health Administration Medical Center, **\$781,822**
- Complex Systems Engineering for Rapid Computational Socio-Cultural Network Analysis, Office of Naval Research, **\$404,000**
- Characterization and Quantification of Economic Value of a Human and Human Performance and Total Ownership Cost of Naval Systems, Office of Naval Research, **\$385,306**

Gene Lee (PI)

- "An interoperability technology for LVC components and its prototype in the component-based simulation environment (AddSIM)", (2014-2015), funded by the Korea Agency for Defense Development (ADD), **\$520,000**

Jennifer Pazour (PI)

- 2013 Young Investigator Award from Office of Naval Research, "YIP: The Design of Responsive Sea-Based Logistic Delivery Systems," Office of Naval Research, **\$825,385**

Major Graduate Awards

Tatiana Viecco, 2013 **National Science Foundation (NSF) Graduate Fellowship (GRFP) Fellowship**

Haitham Bahaitham - 2011-2012 **University Award for the Outstanding Dissertation Award**

National Visibility of Faculty

Fulbright Scholars

Pamela McCauley – U.S. Fulbright Scholar, Specialist program 2012- 2013

Luis Rabelo – U.S. Senior Scholar Fulbright 2008-2009

Engineering Society Fellowships

Ahmad Elshennawy

- Fellow, American Society for Quality (ASQ)

Charles Reilly

- Fellow, American Association for the Advancement of Science
- Fellow, Institute of Industrial Engineers

Timothy Kotnour

- Fellow, American Society for Engineering Management

Waldemar Karwowski

- Fellow, International Ergonomics Association (IEA)
- Fellow, Institute of Industrial Engineers (IIE)
- Fellow, Human Factors and Ergonomics Society (HFES)
- Fellow, The Ergonomics Society (United Kingdom): F.Erg.S

Faculty Journal Editorships

Boginski, Vladimir

- Associate Editor, Optimization Letters, 2006–present

Elshennawy, Ahmad

- Senior Editor, Journal of Management and Engineering Integration (JMEI), Association of Industry Engineering and Management Systems (AIEMS)

Karwowski, Waldemar

- Co-Editor-in-Chief, Theoretical Issues in Ergonomics Science, 2000 - present
- Co-Editor, International Journal of Occupational Safety and Ergonomics, 1994 - present
- Co-Editor, The Open Cybernetics and Systemics Journal, 2007- present

Kotnour, Timothy

- Associate Editor, Journal for Enterprise Transformation

O'Neal, Thomas

- Associate Editor, Engineering Management Journal, 2007 – present
- Editor, Orlando Trep, 2014 – present

Proctor, Michael

- Associate Editor, Journal of Defense Modeling and Simulation

Rabelo, Luis

- Associate Editor of International Journal of Manufacturing Systems and Industrial Engineering (IJMSIE)

Xanthopoulos, Petros

- Associate Editor, Optimization Letters, (Springer)
- Associate Editor, International Journal of Biomedical Data Mining (Omics Online)

Zheng, Qipeng

- Associate Editor and Editorial board member, Energy Systems, Springer, 2010- present

Major Professional Awards

- Jennifer Pazour, 2013 **Young Investigator Award** from Office of Naval Research
- Pamela McCauley, **Jefferson Fellowship** 2015-2016, U.S. State Department
- Pamela McCauley - **United Nations Forum on Science, Technology and Innovation** for the Sustainable Development Goals in the interactive session on "Enabling environment for science, technology, and innovation" 2016
- Luis Rabelo, Society of Automotive with the **Forest R. McFarland Award**, September 2013 (Montreal, Canada)
- Luis Rabelo, **Distinguished Engineering Educator Award** at the nation's largest annual National Engineers Week Honors & Awards Banquet by the Engineers' Council. 2012
- Michael Proctor, Award winner, **William R. Jones Outstanding Mentor Award**, Florida Education Fund, Fall 2013
- Michael Proctor, Award Recipient, **UCF Millionaires Club**, 2015

- Waldemar Karwowski, **UCF Pegasus Professor** 2016 and **National Professorship Award** by the President of the Republic of Poland, 2012

