2018–2019

ANNUAL REPORT

ENGINEERING
PROFESSIONAL PRACTICE

Our Impact

Helping students add paid, educationally relevant work experience to their engineering education is important at the University of Tennessee. As we move beyond 2019, we continue to see unprecedented growth in student and employer participation and the expansion of our program beyond traditional co-ops and internships into other areas of engineering student enrichment. Our program, which helps students add experience to their education, has been in existence since 1926. It's the second oldest program of its kind in the south and one of the nation's oldest. We are dedicated to helping engineering students find co-op and internship positions with one of our hundreds of participating employers to enhance their education and prepare them for their future.

Key Accomplishments

- The fall 2019 Engineering Expo was our largest ever with 108 employers and 1104 students attending.
- The spring 2019 Engineering Expo was our largest employer-attended spring event in our history, with 92 employers and 807 students attending.
- We had over 1,300 students, faculty, and staff attend the fall 2019 Engineering Cookout, making it one of the largest annual engineering events at UT.
- In March 2018, we held the seventh annual Engineering Professional Practice Spring Banquet.
- In AY19, 42 percent of graduating engineering seniors completed at least one co-op or internship assignment during their time at UT. Over the past ten years of senior classes, on average, 40 percent of those graduating have participated in at least one assignment.

***On the cover**: Zoe Antonas, a chemical engineering senior, on a co-op assignment with Eastman Chemical Company during the fall 2018 semester.*

J. Michael Stone Engineering Professional Practice Leadership Development Program

This program is specifically for engineering students who obtain co-op and internship assignments through our program. While on assignment, students are provided books on leadership development and communication skills and are encouraged to apply the skills learned during their assignments. The program also enables us to bring speakers to campus for additional leadership development opportunities.

These leadership skills go hand-in-hand with the academic knowledge our students gain through their coursework and add to the experiential learning process, combining problem-solving and lifelong-learning skills with critical reflection.

The program began in 2014 thanks to the generosity of alumnus J. Michael Stone ('63).

> **"I want to be able to instill in you a strong and enduring drive to acquire knowledge throughout your life, so you will be able to fully achieve your potential."**
>
> *—J. Michael Stone*

Program Champion Award

The Program Champion Award was created in 2018 to recognize Tickle College of Engineering faculty, staff, and alumni who have supported and worked on behalf of the professional practice program to promote and encourage student participation.

The spring 2019 recipients were:

- **Masood Parang**, former associate dean of the Tickle College of Engineering
- **John W. Prados**, chemical engineering professor emeritus

L-R: 2019 Program Champion Award winners John W. Prados (second from right), Masood Parang (right) joined Engineering Professional Practice Director Todd Reeves and former TCE Interim Dean Mark Dean.

Previous Program Champion Award winners include:

- **Wayne Davis**, former dean of TCE
- **Dorothy Bryson**, former executive director of development for the college
- **J. Michael Stone**, alumnus, (BS/ChemE, '63)

Co-op Scholarships

L-R: Graduating John W. Prados Chemical Engineering Co-op scholarship recipients Michael Stone (second from left) Nicholas Ross, Andrew Street, Malcolm Miller, Xavier Lee, and Jacob Reynolds joined Michael Stone (left) and John W. Prados (center).

John W. Prados Chemical Engineering Scholarship

With an annual stipend of $5,000 each for up to five students, the John W. Prados Chemical Engineering Scholarship offers a grand opportunity for students who excel to be recognized in a substantial financial way. To be considered, a student must be in the undergraduate chemical engineering program, have completed two co-op assignments, and be enrolled in business courses designated for the business minor. In addition to the one-year stipend, the Prados Scholars each receive a number of books upon graduation to help them begin building their professional library.

The scholarship is named for Professor Emeritus John W. Prados, who has been recognized for excellence at the university where he served for more than fifty years and by organizations around the nation. He is a Fellow of AIChE, ABET, and ASEE and is a registered Professional Engineer (retired) in Tennessee. In 1993, Prados received the L.E. Grintner Distinguished Service Award, ABET's highest recognition for services to engineering education. The Southern Association of Colleges and Schools gave him the James T. Rogers Award in 2004, and in 2009 he received the Benjamin Garver Lamme Award from ASEE. The University of Tennessee, Knoxville, named him Macebearer in 1997-98, the highest faculty honor conferred by the university, and in 2010 the UT College of Engineering presented him with the Nathan W. Dougherty Award for his many accomplishments that enhanced the profession and brought acclaim to the university.

List of all-time Prados Scholarship recipients:

Patrick Thomas Bowland, 2010
Amanda (Mathews) Fenyves, 2010
Angel M. (Vogel) Minor, 2009
Mark Edward May, 2009
Jacob Miller Buchkovich, 2010
Shelley E. Parker, 2010
Brian Kenneth Yount, 2012
Matthew R. Melton, 2012
Nichols Joseph Ponzio, 2012
Rebekah K. Patton, 2013
Hanna Elizabeth Haines, 2014
Zachary P. Shupe, 2014
Brittany (Rogers) Thompson, 2015
Jonathan A. Jones, 2015
Travis W. Keever, 2016
Derek Watkins, 2017
Evan Boone, 2018
Grayson Jones, 2018
Jacob Reynolds, 2019
Malcolm Miller, 2019
Andrew Street, 2019
Nicholas Ross, 2020
Xavier Lee, 2020

Discover how you can help shape the engineers of the future.

Our co-op and internship students can be a tremendous advantage to you and your organization.

