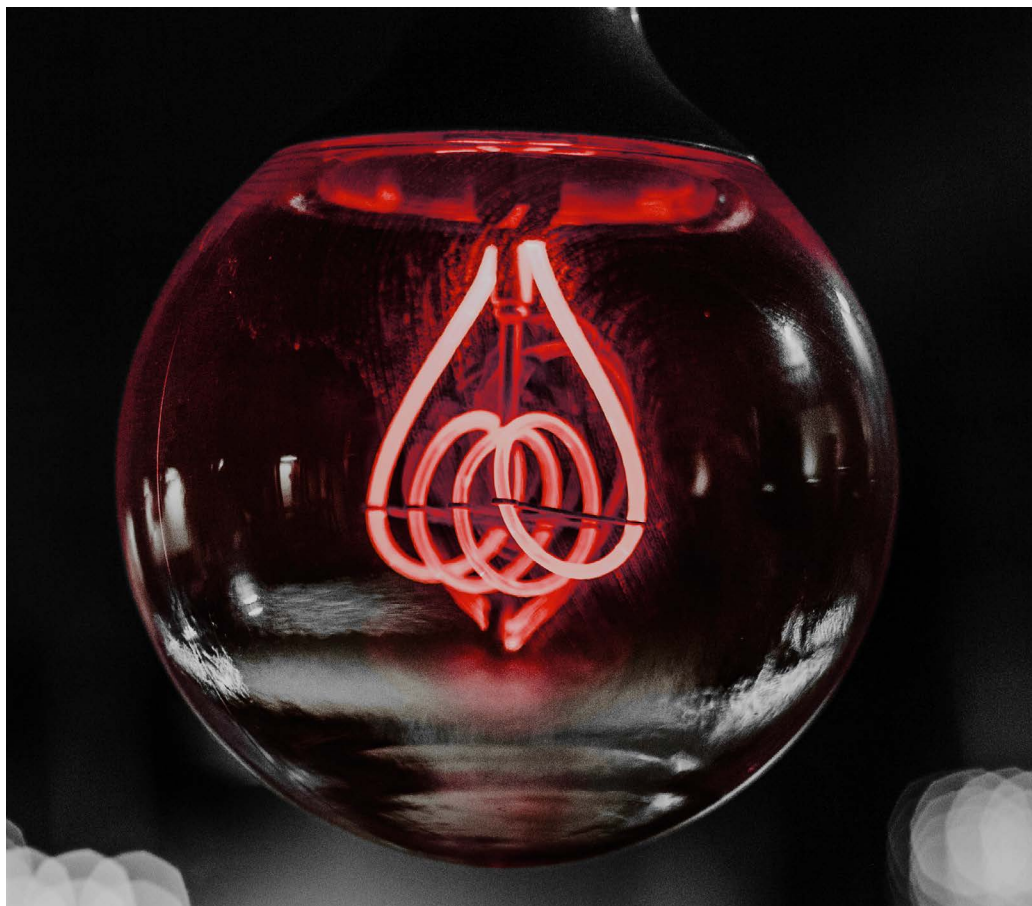




Division of Energy and Innovation
UNIVERSITY OF HOUSTON

UNIVERSITY OF
HOUSTON



Educational Programs in Energy

A Comprehensive Guidebook of UH Energy-Related Academic Programs



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The Energy University®

UH Energy & Innovation at a Glance

About The Division

Launch Your Education & Fuel Your Career

Student Success Programs



UH Energy & Innovation **at a Glance**

95

Energy-related Programs

27,956

Students Enrolled Fall 2025

59%

Energy-Related Degrees of all UH degrees awarded

29

Research Centers

1st

1st in nation: Cyvia and Melvyn Wolff Center for Entrepreneurship best entrepreneurship program for undergraduate students



Ramanan Krishnamoorti

Vice President

Division of Energy & Innovation

Message from the Vice President of Energy & Innovation

At the University of Houston, the Energy University®, student success is the primary goal of our academic and strategic efforts. From high-quality classroom and online instruction alongside targeted retention tools to exposure to the real-world challenges only accessible in the Energy Capital, UH provides distinctive educational experiences. Currently, energy-focused academic pathways span across eight colleges, shaping the education of over 40% of our student body through traditional undergraduate and graduate degrees, technical minors, graduate certificates, and lifelong professional training. To meet the challenges of a rapidly evolving sector, UH serves as an active strategic partner to the energy industry, working in partnership with industrial leaders to provide a highly qualified workforce, supply clear technical leadership, and execute targeted research and development for emerging technologies. We are also expanding our micro-credentialing programs, technical certificates, and continuing education programs to bridge a widening talent gap and ensure our workforce remains competitive and agile.

Energy systems are complex and require multi-disciplinary collaborations to address improvements that are meaningful at scale. UH Energy serves as the central hub to scale these interdisciplinary solutions, ensuring they balance and strengthen our foundational, discipline-centered degree tracks. This guidebook offers students, academic advisors, parents, and industry partners a straightforward, transparent roadmap to navigate our extensive energy curriculum as we continue to build a resilient, affordable, reliable, and forward-looking energy talent ecosystem.



About UH Energy

UH Energy is an umbrella for efforts across the University of Houston system to position the university as a strategic partner to the energy industry by producing trained workforce, strategic and technical leadership, research and development for needed innovations and new technologies.

That's why UH is the Energy University®.

Educational Programs in Energy is published by UH Energy under the Energy and Innovation Division.

www.uh.edu/energy

uhenergy@uh.edu



Contributing Colleges

Gerald D. Hines College of Architecture

C. T. Bauer College of Business

College of Liberal Arts and Social Sciences

Hobby School of Public Affairs

UH Law Center

The Honors College

Cullen College of Engineering

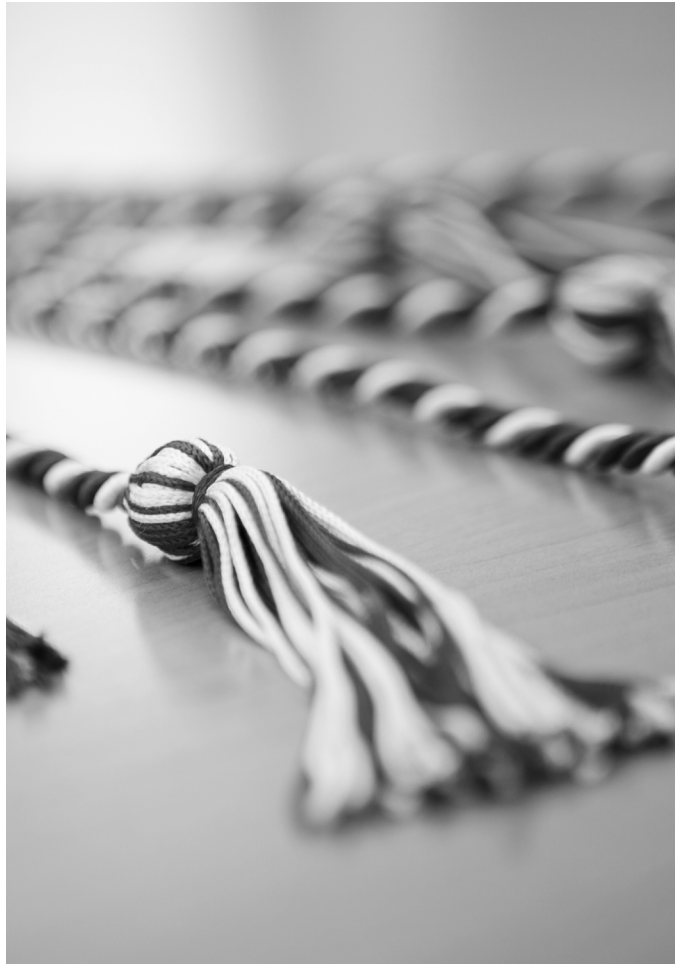
College of Natural Sciences and Mathematics

Stay Connected

Instagram: [@UHENERGY](https://www.instagram.com/UHENERGY)

X/Twitter: [@UHOUSTONENERGY](https://twitter.com/UHOUSTONENERGY)

LinkedIn: [linkedin.com/company/uh-energy](https://www.linkedin.com/company/uh-energy)



Launch Your Education & Fuel Your Career

UH offers several innovative educational programs at all levels and in the four major energy sectors: upstream; midstream and downstream; alternatives and enablers; and policy and management. UH also offers continuing professional studies, as well as certificate programs that may be completed either in conjunction with a graduate level degree or as a stand-alone. Most degree and certificate programs listed in this guidebook only include a subset of degree plan requirements. For more information on individual degree and certificate programs, visit the corresponding departmental websites indicated on each program page or see 'Student Resources' for information on how and where you can access the official University of Houston undergraduate and graduate catalogs online.

Upstream

The upstream energy sector involves exploration and production of oil and gas, including underwater or underground crude oil, natural gas fields and drilling wells. Professionals in this sector include geologists and geophysicists, who determine where resources can be found; petroleum engineers, who work with geoscientists to understand geologic formations, and mechanical engineers, who optimize physics and materials science to design, examine and manufacture mechanical systems.

Midstream & Downstream

Midstream involves bringing oil and gas to the distributor and the conversion and storage of these natural resources. This includes the construction, maintenance and operation of pipelines, rail cars, barges and ships, and other modes of transporting energy resources. Refining crude oil and processing natural gas, production of value added materials and consumer products and marketing occupy the downstream sector of the energy industry.

Alternatives/Enablers

As energy demands become more dynamic, innovative researchers and problem solvers will lead the ever-changing energy industry. Various types of engineering, from chemical to industrial, will have a role in the future. At UH, we believe that the world's energy demand and environmental stewardship go hand-in-hand. We exemplify this through our popular undergraduate minor in Energy and Sustainability and the globally recognized Energy, Environment and Natural Resource Law program in the UH Law Center. UH has programs in sustainable, innovative and new architecture, electric grid cyber security, environmental engineering, power engineering, power technology and superconductivity.

Policy/Management

Public policy, regulatory, financial, business, policy and management issues are central to the implementation of energy programs. To address this, UH offers programs on energy management, energy finance, public policy, energy law and industrial psychology. Noteworthy are the Gutierrez Energy Management Institute (GEMI), and the Upstream Energy Safety Certification Program that have a global focus. One of our newest programs in this area is the graduate certificate program in Global Energy, Development and Sustainability.

Student Success Programs

The University of Houston is committed to creating an educational environment in which student success can be ensured from enrollment to graduation.

Undergraduate Student Success

Explore resources and programs that enhance learning experience and help students achieve their educational goals. These include:

UHin4: Graduate in four years to save time and money with UHin4.

Transfer Advising Program: Smooth the transition to the University of Houston for prospective undergraduate transfer students.

Exploratory Studies: Explore major options by making confident, informed career and academic decisions.

LAUNCH: Get peer tutoring for almost 500 separate courses, success workshops, and individual academic counseling.

Houston GPS: Learn about the partnership between Houston-area 2-year and 4-year institutions to encourage smooth transfer and increase completion rates.

Access a full list of Undergraduate Success programs:

<https://www.uh.edu/provost/students/student-success-programs/>

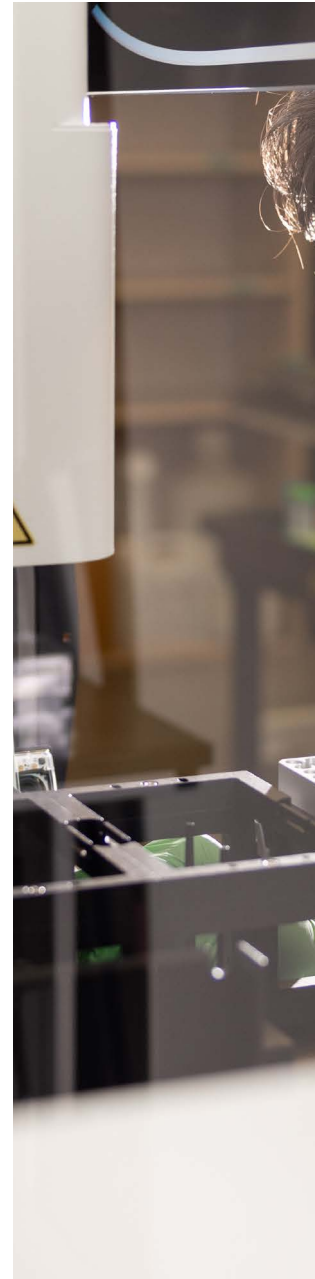
Global Connections at UH

Students have diverse opportunities to study abroad. The university also provides support services for international students.

