Spring 2023 Kick-Off

MIAMI UNIVERSITY
College of Engineering and Computing

Dr. Beena Sukumaran

Dean, College of Engineering and Computing

Miami University

January 20th, 2023

Imagination… Ingenuity… Impact!

What can we do to help our students succeed?

Slides can be found at: http://fac.cec.miamioh.edu/

Our College

Unity,

Purpose,

Collaboration

Vision & Mission

Miami University's College of Engineering and Computing seeks to educate technology leaders who will have a positive impact!

Our graduates will use their engineering, and computing knowledge to confront the grand challenges facing the world.

Their technical education is combined with the liberal arts and other disciplines to produce creative, entrepreneurial, and impactful solutions.

Strategic Priorities

Recruitment & Retention

Lead in DEI among engineering & computing schools

Modernizing Engineering & Computing Curriculum

Research & Innovation

Advancement

Dr. Keith Hohn

MIAMI UNIVERSITY

COLLEGE OF ENGINEERING AND COMPUTING

Department of Chemical, Paper, and Biomedical Engineering

CPB Department

- **ABET Results**
  - Weakness noted for BS in Biomedical Engineering related to engineering design
  - Concern noted for BS in BME around composition of CPB faculty
  - Concern noted for BS in Chemical Engineering related to engineering design
- **Search Update**
  - Assistant Research Engineer – Applicant Screening in Progress
- **New Initiatives**
  - Clinical engineering MS program approved, recruiting underway
  - Regulatory affairs course (CPB 452) being offered for the first time, taught by two Stryker professionals (Katie Suprenant, John Rossman)

Dr. Eric Bachmann

COLLEGE OF ENGINEERING
AND COMPUTING

Department of Computer Science
and Software Engineering

CSE Department

- **ABET Results**
  - No deficiencies or weaknesses noted for the BS in Computer Science and BS in Software Engineering degrees
  - Single Concern for both degree programs regarding challenges around hiring and retaining faculty
- **Search Update**
  - Tenure Track – On campus interviews in progress
  - TCPL - (two separate searches) Applicant screening in progress
  - Cybersecurity Director – Screening will begin in February
- **New Initiatives**
  - Recruiting for new BA in Computer Science and Master of Computer Science
  - BS in Cybersecurity – Period for public comment ending Jan 24th
  - New Visiting Assistant Professor – Dr. Benjamin Cecchetto

Dr. Qihou Zhou

MIAMI UNIVERSITY

COLLEGE OF ENGINEERING AND COMPUTING

Department of Electrical and Computer Engineering

ECE Department

- **ABET Results**
  - Computer Engineering accredited without concerns
  - Electrical Engineering accredited without concerns
- **Search Update**
  - Chair Search Chaired by Tim Cameron
  - Assistant/Associate Tenure Track
  - Lab Tech./Coordinator
- **New Initiatives**
  - ABET review for Robotics after spring graduation

Dr. Fazeel Khan

MIAMI UNIVERSITY

COLLEGE OF ENGINEERING AND COMPUTING

Department of Mechanical and Manufacturing Engineering

MME Department

- **ABET Results**
  - Mechanical Engineering: One Concern
  - Manufacturing Engineering: One Weakness
- **Search Update**
  - Tenure track position – campus interviews to begin this month
  - TCPL position - campus interviews to begin this month
- **New Initiative**
  - MCH Curriculum – Addition of one new thematic track (Thermal-Fluids, Dynamics and Controls, and Mechanics)
  - Smart Manufacturing Initiative

