

UH ENGINEERING

A Cullen College of Engineering Publication

GRADUATE CATALOG

2017-2018

YOUR FUTURE STARTS HERE.



UNIVERSITY of
HOUSTON
CULLEN COLLEGE of ENGINEERING



UH ENGINEERING

GRADUATE CATALOG

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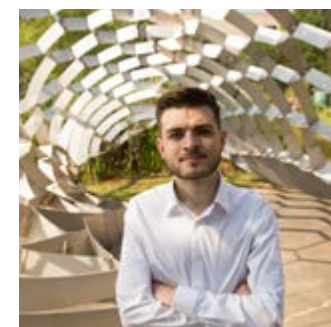
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UNIVERSITY of
HOUSTON
CULLEN COLLEGE of ENGINEERING

INTRO TO ENGINEERING

As you move through this world, we ask you to take a second look at the infrastructures, materials, technologies, tools and machines that shape your daily life; **the cars, cell phones, lights, bridges, buildings, clean water, cameras, computers – even the very fuel powering our planet.**

Is there anything that an engineer has not touched?



CAREERS IN ENGINEERING

Careers in engineering vary depending on which field of study you choose to pursue. However, due to a national shortage of qualified engineers, all engineering professionals are well-paid and positions are easy to come by – especially in the city of Houston, the Energy Capital of the World.

Here is a breakdown of the different types of engineering degrees and their average annual salaries. ➡

DID YOU KNOW?

The demand for engineering talent is higher in the city of Houston than in any other major U.S. city.

(Source: Kelly Services)

AVERAGE ANNUAL SALARIES for Recent **M.S. Graduates** in 2016*

Aerospace Engineering	\$72,887
Biomedical Engineering	\$71,140
Chemical Engineering	\$79,894
Civil Engineering	\$67,962
Computer Engineering	\$74,513
Electrical Engineering	\$74,896
Environmental Engineering	\$65,857
Geosensing Systems Engineering & Sciences	\$52,170**
Industrial/Manufacturing Engineering	\$73,756
Materials Engineering	\$74,721
Mechanical Engineering	\$75,391
Petroleum Engineering	\$97,333
Subsea Engineering	\$95,575**

*Salary information based on the 2016 survey by the National Association of Colleges and Employers unless otherwise noted

**Source: Payscale.com

AVERAGE ANNUAL SALARIES for Recent **Ph.D. Graduates** in 2016*

Biomedical Engineering	\$82,432**
Chemical Engineering	\$98,889
Civil Engineering	\$79,689**
Computer Engineering	\$100,500
Electrical Engineering	\$98,018
Environmental Engineering	\$80,000**
Geosensing Systems Engineering & Sciences	\$67,185**
Industrial/Manufacturing Engineering	\$78,667
Materials Engineering	\$95,000
Mechanical Engineering	\$93,652
Petroleum Engineering	\$99,611**

*Salary information based on the 2016 survey by the National Association of Colleges and Employers unless otherwise noted

**Source: Payscale.com

ENGINEERING EMPLOYMENT OUTLOOK

60% MORE DEMAND FOR ENGINEERS

Job posting trends suggest demand for engineers is 60 percent higher than for all other occupations

\$85,000 AVERAGE ANNUAL SALARY

The median income for engineers is twice that of general occupations (\$42,000)

TOP THREE SALARIES

The highest annual earnings for engineers go to these occupations:

PETROLEUM ENGINEERS	\$123,947
ARCHITECTURAL/ENGINEERING MANAGERS	\$123,947
AEROSPACE ENGINEERS	\$103,459

ENGINEERING JOB PROJECTIONS THROUGH 2023:

11% GROWTH

249,908 new jobs
will be available for engineers



TOP 10 OCCUPATIONS

Growth forecast for engineering occupations:

Civil engineers	+45,745
Mechanical engineers	+25,485
Architectural and engineering managers	+19,650
Industrial engineers	+17,660
Electrical engineers	+16,561
Electronics engineers*	+12,139
Petroleum engineers	+11,469
Computer hardware engineers	+10,799
Biomedical engineers	+10,542
Environmental engineers	+10,129

TOP 10 LOCATIONS

These U.S. metropolitan areas will have the greatest demand for engineers:

Houston, TX	+14,925
Washington, D.C.	+9,864
Los Angeles, CA	+8,898
Dallas, TX	+8,163
San Francisco, CA	+7,312
New York, NY	+6,970
San Jose, CA	+6,820
Boston, MA	+6,773
Denver, CO	+6,385
Phoenix, AZ	+6,147

Source: kellyservices.us/engineeringcareers

*Excluding computer engineers

DID YOU KNOW?



UH graduates beat the national average for starting and mid-career salaries (Source: PayScale.com)



UH is #7 in U.S. for graduating students with the least amount of debt (Source: *U.S. News & World Report*)



UH is a “Best Value College” (Source: *Princeton Review*)



UH is awarded \$113 million in grants and scholarships each year



UH is among the “Top 100 Most Affordable Large Public Colleges” (Source: *AffordableCollegesOnline.org*)

CULLEN COLLEGE OF ENGINEERING

BY THE NUMBERS



TOP 100 

ENGINEERING SCHOOLS IN THE U.S.
(As Rated by U.S. News & World Report)

13 

NATIONAL ACADEMY OF
ENGINEERING FACULTY MEMBERS

28 

ENGINEERING STUDENT
ORGANIZATIONS

\$103,390 


AVERAGE ANNUAL SALARY OF ENGINEERING
PROFESSIONALS IN HOUSTON, TEXAS
(U.S. Bureau of Labor Statistics, 2015)

55 

RESEARCH LABS, CENTERS, INSTITUTES
AND INDUSTRY CONSORTIUMS

\$26M+ 

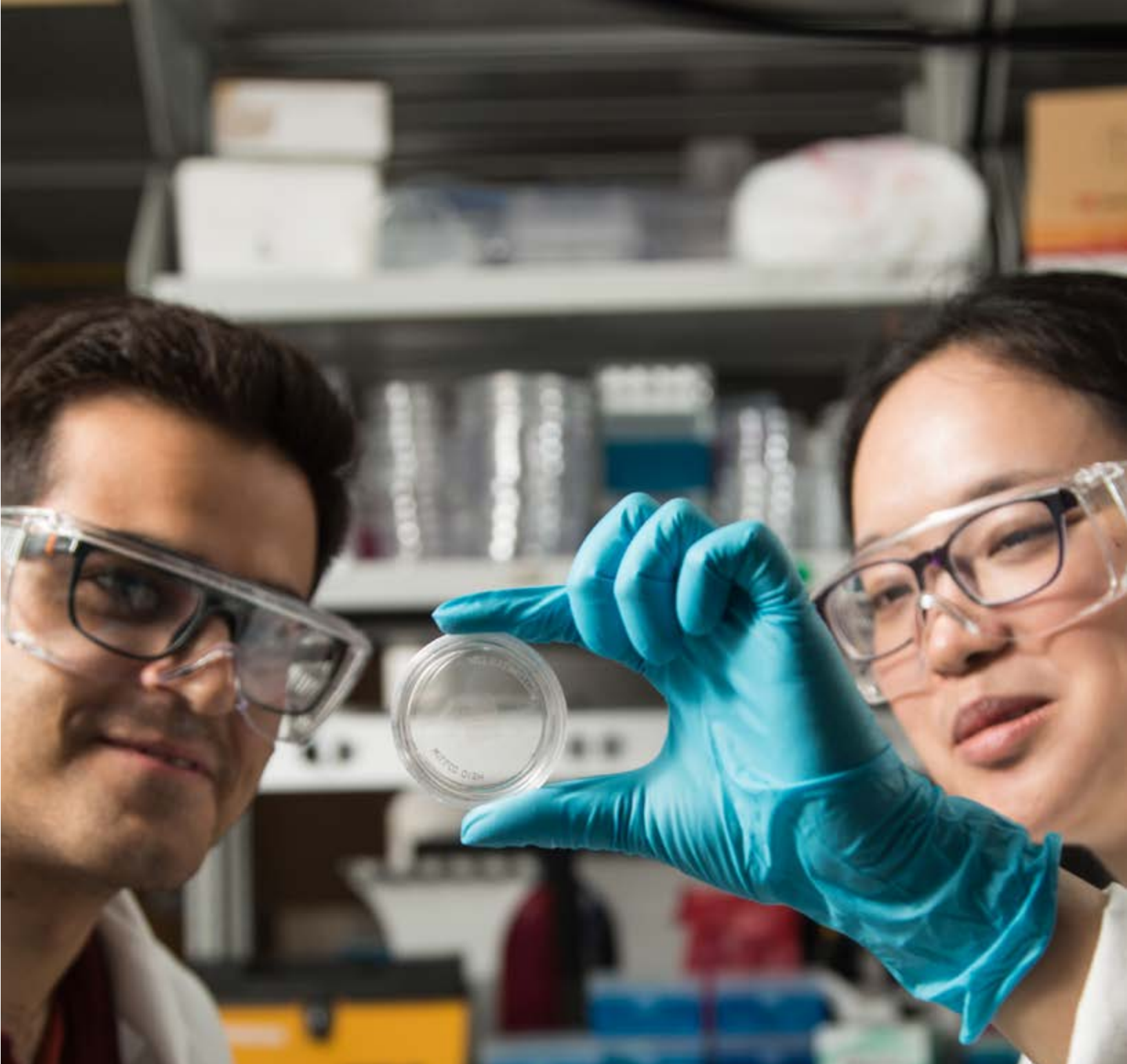
IN RESEARCH EXPENDITURES

30+ 

ACTIVE LABORATORIES

19,000+ 

TOTAL ALUMNI
OF THE CULLEN COLLEGE
OF ENGINEERING



CULLEN COLLEGE 2015 FAST FACTS

129

FACULTY

1,312

GRADUATE STUDENTS
M.S. 850 | PH.D. 462

3,764

UNDERGRADUATE
STUDENTS

**DEGREES AWARDED
(FY 2015):**

B.S. 339 | M.S. 309 | PH.D. 63 | TOTAL 711

POINTS OF PRIDE

We've got everything you'd expect from a top engineering college – outstanding faculty, cutting-edge research and state-of-the-art facilities. But just how good are we?