- **Learning Abroad:** Students and faculty participate in study, volunteer, research, service, and exchange programs while immersed in other cultures and environments.
- **International Student and Scholar Services:** International students and visiting scholars are welcomed to UH through campus assimilation and cultural transition initiatives.

UH Graduate School

The UH Graduate School oversees over 6,000 students in master's, doctoral, advanced certificate, professional, and joint degree programs.





Colleges In Energy

Gerald D. Hines College of Architecture

C. T. Bauer College of Business

College of Liberal Arts and Social Sciences

Hobby School of Public Affairs

UH Law Center

The Honors College

Cullen College of Engineering

College of Natural Sciences and Mathematics





Gerald D. Hines College of Architecture and Design

The Gerald D. Hines College of Architecture and Design offers its students a platform of integrated disciplines—Architecture, Interior Architecture, and Industrial Design—from which to negotiate the complexities of contemporary practice in a world that is grappling with diminishing economic and natural resources; the realities of post disaster reconstruction; and at the same time, continued, rapid urbanization. Faculty and students work together in a studio-centric curriculum, supported by a digital fabrication facility. Open studios seamlessly incorporate coursework into project based learning through material investigations and applied research. The College of Architecture and Design is a member of the Association of Collegiate Schools of Architecture (ACSA) and is accredited by the National Architectural Accrediting Board (NAAB).



Undergraduate Programs

Architecture | BArch

Interior Architecture | BS

Industrial Design | BS

Environmental Design | BS



Graduate Programs

Master of Architecture | MARCH +3

Master of Architecture | MARCH +2

**Architecture – Concentration in
Historic Preservation** | MS ARCH

**Architecture – Concentration in
Media + Fabrication** | MS ARCH

**Architecture – Concentration in
Sustainable Design** | MS ARCH

**Architecture – Concentration in
Sustainable Urban Systems** | MS ARCH

**Architecture – Concentration in
Urban Design** | MS ARCH

Industrial Design | MS

Architectural Studies | MAAS

Advising and Resources

Prospective students including first time in college (FTIC), transfer (TR), and change of major (CoM) students should contact the Student Services Office (SSO) at archsso@central.uh.edu and 713-743-3463, or register to attend an Information Session at <https://uh.edu/architecture/future-students/undergraduate/information-sessions/> for more information about any of the Hines College's design majors.

All recently admitted and current students are assigned to work with an academic advisor based on the first letter of the students' last names. Students are encouraged to contact their assigned advisors for support and guidance.

Undergraduate Advising

Irene Acevedo

iaceved2@CougarNet.UH.EDU

713-743-3463

Jenny Mutz

jamutz@CENTRAL.UH.EDU

713-743-3463

Graduate Advising

Trang Phan

trangphan@uh.edu

713-743-3463

Undergraduate



“Attending architecture school at the University of Houston was a transformative experience. It provided a solid foundation, allowing me to expand my horizons and explore different design ideas and theoretical approaches in a way I had not before.”

Ami Shah

Principal, Firmwide
Health Education

HOK



“Looking back, I am grateful I pursued architecture even though my path took an unexpected turn. The program prepares you for more than you realize.”

Rodrigo Marron

Senior Airtable
Engineer Apple
Contract

Magnit Global



“The Hines College taught me the importance of dialogue and the value of sharing ideas with colleagues and friends ... collaboration was always at the core.”

Mariam Fallah

Principal

GSMArchitects

Careers

Architect

Landscape Architect

Residential Architect

Urban Planner

Construction Manager

Interior Designer

Graphic Designer

Architectural Historian

Surveyor

Bachelor of Architecture | BArch

The Gerald D. Hines College of Architecture and Design offers a Bachelor of Architecture, enabling students to pursue licensure after completing degree requirements. The Bachelor of Architecture is a five-year professional degree. Design is the focus of undergraduate studies and provides students with access to resources involving research, building, and community components. Students gain hands-on experience in studio courses with guidance from experienced faculty.

The degree plan is structured to immerse students in a focused education that will build their skills to be top leaders and innovators in the field of architecture. The program for the Bachelor of Architecture degree (first professional degree) is a five-year curriculum of at least 160 semester credit hours. The focus of the curriculum is preparation for professional practice in architecture and emphasizes sustainability, critical thinking, research, and technology. The curriculum is divided into four segments: Foundation Level, Intermediate Level, Comprehensive Design, and Professional Level.



uh.edu/architecture

Degree Requirements: 160 Credit Hours

Foundation Courses

ARCH 1358 Introduction to Design Culture

ARCH 1500 Design Studio I

ARCH 1501 Design Studio II

ARCH 1210 History and Theory of Design Media

ARCH 2327 Technology I

ARCH 2350 Survey of Architectural History I

MATH 1310 College Algebra

MATH 1330 Precalculus

PHYS 1301 Introductory General Physics I

PHYS 1302 Introductory General Physics II

Intermediate Courses

ARCH 2501 Architecture Design Studio IV

ARCH 2351 Survey of Architectural History II

ARCH 2328 Technology II

ARCH 3500 Architecture Design Studio V

ARCH 3327 Technology III

ARCH 3501 Architecture Design Studio IV

ARCH 3328 Technology IV

ARCH 3230 Programming and Building Regulations

Professional

ARCH 5500 Architecture Design Studio VIII

ARCH 4328 Technology VI

ARCH 5500 Architecture Design Studio IX

ARCH 5500 Architecture Design Studio X

Approved Architecture Research Elective

Comprehensive Design

ARCH 4510 Integrated Architectural Solutions

ARCH 4373 Urban Environments

ARCH 4327 Technology V

Elective Courses

6 credit hours | Architectural History electives

6 credit hours | Architecture electives

6 credit hours | approved integrative courses

15 credit hours | general electives

3 credit hours of approved electives, selected from the following:

- **ACCT 2331** Account Principles I
- **ARTH 1380** Art & Society: Prehistoric to Gothic
- **ARTH 1381** Art & Society: Renaissance to Modern
- **ARTH 2389** Modern & Contemporary Art
- **COMM 1332** Fundamentals of Public Speaking
- **ENRG 3310** Introduction to Energy & Sustainability
- **ENTR 3310** Entrepreneurship
- **GENB 3300** Introduction to Personal Finance
- **HDGS 1300** Human Ecosystems and Technological Change
- **HDGS 3300** Organizational Decisions
- **MUSI 3300** Listening to Music Masterworks

Undergraduate



“I think the Interior Architecture program is unique because it allows you to push your projects across all disciplines. My thesis project involved site and landscape design, adaptive reuse, interior renovation, historic preservation, and furniture design. Learning how all of that comes together has been so helpful in my career.”

Jamie Newcomb

Associate Interior Designer

Kirksey Architecture

“Every memory I had on campus and within the Hines College was meaningful and life-changing. Many of my closest friends and my life partner all stemmed from my time at the College. I would not have asked for it any other way. Competition among the most talented people fueled my journey to success.”

Vy Truong

Co-Founder/Creative Director

Very Handsome Studio

“What I like most about the interior architecture program at the Hines College is that it offers both architecture and interior architecture design philosophy and theory. Architecture and interior space should speak the same language and deliver a cohesive story throughout.”

Han Dang

Co-Founder/Creative Director

Very Handsome Studio



Careers

Adaptive Reuse Of Existing Buildings

Workplace Design

Health And Wellness Design

Design For Education

Hospitality Design

Commercial Design

Exhibition And Event Design

Bachelor of Science in Interior Architecture | BS

The Bachelor of Science in Interior Architecture degree is a four-year program focusing on the design of architectural interiors with particular focus on sustainability, materiality, color theory, lighting, and the social and cultural aspects of habitable space. Design is the focus of undergraduate studies and provides students with access to resources involving research, building and community components. Students gain hands-on experience in studio courses with guidance from experienced faculty.



uh.edu/architecture

Degree Requirements: 132 Credit Hours

Foundation Courses

ARCH 1358 Introduction to Design Culture

ARCH 1500 Design Studio I

ARCH 1210 History and Theory of Design Media

ARCH 1501 Design Studio II

ARCH 2500 Architecture Design Studio III

ARCH 2327 Technology I

ARCH 2350 Survey of Architectural History I

MATH 1310 College Algebra

MATH 1330 Precalculus

PHYS 1301 Introductory General Physics I

PHYS 1302 Introductory General Physics II

Intermediate Courses

ARCH 2351 Survey of Architectural History II

ARCH 2328 Technology II

ARCH 3230 Programming and Building Regulations

INAR 2501 Interior Architecture Design Studio IV

INAR 3360 Human Factors

INAR 3300 History of Interior Architecture

INAR 3500 Interior Architecture Design Studio V

Professional

INAR 3501 Interior Architecture Design Studio VI

INAR 3310 Materials and Methods

INAR 4500 Interior Architecture Design Studio VII

INAR 4393 Interior Architecture Thesis Preparation

INAR 4501 Interior Architecture Design Studio VIII

INAR 4360 Practice of Interior Architecture

Elective Courses

6 credit hours | approved integrative courses

6 credit hours | general electives

7 credit hours of approved electives, selected from the following:

- **ACCT 2331** Account Principles I
- **ARTH 1380** Art & Society: Prehistoric to Gothic
- **ARTH 1381** Art & Society: Renaissance to Modern
- **ARTH 2389** Modern & Contemporary Art
- **IART 3395** Spatial Activism: Houston
- **COMM 1332** Fundamentals of Public Speaking
- **ENRG 3310** Intro to Energy & Sustainability
- **ENTR 3310** Entrepreneurship
- **GENB 3300** Introduction to Personal Finance
- **HDCS 1300** Human Ecosystems & Technological Change
- **HDCS 3300** Organizational Decisions
- **MUSI 3300** Listening to Music Masterworks

Undergraduate



“I think dearly of my time at the Hines College. I learned from lectures, experimentation, and, sometimes, failure. Working in a creative environment with high standards prepared me for the professional world of design.”

Maríel Piña

Director of User Experience

Renaissance Learning

“The sense of community within the industrial design program and the camaraderie with friends in Alpha Rho Chi kept me going through tough times. Working together on projects and sharing these experiences created lifelong bonds.”

Kadmiel Konan

Designer and Machine Operator

AmPD Labs (until May 2024)

“One valuable lesson I learned during my time at the Hines College is to be open to change all the time. Through challenging projects and college situations, I slowly learned to be more okay with sudden change.”

Mariana Marquez Keymolen

UX Designer

Plexus Worldwide

Careers

Industrial designer

Product designer

UX designer

CAD designer

Interior designer

Production designer

Production manager

Industrial engineer

Design researcher

Bachelor of Science in Industrial Design | BS

Established in 2003, the Bachelor of Science in Industrial Design is the first of its kind in a four-state region covering Texas, Oklahoma, Arkansas, and New Mexico.

The Industrial Design (ID) program emerged from an established and respected university in one of the largest and most dynamic urban centers: Houston. The ity provides an ideal learning context for the discipline of Industrial Design with resources unique to the metro area, such as NASA, the Texas Medical Center and diverse industrial entities.