The primary and most effective way employers typically recruit students is by attending our Spring and Fall Engineering Expos. A secondary way to recruit is to simply post an open position within our online system and then set up an interview day to meet interested students.

Getting involved with our office enables your organization to engage UT engineering students who are bright, energetic, and future oriented early in their academic program.

Get started today:
Visit tiny.utk.edu/coop

Student Reflections

Lauren Lingar

Industrial Engineering
Shaw Industries, Inc.

I obtained a co-op position with Shaw Industries, Inc., in the fall of my sophomore year (2017). I went on my first rotation in spring 2018 after taking only seven industrial engineering credit hours. I was in general administration in one of Shaw's smallest plants. That rotation gave me an intimate knowledge of how a plant operates from a management, business, process, safety, shipping, and maintenance viewpoint.

My second rotation, in summer 2018, was in the world's largest carpet backing facility. I was in a process engineering role, one of which is almost always filled by a mechanical or chemical engineering major, and I was neither. Working in this position was the most fruitful and fun job I've ever had. I got to see why it is so important and helpful for an industrial engineer to be very hands on in a process.

After going to school for a full year, I gained many technical skills, and started my next co-op position in corporate quality in summer 2019. Being in corporate quality was a unique and rewarding experience.

I think some of the best things about going on a co-op are that it supplements your education so well, you get to learn very important soft skills, and you get to find out what you would or would not like to do in industry.

Shivang Patel

Chemical Engineering
Kimberly Clark Corporation

My first co-op was a three-term assignment with Kimberly Clark Corporation. I completed two terms at the Loudon, Tennessee, paper mill and a third term at the research and engineering office in Neenah, Wisconsin. I started my assignment after my first semester as a sophomore and worked the entire year of 2017. Co-op allowed me to grow professionally, and become better prepared for a full-time role as a chemical engineer after graduation.

During my term at the paper mill, I worked in hand towel and bath tissue manufacturing. One of my projects involved reducing the cross-direction basis weight variability on hand towel manufacturing assets. I was tasked with finding a way to reduce the variability by doing a series of benchmark tests.

In my final term at the research and engineering office in Neenah, Wisconsin, I worked with the global team on improving the manufacturing process of various products to ensure product integrity and a better consumer experience. I was challenged with developing a test method in a lab setting that would replicate process conditions. At the end of my term, I was able to develop a test method, and recommend a future trial plan to implement on the manufacturing asset.

My co-op at Kimberly Clark allowed me to further my education outside of school, solidify my passion to pursue a career in chemical engineering, and build long-lasting relationships with the people I worked with.

Student Spotlights

Emma Drum

Mechanical Engineering
Southern Company / Canton, Ga.

Drum worked in the Distribution Engineering department where she was responsible for anywhere from 10-15 projects at a time. She created, designed, and estimated overhead and underground power distribution systems. One of the smaller projects that she worked on included getting power to a house 1,000 feet off the road. Larger projects included designing the underground power layout for subdivisions and apartments, and replacing 3,500 feet of overhead wire that was overstressed.

"The most valuable benefit I received was learning how to be independent in the work place and in my personal life. Another engineer isn't always going to be available to help me, so I needed to be able to solve my problems on my own."

—Emma Drum

Remi Koch

Industrial Engineering
Tesla / Palo Alto, Calif..

Koch worked on the Service Technical Operations team where he developed and launched the HV Battery Swap Program across North America. He also worked on creating a quality system to bridge Tesla manufacturing and service and supported in outsourcing glass repairs and establishing seat replacement processes.

"This was a great peek into what it is like to manage a program and give directions to 300+ people and how to communicate and take action over a huge organization."

—Remi Koch

Heather Haynie

Computer Engineering
Siemens Molecular Imaging / Knoxville, Tenn.

During her rotation, Haynie worked on the Electrical Research and Development team. She had many responsibilities including testing circuit boards, making cable drawings, creating a real time temperature graph, and troubleshooting computers. The biggest project she worked on was creating a program that parsed an XML file for data that was then sent to a graphical user interface. This project allows the engineers on the team to view data from sensors on the PET scanners, which was previously very difficult and not possible to read in real time.

"The most valuable things I have gained from my time working were an understanding of what it was like to interact in a professional setting and getting advice from engineers of different backgrounds and levels of experience."

—Heather Haynie

Brooke Narducci

Mechanical Engineering
DENSO Corporation / Knoxville, Tenn.