- ✓ **UH engineering students ranked 15th in the U.S.** for salary-earning potential (Source: PayScale.com)
- ✓ Named one of *Princeton Review's* “**Best Colleges for Undergraduate Education**” and “**Nation's Best Colleges**” (2016, 2014)
- ✓ Located in “**America's Coolest City**” and “**One of the best places for 20-somethings**” (Source: *Forbes* and *CreditDonkey*, 2013)
- ✓ Listed as one of the world's top universities **for grads who go on to become CEOs** (Source: *The Times Higher Education of London*)
- ✓ Ranked #4 in the nation for “**Top Colleges Where Students Get the Best Bang for Their Buck**” (Source: *PolicyMic*, 2013)
- ✓ Ranked among the top 75 in the nation and **#1 in Houston for engineering research** and development expenditures (Source: National Science Foundation, 2011)

DID YOU KNOW?



3,500+ UH alumni are presidents, CEOs, or heads of their own companies



63% of all University of Houston alumni live and work in Houston



UH students spend over 1 million hours volunteering and interning in Houston each year

DID YOU KNOW?

AVERAGE ANNUAL SALARIES



Ph.D. in engineering	\$116,000
M.S. in engineering	\$95,576
B.S. in engineering	\$85,900

SOURCE: 2012 ENGINEERING INCOME AND SALARY SURVEY, CONDUCTED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) AND THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

YOUR INVESTMENT VS PAYOFF



DOCTORAL



\$23,112*

\$116,000



MASTER'S

\$14,220**

\$95,576

average cost of degree

VS

average annual salary

* COST OF DEGREE BASED ON 9 HOURS/3 COURSES PER SEMESTER FOR 54 TOTAL CREDIT HOURS. ESTIMATED COST ONLY INCLUDES TUITION AND INCIDENTAL FEES PER SEMESTER CREDIT HOUR BASED ON MAJOR FOR IN-STATE STUDENTS.

** COST OF DEGREE BASED ON 9 HOURS/3 COURSES PER SEMESTER FOR 30-36 TOTAL CREDIT HOURS. ESTIMATED COST ONLY INCLUDES TUITION AND INCIDENTAL FEES PER SEMESTER CREDIT HOUR BASED ON MAJOR FOR IN-STATE STUDENTS.

For more information on estimated costs, please visit



www.uh.edu/financial/graduate/tuition-fees

YOUR ACADEMIC LIFE

Achieving and maintaining academic excellence at the UH Cullen College of Engineering is serious business.

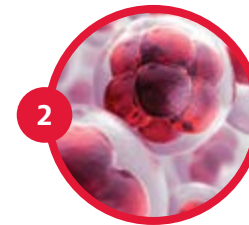
The admission standards for entering the Cullen College are very high – and the hard work doesn't end once you're admitted. It takes a great deal of hard work, studying and perseverance to make it through to graduation.

Luckily, small classes are the rule at the Cullen College, with most classes taught by full-time faculty members rather than teaching assistants or graduate students.

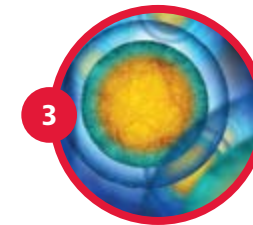
THE CULLEN COLLEGE OFFERS 14 GRADUATE-LEVEL MAJORS:



1
AEROSPACE
ENGINEERING



2
BIOMEDICAL
ENGINEERING



3
CHEMICAL & BIOMOLECULAR
ENGINEERING



4
CIVIL
ENGINEERING



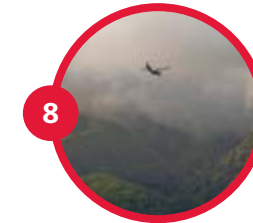
5
COMPUTER & SYSTEMS
ENGINEERING



6
ELECTRICAL
ENGINEERING



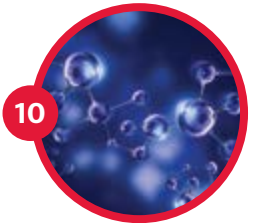
7
ENVIRONMENTAL
ENGINEERING



8
GEOSENSING SYSTEMS
ENGINEERING & SCIENCES



9
INDUSTRIAL
ENGINEERING



10
MATERIALS
ENGINEERING



11
MECHANICAL
ENGINEERING



12
PETROLEUM
ENGINEERING



13
SPACE
ARCHITECTURE



14
SUBSEA
ENGINEERING

Read more about each of the engineering programs starting on page 22.

**It's not an easy road,
but it's a worthwhile one.**

After graduation, career opportunities for engineers are limited only by their imaginations, and there's no better place than Houston to begin an engineering career.



YOUR RESEARCH LIFE

As a graduate student at the UH Cullen College of Engineering, you can become a part of cutting-edge research projects with real-world impacts as soon as you walk into the building on your first day of classes.

The Cullen College is home to a wide array of national research centers, laboratories, institutes and industry consortiums, including:



Graduate students may also opt to participate in interdisciplinary research projects that are taking place in labs, centers or institutes at other colleges across the UH campus.

By the time you earn your graduate degree from the Cullen College, you will have years of laboratory training and professional experience. You will be confident and well-prepared to take on the future, no matter what direction your engineering career path takes you!

Center for Advanced Materials



Center for Electromagnetic Compatibility Industry/University Cooperative Research Center



Center for Innovative Grouting Materials and Technology



Center for Integrated Bio and Nano Systems



Center for Neuro-Engineering & Cognitive Science



Composites Engineering & Applications Center



Electric Power Analytics Consortium



International Subsea Engineering Research Institute



Ocean Energy Safety Institute (OESI)



National Center for Airborne Laser Mapping (NCALM)



Sasakawa International Center for Space Architecture (SICSA)



Southwest Public Safety Technology Center (SWTC)



Subsea Systems Institute



Systems Research Education Consortium (SREC)



Texas Center for Clean Engines, Emissions & Fuels



Texas Center for Superconductivity at UH



Well Logging Laboratory (WLL) Research Consortium



YOUR CAMPUS LIFE



Engineering is the most exciting profession you could choose, especially in the 21st century! And there's no better place than the city of Houston to begin your engineering career. The University of Houston, also known as the Energy University, is renowned for educating global, entrepreneurial energy leaders.

So why is UH one of the premiere destinations for engineering education in the U.S?

Truthfully, one of the reasons UH Engineering programs are so highly ranked is that we understand your life as an engineer doesn't begin and end with engineering.

While you're pursuing your degree, we want you to pursue the things that make you *you*!

Whatever your hobbies and interests outside of engineering might be, the University of Houston has a home for you – and we're here to help you find it!

Learn more at



www.uh.edu/student-life

We want you to pursue the things that make you *you*!



- 1 - Hang out at the annual BOS party
- 2 - Go indoor rock climbing at the UH Campus Recreation Center
- 3 - Study at the MD Anderson Library
- 4 & 5 - Take a stroll through one of UH's manicured lawns

YOUR CITY LIFE

The UH Cullen College of Engineering is centrally located in the Energy Capital of the World. The city of Houston is home to the world's largest medical center, NASA, the Port of Houston and the second-most Fortune 500 headquarters of all major U.S. cities.

The University of Houston's location in the heart of Houston makes maintaining jobs, internships or fellowships while pursuing a graduate degree very doable. Cullen College students are strongly encouraged to take on internships or other professional development opportunities while they are still in school. Dedicated staff members in the Engineering Career Center provide students with direct access to internships, fellowships and full-time positions throughout the region. We want you to turn your dream job into a reality!

To learn more, visit

 career.egr.uh.edu

DID YOU KNOW?

Houston was named the 3rd best city for young professionals by *Forbes Magazine*



Houston is the 4th largest city in the nation



Houston has the largest medical center in the world



Houston ranks 2nd in employment growth in the nation



UH ENGINEERING STUDENTS CAN BE FOUND THROUGHOUT THE CITY

Cheat sheet

UH Engineering students can be found throughout the vibrant city of Houston trying award-winning international food, exploring contemporary art galleries and watching live music at festivals and venues. Here is a quick guide to where you can find our students at their favorite places around town!