The education model for the Industrial Design program focuses on addressing a new structure of learning by connecting and integrating design knowledge in innovative, useful, and meaningful ways for the student. The ID program emphasizes the learner’s generative and discovery-oriented learning process through integrated, collaborative, and project-oriented learning.



uh.edu/architecture

Degree Requirements: 132 Credit Hours

Required Courses

INDS 1501 Industrial Design Studio II

INDS 2500 Industrial Design Studio III

INDS 2340 Visual Communication

INDS 2355 Design History I

INDS 2260 Materials and Fabrication Methods

INDS 2160 Materials and Fabrication Methods II

INDS 2501 Industrial Design Studio IV

INDS 2341 Computer-Aided Industrial Design I

INDS 2356 Design History II

INDS 3500 Industrial Design Studio V

INDS 3340 Computer Aided Industrial Design II

INDS 3360 Human Factors

INDS 3501 Industrial Design Studio VI

INDS 3341 Design Interaction

INDS 3365 Design Research Methods

INDS 4380 Design Internship

INDS 4500 Industrial Design Studio VII

INDS 4360 Design Issues

INDS 4501 Industrial Design Studio VIII

INDS 4365 Design Practice and Business

ARCH 1200 Introduction to Architecture, Industrial Design, and Interior Architecture

ARCH 1500 Architecture Design Studio I

ARCH 1358 Introduction to Design Culture

MATH 1310 College Algebra

MATH 1330 Precalculus

PHYS 1301 Introductory General Physics I

PHYS 1302 Introductory General Physics II

Electives

3 credit hours | general electives

6 credit hours approved electives, selected from the following:

- **ACCT 2331** Account Principles I
- **ARTH 1380** Art & Society: Prehistoric to Gothic
- **ARTH 1381** Art & Society: Renaissance to Modern
- **ARTH 2389** Modern & Contemporary Art
- **IART 3395** Selected Topics in Interdisciplinary Arts
- **ENRG 3310** Intro to Energy & Sustainability
- **ENTR 3310** Entrepreneurship
- **GENB 3300** Introduction to Personal Finance
- **HDCS 1300** Human Ecosystems & Technological Change
- **HDCS 3300** Organizational Decisions
- **MUSI 3300** Listening to Music Masterworks

Contact

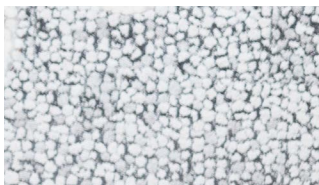
Mark Kimbrough

Co Director

832-842-3012

mkimbrough@uh.edu

Undergraduate



“Learning to develop my visions and making them into a reality is something I am thankful to the College for teaching me. Allotting time to network is another lesson I learned, regardless of what you pursue. Making connections is a crucial component of following your career path. Also, it doesn’t hurt to use the Cougar legacy now and then!”

Shaya Attaei

Chief Executive Officer

*ARIA Signs & Design
+ Architectural
Products*



“There were many voices (and statistics) along the way that all said my becoming a registered architect was highly unlikely, but the voice inside me that believed I would be was the loudest. I hope to be that positive voice for someone.”

Cindy Villarreal

Houston Office Director

O’Connell Robertson

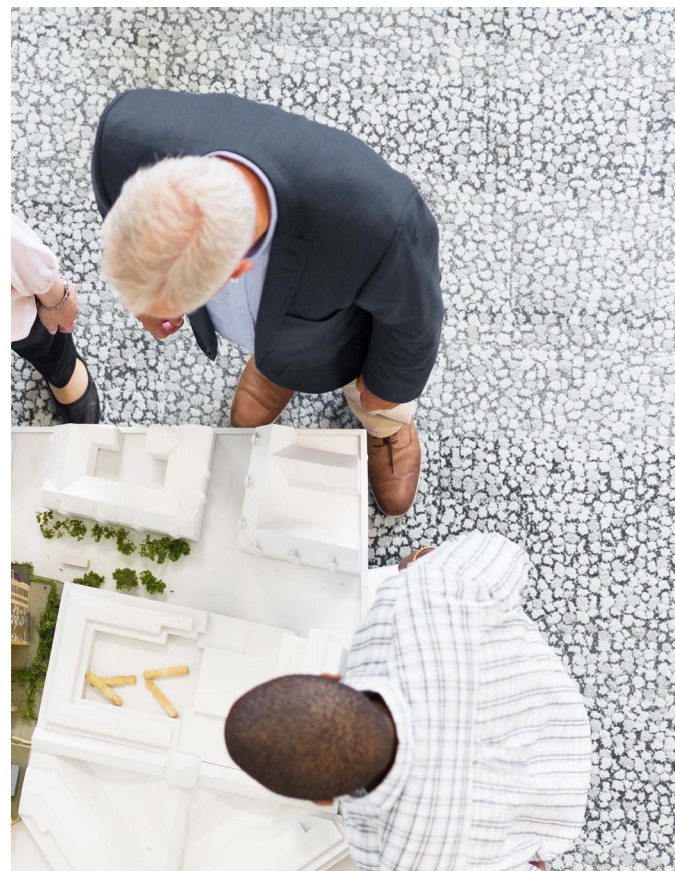


“Given architecture is still a predominately male profession, being recognized for the work my firm is doing to lift female architects and keep them in the profession is incredibly humbling and fulfilling.”

Alyse Makarewicz

President

AMB Architects



Bachelor of Science in Environmental Design | BS

The program for the Bachelor of Science in Environmental Design degree is a pre-professional, four-year curriculum of at least 128 semester hours. The curriculum includes 73 hours of Architecture courses, 34 of which are advanced hours (3000-level or higher). The degree includes the university’s required core curriculum and 4 semester hours of elective courses, and maintains the same focus as the Bachelor of Architecture, but with less emphasis on professional practice.

Careers

Environmental designer
Architect
Urban Designer
Environmental Planner
City Planner
Landscape Architect
Product Designer
Commercial Real Estate Associate
Drafting Technician
Engineering Manager
Graphic Designer
Interior Designer
Project Manager
Sustainability Consultant



uh.edu/architecture

Degree Requirements: 128 Credit Hours

Foundation Courses

ARCH 1358 Introduction to Design Culture

ARCH 1500 Architecture Design Studio I

ARCH 1210 History and Theory of Design Media

ARCH 1501 Architecture Design Studio II

ARCH 2500 Architecture Design Studio III

ARCH 2327 Technology I

ARCH 2350 Survey of Architectural History I

MATH 1310 College Algebra

MATH 1330 Precalculus

PHYS 1301 Introductory General Physics I

PHYS 1302 Introductory General Physics II

Intermediate Courses

ARCH 2501 Architecture Design Studio IV

ARCH 2328 Technology II

ARCH 2351 Survey of Architectural History II

ARCH 3500 Architecture Design Studio V

ARCH 3327 Technology III

ARCH 3501 Architecture Design Studio VI

ARCH 3328 Technology IV

ARCH 3230 Programing and Building Regulations

Comprehensive Design

ARCH 4373 Urban Environments

Elective Courses

6 credit hours | Architectural History electives

6 credit hours | Architecture electives

6 credit hours | approved integrative courses

13 credit hours | general electives

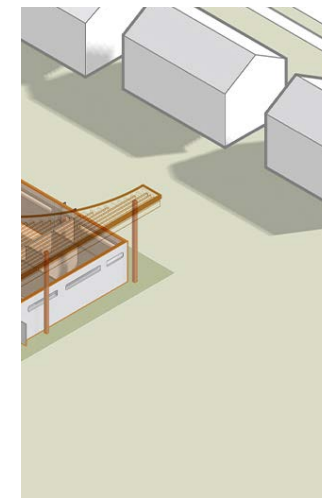
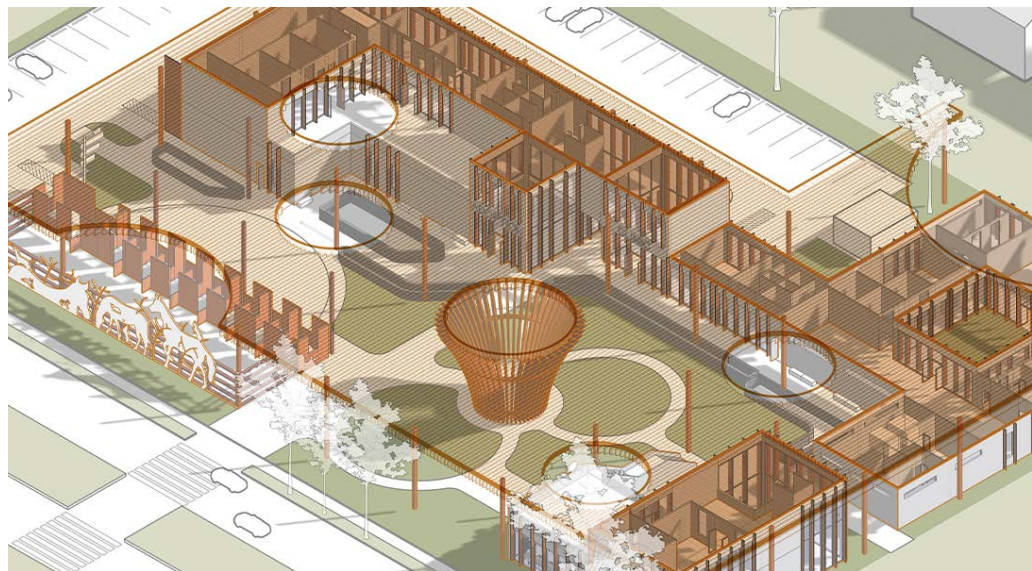
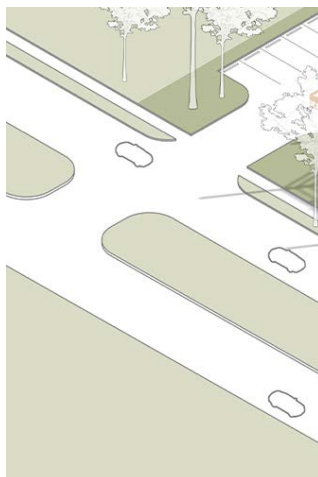
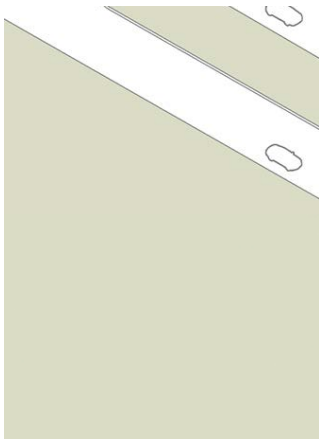
6 credit hours of approved electives, selected from the following:

- **ACCT 2331** Account Principles I
- **ARTH 1380** Art & Society: Prehistoric to Gothic
- **ARTH 1381** Art & Society: Renaissance to Modern
- **ARTH 2389** Modern & Contemporary Art
- **COMM 1332** Fundamentals of Public Speaking
- **ENRG 3310** Introduction to Energy & Sustainability
- **ENTR 3310** Entrepreneurship
- **GENB 3300** Introduction to Personal Finance
- **HDCS 1300** Human Ecosystems and Technological Change
- **HDCS 3300** Organizational Decisions
- **MUSI 3300** Listening to Music Masterworks

Contact

Roya Plauche'

Interim Director
713-743-2400
rplauche@uh.edu



Master of Architecture | MARCH +3

The Master of Architecture [MARCH +3] is a three-year STEM-designated professional degree focused on architectural design and practice. The degree is accredited through the National Architectural Accrediting Board (NAAB).

This program is dedicated to critical inquiry and the professional discipline of architecture. With a two-year (five semesters) core studio sequence followed by a culminating year (two semesters) focused on cutting-edge research and experimentation, the curriculum focuses on a cumulative thematic sequence:

- Conceptualization (fall year 1)
- Materialization (spring year 1)
- Fabrication (summer year 1 design-build)
- Contextualization (fall year 2)
- Synthetization (spring year 2)
- Globalization (optional summer year 2)
- Individuation (fall year 3)
- Assertion (spring year 3)

Beginning with a core studio sequence including integrated history and theory, technology of materials and assemblies, structures, and environmental and sustainable systems, and professional practice, the core sequence is augmented by a large selection of topical studios, global studies, and elective seminars, all culminating in a year-long master's project. This curricular flexibility allows for concentrations in media + fabrication, sustainable architecture, and urban systems.

Degree Plan: 99 Units

This degree is a STEM-designated professional degree program for students without previous degrees in architecture.

The seven-semester program includes 99 academic credits outlined in the sample degree plan below. Some students may have already taken university courses meeting or exceeding the requirements described below. For such students, the curriculum may be modified by substituting electives for courses previously taken at another institution. The appropriate area coordinator and the director of graduate studies must approve any general petitions for substitutions in the degree plan. Students with deficiencies may be required to undertake additional coursework.

Students must obtain approval of their individual degree plan before the conclusion of the first semester of enrollment.

Courses must be selected with a graduate academic advisor and with the approval of the director of Graduate Studies.