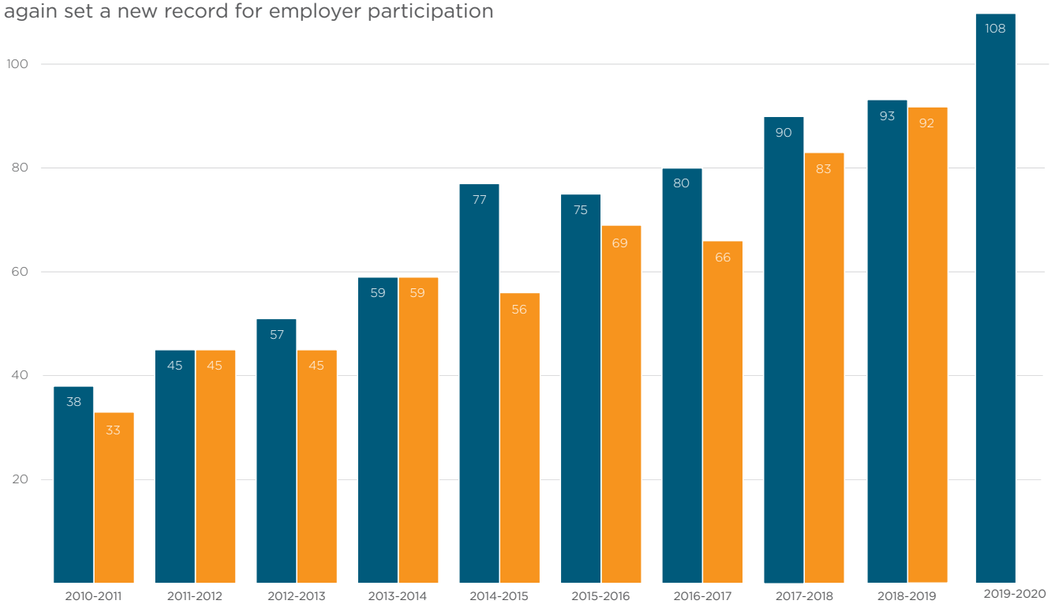
Narducci worked as a production engineer over the alternator and starter lines. Some of her projects included designing a jig to remove a pulley cap from an alternator without damaging the pulley, designing a stand for a program and its monitor on starter line, and using SolidWorks to make a 3D model from a 2D drawing. She is currently working on a year-long project to design and implement a method for a new product on starter line.

"The most valuable benefit I have received by accepting my co-op is finding value in myself. Before starting, I felt like I didn't deserve to work here. That I was under-qualified and would become a disappointment for the co-op program. In just the three months I've been here, I realize that I have a lot of great qualities and that I can accomplish anything I set my mind to."

—Brooke Narducci

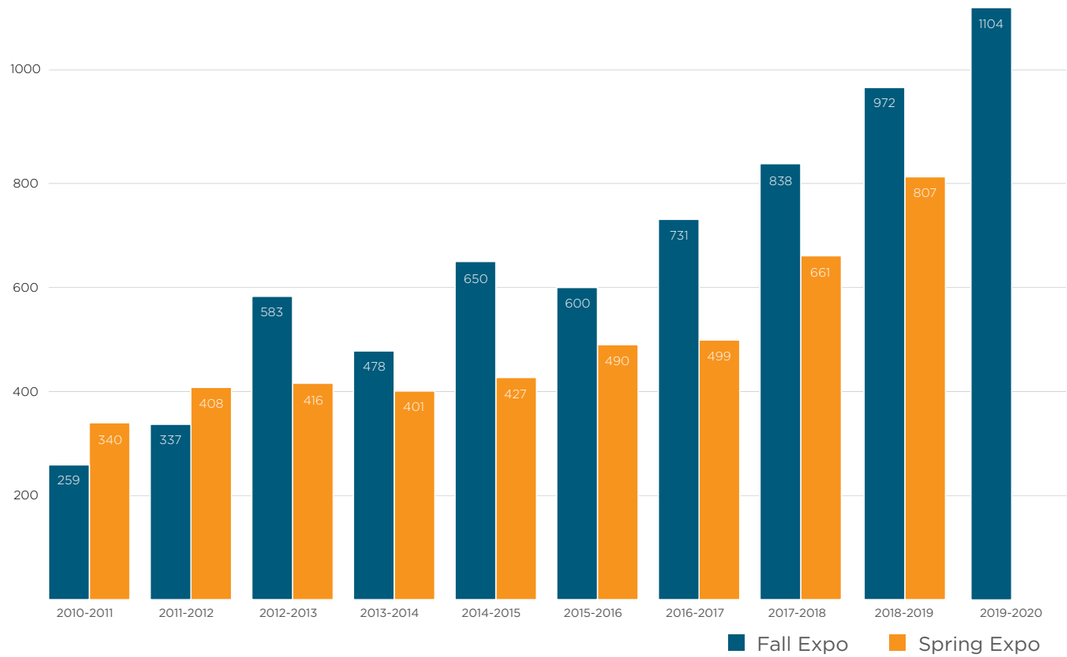
Engineering Expo Employer Attendance is on the Rise

Our program has experienced consistent growth in Engineering Expo employer attendance since AY2010-11. After a record-setting employer attendance in the fall of 2018 and the spring of 2019, our employer attendance in fall of 2019 again set a new record for employer participation



Engineering Expo Student Attendance is Strong

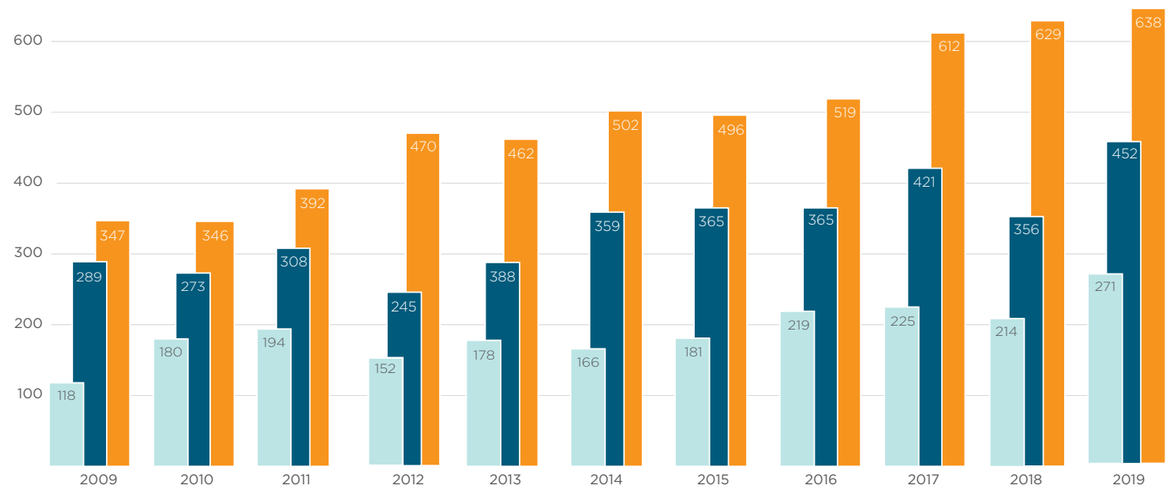
The student attendance at the 2019 spring and fall expos have set new records. The fall student attendance was a nearly 14 percent year-over-year increase over fall 2018 and a 326 percent increase over fall 2010, while the increase in student attendance in spring 2019 was a 22 percent year-over-year increase and a 271 percent increase over 2010.