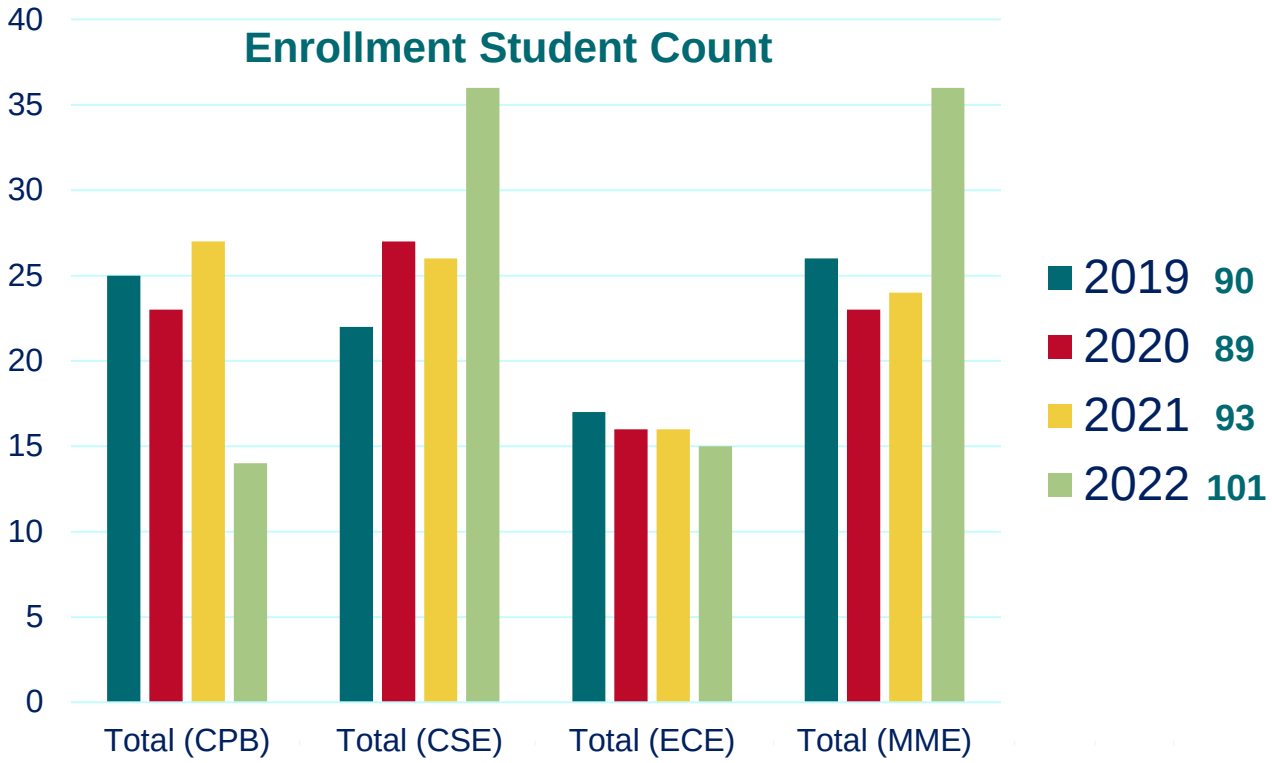
Dr. Kumar Singh

MIAMI UNIVERSITY

COLLEGE OF ENGINEERING AND COMPUTING

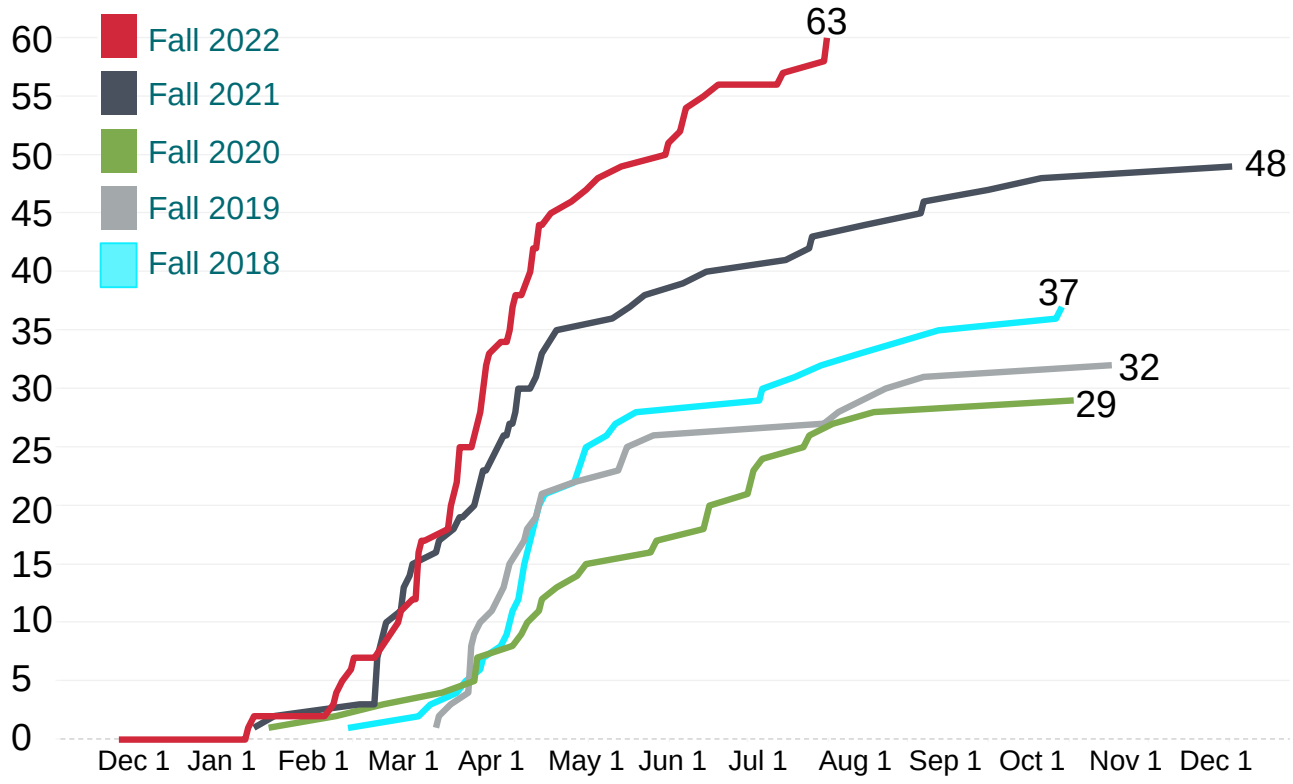
Graduate & Research Update

Graduate Programs



Fall Semester Report
(BI)