First Year: 42 Units

Fall Core (Conceptualization)

Design Studio I (6600)

Visual Studies I (6301) - PRE-TERM

Visual Studies II (6302)

Environmental Technology I (6A20)

Construction Technology I (6A22)

Survey of Architectural History (6340A)

Spring Core (Materialization)

Design Studio II (6601)

Contemporary Theory and Criticism (6357)

Environmental Technology II (6A21)

Construction Technology II (6A23)

Survey of Architectural History II (6341)

Spring Core (Materialization)

Design Studio II (6601)

Contemporary Theory and Criticism (6357)

Environmental Technology II (6A21)

Construction Technology II (6A23)

Survey of Architectural History II (6341)

Summer Core (Fabrication)

Graduate Design Build Workshop (6602)

Visual Studies III (6303)



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Contact

**Gail Peter Borden,
FAIA, NCARB**

Director of Graduate Studies
Professor

713-743-4114
gborden@central.uh.edu

Second Year: 30 Units

Fall Core (Contextualization)

Design Studio III (6603)

Visual Studies IV (6304)

Environmental Technology III (6A48)

Construction Technology III (6A50)

Modern Architecture and Urbanism (6359)

Spring Core (Synthesization)

Design Studio IV (6604)

Environmental Technology IV (6A49)

Construction Technology IV (6A51)

Urban Determinants (6376)

Elective (Architecture)*

Third Year: 27 Units

Fall Core (Individuation)

Design Studio V (7600)

Master Project Prep (6393)

Professional Practice (6360)

Integrated Practice (6361)

Spring Core (Assertion)

Design Studio VI - Master Project (6604)

Elective (Architecture)*

Elective (Architectural History)*

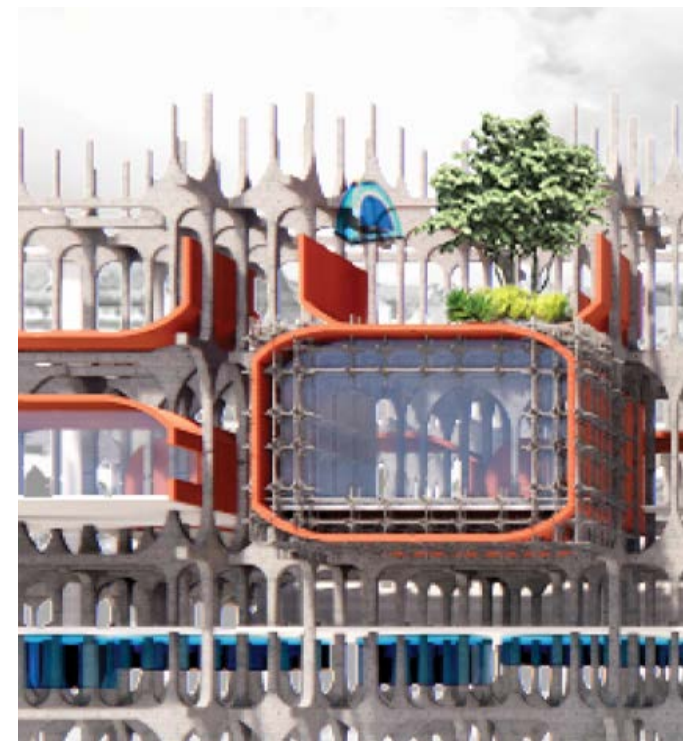
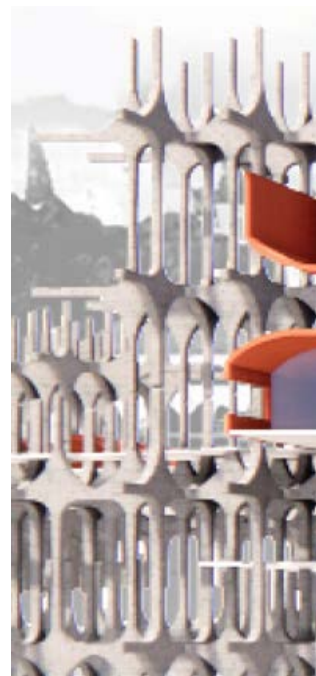
Master of Architecture | MARCH +2

The Master of Architecture [MARCH +2] is a two-year STEM-designated professional degree focused on architectural design and practice. The degree is accredited through the National Architectural Accrediting Board (NAAB). Please visit the accreditation page to learn more.

This program is dedicated to critical inquiry and the professional discipline of architecture. With a one-year (two semesters) core studio sequence built upon a previously completed undergraduate degree in architecture, followed by a culminating year (two semesters) focused on cutting-edge research and experimentation, the curriculum focuses on a cumulative thematic sequence:

- Conceptualization (fall year 1)
- Synthetization (spring year 1)
- Globalization (optional summer year 1)
- Individuation (fall year 2)
- Assertion (spring year 2)

Beginning with a core studio sequence with integrated history and theory, the technology of materials and assemblies, structures, and environmental and sustainable systems, and professional practice, the core sequence is augmented by a large selection of topical studios, global studies, and elective seminars, all culminating in a yearlong master's project. This curricular flexibility allows for concentrations in media + fabrication, sustainable architecture, and urban systems.



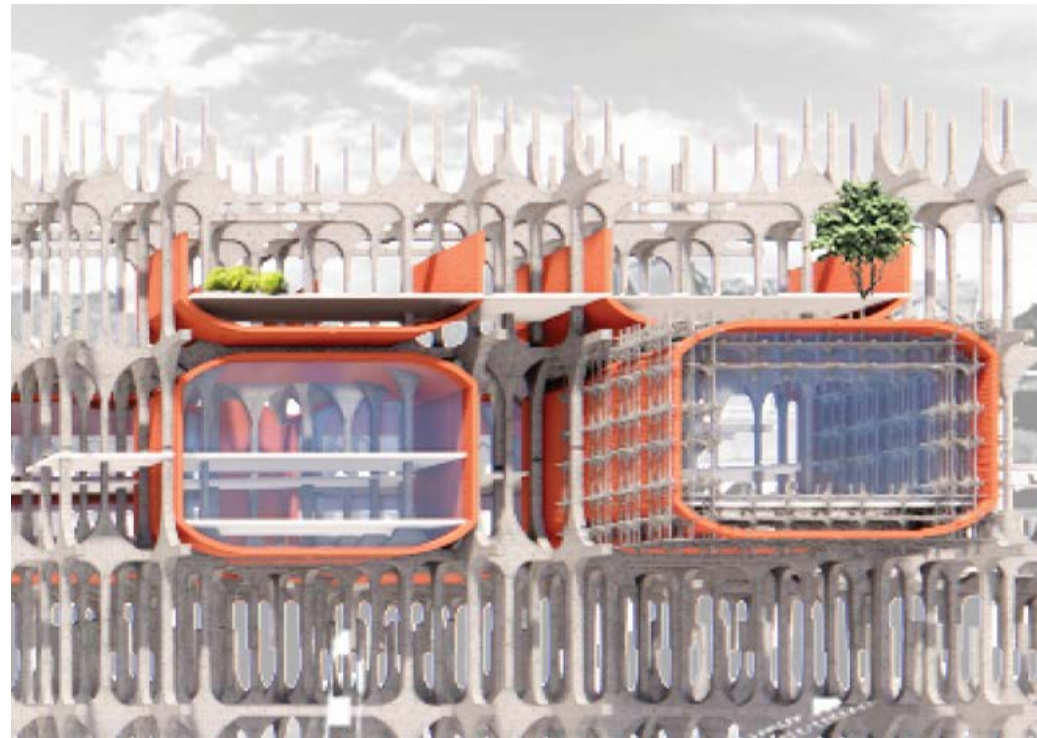
Degree Plan: 60 Units

This degree is a STEM-designated professional degree program for students who have already earned a bachelor's degree in architecture or environmental design.

The four-semester program includes 60 academic credits outlined in the sample degree plan below. Because students entering this program must already hold a degree in architecture or environmental design, some of the requirements described below may have been met in advance. For such students, the curriculum may be modified by course waivers or substitution of electives for courses previously taken at another university. The appropriate area coordinator and the director of graduate studies must approve any general petitions for substitutions or course waivers in the degree plan. Students with deficiencies may be required to undertake additional coursework.

Students must obtain approval of their individual degree plan before the conclusion of the first semester of enrollment.

Courses must be selected with a graduate academic advisor and with the approval of the director of Graduate Studies.



uh.edu/architecture

Second Year: 30 Units

Fall Core (Contextualization)

Design Studio III (6603)

Visual Studies I (6301)

Visual Studies IV (6304)

Environmental Technology III
(6A48)

Construction Technology III
(6A50)

Modern Architecture and
Urbanism (6359)

Spring Core (Synthesization)

Design Studio IV (6604)

Environmental Technology IV
(6A49)

Construction Technology IV
(6A51)

Urban Determinants (6376)

Contemporary Theory and
Criticism (6357)

Third Year: 30 Units

Fall Core (Individuation)

Design Studio V (7600)

Master Project Prep (6393)

Professional Practice (6360)

Integrated Practice (6361)

Spring Core (Assertion)

Design Studio VI - Master
Project (6604)

Elective (Architecture)*

Elective (Architectural History)*

Contact

Gail Peter Borden,
FAIA, NCARB

Director of Graduate Studies

Professor

713-743-4114

gborden@central.uh.edu

Master of Science in Architecture – Concentration in Historic Preservation | **MS ARCH**

The Master of Science in Architecture (MS ARCH) with a concentration in historic preservation is a post-professional degree focusing on issues of design and planning related to cultural sustainability.

The Concentration in Historic Preservation is for those passionate about protecting and celebrating the values of cultural heritage. It focuses on long-term cultural sustainability and resilience—preserving the identity and history of communities. Students will gain advanced training and experience that can be collaboratively applied in fields like architecture, engineering, city planning, public policy, and heritage management. The curriculum covers core principles of historic preservation, including the legal, economic, and regulatory aspects that define the field. Using an interdisciplinary approach, the program emphasizes methods to preserve cultural identity and heritage in a way that is sustainable as well as respectful of diverse communities. Our faculty bring expertise in areas such as architectural design, preservation master planning, history, urban planning, adaptive use, sustainable retrofits, disaster resilience mitigations, World Heritage management, and conservation of mid-century modern designs.

Degree Plan

The program concentration is centered on design and planning for students already possessing a professional degree in architecture, urban studies, landscape architecture, or a related design field. It integrates historic preservation, history, planning, environmental design and the sustainability of cultural heritage to advance actionable strategies for the future health, safety and welfare of people. The two-semester MS ARCH program consists of 36 academic credits in consecutive fall and spring semesters including design studio classes.

At least two of the three electives must be classes in the history of the designed environment.

Courses must be selected with a graduate academic advisor and with approval of the Director of Graduate Studies. Topical Design Studios must address Historic Preservation and be approved in advance



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Total Degree Requirements: **36 units**

Fall

Topical Design Studio (7600)

Master Project Prep (6393)

Historic Preservation Theory (6378)

Elective*

Elective*

Spring

Topical Design Studio (7601) or Advanced Master Project Studio (7602) or Master's Project (7603)

Heritage Documentation (6381)

Internship (6593)

Topics in Design Practice (7313)

Elective*

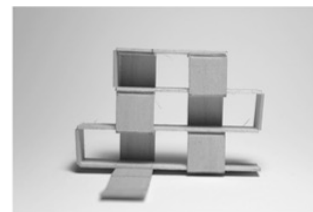
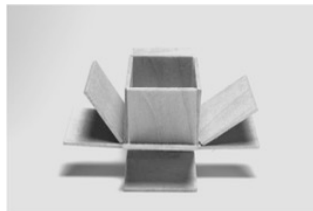
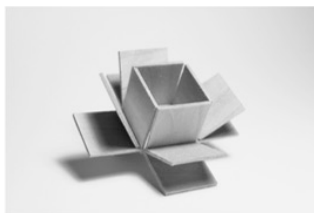
Contact

**Gail Peter Borden,
FAIA, NCARB**

Director of Graduate Studies
Professor

713-743-4114

gborden@central.uh.edu


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Master of Science in Architecture – Concentration in Media + Fabrication | **MS ARCH**

The Master of Science in Architecture with a concentration in media and fabrication [MS ARCH in Media + Fabrication] is a post-professional degree focusing on contemporary technology and architecture. The degree provides an integrative way of looking at new media, digital technologies, and advanced fabrication methods focused on developing the ability to fluidly navigate and integrate the expansive landscape of media technologies. This program investigates virtual applications, design media, and digital fabrication technologies and their opportunities to inform and engage architecture.