STUDYING

- Bohemeo's Cafe
- The Teahouse on Shepherd
- Kung Fu Tea
- Brasil Cafe
- Agora
- Mercantile
- Houston Public Libraries

DRINKING COFFEE



- Paper Co.
- Blacksmith
- Inversion Coffee House
- Pura Coffee
- Fellini Caffè
- Antidote Coffee
- Dunn Brothers Coffee
- Boomtown Coffee
- Oui Desserts
- Tout Suite
- Common Bond Café and Bakery
- Catalina Coffee
- Campesino Coffee House
- Double Trouble Caffeine and Cocktails

RIDING THE METRO RAIL TO



- Minute Maid Park for an Astros baseball game
- BBVA Compass Stadium for a Dynamos soccer game
- Hermann Park
- The Houston Zoo
- Natural Science Museum
- Contemporary Arts Museum
- Museum of Fine Arts Houston (MFAH)
- Lillie and Hugh Roy Cullen Sculpture Garden at the MFAH
- Houston Bike Museum
- Stage productions at the Alley Theatre
- Musical performances at Jones Hall
- Sundance Cinema
- Silver Street Studios
- Phoenicia Specialty Foods
- Discovery Green

ON THE WEEKENDS



- Riding bikes on the Brays Bayou trail
- Running at Memorial Park
- Taking classes at Yoga and Crossfit EADO, Big Yoga, the downtown YMCA and more
- Taking classes at Houston Makerspace in 3D printing, woodworking, textiles and more
- Resale and vintage shopping in Montrose
- People watching at the Galleria Shopping Center
- Watching live music at venues like the Continental Club, White Oak Music Hall, Walter's Downtown and many more
- Dancing in midtown at Big Top, Barbarella, Gloria's and many more
- Visiting the Art Car Museum
- Getting in touch with nature at the Houston Arboretum
- Attending free plays at the Miller Outdoor Theatre in Hermann Park

ENJOYING HAPPY HOUR



- Downtown on Main Street at The Honeymoon Café and Bar, Little Dipper Lounge, Moving Sidewalk and more
- The Hay Merchant
- Under the Volcano
- Poison Girl Cocktail Lounge
- Grand Prize Bar
- Houston Watch Co.
- Julep
- Benji's
- Axelrad Beer Garden
- The Dogwood
- Little Woodrow's
- Lucky's Pub
- Rudyards Pub
- Saint Arnold Brewery
- West Alabama Ice House

GRABBING A LATE-NIGHT SNACK



- House of Pies
- Dot's Diner
- Ninja Ramen
- Frank's Pizza
- La Fendi
- Theo's
- Whataburger
- Tacos A Go Go
- Cottonwood

“Tacos Tierra Caliente, which parks in front of the West Alabama Ice House, is hands-down the best food truck in the city.”
- Raymond S.





YOUR LIFE



GET INVOLVED.

Getting involved in student organizations and professional societies not only increases your chances for success in engineering – it gives you access to leadership and networking opportunities that help to prepare you for life after college. Joining student organizations and professional societies is also a great way to meet fellow engineering students and connect with your classmates for study groups and academic support.

For more information, please visit



www.egr.uh.edu/people/engineering-student-organizations

GET CONNECTED.

Being connected within the engineering community vastly increases the chances that you will successfully complete your engineering degree. We strongly encourage all students to connect with professional or student organizations, join a research group on campus and seek out jobs and internships with local employers.

GET HELP.

When the going gets tough during your engineering education, the tough get help.

The University of Houston offers a wide variety of resources to help you through any academic, personal, social or professional struggles you may have during your time on campus. UH students have access to free tutoring services, student advocacy and support services, accommodation and support services for students with disabilities, and wellness, recreation and health services.

As an engineering student, you will also have special access to the Engineering Computing Center, the Engineering Career Center and the various engineering student organizations and professional societies!



DID YOU KNOW?

UH HAS:



2,500+ on-campus jobs and internships posted annually by University Career Services



581 student organizations



46 fraternities and sororities



41 sports and intramurals



60+ group exercise classes (per week each semester)



21 outdoor adventure trips (each semester)



22 clinic/workshops (each semester)



a 264,000-square-foot Campus Recreation and Wellness Center



16 intercollegiate sports teams



a 667-acre park-like campus, full of lush trees, gardens and lawns



a stunning public art collection at the Blaffer Art Museum

**For more information on modified hours and all of the recreational opportunities available to you, please visit*



www.uh.edu/recreation

UH Campus Recreation Center Normal Operating Hours*

Mon – Thurs: 6:00am – 11:30pm
Fri: 6:00am – 8:00pm
Sat: 10:00am – 8:00pm
Sun: Noon – 11:30pm

CHECK IN AND STAY IN TOUCH.

At the Cullen College, our faculty and staff want to know you by name. We want to know your thoughts, suggestions, comments and what your hobbies are outside of engineering. Forming and maintaining a connection with your professors and the college staff members who help you is just as important as forming connections with fellow engineering students. So, when you have a bit of down time, please knock on our doors and tell us what's new with you! You are the reason we come to work at the college each and every day, and nothing makes us more excited to do our job and do it well than hearing from our students both during and after their time at the Cullen College.

Please visit www.egr.uh.edu/news/enews to sign up for email updates from the Cullen College and stay up-to-date on the latest news!

BLOW OFF STEAM.

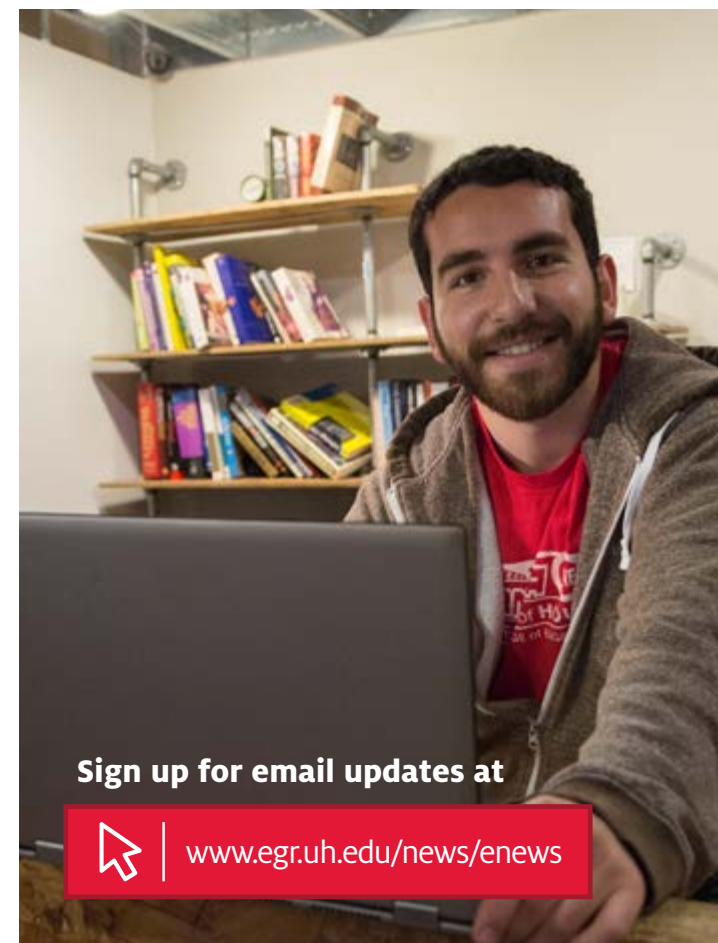
Although getting through your engineering degree will require you to spend a lot of hours with your nose in a textbook or your eyes glued to a computer screen, it's important to look up from your research, studies or homework for a break every now and then. And when break time rolls around, you'll have no shortage of fun activities to help you blow off steam and clear your mind before the next big exam or project.

So after a long day of classroom lectures and studying, make sure you take the time to climb the 53-foot climbing wall before taking a dip in the 70-meter indoor pool, sauna or whirlpool inside the UH Campus Recreation Center – or sign up for an intramural sports team, join an aerobics class, or see a concert on campus with your friends and classmates.

MANAGE STRESS.

Stress management isn't only important while earning your engineering degree – it's important for your life after college as well. That's why UH offers a wonderful array of free support services for students, such as:

- UH Wellness, where you can take part in individualized programs or group fitness activities that help with improving both mind and body;
- Counseling & Psychological Services, where you can access mental health professionals any time you're feeling overwhelmed or just need someone to talk to;
- The Ombudservice, where you can get the help you need resolving any academic or nonacademic issue you might have, such as residency status, registration, fee payment, housing, financial aid, grades, parking and more.