Confirmed Graduate Students



As of 17 January 2023

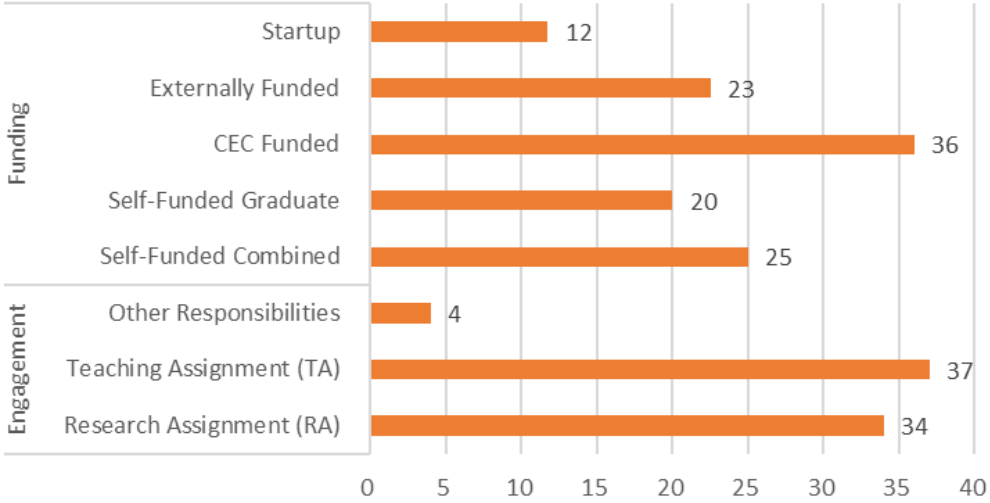
Total Application: 80
Admitted: 11
Confirmed: 6

As of 17 August 2022

Graduate Assistantships

2021-2022

Student Funding and Engagement



- GA allocation were made based on the CEC budgeted support of up to **38 GA**
- Increased from ~22-28
- 57% of ENG budget is to support GAs and tuition waiver

Graduate Program Directors

Dr. Amy Yousefi
Chemical, Paper, and Biomedical Engineering

Dr. Chi-Hao Cheng
Electrical and Computer Engineering

Dr. Muhammad Jahan
Mechanical and Manufacturing Engineering

Dr. Daniela Inclezan
Computer Science and Software Engineering

CEC Research Clusters

Advanced Communications and Networks

- 5G/6G Mobile Technology
- IoT – Internet of Things
- Wireless Network Security
- Remote sensing
- Wireless Sensor Networks
- Radar Signal Processing

Artificial Intelligence & High Performance Computing

- Computer Vision
- Chem-Informatics
- Molecular Simulation
- AI in Cybersecurity
- Machine Learning
- Parallel & Distributed Computing
- Quantum computing

Assistive & Sustainable Technology

- Wearable Technology and Signal Processing
- Biomedical Imaging
- Human Postural Dynamics
- Virtual Manipulations
- Power electronics for electrified transportation
- Solar and renewable energy
- Fuel Cell & Metal Oxides

Biomedical Engineering and Biotechnology

- Protein Engineering
- Health Data Analytics & Bioinformatics
- Synthetic Biology
- Bio-sensors
- Drug Delivery
- Metabolic Engineering
- Tissue Engineering

Engineered Materials

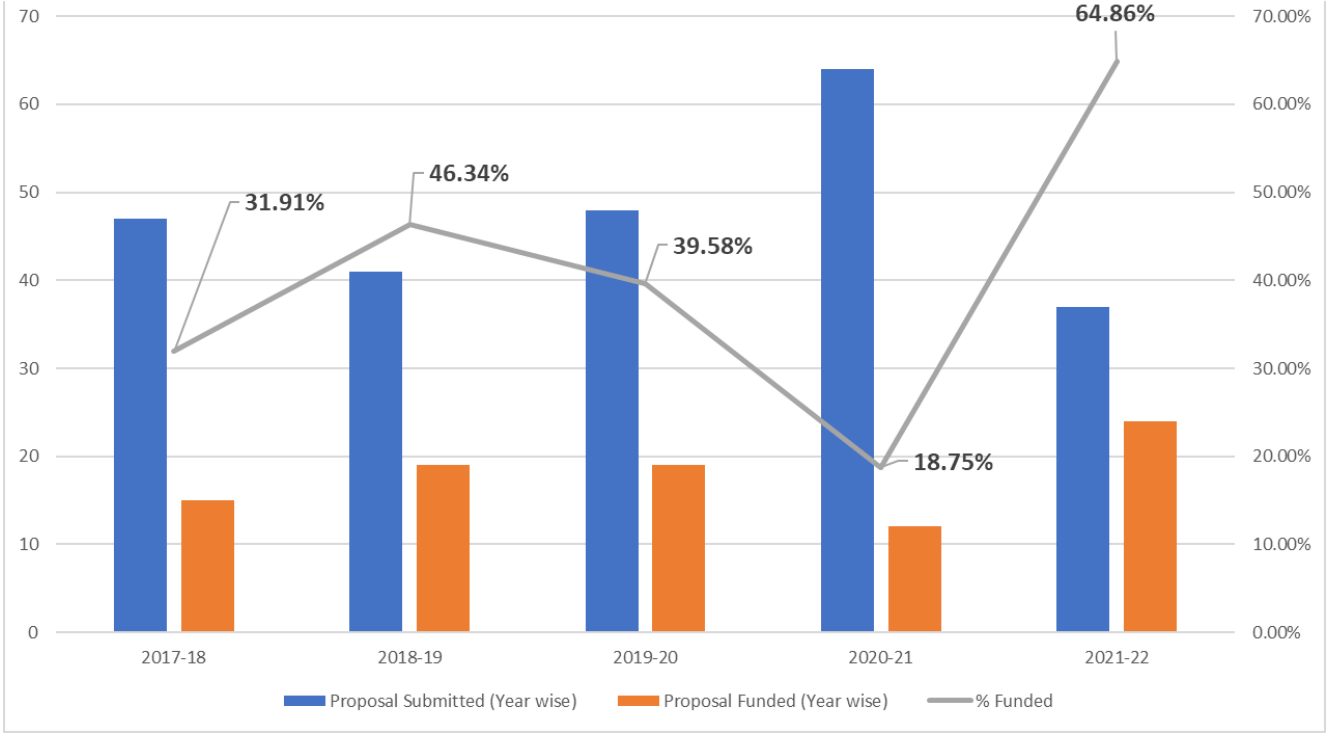
- Biocompatible Polymers
- Cellulosic materials
- Phononics and Acoustic Metamaterials
- Surface engineering & Micro & Nano tribology
- Material Genome
- Smart Materials
- Semiconductor fabrication and packaging