Using the newly formed Construction Robotics and Fabrication Technology Lab alongside the Burdette Keeland, Jr. Design Exploration Lab, these facilities are home to various applied research investigations, including materials research, building envelope investigations, social design, and prototyping for mass production. Specific knowledge areas include but are not limited to:

- Advanced Computation and Parametric Design
- Digital Fabrication and Robotics
- 3D printing / Additive Manufacturing
- Interactive Technologies and Responsive Systems
- Building Information Modeling [BIM]
- Advanced Visualization and Simulation
- History and Theory of Digital Design
- Experimental and Emerging Technologies

Students develop an individual presence within the diverse options and the range of complex digital capabilities available within the College. Through their master's project, students work on independent inquiries challenging the potential of traditional methodologies and processes with advanced digital tools engaging both spatial ideas and their corresponding physical components with great clarity, efficiency, and innovative modes of application. This degree intensively focuses on the emergent opportunities of computational tools to lead and expand architectural design, theory, and practice.

Total Degree Requirements: **36 units**

Fall

Topical Design Studio (7600)
Master Project Prep (6393)

Elective

Elective

Elective

Spring

Advanced Master Project
Studio (7602)

Elective

Elective

Elective

Elective

Contact

**Gail Peter Borden,
FAIA, NCARB**

Director of Graduate Studies
Professor

713-743-4114

gborden@central.uh.edu

Degree Plan

This degree is a design-based program centered on the studio, for students already possessing a professional degree in architecture, urban planning, urban design, landscape architecture, or related design fields. It integrates advanced technologies with architecture, to challenge both the means and the product of design. Individual flexibility to the technologies engaged is provided through the diverse and flexible curricular offerings. The program prepares students for design-based research and professional practice at the cutting edge of media design and fabrication. The two-semester program consists of 36 academic credits in consecutive fall and spring semesters.

Courses must be selected with a graduate academic advisor and with the approval of the director of Graduate Studies.

Master of Science in Architecture – Concentration in Sustainable Design | **MS ARCH**

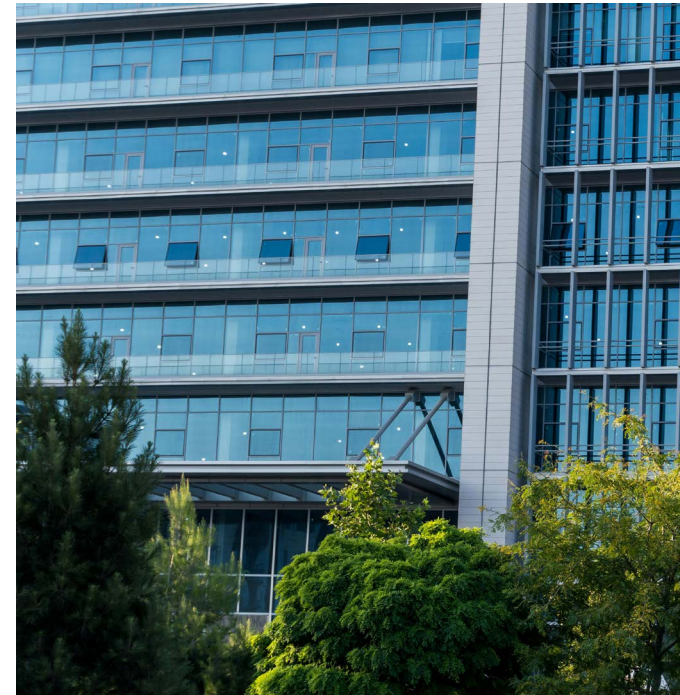
The Master of Science in Architecture with a concentration in sustainable design [MS ARCH in Sustainable Design] is an advanced post-professional degree for students focusing on the research and design of sustainable design at multiple scales, ranging from energy-efficient buildings to better neighborhood design and smart growth.

Before air-conditioning became ubiquitous, designing with the local climate in mind was not a virtue but a necessity. Passive design – taking advantage of the cyclical nature of the sun and maximizing natural ventilation – was widely practiced for centuries before the phrase was coined. In the years since the World Commission on Environment and Development defined sustainability as “meeting today’s needs without compromising the ability of future generations to meet their own needs,” we have better understood that technological innovations can present both problems and solutions. Taking advantage of our location in Houston, the world’s energy capital, this program works closely with the UH Energy research group, where academics collaborate with industry partners on multi-disciplinary projects promoting a better built environment.

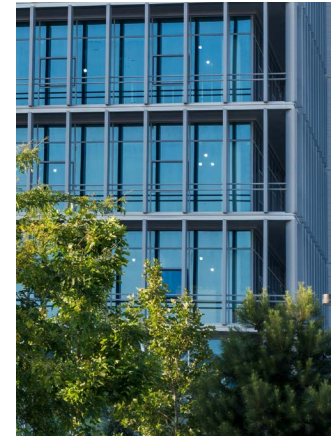
Degree Plan

This degree is a design-based program centered on the studio for students already possessing a professional degree in architecture, urban planning, urban design, landscape architecture, or related design fields. It integrates aspects of sustainability, building science, design technology, architectural history and precedent, urban design, planning, and environmental thinking within the context of the design studio to provide new methodologies for envisioning sustainable design. The program prepares students for design-based research and professional practice at the cutting edge of sustainable design. The two-semester program consists of 36 academic credits in consecutive fall and spring sessions.

Courses must be selected with a graduate academic advisor and with the approval of the director of Graduate Studies.



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Total Degree Requirements: **36 units**

Fall Core

Topical Design Studio (7600)
Master Project Prep (6393)
Elective
Elective
Elective

Spring Core

Advanced Master Project
Studio (7602)
Elective
Elective
Elective
Elective

Contact

**Gail Peter Borden,
FAIA, NCARB**

Director of Graduate Studies
Professor

713-743-4114
gborden@central.uh.edu

Master of Science in Architecture – Concentration in Sustainable Urban Systems | **MS ARCH**

The Master of Science in Architecture with a concentration in sustainable urban systems [MS ARCH in Sustainable Urban Systems] is an interdisciplinary post-professional degree focusing on sustainable architecture and urban systems. Using Houston and its coastal context as a laboratory, the program encompasses urban and regional planning, neighborhoods, cities, metropolitan areas, and their urban and natural systems.

The program allows for a wide range of graduate student participation with areas of concentration in design, business, public policy, engineering, natural sciences, and law. Students strengthen their ability to function as creative problem solvers capable of facilitating community discussions about livable, sustainable, resilient, and healthy cities and places, and also strategic thinkers who lead multidisciplinary design teams.

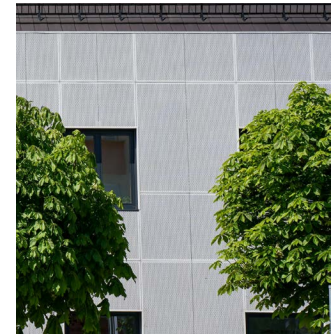
Degree Plan

An interdisciplinary team of instructors teaches this program's core curriculum. Students have 18 hours of core courses and 18 hours of electives. Up to six hours of the electives may be shared by related dual graduate programs. Core courses include interdisciplinary practicum and environmental analysis, ecologies, and technology courses. The interdisciplinary practicum courses includes a sustainable urban systems and urban sites capstone project. Core courses include Environmental Analysis I+II and Urban Ecologies and Technologies I+II.

Courses must be selected with a graduate academic advisor and with the approval of the director of Graduate Studies.



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Total Degree Requirements: **36 units**

Fall Core

Practicum 1:
Sustainable Urban Systems

Environmental Analysis I

Urban Ecologies and
Technologies I

Specialized Elective

Specialized Elective

Spring Core

Capstone Practicum 2:
Urban Sites

Environmental Analysis II

Urban Ecologies and
Technologies II

Specialized Elective

Specialized Elective

Contact

**Gail Peter Borden,
FAIA, NCARB**

Director of Graduate Studies
Professor

713-743-4114

gborden@central.uh.edu

Master of Science in Architecture – Concentration in Urban Design | **MS ARCH**

The Master of Science in Architecture with a concentration in urban design [MS ARCH Urban Design] is a post-professional degree focusing on contemporary urbanity. The degree provides an integrative way of looking at all of the complexity of the contemporary city, exploring the potentials and opportunities that are already inherent in urban thinking. This program is an immersive experience, graduating creative problem solvers capable of facilitating community discussions about livable, sustainable, and healthy cities. Our goal is to create strategic thinkers who lead multidisciplinary design teams.

Through their interdisciplinary studies in the MS ARCH in Urban Design program students:

- Prepare to assess and examine wide-ranging urban issues, including economic development, urban design, landscape and infrastructure integration, ecological systems, urban energy systems, and building performance
- Gain a working understanding of the legal, economic, and regulatory framework of federal, state, and local environmental policies
- Make the business case for resilience and pursuing sustainable development
- Define and promote sustainable community development
- Demonstrate the ability to manage collaborative community engagement processes upholding social and environmental justice and problem-solving
- Articulate sustainable environmental strategies with verifiable indicators and metrics while developing professional written, oral, and visual communication skills

At the beginning of the twenty-first century, global cities were defined by massive change. In the developing world, urban expansion was so rapid that conventional planning systems could not keep pace with growth. In the developed world, existing infrastructure and urbanism are often unable to accommodate shifting realities. In both settings, threats of climate change, environmental degradation, failing infrastructures, and public health issues are challenging the livability of our cities. New models are needed to address these major challenges.

This program concentration seeks to provide those new models. Its focus is not solely on issues of policy or design or community development but rather an integrative way of looking at the complexity of the contemporary city. It seeks to merge planning, design, and ecological thinking, in an acknowledgment that the challenges of the contemporary city cannot be addressed through policy or design alone. The program provides students a means to intervene in the city in productive, innovative ways – across disciplines, platforms, and methodologies.



The Megalopolis: Houston

The MS ARCH in Urban Design takes full advantage of Houston as a laboratory for invention and intervention. Investigations range from community development initiatives in disadvantaged neighborhoods to large-scale public works projects, long-term environmental studies, designs of city segments, and speculative projects exploring new concepts for evolving cities across the globe.

Houston has been described as a “problem-rich” ideal place for research, scholarship, and design of future urbanism – a city in transformation. It is the United States’ fourth largest city at the center of a region of over four million people, with the country’s largest port and largest petrochemical complex. Its growing economy is in the formational stages of transit-oriented land use and design policies, revitalizing neighborhoods, and recovering coastal edge habitats. It is a dynamic and culturally diverse city facing natural and manmade environmental challenges whose solutions are of growing importance.



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Degree Plan

This program concentration is a design-based program centered on the studio for students already possessing a professional degree in architecture, urban planning, urban design, landscape architecture, or related design fields. It integrates aspects of urban design, planning, and environmental thinking within the context of the design studio in order to provide new methodologies for envisioning the contemporary city. The program prepares students for design-based research and professional practice at the front edge of urban thinking. The two-semester program consists of 36 academic credits in consecutive fall and spring semesters.

Courses must be selected with a graduate academic advisor and with the approval of the director of Graduate Studies.

Total Degree Requirements: 36 units

Fall Core

Elements of Urbanism Core Studio

Urban Determinants (6376)

Methods of Urban Analysis

Master Project Prep (6393)

Elective

Spring Core

Advanced Master Project Studio (7602)

History of Urban Policy and Development

Elective

Elective

Elective

Contact

**Gail Peter Borden,
FAIA, NCARB**

Director of Graduate Studies
Professor

713-743-4114
gborden@central.uh.edu

Master of Science in Industrial Design | MS

The Master of Science (MS) degree in Industrial Design is a two-year (potentially three years for non-ID background students) curriculum committed to design research, innovation, and commercialization. Forged by connections to the medical, energy, aerospace, and entertainment industries in the context of Houston and the State of Texas, our graduate program advocates for a new form of design knowledge, merging theory with practice, and providing a new perspective on creativity, product and system development, services, and the environment with an emphasis on interdisciplinary studies.

Degree Plan: Personalized Program of Study

Each graduate student develops their personalized curriculum in consultation with the co-directors of the industrial design program based on the student's needs, interests, background, and specific area of study. An interdisciplinary study plan of 36 credit hours (15 required, 9 ID electives, and 12 general electives) needs to be completed for graduation. Elective courses may be taken in other departments and colleges at the University of Houston, as needed.