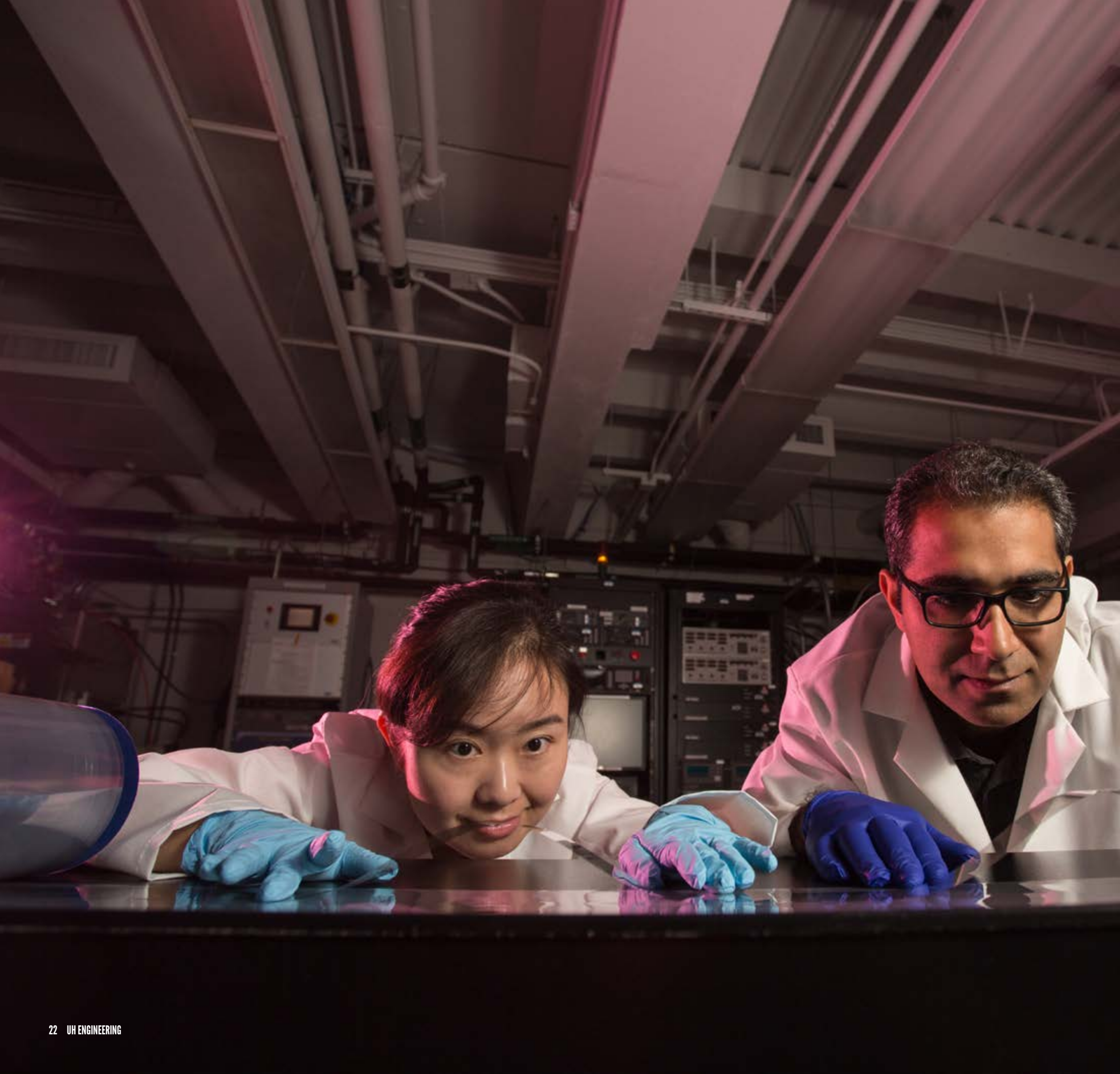


Sign up for email updates at



www.egr.uh.edu/news/enews





CUSTOMIZE YOUR DEGREE, CHOOSE YOUR DESTINY.



Learn about the different departments and programs at the UH Cullen College of Engineering and choose how to customize the right degree for you.

AEROSPACE ENGINEERING

AEROSPACE.EGR.UH.EDU

REACHING
FOR THE STARS

WHAT IS AEROSPACE ENGINEERING?

Aerospace engineers invent, design and build the technologies, processes and prototypes required for aviation. These include aircrafts, spacecraft, satellites, missiles, power and energy systems, as well as electronic systems and software for airplanes and spacecraft.

WHY THE UNIVERSITY OF HOUSTON?

Students in the interdisciplinary aerospace engineering program are trained to understand full systems involved in aerospace engineering, from aerodynamics and materials to space physics and human factors. The city of Houston, also known as Space City, is recognized internationally for the strength of its aerospace companies and its proximity to the NASA Johnson Space Center (JSC). Aerospace engineering students often work full-time, part-time or internship-based positions at NASA JSC and other aerospace companies while pursuing their degree at UH. Graduates of the program exceed the expectations of employers in the aerospace industry and can be found in leadership positions throughout the Houston region and beyond.

WHAT CAN I DO WITH AN AEROSPACE ENGINEERING GRADUATE DEGREE?

Smart Materials: Explore new smart materials for building aircrafts and spacecraft.

Advanced Propulsion: Design more environmentally friendly hybrid jet-fuel electric systems for launching aircrafts and spacecraft.

Commercial Space Industry: Lead the race to space by working with private aerospace companies who are developing new spacecraft, vehicles and systems for human space flight, space tourism and research.

Unmanned Aerial Vehicles (UAVs): Work at the cutting-edge of aviation and fly an aircraft without leaving your desk! Help develop UAVs for scientific research, national security, weather monitoring and much more.

A 2016 salary survey produced by the National Association of Colleges and Employers (NACE) found that new graduates with an M.S. in aerospace engineering earn an average starting salary of \$72,887.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN AEROSPACE ENGINEERING?

The UH Cullen College of Engineering offers M.S. thesis and non-thesis degrees in aerospace engineering.



FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

13

M.S. STUDENTS

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$72,886

M.S. IN AEROSPACE

FOR MORE INFORMATION

For more information on eligibility and admissions requirements, please visit aerospace.egr.uh.edu/graduate-program/program-description

BIOMEDICAL ENGINEERING

BME.UH.EDU

ENGINEERING
THE FUTURE OF
HEALTHCARE

WHAT IS BIOMEDICAL ENGINEERING?

Biomedical engineers solve problems in biology and medicine, playing a central role in advancing healthcare, medicine and patient care. At the UH Cullen College of Engineering, biomedical engineering students and faculty members are researching new methods for diagnosing diseases, improving therapies for the treatment of diseases and developing cutting-edge medical technologies that are being implemented in hospitals and clinics across the country.

WHY THE UNIVERSITY OF HOUSTON?

The central mission of the biomedical engineering program at the University of Houston is to develop leadership in academia, government and industry both nationally and globally. The importance of global scientific, social and cultural interaction and the demands of the dynamic, ever-changing global healthcare economy are strongly emphasized in the biomedical engineering graduate program. Graduate students are taught by distinguished faculty members and world leaders in the biomedical engineering field. Moreover, the University's proximity to the Texas Medical Center, the largest medical center in the world, provides graduate students with nearly limitless opportunities for multi-institutional collaboration and research. In fact, 95 percent of current full-time doctoral students are fully funded.

WHAT CAN I DO WITH A BIOMEDICAL ENGINEERING GRADUATE DEGREE?

Biomedical engineering graduate students at the UH Cullen College of Engineering will be prepared for careers in the biomedical technology industry, academia or government. Research in the graduate program focuses on three main areas: 1) neural, cognitive and rehabilitation engineering; 2) biomedical imaging; 3) bionanoscience.

A 2016 salary survey produced by the National Association of Colleges and Employers found that new graduates with an M.S. in biomedical engineering earn an average starting salary of \$71,140. Payscale.com reports that graduates with a Ph.D. in biomedical engineering earn an average annual salary of \$82,432.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN BIOMEDICAL ENGINEERING?

The UH Cullen College of Engineering offers M.S. thesis and non-thesis degrees in biomedical engineering, as well as Ph.D. degrees (with prior M.S. degree or directly from undergraduate degree).



FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

9

M.S.

53

PH.D.

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$71,140

M.S.

\$82,432

PH.D.

FOR MORE INFORMATION

For more information on eligibility and admission requirements, please visit www.bme.uh.edu/graduate

CHEMICAL & BIOMOLECULAR ENGINEERING

CHEE.UH.EDU

ENGINEERING
CHEMISTRY FOR
A BETTER WORLD

WHAT IS CHEMICAL ENGINEERING?

Chemical engineers are taught to link chemistry and engineering in order to produce substances or products that improve people's lives. Chemical engineers develop techniques and processes to convert chemicals and raw materials into products such as plastics, food, pharmaceuticals, petroleum products and other consumer goods while maximizing efficiency and minimizing risk and environmental impact.

WHY THE UNIVERSITY OF HOUSTON?

The chemical and biomolecular engineering department at the University of Houston Cullen College of Engineering is one of the top-ranked chemical engineering programs in the nation. Chemical engineering graduates are prepared to meet or exceed the expectations of employers, particularly in the energy and chemical industries. Many graduates of the chemical engineering program are currently employed in leadership positions in industry, academia and government across the Houston region and around the world. Conveniently located in the Energy Capital of the World, students have direct access to internships, fellowships and full-time positions throughout the region and are encouraged to pursue professional opportunities while they are in school.

WHAT CAN I DO WITH A CHEMICAL ENGINEERING GRADUATE DEGREE?

Chemical engineering careers span chemicals, manufacturing, refining, advanced materials, resource management, medicine, pharmaceuticals development and production, pollution control and environmental remediation. Career opportunities for chemical engineers in the city of Houston are excellent. Almost half of Houston's economic base is driven by energy, with more than 3,600 energy-related companies based in Houston. All of the major oil and gas companies have operations in Houston, and the region boasts almost 40,000 jobs just in oil and gas extraction, representing one-third of such positions worldwide.

A 2016 salary survey produced by the National Association of Colleges and Employers found that new graduates with an M.S. in chemical engineering earn an average starting salary of \$79,894, with new Ph.D. graduates earning \$98,889.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN CHEMICAL ENGINEERING?

The UH Cullen College of Engineering offers MChE non-thesis, M.S. course-based and Ph.D. degrees in chemical engineering.



FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

35

M.S.

101

PH.D.

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$79,894

M.S.