Robotics, Automation & Manufacturing

- Additive Manufacturing/ 3D printing
- Micro & nano machining
- Friction Stir Welding
- 4D printing of smart materials
- Autonomous Vehicles
- Human Machine Interaction
- RF sensors
- Control Design

CEC Research Proposals

Proposal Submission and Funding Record during Last 5 Academic Years

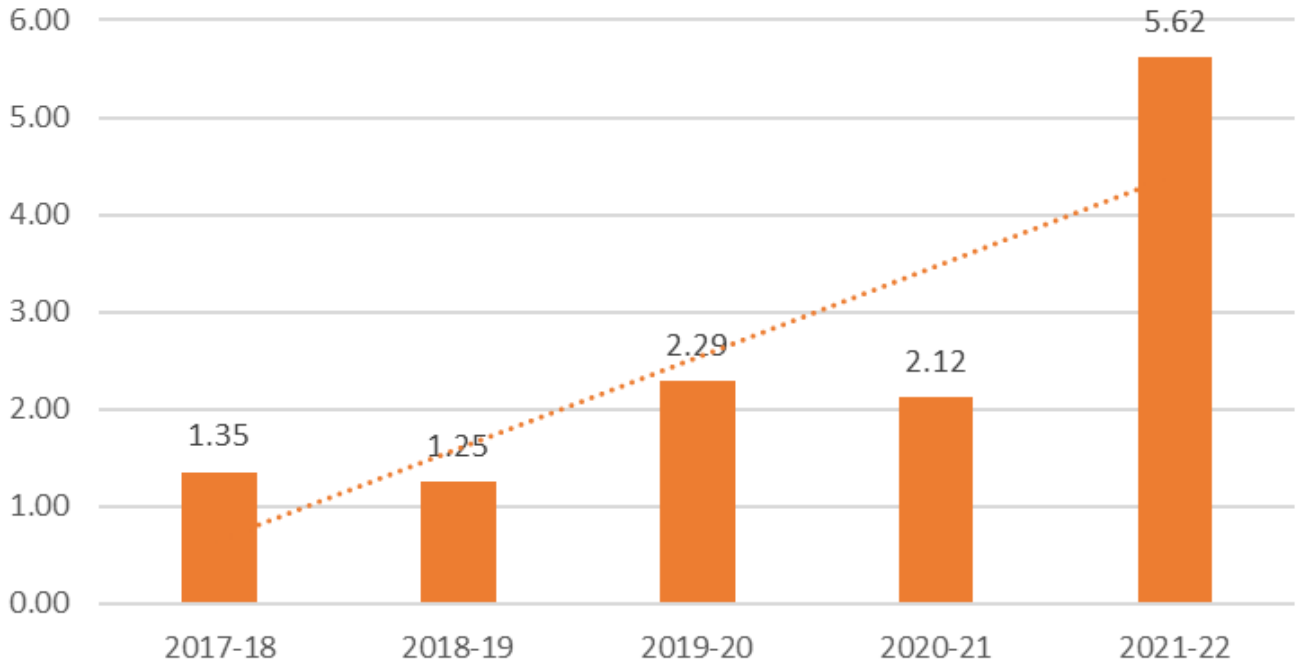


As of 13 January 2023

Proposal Submitted: 37
Number of Awards: 21
% Success: 56

Research Awards

Research Funding Record during Last 5 Academic Years



As of 13 January 2023

Funded Award Total: **$1.19 M**

Funding Highlights

- **NSF ERI:** Ran Zhang (ECE), ACL Administration for Community Living: Vaskar (CSE)
- **Collaborative Research (NSF):** Jason Boock (CPB) with MIT, Mehdi Zanjani (MME) with MU Geology
- **Intel OASiS:** Ohio-southwest Alliance on Semiconductors and Integrated Scalable-Manufacturing – Led by UC, MU Team: Singh (MME), Chen (ECE), Garmatyuk (ECE), Hohn, and Jones (CPB)
- **ODHE (Smart Manufacturing, Healthcare, and Cybersecurity):** Hartup (ECE), Khan (MME), Bal and Reza (Regionals);
- **COF-JEDI:** Khan (MME), Singh (CEC), Blue (CAS)

CEC Support

- Proposal Writing
- Team building for Proposals
- Connecting with MU’s ORI resources and initiatives
- Some upcoming RFP’s
  - NSF ExLENT
  - NSF-VITAL
  - NIH REACH

Dr. Jessica Sparks

MIAMI UNIVERSITY

COLLEGE OF ENGINEERING AND COMPUTING

CEC 111/112, KEEN, & Ratings

CEC 111/112 Pilot – 2022/2023

- Active learning and inclusive teaching strategies
- UNV/CEC 101 content
- Multidisciplinary SEEC-themed projects
- Signature Inquiry course

Edgar Caraballo
MME

Karen Davis
CSE

Dave Hartup
ECE

Justin Saul
CPB

Norm Krumpe
CSE

Wyatt Bischoff
MME

Elise Yuhas
CSE

Keisha Norris
ECE

Nick Stanford
CPB

Brian Kirkmeyer
CEC

#Engineering Unleashed

- Miami University is now a KEEN Partner! (#54 out of 55)
- 5 Sponsorships per year to attend the KEEN National Conference
- 5 Sponsorships per year for summer Faculty Development Workshops
- Access to network resources
  - KEEN cards, SOTL manuscript prep workshop
  - KEEN Rising Star award, Community Catalysts, etc.
- https://engineeringunleashed.com

Our Rankings Story

- # 105 among National Universities
- Tied for #18 for “Best Undergraduate Teaching” among all National Universities
- Tied for #35 for “Best Undergraduate Engineering Programs” (no doctorate)
- $24.4 million in total R&D expenditures (FY 2020)
- HERD Ranking of 260 (29.1 percentile, total R&D)

The Higher Education Research and Development Survey

https://ncsesdata.nsf.gov/profiles/site?method=rankingBySource&ds=herd

Michael Kumler

MIAMI UNIVERSITY

COLLEGE OF ENGINEERING AND COMPUTING

Development Campaign

FY23 Successes

On pace to surpass largest fundraising year in CEC History - $4,267,025

More than 400% ahead of last year YTD

Significant Major Gift Commitments

Faculty Research & Equipment, Endowed Faculty, Endowed Scholarships, K-12 Outreach Support

Continued Meaningful Engagement

70+ meaningful individual engagements with Alumni, Friends and Corporate Partners

CEC & Campaign Update

- Largest Q1-Q2 total
- Current FY $4,267,025 and Campaign Total $27,443,433
- Surpassed $10M in new scholarships
- 2022 – Largest fundraising year for Miami – Over $100M
- MU Campaign has surpassed $600M