The MS degree offers two certificate options with internationally recognized programs at the University of Houston:

- **Entrepreneurship Certificate** with the UH Wolff Center for Entrepreneurship (ranked #1 undergraduate entrepreneurship program in the US by *the Princeton Review and Entrepreneur's list of Top 50 Best Programs*)
- **Foresight Certificate** with the UH Foresight Graduate Program to explore the future, as well as anticipate and prepare for change.

Candidates without an undergraduate degree in industrial design are advised to complete an additional up to 17 credits to develop fundamental design thinking and visualization skills. The co-directors and faculty of the ID program will advise and approve appropriate courses, including undergraduate ID studios.

Industrial Design | MS

Foundation Year

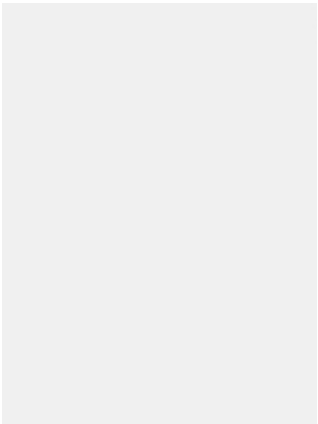
- INDS 6322 Visual Communication
- INDS 6397 Foundation Studio I
- INDS 6331 CAID II
- INDS 6333 Human Factors
- INDS 6398 Foundation Studio II
- INDS 6329 CAID I
- ID Elective
- ID Elective

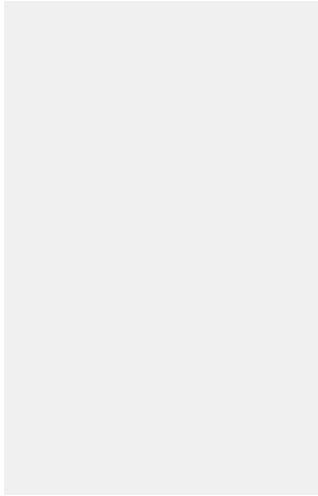
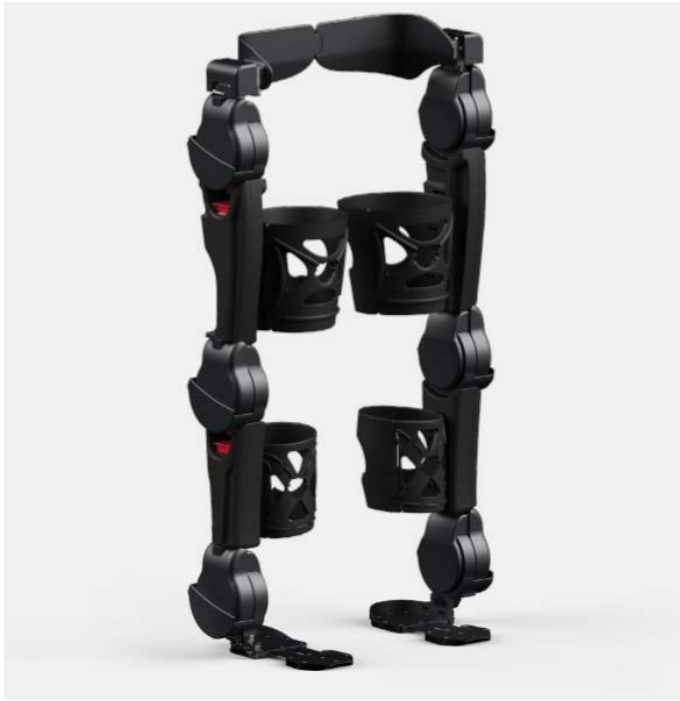
First Year

- INDS 6350 Design Studies
- INDS 6360 Graduate Studio I
- INDS 6345 Advanced Human Factors
- INDS 6330 3D Visualization
- INDS 6355 Integrated Research
- INDS 6361 Graduate Studio II
- INDS 6340 Advanced Materials
- Approved Elective

Second Year

- INDS 7300 Design Thesis I
- INDS 7301 Design Thesis II
- Approved Elective
- Approved Elective





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Industrial Design Research and Development | **MS**

Foundation Year

- INDS 6322** Visual Communication
- INDS 6397** Foundation Studio I
- INDS 6331** CAID II
- INDS 6333** Human Factors
- INDS 6398** Foundation Studio II
- INDS 6329** CAID I
- ID Elective
- ID Elective

First Year

- INDS 6350** Design Studies
- INDS 6360** Graduate Studio I
- INDS 6345** Advanced Human Factors
- INDS 6330** 3D Visualization
- INDS 6355** Integrated Research
- INDS 6361** Graduate Studio II
- INDS 6340** Advanced Materials
- Approved Elective

Second Year

- INDS 7300** Design Thesis I
- INDS 6397** UX/UI Design I
- INDS 7301** Design Thesis II
- INDS 6397** UX/UI Design II

Entrepreneurship Certification | **MS**

First Year

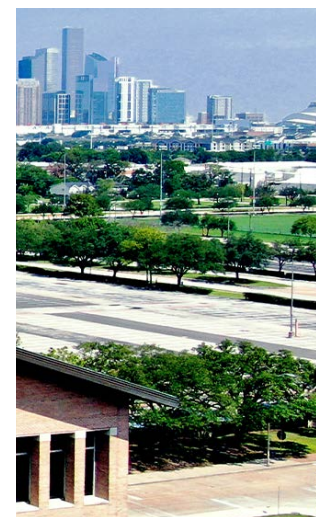
- INDS 6350** Design Studies
- INDS 6360** Graduate Studio I
- INDS 6345** Advanced Human Factors
- ENTR 7336** Entrepreneurship Overview
- INDS 6355** Integrated Research
- INDS 6361** Graduate Studio II
- INDS 6340** Advanced Materials
- ENTR 7337** Entrepreneurship Capital and Legal Forms

Second Year

- INDS 7300** Design Thesis I
- ENTR 7381** Technology Commercialization
- INDS 7301** Design Thesis II
- ENTR 7383** Technology Commercialization Project

Contact

Gail Peter Borden, FAIA, NCARB
 Director of Graduate Studies
 Professor
 713-743-4114
 gborden@central.uh.edu



uh.edu/architecture

Master of Arts in Architectural Studies | MAAS

The Master of Arts in Architectural Studies [MAAS] is an advanced degree focusing on deep research in the built environment. Students pursuing this degree must hold a four-year bachelor's degree from an accredited university. The Master of Arts in Architectural Studies is an advanced degree; it is not a post-professional degree.

Degree Plan

Students must have a minimum of 30 credit hours of approved study, including the following:

- 9 credit hours in advanced, prescribed courses as included in the sample degree plan below
- 21 credit hours of elective study approved by the director of graduate studies. Students must obtain approval of their degree plans, including electives, before the conclusion of the first semester of enrollment.

Some prerequisites may be required.

Second Year

Fall Core

Topical Design Studio (7600)
(optional)

Master Project Prep (6393)

Elective / Independent

Research Elective /
Independent Research

Spring Core

Advanced Master Project
Studio (7602)

Elective / Independent Research

Elective / Independent Research

Elective / Independent Research

Contact

Gail Peter Borden,
FAIA, NCARB

Director of Graduate Studies
Professor

713-743-4114

gborden@central.uh.edu

Reflections & Testimonials



“Some of my best memories from school came from working alongside classmates, sharing ideas, critiquing each other’s work, and learning together. That collaborative mindset continues to be just as important in professional practice.”

Jackie Barry

Interior Design Program Coordinator & Professor,
Architectural Design & Construction COE

Houston City College



“Embracing change and developing resilience have been essential to discovering where my strengths lie and what I am most passionate about. My architectural education, through design studios, varied coursework, and exposure to multiple career paths within the field, laid the foundation for this exploration and growth.”

Rashmi Murthy

Principal | Higher Education Client Leader

DLR Group

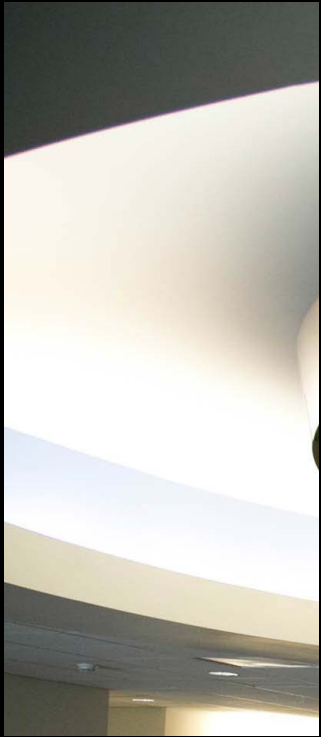


“Being able to work on any project at hand is what truly motivates me the most every day. I am so thankful for that opportunity. I look forward to discovering and uncovering each project, contemplating how to shape each idea, and bringing innovation, clarity, and execution to every project that comes my way. It’s a privilege that I treasure.”

Andres A. Pacheco

Senior Associate

VMDO Architects



C.T. Bauer College of Business

The C.T. Bauer College of Business is more than a degree-granting institution. Here, we transform the lives of our students, as they transform our college.

Our students have said that Bauer is “Where Awesome Happens” – from nationally ranked programs led by faculty who are scholarly leaders and former executives and entrepreneurs to experiential learning opportunities with globally recognized companies, there’s no shortage of awesome here.

A Bauer degree has incredible value on the market. Our alumni base in Houston is more than 50,000, with Bauer graduates working at all levels across sectors. We also offer our students and alumni a dedicated resource in finding jobs and internships with the Rockwell Career Center, which provides one-on-one personalized career counseling, resume critiques and interview prep, and employer panels and career fairs.

Undergraduate Programs

Entrepreneurship | BBA

Oil & Gas Accounting | Undergraduate Certificate

Accounting | BBA

Finance | BBA (Global Energy Management (GEM) Professional Program)

Finance | BBA (Global Energy Management (GEM) Track And Certificate)

Supply Chain Management | BBA

Energy Supply Management | Undergraduate Certificate



Graduate Programs

Professional | MBA

Executive | MBA

Executive | DBA

Finance (STEM) | MS

Accountancy (STEM) | MS

Business Analytics (STEM) | MS

Management Information Systems (STEM) | MS

Marketing | MS

Management and Leadership | MS

Sales Leadership | MS

Supply Chain Management (STEM) | MS

Real Estate | MS

Human Resource Leadership | MS





Bachelor of Business Administration in Entrepreneurship | BBA

The Bachelor of Business Administration in Entrepreneurship prepares students to develop entrepreneurial skills, create innovative ventures, and lead within dynamic business environments. Home to the nationally top-rated Wolff Center for Entrepreneurship, the program combines leadership development, business strategy, and practical application to help students turn ideas into successful ventures. It is ideal for students with entrepreneurial mindsets, as well as those interested in innovation, business strategy, and venture creation from business, engineering, or technical backgrounds.

Students gain expertise in leadership, change management, marketing, product development, innovation, and competitive business strategy while participating in hands-on learning experiences. Opportunities include developing startup business plans, competing in business plan competitions, collaborating with industry mentors and investors, and working in innovation labs and incubators. Students may also earn certificates in Corporate, Social, or Technology Entrepreneurship and work with local startups on real-world consulting projects. Graduates often launch their own businesses or pursue innovation-focused careers with startups, consulting firms, venture capital organizations, accelerators, and established companies. Through partnerships with organizations such as Red Labs and other corporate partners, students gain valuable industry connections and may apply program credits toward advanced degrees, including an MBA.

Advising

Kishwar Kabiruddin

Academic Advisor

713-743-9680

kkabiru2@central.uh.edu

Asha Thomas

Academic Advisor

713-743-8963

asha@uh.edu

Careers

Entrepreneurs

Venture Capital Analysts

Program Managers

Consultants

Business Development
Managers

Innovation Managers

Operations Managers

Sales Managers



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Entrepreneurship Major Coursework and Electives (42 Credit Hours)

Entrepreneurship Major Requirements

ENTR 3310 Entrepreneurship

ENTR 4330 Entrepreneurial Costs and Budgets

ENTR 4340 Entrepreneurial Capital

Additional Elective Hours Required:

Approved Advanced Business Electives Credit Hours: 6.0 (any 3000-4000 level business course)

Advanced Electives Credit Hours: 9.0 (any 3000-4000 level course)

General Electives Credit Hours: 9.0 (any 1000-4000 level course) *

Undergraduate business majors in the accelerated pathway B.B.A./M.S. degree program

Undergraduate business majors in the accelerated pathway B.B.A./M.S. degree program who complete graduate courses as an undergraduate may count them toward the requirements for the B.B.A. regardless of admission to a M.S. business program toward major or minor requirements for courses with the same letter rubrics as their major or minor, or toward elective requirements of their major.