\$98,889

PH.D.

FOR MORE INFORMATION

For more information on eligibility and admission requirements, please visit www.ch ee.uh.edu/graduate/degree

CIVIL ENGINEERING

CIVE.UH.EDU

BUILDING THE
INFRASTRUCTURES
OF OUR WORLD

WHAT IS CIVIL ENGINEERING?

Civil engineering is the professional discipline that focuses on the development and maintenance of both man-made and natural infrastructures. Civil engineers produce the facilities on which modern life depends, including roads, bridges, buildings, offshore structures, airports and levees, as well as the infrastructure required for the supply of clean water. Civil engineering includes a multitude of sub-disciplines, including geotechnical engineering, hydrosystems engineering, structural engineering and water resources engineering.

WHY THE UNIVERSITY OF HOUSTON?

The civil engineering graduate program at the University of Houston Cullen College of Engineering equips students with the extensive background necessary for practicing professional civil engineering in industry. The curriculum is focused on design, construction, management and operation to enable graduates of the program to cope with and solve current and future grand challenges facing the civil engineering field.

WHAT CAN I DO WITH A CIVIL ENGINEERING GRADUATE DEGREE?

Civil engineers find employment opportunities in both the private and public sectors. Career opportunities in civil engineering are excellent – especially in Houston, the Energy Capital of the World. Employment for civil engineers is expected to increase significantly, spurred by ongoing emphasis to improve our nation's infrastructure. Civil engineering tops the list of growing occupations released by the staffing agency Kelly Services, with an estimated 45,000 new jobs being created through 2023. Even better news for Cullen College civil engineering students: Houston is ranked as the top city in the U.S. for engineering demand.

A 2016 salary survey produced by the National Association of Colleges and Employers found that new graduates with an M.S. in civil engineering earn an average starting salary of \$67,962. Payscale.com reports that graduates with a Ph.D. in civil engineering earn an average annual salary of \$79,689.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN CIVIL ENGINEERING?

The UH Cullen College of Engineering offers M.S. non-thesis, M.S. thesis and Ph.D. degrees in civil engineering. Students have the option of taking some civil engineering courses online.



FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

60

M.S.

67

PH.D.

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$67,962

M.S.

\$79,689

PH.D.

FOR MORE INFORMATION

For more information on eligibility and admission requirements, please visit www.cive.uh.edu/programs/civil-graduate

COMPUTER & SYSTEMS ENGINEERING

ECE.UH.EDU



DESIGNING THE DIGITAL SYSTEMS OF TOMORROW

WHAT IS COMPUTER & SYSTEMS ENGINEERING?

Computer & systems engineering is an interdisciplinary program that provides specialization in computer engineering. Graduates of the computer & systems engineering program will be prepared to design state-of-the-art hardware and software systems that include computing, communications and networking, control functions, sensing, signal processing and much more.

WHY THE UNIVERSITY OF HOUSTON?

Computer & systems engineering graduate students at the University of Houston have the opportunity to work with and learn from faculty recognized as world leaders in their fields. These include Fellows of the IEEE and the National Academy of Inventors, multiple winners of the National Science Foundation (NSF) CAREER Awards, and investigators in major research projects supported by NASA, the Defense Advanced Research Projects Agency, the National Institutes of Health, the Advanced Research Projects Agency - Energy and the NSF.

Graduate students can also take full advantage of the college's location in Houston. Many department researchers work closely with firms in the energy industry, allowing them to address the sector's most pressing needs. Faculty also have ongoing collaborations with physicians and researchers at Texas Medical Center institutions, enabling them to bring advances from the lab to the clinic as quickly as possible.

WHAT CAN I DO WITH A COMPUTER & SYSTEMS ENGINEERING GRADUATE DEGREE?

Computer engineers design and maintain hardware and software in computer-based systems, from PCs to supercomputers, as well as computer systems that are embedded in vehicles, appliances and communications networks. Specialized areas in computer engineering include system architecture, computer chip design, layout design, package/board design and system integration. Alumni of the computer & systems graduate program work locally and overseas for Halliburton, Schlumberger, Hewlett Packard, CenterPoint Energy, Burns & McDonnell, as well as other medical, telecommunications, construction and petrochemical companies.

A 2016 salary survey produced by the National Association of Colleges and Employers found that new graduates with an M.S. in computer engineering earn an average starting salary of \$74,513, with new Ph.D. graduates earning \$100,500.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN COMPUTER & SYSTEMS ENGINEERING?

The UH Cullen College of Engineering offers an M.S. degree in computer & systems engineering.

FAST FACTS

TOTAL GRADUATE STUDENTS IN CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

68

M.S. STUDENTS

129

TOTAL FACULTY IN COLLEGE

\$26M+

IN RESEARCH EXPENDITURES

AVERAGE STARTING SALARY

\$74,513

M.S. IN COMPUTER & SYSTEMS ENGINEERING

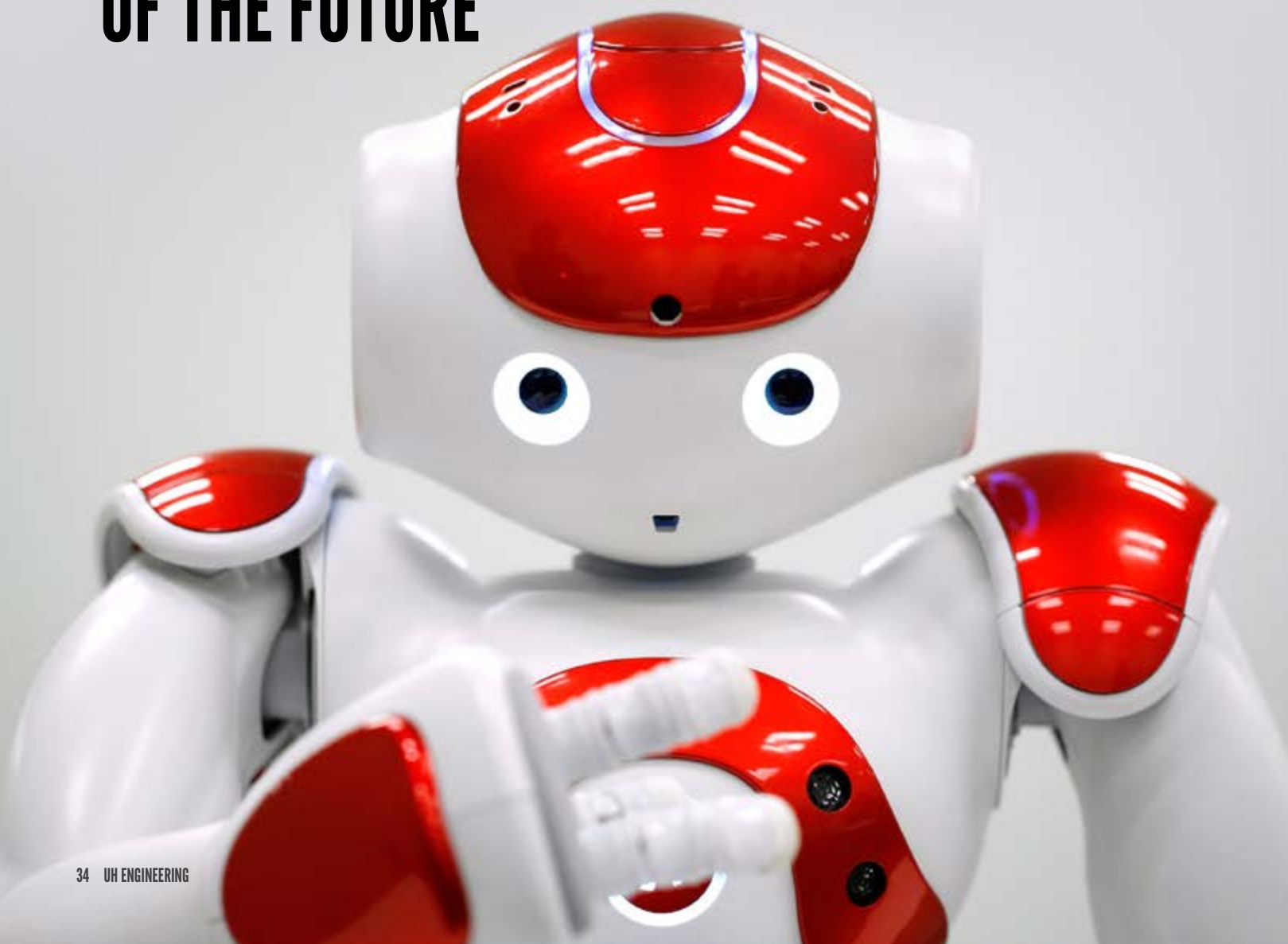
FOR MORE INFORMATION

For more information on eligibility and admissions requirements, please visit www.ece.uh.edu/graduate/degree-programs

ELECTRICAL ENGINEERING

ECE.UH.EDU

PIONEERING THE TECHNOLOGY OF THE FUTURE



WHAT IS ELECTRICAL ENGINEERING?

Electrical engineering is an exciting and continually developing field – it encompasses virtually anything you can think of that requires electrical power to operate. As an electrical engineering graduate student at UH, you will become experienced with electrical engineering design, systems operation, manufacturing and management. Students may specialize in one of four areas of strength, including: control and power systems, electromagnetics and microelectronics, electronics and computers, and signals and communications. Graduate students with an interest in power systems can pursue a specialized industrial power systems track within the program, offering specialized training on industrial power systems design, power systems analysis, regulations and standards, equipment and systems protection. The industrial power systems track was established at the request of industry and its curriculum was shaped with the guidance of leaders in the power systems industry to ensure students develop the knowledge and skills required for current workforce needs.