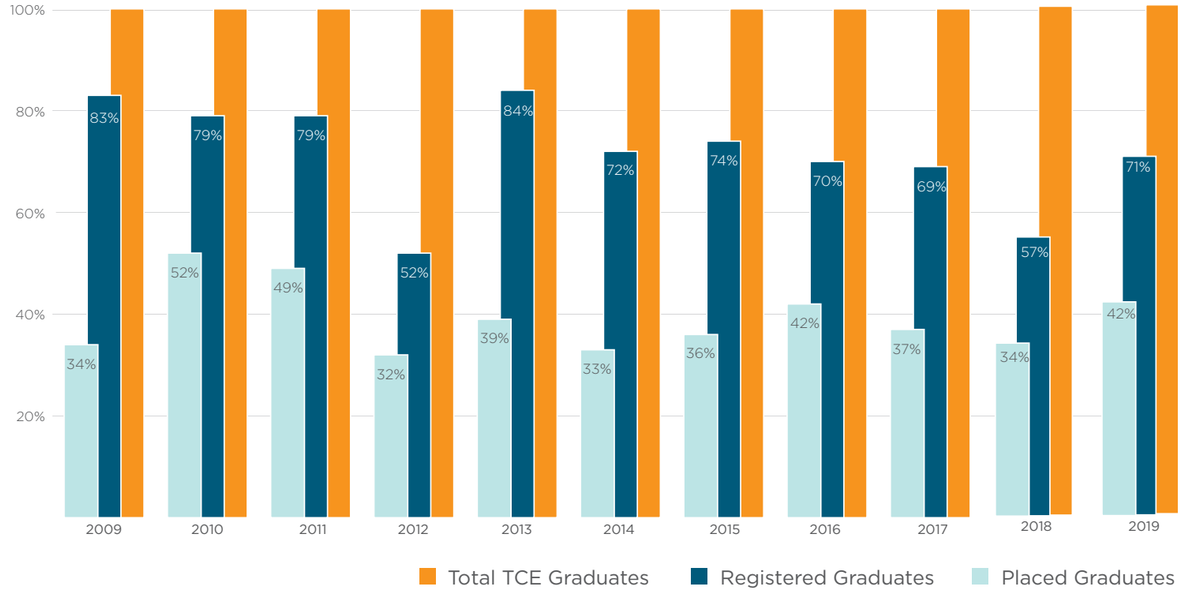
Graduating Students Who Participated in the Program

Our office continues to see strong interest and high participation levels from engineering students. In total, the number of placed TCE graduates participating in co-ops and internships averaged 40 percent from AY2009 through AY2019. Additionally, since 2009, at least 75 percent of graduating seniors have, on average, at least registered with our program.

Undergraduates Graduating in the Academic Year Participating (Totals)



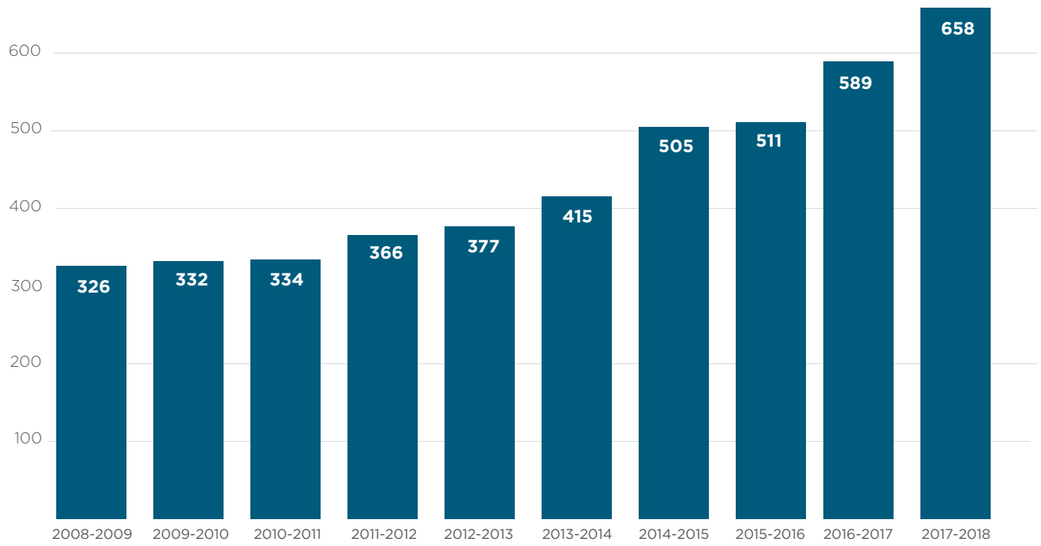
Undergraduates Graduating in the Academic Year Participating (Percentages)