GOAL 3: International Emphasis

Provide International Focus to Our Curricula and Research Programs

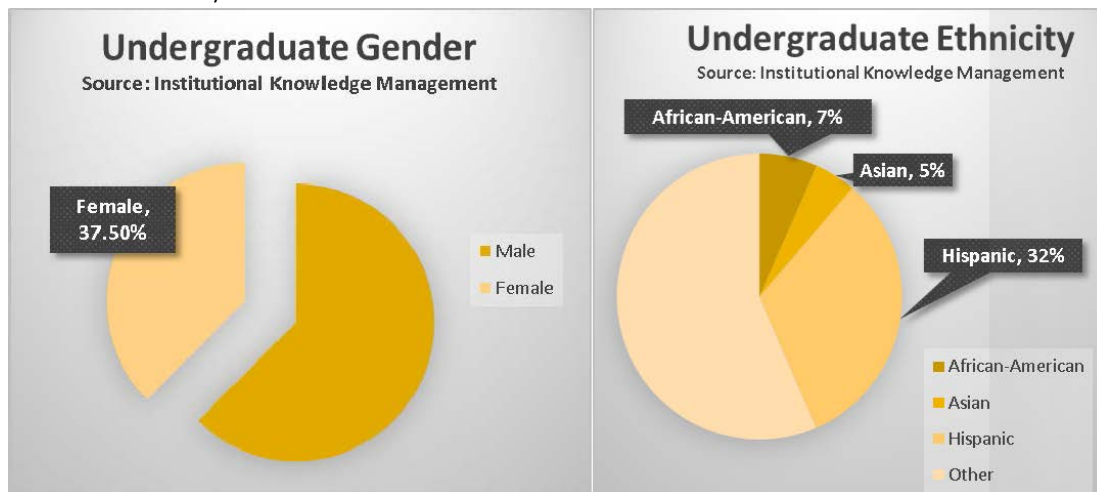
International Initiatives

- **Industrial Engineering BS dual degree** in Universidad San Ignacio de Loyola, Lima, Peru. UCF's first international dual degree program at the baccalaureate level. Twelve students graduated from the first cohort in August 2016
- Excellent international reputation – about **61% of doctoral enrollment and 55% of Master's enrollment are international students**, including Hispanics and Asians (Source: ASEE 2015 College Profiles Graduate Data)

GOAL 4: BE INCLUSIVE AND DIVERSE

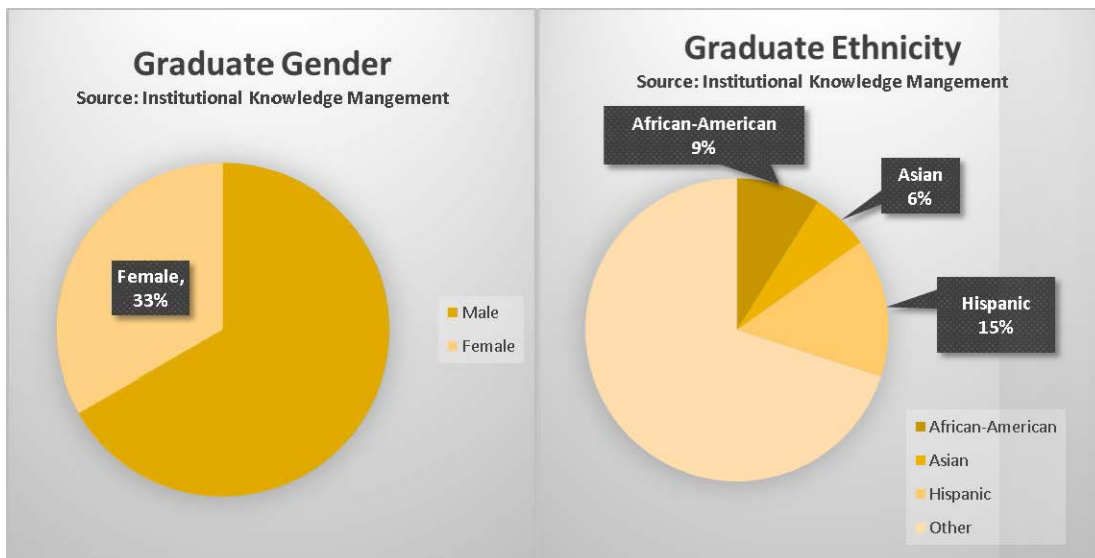
Become More Inclusive and Diverse

Student Diversity



Undergraduate Students (BSIE and Pending)