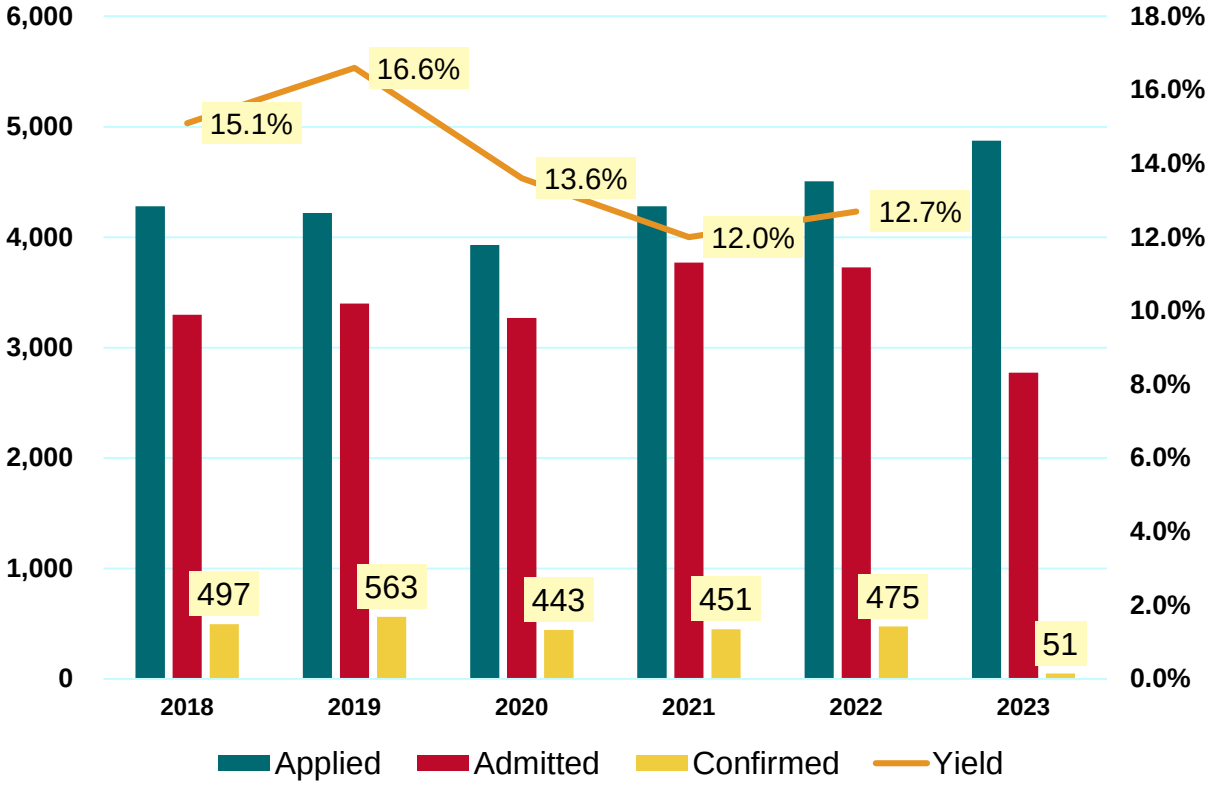
Clark Kelly

MIAMI UNIVERSITY

COLLEGE OF ENGINEERING AND COMPUTING

Undergraduate Admissions Update

CEC UG Applications, Admits, & Confirms 2018-2023



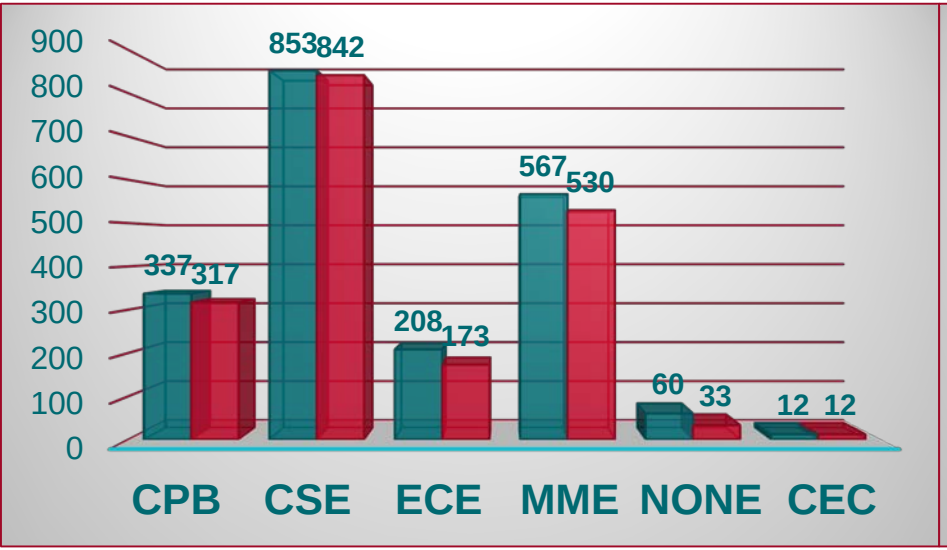
As of 18 Jan 2023

CEC Support

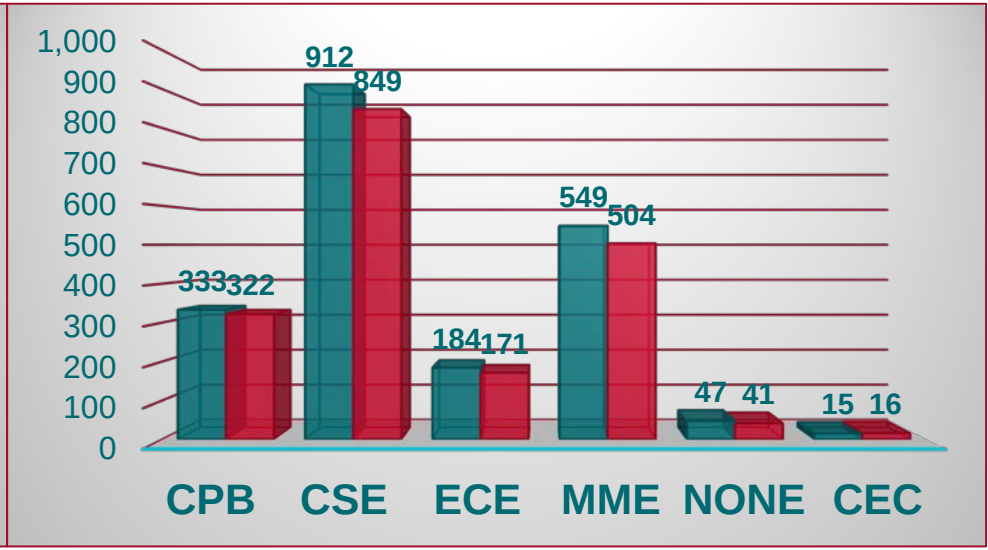
- Weekly Tours Monday & Friday for prospective students
- Make it Miami – CEC Time - Noon to 1 PM
  - Friday, February 10th and 17th
  - Monday, February 20
  - Friday, March 3rd, 10th, and 31st
  - Friday, April 7th and April 14th
  - Friday, April 21st – Backup hidden date
- Sunday, April 16 - Spring Open House
- Presidential Fellows & COF Interviews
  - Sunday, February 19th