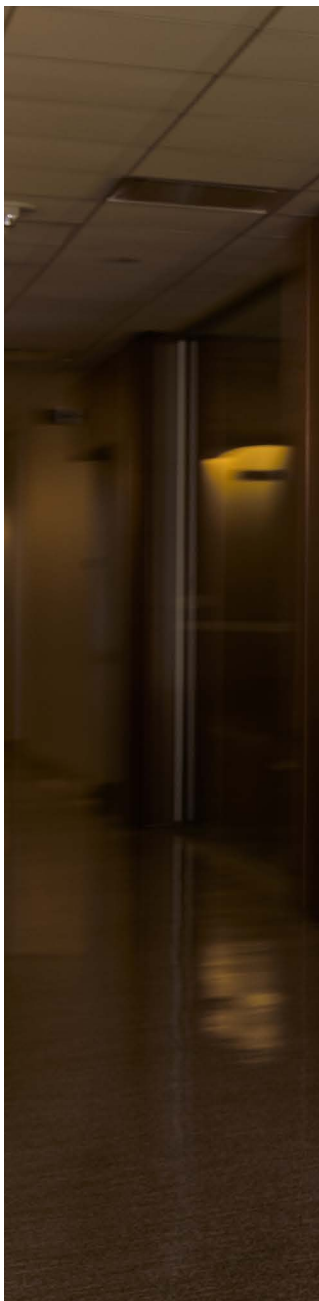
General B.B.A. Requirements

In order to earn a Bachelor of Business Administration (B.B.A.) degree, students must complete credit hour requirements:

- UH Core Courses & College Requirements
- Business Administration and Management Field of Study Courses
- Advanced-Level Business Requirements (required for all business majors),
- Major Coursework Requirements
- Additional Elective Requirements

Along with noncredit requirements:

- Assenting to the Bauer Code of Ethics and Professional Conduct, and
- A business writing evaluation (BWE), administered through BUSI 3302.



Oil & Gas Accounting | Undergraduate Certificate

The Oil & Gas (O&G) Accounting Certificate delivers the tools and cross-functional expertise to prepare students for positions in the Oil & Gas industry. A three-course certificate in the area of Oil & Gas/Energy accounting was developed through a joint effort with Oil & Gas/Energy companies, CPA firms, and other affected stakeholders in 2009. Only a few schools offer a course in O&G accounting and none offer anything like this certificate. Houston Oil & Gas and Energy companies and large CPA firms will be looking to recruit students who have obtained this certificate.

Throughout the fall semester, representatives from accounting and industry firms will host a one-semester-hour colloquium course for O&G students. The colloquium is intended to help students learn about the companies, network with representatives, and learn what it means to be an accountant in the O&G/Energy industries. Many of these companies will offer internships designed to prepare students for a career in O&G/Energy accounting and provide them with invaluable exposure to practical experiences in the accounting profession. The O&G courses are not approved to fulfill the Texas State Board of Public Accountancy's (TSBPA) educational requirement of 30 credit hours of advanced accounting. However, these courses are approved to fulfill the 150 hours of college credit.



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Certificate Requirements

Foundation Courses

ACCT 4378 Oil & Gas
Accounting I

ACCT 4382 Oil & Gas
Accounting III

ACCT 4381 Oil & Gas
Accounting II

ACCT 4107 O&G Colloquium
(Fall Semester Only)

Complete three required courses and one colloquium listed specifically for the certificate. Courses cannot be substituted for the required list.

To enroll in the O&G Colloquium, a student must

- Have completed or have concurrent enrollment in ACCT 4378.
- Have a minimum cumulative and accounting GPA OF 2.5.
- Have a minimum cumulative GPA of 2.5 in the Oil & Gas courses.

Advising

The Professional Accounting Advising Office provides advising to BBA Accounting students.

Advising appointments are available online (Microsoft Teams or Zoom) or in-person. Declared accounting majors can schedule an appointment via Navigate. Please note, all advising appointments must be scheduled in advance.

Students are encouraged to contact their assigned advisor based on their program type (in-person and online).

In-Person (A-M) & UH Extend

Dillon Kent

713-743-1289 | 304 CBB

bbaacct@uh.edu

onlinebbaacct@bauer.uh.edu

*In-person (A-B) & UH Extend is
on an interim basis.

In-Person (N-Z)

Kierstyn Stevens

713-743-6252 | 304 CBB

bbaacct@uh.edu

Department of Accountancy & Taxation

Christina Lewis

Program Manager

713-743-4821

clewis3@cougarnet.uh.edu

Cecilia Pittman

Director of Accounting
Department Business Services

713-743-4493

ccsanchez@uh.edu

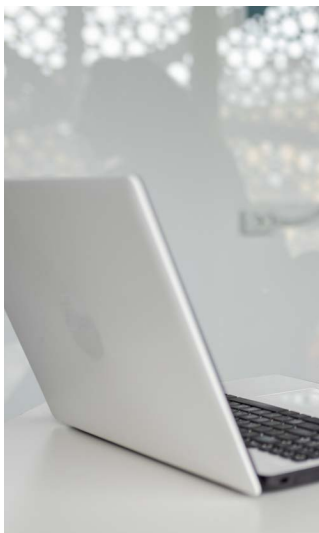
Tiffany Woods

Director of Accounting Advising
and Career Development

713-743-5004

tmwoods@central.uh.edu

Undergraduate



Bachelor of Business Administration in Accounting | BBA

Studies in Accountancy & Taxation prepare students for measuring and analyzing the income, costs, sources and uses of funds of an organization on the basis of certain generally accepted principles. Such measurements and analyses are helpful to those directly responsible for attaining production, marketing and financial objectives.

The goals of the undergraduate program in accounting are to provide graduates with the ability to:

1. Record, analyze, and interpret financial and other information.
2. Identify and diagnose accounting problems.
3. Communicate business information in a clear and concise manner.
4. Recognize ethical and regulatory dilemmas
5. Demonstrate an understanding of accounting and financial concepts.

Careers are available in corporate, non-profit and government organizations, as well as in the field of public accounting.

Careers

Audit

Tax

Risk Services

Industry Accounting

- Oil and Gas
- Corporate Accounting
- Internal Audit

Advising

The Professional Accounting Advising Office provides advising to BBA Accounting students.

Advising appointments are available online (Microsoft Teams or Zoom) or in-person. Declared accounting majors can schedule an appointment via Navigate. Please note, all advising appointments must be scheduled in advance.

Students are encouraged to contact their assigned advisor based on their program type (in-person and online).

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*In-person (A-B) & UH Extend is on an interim basis.

In-Person (N-Z)

Kierstyn Stevens

713-743-6252 | 304 CBB

bbaacct@uh.edu



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Degree Requirements: 120 Credit Hours

Foundation Courses

ACCT 3366 Financial Reporting Frameworks

ACCT 3367 Intermediate Accounting I

ACCT 3368 Intermediate Accounting II

ACCT 3371 Accounting Information Systems

ACCT 3377 Cost Accounting

ACCT 4331 Federal Income Tax - Individual

ACCT 4335 Financial Statement Auditing

Elective Courses

9 credit hours | general electives

3 credit hours | advanced business electives

- any 3000 / 4000 level business course*

9 credit hours | advanced electives

- any 3000 / 4000 level course*

*Optional: Certificate in Oil & Gas Accounting (ACCT majors only). Students should reserve 10 hours of electives for an O&G certificate.

In order to earn a BBA degree, students must complete credit hour requirements:

- UH Core Courses & Business Administration and Management Field of Study Courses
- Advanced-Level Business Requirements
- Major Coursework & Additional Elective Requirements
- Along with non-credit requirements:
- A business writing evaluation (BWE); administered through GENB 3302. Clearing the BWE is required to file a degree plan.

Department of Accountancy & Taxation

Christina Lewis

Program Manager

713-743-4821

clewis3@cougarnet.uh.edu

Cecilia Pittman

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ccsanchez@uh.edu

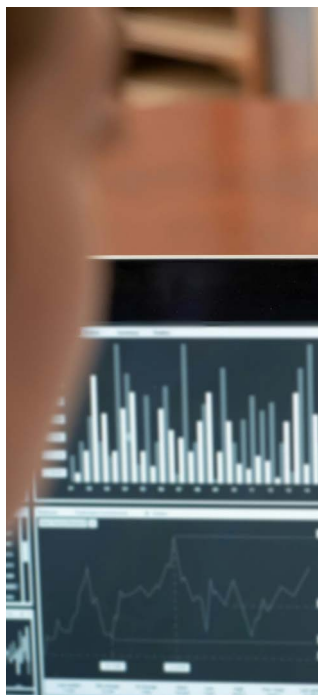
Tiffany Woods

Director of Accounting Advising
and Career Development

713-743-5004

tmwoods@central.uh.edu

Undergraduate



Bachelor of Business Administration in Finance | BBA

Global Energy Management (GEM) Professional Program

The Bauer faculty surveyed the energy sector and took a novel approach when doing so by asking the industry what skill sets would you like to see in a business graduate. The responses all centered on a theme; “we would like your business graduates to have grounding in technical disciplines. The energy industry is a very technical industry mostly comprised of engineers. Our business leaders need to be able to communicate and work in a technical environment.” The GEM Professional Program provides the basis for these fundamentals. This edge will allow you the potential to explore positions within the energy industry which might otherwise be unavailable to you.

The GEM Professional Program is the most powerful and comprehensive blend of technical and business skills available at the undergraduate and graduate level. Students in this program obtain a BBA in Finance with a GEM specialization. Meant to begin at the freshman year and carry through graduation, the GEM Professional Program requires a higher level math and science core than the traditional BBA in Finance. In addition to the required business core course work, GEM-PP students take all their advanced-elective courses in energy business.



Careers

- Banking
- Risk Management & Insurance
- Real Estate
- Corporate and Public Finance
- Personal Financial Planning

Advising

UH students interested in an energy focus within the Finance Major (either the GEM-Professional Program or the GEM track in Finance) may contact the Finance Academic Advisor for specialty tracks, Bethany Rose, at btolar@uh.edu. Appointments can be made through the Navigate appointment system.

Bethany Rose

Academic Advisor, FINA (A-L, specialty tracks)

713-743-4936 | MH 223G

btolar@uh.edu



bauer.uh.edu

Degree Requirements: 120 Credit Hours

Foundation Courses

FINA 4320 Investment Management

FINA 4330 Corporate Finance

12 credit hours from the following:

- **FINA 4350** Derivatives I: Options
- **FINA 4351** Derivatives II: Forwards, Futures and Swaps
- **FINA 4357** Commercial Liability
- **FINA 4358** Commercial Property
- **FINA 4359** Energy Insurance and Risk Management
- **FINA 4360** International Financial Management
- **FINA 4370** Energy Trading
- **FINA 4371** Energy Value Chain
- **FINA 4372** Upstream Economics
- **FINA 4373** Petrochemical and Refining Economics
- **FINA 4397** Approved Selected Topics in Finance

Elective Courses

6 credit hours | energy-related advanced electives, to be selected from the following:

- **ENRG 3310** Introduction to Energy and Sustainability
- **ENGR 4320** Case Studies in Energy and Sustainability
- **ENGR 4397** Selected Topics on Energy and Sustainability
- **ENGR 4398** Independent Study on Energy and Sustainability
- **SCM 4302** Energy Supply Chain
- **SCM 4312** Project Management for Energy Industries
- **TECH 4310** Future of Energy and the Environment
- **ECON 3385** Economics of Energy
- **HIST 3349** War, Globalization, and Terrorism
- **MANA 4397** Strategic Leadership in the Energy Sector

In sequence:

- **ACCT 3366** Financial Reporting Frameworks
- **ACCT 3367** Intermediate Accounting I (prereq: ACCT 3366)

In order to earn a BBA degree, students must complete credit hour requirements:

UH Core Courses and Additional GEM-PP Requirements

Life & Physical Sciences requires PHYS 1321 plus either:

- (1) CHEM 1331+1111 & CHEM 1331+1112,
or
- (2) Any two from CHEM 1301, GEOL 1330, or GEOL 3378

Business Administration & Management Field of Study Courses:

- **BUSI 3302** Connecting Bauer to Business
- **STAT 3331** Statistical Analysis for Business Applications

Additional Advanced-Level Business Requirements & Major Coursework

Along with non-credit requirements:

- A business writing evaluation (BWE); administered through BUSI 3302. Clearing the BWE is required to file a degree plan.