WHY THE UNIVERSITY OF HOUSTON?

Electrical engineering graduate students at the University of Houston have the opportunity to work with and learn from faculty recognized as world leaders in their fields. These include Fellows of the IEEE and the National Academy of Inventors, multiple winners of the National Science Foundation (NSF) CAREER Awards and investigators in major research projects supported by NASA, the Defense Advanced Research Projects Agency, the National Institutes of Health, the Advanced Research Projects Agency - Energy and the NSF.

Graduate students can also take full advantage of the college's location in Houston. Many department researchers work closely with firms in the energy industry, allowing them to address the sector's most pressing needs. Faculty also have ongoing collaborations with physicians and researchers at Texas Medical Center institutions, enabling them to bring advances from the lab to the clinic as quickly as possible.

WHAT CAN I DO WITH AN ELECTRICAL ENGINEERING GRADUATE DEGREE?

The job outlook for electrical engineers is excellent – especially in the city of Houston, the Energy Capital of the World. Alumni of the electrical engineering graduate program work locally and overseas for Halliburton, Schlumberger, Hewlett Packard, CenterPoint Energy, Burns & McDonnell, as well as other medical, telecommunications, construction and petrochemical companies.

A 2016 salary survey produced by the National Association of Colleges and Employers found that new graduates with an M.S. in electrical engineering earn an average starting salary of \$74,896, with new Ph.D. graduates earning \$98,018.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN ELECTRICAL ENGINEERING?

The UH Cullen College of Engineering offers an M.S. degree, Master of Electrical Engineering (MEE) degree, and a Ph.D. degree in electrical engineering. Students have the option of taking some MEE courses online.

FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

131

M.S.

102

PH.D.

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$74,896

M.S.

\$98,018

PH.D.

FOR MORE INFORMATION

For more information on eligibility and admissions requirements, please visit www.ece.uh.edu/graduate/degree-programs

ENVIRONMENTAL ENGINEERING

CIVE.UH.EDU

ENGINEERING BRIGHTER,
HEALTHIER HORIZONS

WHAT IS ENVIRONMENTAL ENGINEERING?

Environmental engineering is a multidisciplinary field combining science and engineering principles to improve the natural environment, reduce pollution, provide clean water, and improve air and land quality for human habitation and other organisms.

WHY THE UNIVERSITY OF HOUSTON?

The environmental engineering graduate program at the University of Houston Cullen College of Engineering is internationally recognized for research and teaching in water, wastewater, soil and hazardous waste treatment and modeling, airborne particulates, microbiology and bioremediation. The emphasis of study and research is placed on municipal and industrial water and wastewater treatment, water reuse, hazardous-waste management, and groundwater restoration with elective courses in the fields of air pollution modeling, measurement and control, engineering management, business and public policy, environmental law, water resources engineering, chemical engineering, chemistry, biochemistry and geosciences.

WHAT CAN I DO WITH AN ENVIRONMENTAL ENGINEERING GRADUATE DEGREE?

Environmental engineers find employment opportunities in both the private and public sectors. Career opportunities in environmental engineering are excellent – especially in Houston, the Energy Capital of the World. Employment for civil and environmental engineers is expected to increase significantly, spurred by ongoing emphasis to improve our nation's infrastructure while reducing air and water pollution.

A 2016 salary survey produced by the National Association of Colleges and Employers found that new graduates with an M.S. in environmental engineering earn an average starting salary of \$65,857. Payscale.com reports that graduates with a Ph.D. in environmental engineering earn an average annual salary of \$80,000.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN ENVIRONMENTAL ENGINEERING?

The UH Cullen College of Engineering offers M.S. non-thesis, M.S. thesis and Ph.D. degrees in environmental engineering.



FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

60

M.S.

67

PH.D.

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$65,857

M.S.

\$80,000

PH.D.

FOR MORE INFORMATION

For more information on eligibility and admissions requirements, please visit www.cive.uh.edu/programs/environmental-graduate

GEOSENSING SYSTEMS ENGINEERING AND SCIENCES

NCALM.CIVE.UH.EDU

CHARTING THE FUTURE OF GEOSPATIAL TECHNOLOGY

WHAT IS GEOSENSING SYSTEMS ENGINEERING AND SCIENCES?

Geosensing systems engineering and sciences is an interdisciplinary program focusing on the use of airborne mapping to meet the needs of private industry, government agencies and academic institutions. Graduate students will be trained to use a tool called LiDAR, or Light Detection and Ranging. With LiDAR, researchers fly a plane over an area they want to map, shooting hundreds of thousands of laser bursts per second at the ground. How that light returns to its source can be used to create extremely detailed topographical maps, even through dense vegetation and murky water. The maps produced from UH LiDAR data have supported hundreds of research projects for both private and government agencies. These maps have helped locate an ancient civilization in the Honduran rainforest, identify levees in danger of failing, chart land erosion following hurricanes, create flood maps for urban areas, find near-drought conditions in seemingly healthy plants, map the sea floor, chart areas prone to landslides and identify how the presence of life impacts geographical features.

WHY THE UNIVERSITY OF HOUSTON?

The geosensing systems engineering and sciences program is the only graduate program of its kind in the world! As the geospatial technology sector continues to grow, so does the demand for scientists who are trained to use technologies such as LiDAR. The graduate program in geosensing systems engineering at UH was established in direct response to industry workforce needs, and students are expected to prepare proposals for private and government agencies for financial support of their own research projects. Graduate students in the program have the advantage of working with and being taught by the world's leading experts on airborne laser mapping through the UH National Center for Airborne Laser Mapping (NCALM). NCALM is funded by the National Science Foundation and is jointly operated with the University of California, Berkeley.

WHAT CAN I DO WITH A GEOSENSING SYSTEMS ENGINEERING AND SCIENCES GRADUATE DEGREE?

Geosensing systems engineering and sciences graduate studies provide opportunities to students in a wide assortment of disciplines that cross traditional areas of engineering and scientific specialties to produce next-generation global engineers and scientists. According to the U.S. Department of Labor, the global demand for graduates who are trained in geospatial technologies and geographic information systems (GIS) is vastly outgrowing the supply of such qualified graduates. Recent estimates by the Department of Labor show the shortfall in advanced level of GIS-trained individuals to be approximately 4,000 in the U.S. alone. Graduates of the geosensing systems engineering and sciences program at the UH Cullen College of Engineering will be prepared to embark on academic, national laboratory or industrial research careers in engineering and science. Payscale.com reports that graduates with an M.S. in geosensing systems engineering earn an average annual salary of \$52,170, with Ph.D. graduates earning \$67,185.

FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE 1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

3

M.S.

9

PH.D.

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$52,170

M.S.

\$67,185

PH.D.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN GEOSENSING SYSTEMS ENGINEERING AND SCIENCES?

The UH Cullen College of Engineering offers an M.S. degree and Ph.D. degree in geosensing systems engineering and sciences.

FOR MORE INFORMATION

For more information on eligibility and admission requirements, please visit ncalm.cive.uh.edu/gses/geosensing

INDUSTRIAL ENGINEERING

IE.UH.EDU

OPTIMIZING GLOBAL
LOGISTICS, SYSTEMS
AND PROCESSES

WHAT IS INDUSTRIAL ENGINEERING?

Industrial engineers are optimization experts, focusing on the effective use of people, machines, materials, information and energy to improve processes for products and services. This unique engineering field includes the development of analytical methods and techniques that concentrate on higher productivity and better quality. Firms looking to develop more efficient processes hire industrial engineers to reduce costs and waste while increasing safety and efficiency.

WHY THE UNIVERSITY OF HOUSTON?

The industrial engineering department at the UH Cullen College of Engineering is highly-ranked, consisting of top-performing students and world-class faculty and researchers. Industrial engineering graduate students are taught by professors who are actively conducting research in the areas of healthcare and medical decisionmaking, homeland and port security, energy, reliability and maintenance, logistics and transportation, supply chains and manufacturing. Graduate students are exposed to professional and research opportunities throughout their education.

WHAT CAN I DO WITH AN INDUSTRIAL ENGINEERING GRADUATE DEGREE?

Industrial engineers are trained to work virtually anywhere in industry to improve system performance. Specific industries include manufacturing, logistics and transportation, supply chain, energy, oil and gas, healthcare, retail, hotel chains, airlines, construction companies, banks, social services and government.

A 2016 salary survey produced by the National Association of Colleges and Employers found that new graduates with an M.S. in industrial/manufacturing engineering earn an average starting salary of \$73,756, with new Ph.D. graduates earning \$78,667.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN INDUSTRIAL ENGINEERING?

The UH Cullen College of Engineering offers a Master's degree in IE (MIE), Master of Science (MSIE) degree and a Ph.D. degree. The following special programs are also available to industrial engineering graduate students:

- **MIE/MBA concurrent degree:** The UH Cullen College of Engineering and the C. T. Bauer College of Business at the University of Houston offer a concurrent degree program that enables students to prepare for careers in which the understanding of both engineering science and business studies is critical. This program provides students with the opportunity to complete the degree requirements for the MBA and MIE in a shorter period of time than if the two degrees were pursued separately.

FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE 1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

173

M.S.

18

PH.D.

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$73,756

M.S.

\$78,667

PH.D.

- **MIE with concentration in public safety management:** Recognizing that industrial engineering can play a vital role in some of the most pressing issues facing industry and government in planning, managing and delivering public safety services, this concentration provides a solid education for understanding and tackling interdisciplinary issues at the intersection of public safety management and industrial engineering.

FOR MORE INFORMATION

For more information on eligibility and admissions requirements, please visit www.ie.uh.edu/graduate-program/overview

MATERIALS ENGINEERING

MATERIALS.EGR.UH.EDU

ENGINEERING MATERIALS
FOR ENERGY, HEALTHCARE
AND TECHNOLOGY

WHAT IS MATERIALS ENGINEERING?

Materials are everything. For the caveman, it was the rock – for the astronaut on the moon, it was also the rock. Materials engineers develop materials that got us from the cave to the moon, and they continue to lead the way in every area. New materials usher in new technological and economic developments. Our urgent need for new energy sources has led to increasing demands for materials that have unusual engineering properties and applications. These concerns are further compounded by growing difficulties in assuring continuous availability of various strategic materials. For these reasons, the demand for highly-skilled materials engineers has never been greater.

WHY THE UNIVERSITY OF HOUSTON?

The materials engineering graduate program offers high quality training in fundamentals and applications of technologically-relevant materials to enable successful careers in the competitive and ever changing field. Students are offered a flexible yet demanding curriculum in materials engineering to address the needs of this highly interdisciplinary field. Graduate students are taught by a diverse, interdisciplinary team of faculty who run cutting-edge research programs in areas including bio- and nano-materials, energy storage and delivery, electronic and photonic materials, and advanced polymers. Materials engineering faculty members are developing materials for nanostructured energy storage architectures, molecular biosensors for medical diagnostics, high performance electronics and optoelectronics. Students are provided opportunities to work with modern research instrumentation in state-of-the-art facilities.

WHAT CAN I DO WITH A MATERIALS ENGINEERING GRADUATE DEGREE?

Due to the urgent need for new materials to use as energy sources and in other engineering applications, career opportunities in the materials engineering field are excellent. This is especially true in the city of Houston, the Energy Capital of the World.

A 2016 salary survey produced by the National Association of Colleges and Employers found that new graduates with an M.S. in materials engineering earn an average starting salary of \$74,721, with new Ph.D. graduates earning \$95,000.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN MATERIALS ENGINEERING?

The UH Cullen College of Engineering offers M.S. non-thesis, M.S. thesis and Ph.D. degrees in materials engineering.



FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

14

M.S.

45

PH.D.

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$74,721

M.S.

\$95,000

PH.D.

FOR MORE INFORMATION

For more information on eligibility and admissions requirements, please visit materials.egr.uh.edu/info/program-overview

MECHANICAL ENGINEERING

ME.UH.EDU

ENGINEERING
THE MECHANICS
OF OUR WORLD

WHAT IS MECHANICAL ENGINEERING?

Mechanical engineers are the jacks-of-all-trades within the engineering profession. Just about everything you can think of involves a mechanical process, and anything with a mechanical process is the business of a mechanical engineer. These engineers work in nearly every industry you can imagine, addressing problems in such areas as energy conversion, aerospace, design of mechanical components and systems, man and machine environments, instrumentation and control of processes, product reliability and safety, materials and polymers.

WHY THE UNIVERSITY OF HOUSTON?

The graduate program in mechanical engineering provides students with an educational experience grounded in the engineering sciences and focused on producing a professional capable of systematically applying those sciences to solve real-world problems. The mechanical engineering graduate program encompasses advanced study and research in the areas of applied mechanics, control of dynamical systems, materials science, thermal and fluid sciences, and biomedical engineering. Graduate students are taught by the world's leading mechanical engineering researchers and are prepared to take on leadership positions in industry, government or academia in the Houston region and beyond.

WHAT CAN I DO WITH A MECHANICAL ENGINEERING GRADUATE DEGREE?

Career opportunities in mechanical engineering are excellent, especially in the city of Houston, the Energy Capital of the World. Alumni of the graduate program in mechanical engineering can be found in leadership positions in a variety of different fields throughout the Houston-area and around the world.

A 2016 salary survey produced by the National Association of Colleges and Employers found that new graduates with an M.S. in mechanical engineering earn an average starting salary of \$75,391, with new Ph.D. graduates earning \$93,652.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN MECHANICAL ENGINEERING?

The UH Cullen College of Engineering offers M.S. non-thesis, M.S. thesis and Ph.D. degrees in mechanical engineering. Students have the option of taking some mechanical engineering graduate courses online.



FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

202

M.S.

101

PH.D.

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$75,391

M.S.

\$93,652

PH.D.

FOR MORE INFORMATION

For more information on eligibility and admissions requirements, please visit www.me.uh.edu/graduate-program/overview

PETROLEUM ENGINEERING

PETRO.UH.EDU

LEADING THE INDUSTRY IN ENERGIZING THE PLANET

WHAT IS PETROLEUM ENGINEERING?

Wars are fought over it. Global economies would collapse without it. Life as we know it would cease to exist without oil and gas, and petroleum engineers are the only ones who know how to extract it safely from the earth. They solve the most critical and pressing global energy challenges facing humanity, including how to meet increasing global demand for energy while ensuring the safety and cleanliness of our environment.

WHY THE UNIVERSITY OF HOUSTON?

The vision for the UH Cullen College of Engineering petroleum engineering program is to be the center of world-class petroleum engineering education, research and service in the city of Houston, the center of the world's petroleum industry. Petroleum engineering graduate students are taught by leading researchers and industry professionals. Students are prepared to address the challenges of the world's energy needs responsibly, to exceed the evolving expectations of employers in the petroleum and energy industries, to sustain industry leading skills and to be leaders in industry, academia and government.

WHAT CAN I DO WITH A PETROLEUM ENGINEERING GRADUATE DEGREE?

Career opportunities for petroleum engineers are fantastic, especially in the city of Houston, the Energy Capital of the World. Employment opportunities are widely available with the major integrated international energy companies and service providers, or the many intermediate and independent oil and gas producers, drilling companies, special equipment companies and industry support companies. Employment can be domestic or international, onshore or offshore, and can involve the most sophisticated intelligent systems and technologies. Early on, it can involve specific technical and operational assignments, and later, engineering and business leadership positions. Petroleum engineers with appropriate experience and knowledge often start their own oil and gas companies.

A 2016 salary survey produced by the National Association of Colleges and Employers found that new graduates with an M.S. in petroleum engineering earn an average starting salary of \$97,333. Payscale.com reports that graduates with a Ph.D. in petroleum engineering earn an average annual salary of \$99,611.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN PETROLEUM ENGINEERING?

The UH Cullen College of Engineering offers M.S. non-thesis, M.S. thesis and Ph.D. degrees in petroleum engineering.



FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

111

M.S.

16

PH.D.

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$97,333

M.S.

\$99,611

PH.D.

FOR MORE INFORMATION

For more information on eligibility and admissions requirements, please visit petro.uh.edu/graduate

SPACE ARCHITECTURE

SICSA.EGR.UH.EDU

PUSHING “HOME” BEYOND ITS EARTHLY LIMITS

WHAT IS SPACE ARCHITECTURE?

Space architecture is an interdisciplinary field that involves the planning and design of facilities in extreme environments on earth and in space, including ocean facilities, polar research stations, human disaster accommodations and orbiting space stations. The only program of its kind in the world, the Cullen College's space architecture program involves engineers and technical architects teaming up to design missions and operations from the ground up. Their work includes orbital mechanics, human habitats, logistics, design for extreme environments, life support systems, human factors and launch capability trades.

WHY THE UNIVERSITY OF HOUSTON?

The UH Cullen College of Engineering is the home of the world's only graduate program in space architecture. The operational center for the program is the Sasakawa International Center for Space Architecture, or SICSA, which is internationally-recognized as the center that both defines and leads the space architecture field. SICSA's location in Houston, a preeminent global space technology and trade center, affords important resource and collaboration benefits. This setting offers convenient access to NASA's Johnson Space Center, local aerospace companies, major research institutions and commercial technology enterprises throughout the city and region.

WHAT CAN I DO WITH A SPACE ARCHITECTURE GRADUATE DEGREE?

Career opportunities for space architecture graduates are excellent – especially in the city of Houston, also known as Space City. Graduates of the space architecture program can be found in leadership positions at NASA, Boeing and SpaceX as well as in energy companies throughout the Houston region and beyond.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN SPACE ARCHITECTURE?

The UH Cullen College of Engineering offers an M.S. degree (thesis) in space architecture.



FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

7

M.S. STUDENTS

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES



FOR MORE INFORMATION

For more information on eligibility and admissions requirements, please visit sicsa.egr.uh.edu/welcome/ms-space-architecture-curriculum

SUBSEA ENGINEERING

SUBSEA.EGR.UH.EDU

EXPLORING THE DEPTHS OF UNDERWATER ENERGY

WHAT IS SUBSEA ENGINEERING?

Thousands of feet below the dark ocean waters, subsea engineers shine, carrying out some of the most important and challenging work in the offshore petroleum industry. Subsea engineers have multidisciplinary knowledge and are experts on the equipment, tools and infrastructure required for harnessing energy from the depths of the sea. Ultradeep underwater production environments present unique challenges to engineers, particularly deepwater operations where temperature, pressure and corrosion test the durability of submerged equipment and tools. Most subsea engineering operations depend on automation and remote procedures to construct and repair components beneath the surface of the water.