Undergraduate Enrollment

FY21-22



FY22-23



Total CEC Undergraduates

2,038 → **1,907**

Legend: Fall, Spring

Total CEC Undergraduates

2,040 → **1,903**

2020-2021 First Destination

Degree	Knowledge Rate	Overall Success Rate
Biomedical Engineering	89.5%	100%
Chemical Engineering	76.9%	100%
Computer Science	68.7%	98.9%
Software Engineering	85.7%	100%
Computer Engineering	88.2%	100%

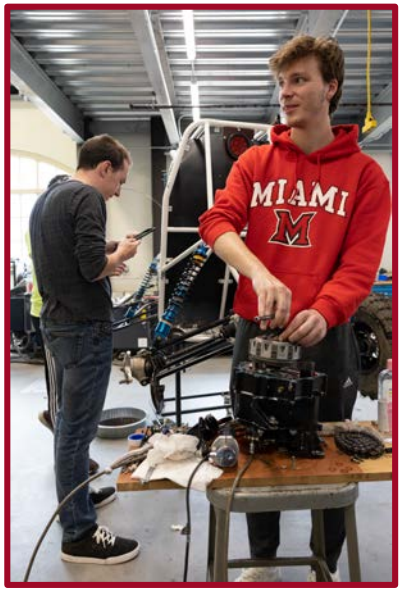
Degree	Knowledge Rate	Overall Success Rate
Electrical Engineering	77.3%	100%
Manufacturing Engineering	87.5%	100%
Mechanical Engineering	81.2%	97.6%
Engineering Management	82.4%	100%
General Engineering	66.7%	100%

CEC average FT salary was $71,696

Other News

Career Fair
Wednesday, February 15th
Millett Hall from 1-5 PM

Senior Design Expo
Thursday, May 4th
Millett Hall from 5-7 PM



Alumni & Friends Conference
Friday, May 5th
Armstrong Student Center
8 AM to 4:30 PM

Joanna Hohn

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COLLEGE OF ENGINEERING AND COMPUTING

K-12 Outreach

Outreach to K-12 Schools

CIQS Day with CAS 150 High School Girls
Dr. Zanjani

Career Exploration with Mercy McAuley High School

Bridges

Talawanda Middle School STEM Club with SWE and Girls Who Code

Outreach to K-12 Schools

FIRST Tech Challenge
Scrimmage 12/22
3 Teams

FIRST Tech Challenge
January 2023
23 Teams

Outreach in the Community

Humanitarian Minor Service Project - Farmers Market

DO STEM Future Fair Dayton November 2022

K-12 Outreach Spring Events

- Talawanda Middle School Spring STEM Club
- INTERalliance TechOlympics 2/18 in Cincinnati
- Engineer's Week 2/19-2/25
- LEGO Decathlon with ETBD 2/20 on campus
- Girl Scout Day with SWE and Cybersecurity Club 4/22
- Farmers Market - 3 Saturdays
- Service Project with Keisha Norris's Class

K-12 Outreach Summer Events

- **Cincinnati Museum Center Sports and Engineering Camp**
  - 1 week day camp with Dr. Keith Hohn - middle schoolers
  - Miami campus field trip
- **imagiCharm Python Coding Camp**
  - Three - 1 week day camps female identifying middle schoolers
  - Two company field trips, Miami campus visit

K-12 Outreach Summer Events

Engineering Career Exploration and Entrepreneurship Camp

- Three - 1 week day camps for middle schoolers
- STEM company field trip, Miami campus field trip
- Pilot camp with RAPID Manufacturing Institute

Colleen Bush

MIAMI UNIVERSITY

COLLEGE OF ENGINEERING AND COMPUTING

Industry Relations

Industry Relations

Fall Semester Events

- **The Biotech Forum**
  - Over 40 students and 20 companies in attendance
  - With Ohio Life Sciences (BioOhio)
- **Faculty and Student Engagement with over 50 companies**
  - Career Fair Prep Event
  - Career Exploration Panel
  - Tours
  - Campus Visits
  - Finals week Study Break
- **Industry events**
  - Manufacturing - 10
  - Startup - 3
  - Economic Development - 5
- **Village of Evendale Aerohub Site partnership**

Industry Relations

Spring Semester Events

- Kinetic Vision tour
- Ohio Healthcare Technology Management Association Conference
- Career Fair Prep events
- Intel Visit and Student/Faculty Presentation
- Engineers Week
- DEI Employer Showcase
- SWE Evening with Industry
- Automate Show
- Stryker Mobile Lab Visit