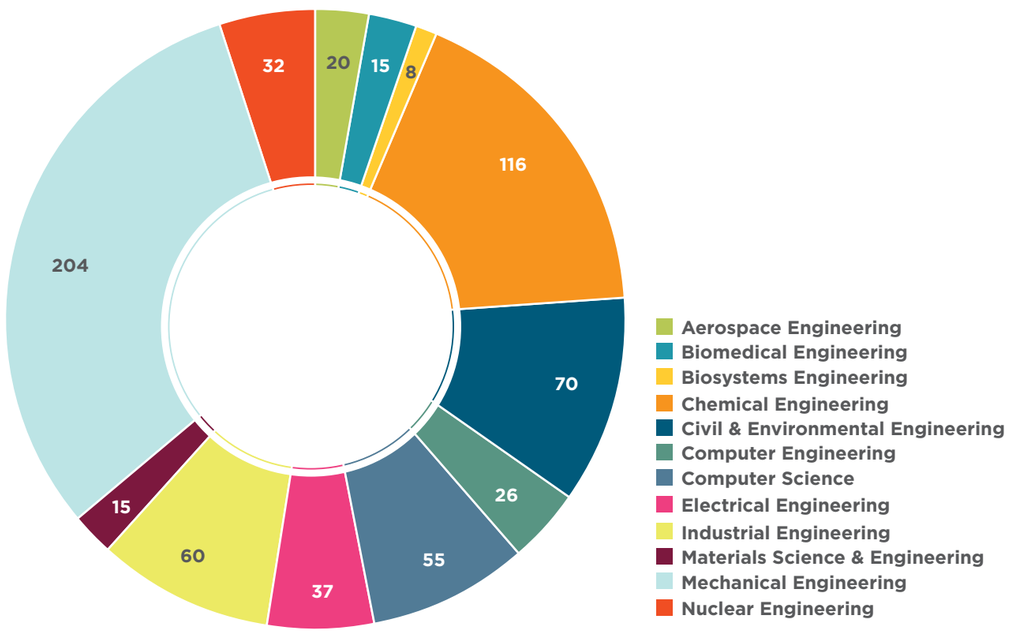
Student Placements Continue to Increase

The number of students placed on a co-op or internship assignment continue to increase each year. The 2017-18 student placements have set a new record of 658, which also represents a 12 percent increase over the previous academic year.

Total Engineering Student Placements



Academic Year 2017–2018 Placements

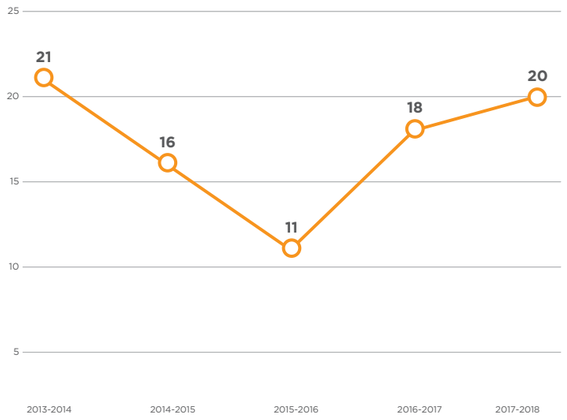


Placement of Engineering Majors by Discipline and Year for the Last Five Academic Years

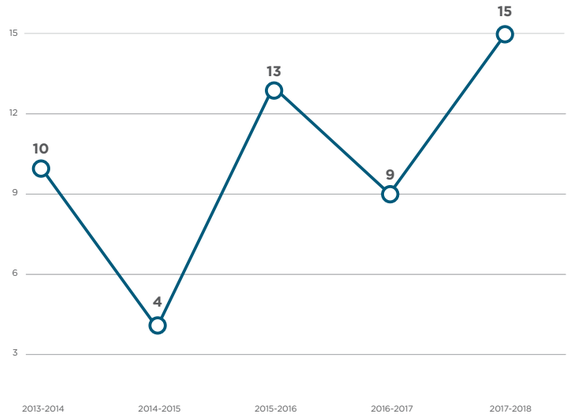
	2013–2014	2014–2015	2015–2016	2016–2017	2017–2018
Aerospace Engineering	21	16	11	18	20
Biomedical Engineering	10	4	13	9	15
Biosystems Engineering	3	12	6	7	8
Chemical Engineering	61	78	87	103	116
Civil & Environmental Engineering	31	32	44	47	70
Computer Engineering	12	19	20	28	26
Computer Science	13	29	30	32	55
Electrical Engineering	44	51	37	54	37
Industrial Engineering	31	58	62	50	60
Materials Science & Engineering	12	16	19	15	15
Mechanical Engineering	153	170	155	187	204
Nuclear Engineering	24	20	27	39	32
Total	**415**	**505**	**511**	**589**	**658**