WHY THE UNIVERSITY OF HOUSTON?

The University of Houston is home to the nation's first subsea engineering graduate program and leads the international effort to standardize subsea engineering education at universities around the world. UH heads the Ocean Energy Safety Institute, a partnership between Texas A&M University and the University of Texas at Austin, which aims to ensure the safety of offshore energy production for years to come. UH is also the leader of the Subsea Systems Institute, a collaboration with Rice University, NASA Johnson Space Center, Texas Southern University, Houston Community College and Lone Star College to conduct research and develop technologies to improve the sustainable and safe development of energy resources in the Gulf of Mexico.

WHAT CAN I DO WITH A SUBSEA ENGINEERING GRADUATE DEGREE?

Career opportunities for subsea engineers are fantastic, especially in the city of Houston, the Energy Capital of the World. Offshore oil and gas reserves are increasingly important sources of energy and significant drivers of the international economy. There are billions of barrels of oil and trillions of cubic feet of natural gas predicted to lie within federally-controlled waters in the Gulf of Mexico alone, including off the coast of Texas. The major problem is that the reserves lie underneath 10,000 feet of water, presenting unprecedented engineering challenges. As such, nearly every energy company operating in the offshore sector employs subsea engineers, and demand for engineers with expertise in developing offshore energy resources continues to rise.

Payscale.com reports that that subsea engineers earn an average annual salary of \$95,575.

WHAT TYPES OF GRADUATE DEGREES DO YOU OFFER IN SUBSEA ENGINEERING?

The UH Cullen College of Engineering offers an M.S. degree in subsea engineering. Students may take subsea engineering courses online or in-person.

< Image Credit: AR SubseaServices. A view of FMC Technologies' subsea services offerings. Image not to scale.

FAST FACTS

TOTAL GRADUATE STUDENTS IN
CULLEN COLLEGE

1,247

TOTAL GRADUATE STUDENTS IN DEPARTMENT

65

M.S. STUDENTS

129

TOTAL FACULTY IN
COLLEGE

\$26M+

IN RESEARCH
EXPENDITURES

AVERAGE STARTING SALARY

\$95,575

M.S. IN SUBSEA

FOR MORE INFORMATION

For more information on eligibility and admissions requirements, please visit subsea.egr.uh.edu/graduate-program/master-science

GRADUATE ADMISSIONS

HOW TO APPLY

Admissions requirements may vary by program. Please consult with the program website to verify what information is required to complete your application. For the full list of engineering graduate programs and advisors, please visit

www.egr.uh.edu/academics/graduate-programs

General graduate admissions requirements include:

YOUR APPLICATION.

You must submit an application through the CollegeNet website. Application fees vary by program.

YOUR TRANSCRIPTS.

Official copies of your transcripts from all previously attended colleges and universities are required.

YOUR TEST SCORES.

Official test scores (GRE, GMAT, etc.) scores should be sent by the testing agency.

ADDITIONAL REQUIRED DOCUMENTS.

Additional documents, such as letters of recommendation, personal statements, resumes and other supplemental materials may be required. These requirements are indicated on the department's graduate admissions webpage. Applicants are encouraged to consult with the program or department's academic advisor with questions regarding your application.

For more information on the graduate school application process, please visit



www.uh.edu/graduate-school/prospective-students/how-to-apply/

FINANCIAL AID

The University of Houston offers several different kinds of financial assistance, ranging from fellowships awarded on the basis of merit to loans awarded on the basis of financial need. A typical financial aid package includes more than one type of aid.

SCHOLARSHIPS

Merit-based awards that you do not have to repay.

GRANTS

Need-based awards that you do not have to repay.

LOANS

Need-based, federally funded loans that you repay at below-market interest rates, plus private bank loans if you don't qualify for federal loans.

FELLOWSHIPS

Merit-based awards to encourage academic pursuits toward the advancement of the university's mission. Fellowships may be granted by the UH Graduate School or individual departments.

GRADUATE TUITION FELLOWSHIPS

A Graduate Tuition Fellowship, or GTF, is a competitive award program which provides funding to assist in defraying the cost of in-state tuition of up to 9 credit hours per semester and 6 credit hours in the summer for qualified Ph.D. students who are in good academic standing. The GTF is awarded to graduate students who are funded through a faculty member.

To learn more, please visit

www.egr.uh.edu/academics/graduate-programs-policies/doctoral-student-tuition-fellowships



ASSISTANTSHIPS

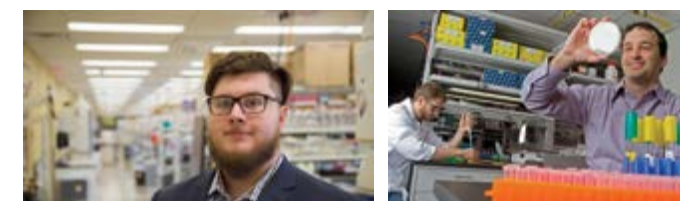
Merit-based job placements on campus tailored to your program of study.

TUITION AND FEES EXEMPTIONS AND WAIVERS

Students who are in good academic standing and meet certain requirements may apply for tuition and fees exemptions and waivers.

For more information on the types of exemptions and waivers available, please visit

www.uh.edu/financial/payment/fee-waivers



You can learn more about the available financial aid and how to apply at



www.uh.edu/financial/graduate

TUITION AND FEES

Graduate tuition and fees vary depending on your department, your residence status, your graduate level and the courses you're taking. However, the table below provides estimated annual costs for average, full-time enrollment of 15 hours per semester, average cost of on-campus residence halls and meal plan, and average cost of books.

For a more accurate estimate, please use the academic year 2017 tuition calculator at www.uh.edu/financial/graduate/tuition-fees/

ESTIMATED ANNUAL COSTS FOR 2016-2017

	Texas Resident	Non-Resident
Tuition and fees	\$10,940	\$25,386
Room and board	\$10,809	\$10,809
Books and supplies	\$1,300	\$1,300
Total*	\$23,049	\$37,495

**Total costs are based on average full-time enrollment of 15 hours per semester, average cost of on-campus residence halls and meal plan and average cost of books.*



DID YOU KNOW?

Students who are funded through a Research Assistant (RA) position or Teaching Assistant (TA) position receive in-state tuition!

Many of the engineering departments offer positions for TAs and RAs. TAs assist in undergraduate laboratories, grade homework, and may assist with teaching classes. RAs assist an individual faculty member with their research projects. Contact the academic advisor for the department you are interested in to learn more!



DID YOU KNOW?

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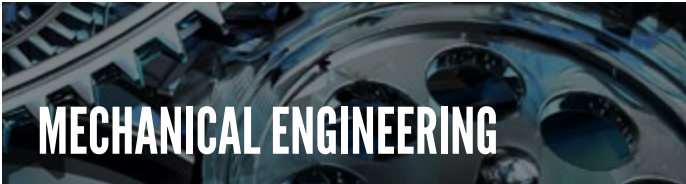
ONLINE LEARNING

Online learning programs at the UH Cullen College of Engineering aren't your standard online courses. The flexible and innovative digital programs are designed for working engineers and include live videos of lectures, interactive web-based discussions and opportunities for one-on-one learning experiences.

Most importantly, the degrees earned through the Cullen College's online programs are **exactly the same degrees** earned by students who choose to attend classes on campus. The online courses are simply digital versions of the in-person courses – the programs have the exact same rigor, expectations and admissions processes.



ONLINE LEARNING PROGRAMS - MASTER'S DEGREES



The Department of Mechanical Engineering (ME) offers an online Master of Science in mechanical engineering degree. The mechanical engineering graduate program provides students with an educational experience grounded in the engineering sciences and focused on producing a professional capable of systematically applying those sciences to solve real-world problems. The program encompasses advanced study and research in the areas of applied mechanics, thermal and fluid sciences, control of dynamical systems, materials science and biomedical engineering.



The Department of Civil and Environmental Engineering (CEE) offers online courses that can be taken as part of the Master of Science in Civil Engineering (MSCE) degree. The MSCE program connects structural engineering with the disciplines of geotechnical engineering, hydrosystems engineering, environmental engineering, geosensing and geoinformatics, mechanical engineering and subsea engineering.



The UH Cullen College of Engineering's Subsea Engineering Program offers a fully-online Master's program, a certificate program and an advanced certificate program in subsea engineering. The curriculum advances both the science and engineering of subsea systems while providing students with a solid, diverse knowledge base in subsea engineering as well as industry practices and state and federal regulations.



The Department of Electrical and Computer Engineering (ECE) offers a non-thesis online Master of Electrical Engineering (MEE) program, with specialization in Industrial Power Systems (IPS). The program provides advanced instruction to give individuals the level of technical and business expertise needed to meet the increased industry demand for highly skilled professionals.

Learn more about UH Engineering's online master's programs at

HOW TO APPLY

Each department's Academic Advisor or Graduate Coordinator is the best source of information regarding admissions to your chosen program. For more information, please visit onlinelearning.egr.uh.edu/apply

 onlinelearning.egr.uh.edu/programs/masters-degrees



FOR MORE INFORMATION:

Please visit us online at www.egr.uh.edu

 UH Cullen College of Engineering

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