Contact me to organize tours and industry visits

Carole Johnson

MIAMI UNIVERSITY
COLLEGE OF ENGINEERING AND COMPUTING

University Communications

University Communication & Marketing

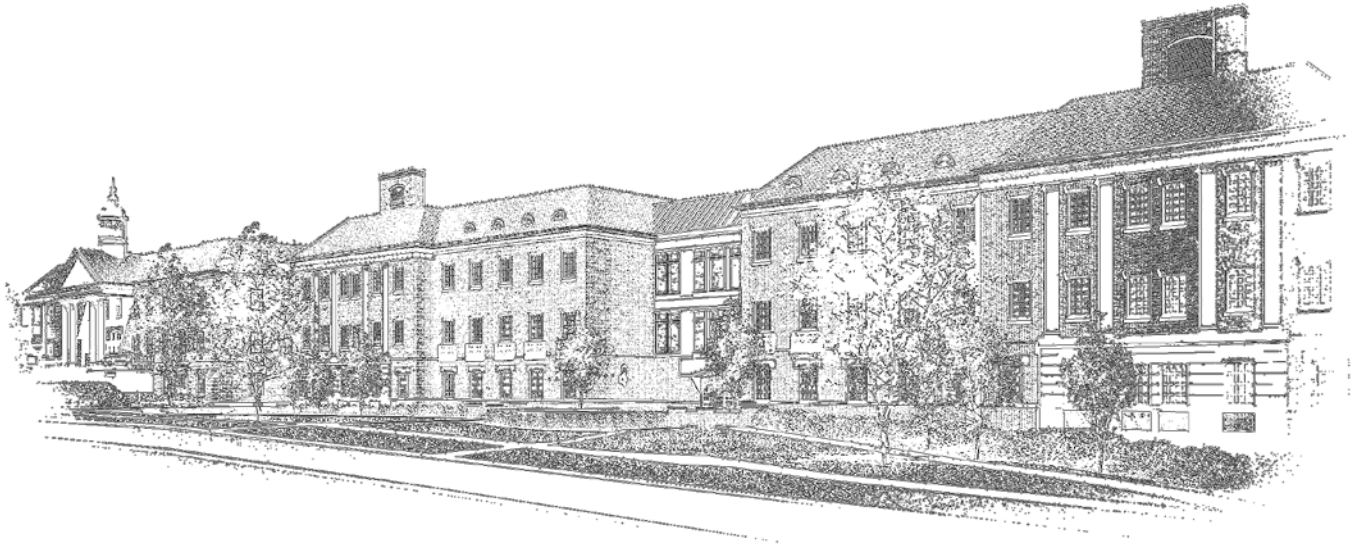
- **CEC Marketing**
  - Dean secured $78K for CEC specific marketing for Admission efforts
  - Completed Study International recruiting campaign
    - Reached 1.9+M brand views with 32.7K Social Post Reads
- **Web Update**
  - UCM has contracted Barkley REI to update templates for top level pages
  - UCM has contracted with Up and Up to update Program Finder pages
- **Social Media Policy**
  - Miami University social media accounts need prior approval

Dean Sukumaran

MIAMI UNIVERSITY

COLLEGE OF ENGINEERING AND COMPUTING

CEC Fiscal Reality



CEC RCM revenues, in million $

	Total Undergrad. NIR**	Total Graduate NIR	Total NIR	State Share	Other Revenues ***	Total Revenue Sources
FY'20	21.23	0.24	21.47	6.45	1.03	28.95
FY'21	18.37	0.23	18.60	6.81	1.50	26.91
FY'22	17.52	0.25	17.77	6.88	1.92	26.57
FY'23 (projected)	*16.14*	*0.13*	*16.27*	*7.07*	*1.66*	*25.00*

* All projections in this presentation as of 12/8/2022

** NIR – net instructional revenues, four-year averages

*** Other revenues: overheads, university investment income, non-divisional students

RCM expenses, in million $

	CEC Direct Expense Budget	Support Center Allocation and Other University Expenses	Total Expenses
FY'20	12.87	12.72	**25.59**
FY'21	12.41	11.79	**24.20**
FY'22	13.38	11.68	**25.06**
FY'23 (projected)	*14.12*	*12.69*	***26.81***

RCM revenues, expenses and ending balance in million $

	Total Revenue Sources	Total Expenses	Ending Balance Before Subvention
FY'20	28.95	25.59	**3.36**
FY'21	26.91	24.20	**2.71**
FY'22	26.57	25.06	**1.51**
FY'23 (projected)	*25.00*	*26.82*	***-1.82***

Opportunities and Challenges

Opportunities

- High demand for graduates in CEC
- Cross-divisional degree offerings & research collaborations
- Graduate programs
- Committed alumni, staff, faculty
- Excellent research credentials of faculty
- Corporate funding
- Discipline specific fee

Challenges

- Demographic decline
- International student enrollment
- Miami Plan
- Retention of faculty, staff & students
- Fragmentation and duplication of programs
- Lack of emphasis on graduate programs
- Bureaucracy

Spring 2023

Have an amazing Spring Semester!

Happy Lunar New Year!!