Placement of Engineering Majors by Discipline

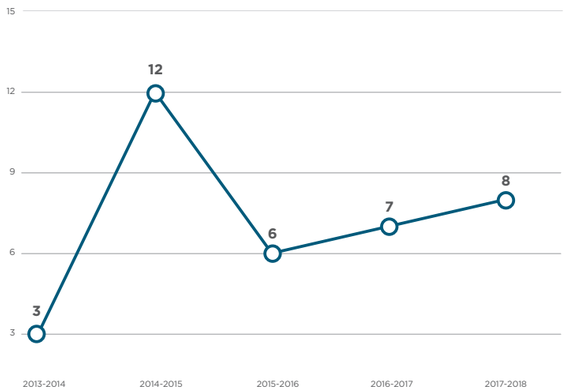
Aerospace Engineering



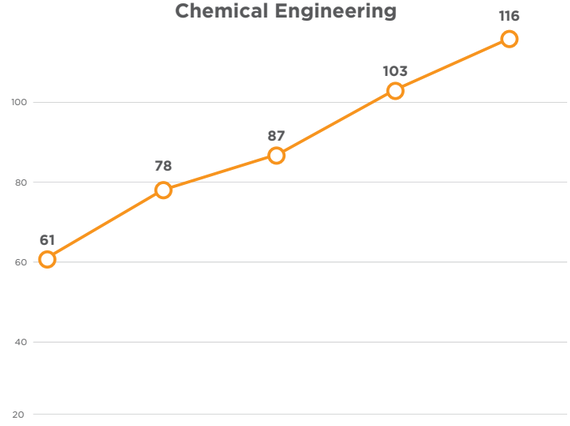
Biomedical Engineering



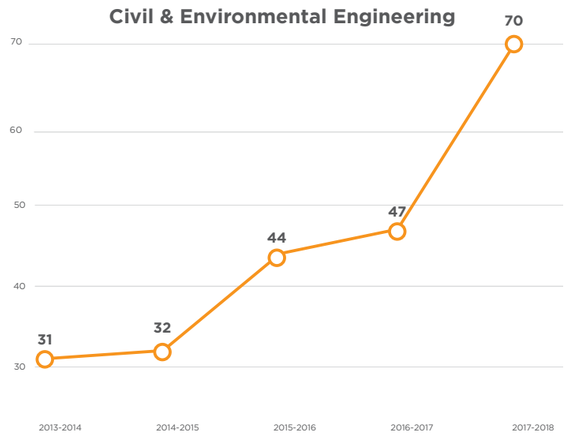
Biosystems Engineering



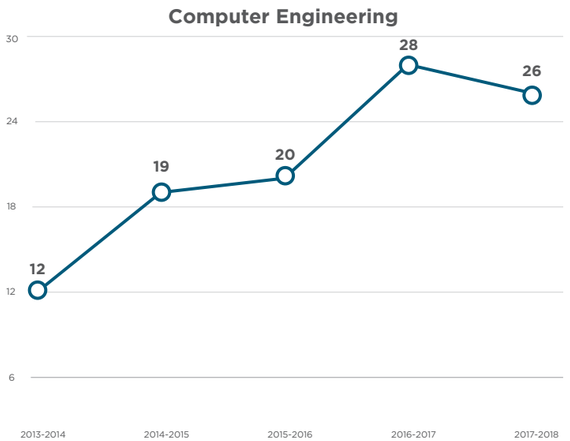
Chemical Engineering



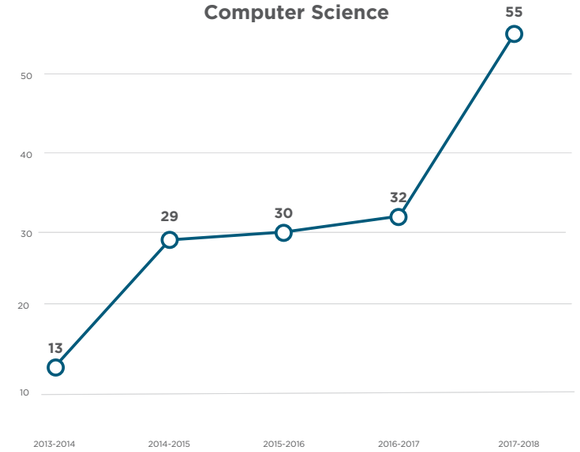
Civil & Environmental Engineering



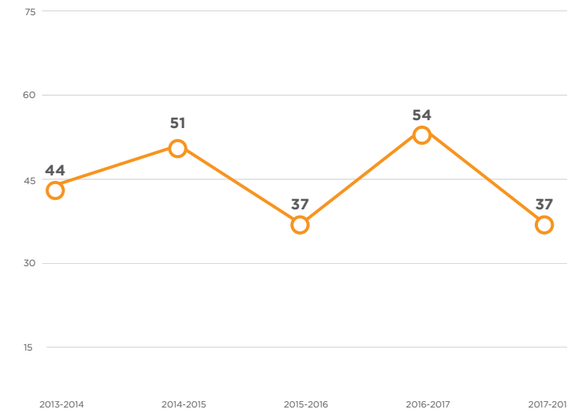
Computer Engineering