African-American 6.6%; Asian 4.7%; Hispanic 32.2%; Female 37.5%



Graduate Students (MSIE, MSEM, MS, PhD)

African-American 9.0%; Asian 6.2%; Hispanic 14.8%; Female 33.3%

Professional Awards

Pamela McCauley

- **College-Level Promotion of Education award** presented by the 29th Black Engineers of the Year Award (BEYA) STEM Global Competitiveness Conference, February 2015.
- 2014 Women of M2M: **Top Woman in Technology Award**
- The Power Promise Organization 2014 **Bountiful Butterfly Award**

IIE UPS Scholarship for Minority Students

- Tatiana Viecco, BSIE, 2012
- Margot Tejera, BSIE, 2014

GOAL 5: PARTNERSHIP

Be America's Leading Partnership University

Engineering Leadership and Innovation Institute (eli²) received funding from industrial partners such as Walt Disney World, Harris, Lockheed Martin, NASA, Harris Corporation, Duke Energy, and Texas Instruments which one of the Maker Space labs is named after, the Texas Instruments Innovation Lab.

- Partnership for Undergraduate Efforts (funded educational projects through UCF Foundation)
 - From 2006-2009 industry provided approximately **\$290,000**.
 - From 2010-2016 industry provided approximately **\$790,000**.
- Partnership for Graduate Efforts (funded educational projects through Regional Campuses)
 - Seven Professional MS in Engineering Management cohorts will have generated over **\$4,500,000** in corporate support through April 2018.
- Partnership for Executive Efforts
 - These efforts generated approximately **\$1,300,000** in support.

MSEM Professional Engineering Management program, as well as Engineering Leadership and Innovation Institute (eli²) funded by leading industrial partners in central Florida (e.g., NASA/Kennedy Space Center, Siemens, Boeing, Harris, Lockheed Martin, and Walt Disney World). MSEM Professional Engineering Management track has been operating successfully since 2011.

- The MSEM program was recognized by **Dean's Advisory Board as an outstanding program** in Central Florida.

Engineering Leadership and Innovation Institute's (eli²) **"The Leaders Up Close" seminar series** is sponsored by Progress Energy whose speakers have included prominent industrial engineers:

- Kay Stanney, President and Founder of Design Interactive, Inc., former IEMS professor
- Tom O'Neal, Associate VP Office of Research and Commercialization, IEMS associate professor
- Grace Bochenek, Director, National Energy Tech Lab, IE Ph.D. graduate
- Brian Crutcher, Senior VP and General Manager, Texas Instruments, MSIE

Waldemar Karwowski

- President, Orlando Chapter, International Council on Systems Engineering (INCOSE), 2015
- European Academy of Industrial Management (AIM) representative to IIE, 2014-present

Annual IEMS **Alumni Awards Banquet** held twice to honor outstanding talent, accomplishments and contributions made by our alumni and to engage them in philanthropy.

IEMS **Advisory Board** strengthened to include members from diverse industries, including IBM, Screenworks, Orlando VA Medical Center, INCOSE Orlando Chapter, Harris Corporation, Siemens, Publix Super Markets Inc., Mitsubishi Power System Americas (MPSA), Lockheed Martin Missiles & Fire Control, Walt Disney-Industrial Engineering, Universal, and Soartech.

Industrial Engineering **Senior Design capstone course** has all projects partnered local industrial partners including NASA, Lockheed Martin, Orlando Health, United Launch Alliance, Boston Whaler, Siemens, I-Con, MC Assembly, Florida Hospital, Parrish Medical, and GE.