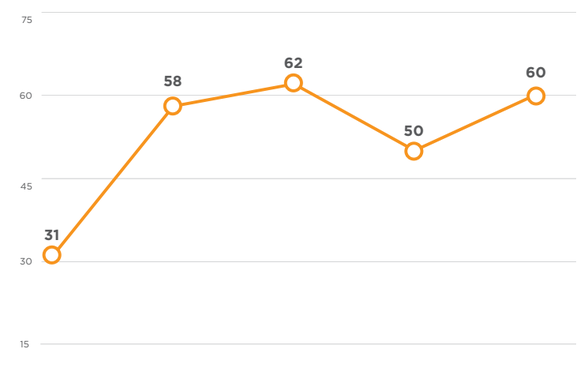
Computer Science



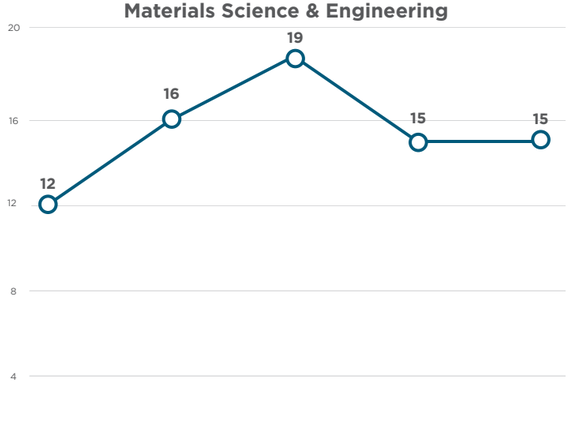
Electrical Engineering



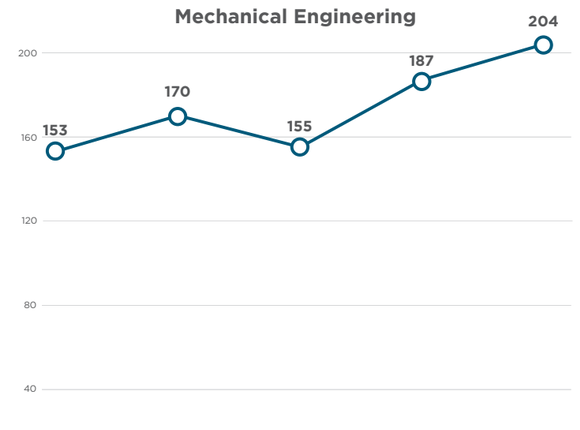
Industrial & Systems Engineering



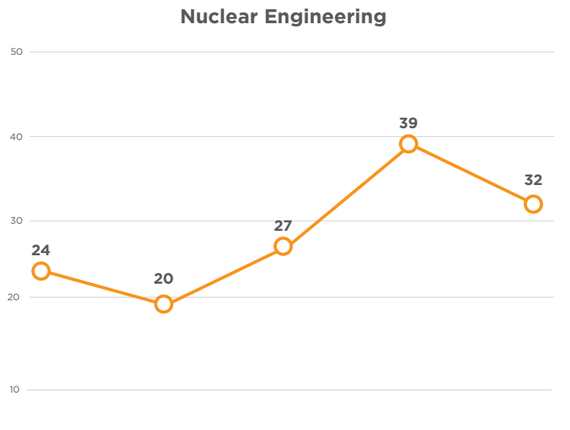
Materials Science & Engineering



Mechanical Engineering



Nuclear Engineering



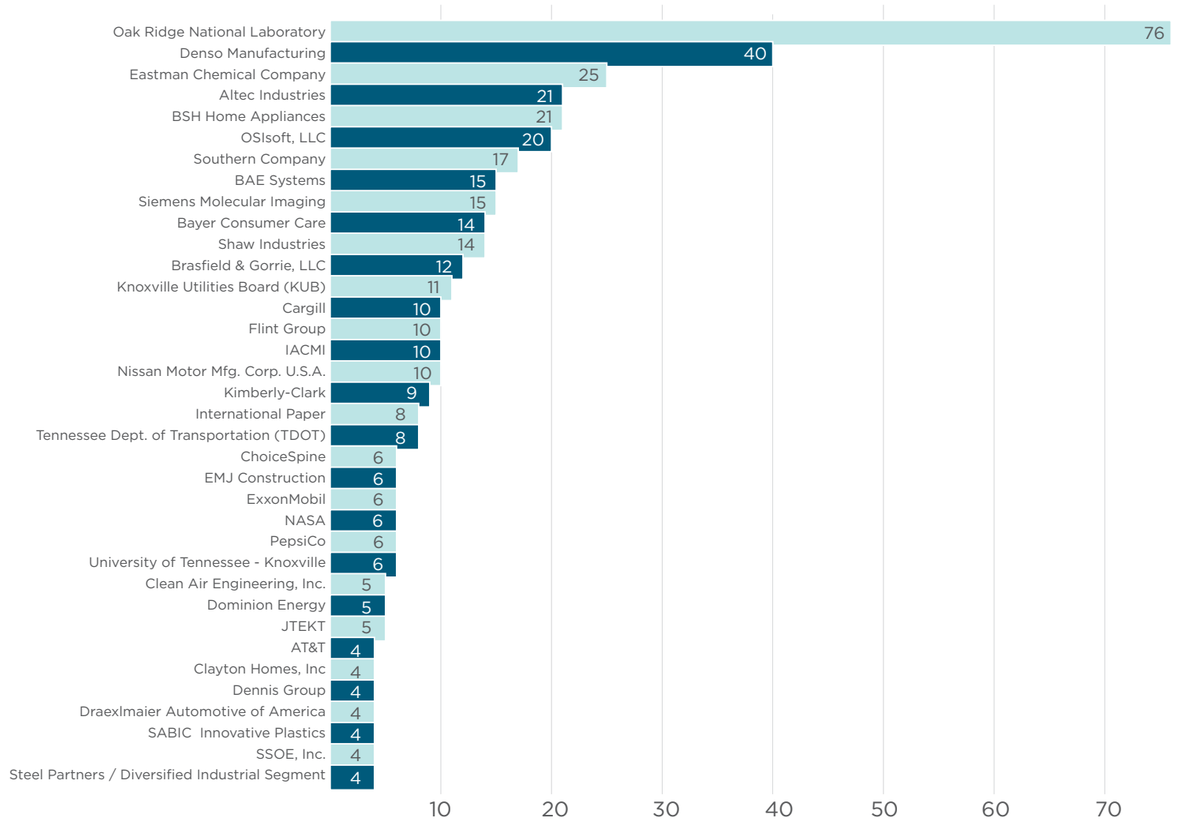
Student Co-op/Internship Placement Monthly Salary: Fall 2017–Summer 2018

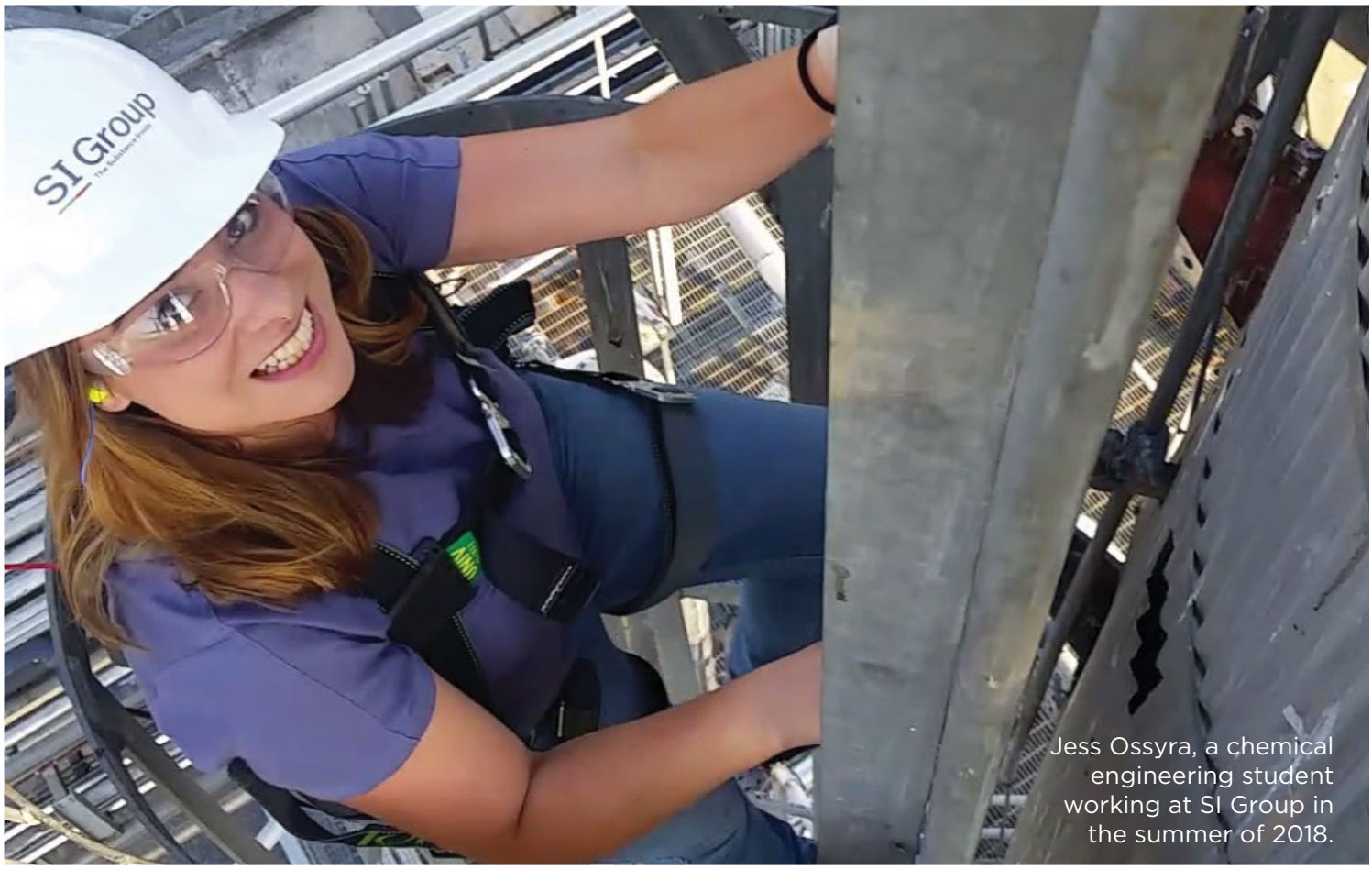
Engineering students continue to earn significant amounts of money during their co-op and internship experiences. In a typical year, engineering students will collectively earn well over $6 million. This figure shows that the Engineering Professional Practice program is not only educationally relevant to students, but also financially relevant. Students are able to use a portion of their earnings to assist with housing, books, and tuition during the regular semester when they return to campus, making the program also financially relevant to both the college and the university.

Top Employers

ORNL continues to place the most co-op and internship students, with DENSO Manufacturing, Eastman Chemical, Altec Industries, and BSH Home Appliances consistently rounding out our top five employers.

Top Employer Placements: Academic Year 2017-18





Jess Ossyra, a chemical engineering student working at SI Group in the summer of 2018.

TICKLE
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ENGINEERING PROFESSIONAL PRACTICE

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