Undergraduate



Bachelor of Business Administration in Finance | BBA

Global Energy Management (GEM) Track and Certificate

A degree in Finance offers studies in the theory and application of activities related to the financing and investment decisions of individuals, corporations and non-profit entities. This includes the analysis of risk, investment cost and benefits, and securities management, as well as the study of financial institutions and their operations. Emphasis is given to understanding decision processes and financial markets and developing optimal decisions.

The GEM track is a complete undergraduate education in energy business culminating in a BBA in Finance; it is a specialization of the traditional BBA in Finance which gives graduates the leading edge when entering the job market. Students of the GEM track are finance majors who take a series of pre-selected energy business electives in their junior and senior years.



Careers

- Banking
- Risk Management & Insurance
- Real Estate
- Corporate and Public Finance
- Personal Financial Planning

Advising

UH students interested in an energy focus within the Finance Major (either the GEM-Professional Program or the GEM track in Finance) may contact the Finance Academic Advisor for specialty tracks, Bethany Rose, at btolar@uh.edu. Appointments can be made through the Navigate appointment system.

Bethany Rose

Academic Advisor, FINA (A-L, specialty tracks)
713-743-4936 | MH 223G
btolar@uh.edu



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Degree Requirements: 120 Credit Hours

Foundation Courses

FINA 4320 Investment Management

FINA 4330 Corporate Finance

12 credit hours from the following:

- **FINA 4350** Derivatives I: Options
- **FINA 4351** Derivatives II: Forwards, Futures and Swaps
- **FINA 4357** Commercial Liability
- **FINA 4358** Commercial Property
- **FINA 4359** Energy Insurance and Risk Management
- **FINA 4360** International Financial Management
- **FINA 4370** Energy Trading
- **FINA 4371** Energy Value Chain
- **FINA 4372** Upstream Economics
- **FINA 4373** Petrochemical and Refining Economics
- **FINA 4397** Approved Selected Topics in Finance

Elective Courses

6 credit hours | advanced business electives, to be selected from the following:

- **ENRG 3310** Introduction to Energy and Sustainability
- **ENGR 4320** Case Studies in Energy and Sustainability
- **ENGR 4397** Selected Topics on Energy and Sustainability
- **ENGR 4398** Independent Study on Energy and Sustainability
- **SCM 4302** Energy Supply Chain
- **SCM 4312** Project Management for Energy Industries
- **TECH 4310** Future of Energy and the Environment
- **ECON 3385** Economics of Energy
- **HIST 3349** War, Globalization, and Terrorism
- **MANA 4397** Strategic Leadership in the Energy Sector

In sequence:

- **ACCT 3366** Financial Reporting Frameworks
- **ACCT 3367** Intermediate Accounting I (prereq: ACCT 3366)

In order to earn a BBA degree, students must complete credit hour requirements:

UH Core Courses & College Requirements:

- Business Administration and Management Field of Study Courses
- **BUSI 3302** Connecting Bauer to Business
- **STAT 3331** Statistical Analysis for Business Applications

Advanced-Level Business Requirements:

- Major Coursework
- 6 hours of additional | advanced elective requirements
- 9 hours | additional general electives

Along with non-credit requirements:

- A business writing evaluation (BWE); administered through BUSI 3302. Clearing the BWE is required to file a degree plan.



Bachelor of Business Administration in Supply Chain Management | **BBA**

Supply Chain Management (SCM) encompasses the planning and management of all the activities and resources that organizations use to produce goods and services that satisfy customer demands.

Supply Chain Management (SCM) students at the Bauer College learn how to analyze the supply chain core processes and develop recommendations that enable companies to reduce costs, improve productivity, and achieve greater customer satisfaction. Recent graduates of supply chain management have taken jobs as analysts and/or consultants in areas such as service operations, quality management, project management, purchasing, inventory management, manufacturing planning, transportation logistics management, Enterprise Resource Planning (ERP), and many other areas. These jobs include: Supply Chain Management Professional, Production Planner, Transportation Planner, and Buyer/Planner.



Advising

Rima Attar

Program Director, Major
Advising SCM

713-743-4718 | MH 223C

rattar@uh.edu

Careers

Strategic sourcing specialist

Logistics coordinator

Process improvement specialist

Material planner

Enterprise systems analyst

Business data analyst



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Degree Requirements: 120 Credit Hours

Foundation Courses

Prerequisite: a grade of C or higher in STAT 3331 and a grade of C+ or higher in SCM 3301.

SCM 4301 Logistics Management

SCM 4330 Business Modeling and Decision Analysis

SCM 4350 Strategic Supply Management

SCM 4362 Demand and Supply Integration

SCM 4367 Process and Quality Management

SCM 4390 Supply Chain Strategy

Elective Courses

6 credit hours | advanced business electives, to be selected from the following:

SCM 4302 Energy Supply Chain

SCM 4311 Project Management

SCM 4351 Strategic Sourcing and Spend Analysis

SCM 4380 Enterprise Resource Planning

SCM 4385 Supply Chain Analytics

FINA 4371 Energy Value Chain

MANA 4340 Cross-Cultural Comm & Negotiations

In addition, in order to earn a BBA degree, students must complete credit hour requirements:

UH Core Courses & College Requirements

Business Administration and Management Field of Study Courses

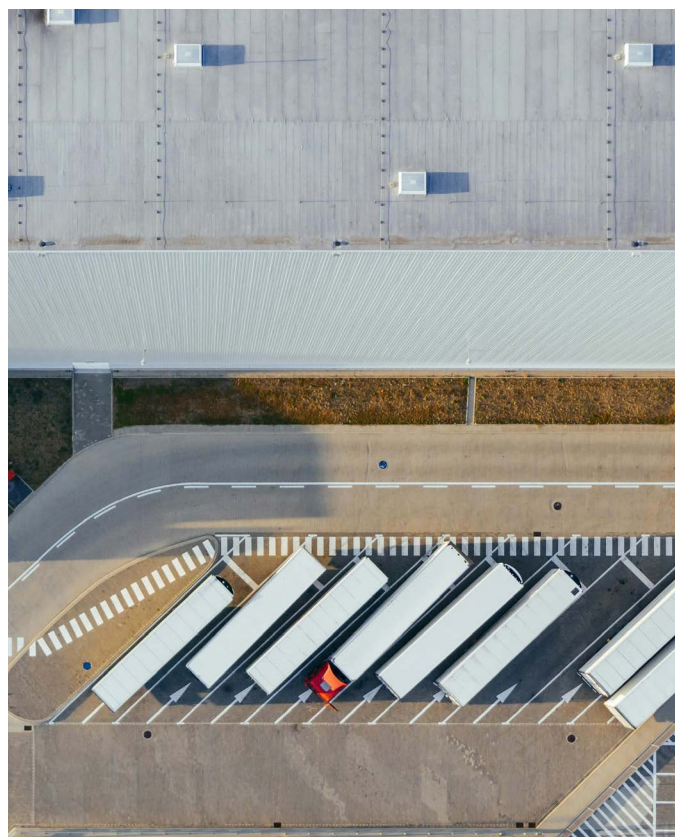
- **BUSI 3302** Connecting Bauer to Business
- **STAT 3331** Statistical Analysis for Business Applications with a grade of C or higher
- **SCM 3301** Supply Chain Management Fundamentals with a grade of C+ or higher

Additional Advanced-Level Business Courses Major Coursework:

- 6 Hours of Additional Advanced Elective Requirements
- 9 Hours of Additional General Electives

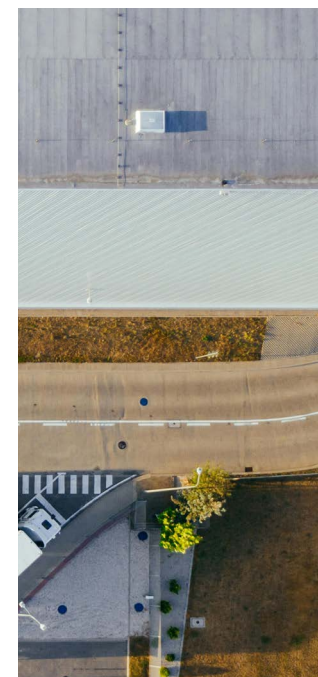
Additional Advanced-Level Business Courses Major Coursework:

- A business writing evaluation (BWE); administered through GENB 3302. Clearing the BWE is required to file a degree plan.



Energy Supply Management | Undergraduate Certificate

The Bauer Supply Chain Management (BBA) program offers students an opportunity to focus their degree objectives in on one of three specific areas: Sourcing, Analytics, or Energy Supply Management. Students who demonstrate competence in these areas by taking specific electives beyond the core course requirements earn certificates that demonstrate to potential employers they have developed additional skills that many employers seek.



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Degree Requirements: 6 Credit Hours

Elective Courses

Students who successfully complete six credit hours of specific electives with an average grade of B or higher can earn the Energy Supply Management Certificate:

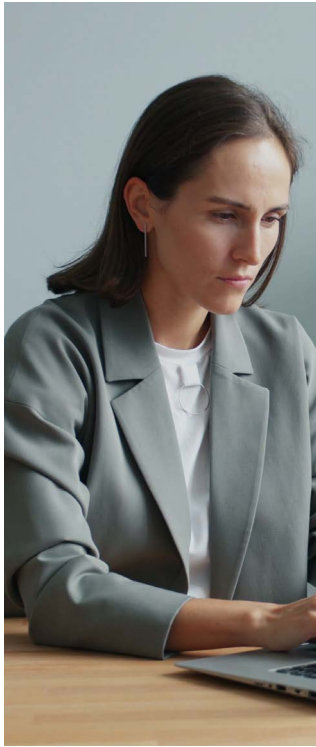
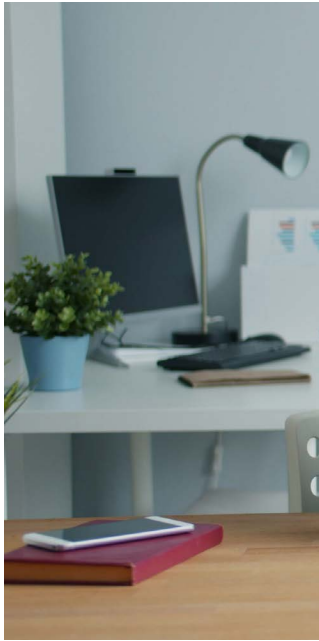
ONE of the Following:

- **SCM 4302** Energy Supply Chain
- **FINA 4371** Energy Value Chain

In addition to:

- **SCM 4311** Project Management

SCM majors can pursue multiple certificates, utilizing the additional SCM elective courses to satisfy their advanced elective requirements without adding any additional hours to their degree plan.



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Professional Master of Business Administration | MBA

The Professional MBA at the University of Houston is designed for working professionals seeking to advance their careers while maintaining their current responsibilities. With flexible evening and online course options, the part-time program allows students to continue working while earning a degree tailored to their professional goals.

Students can customize their experience through more than 100 electives and over 20 certificate options. The program combines online and in-person learning to promote both independent study and collaborative engagement. Through career development resources and networking opportunities, graduates are prepared to pursue leadership roles, advance within their organizations, or transition into new career paths.

Degree Requirements: 48 Credit Hours

Required

Financial Accounting
Managerial Finance
Marketing Administration
Business Communication
Strategic Analysis
Information Systems
Organizational Behavior and Management
Quantitative Analysis for Business Decisions
Managerial Analysis
Supply Chain Management Concepts
Ethical Leadership and Critical Reasoning

Electives

27 credit hours

Contact

713-743-0700
mba@uh.edu



bauer.uh.edu

Executive Master of Business Administration | EMBA

The Executive MBA at the University of Houston is designed for experienced professionals seeking to advance into senior leadership positions within corporations, government agencies, and nonprofit organizations. The program focuses on developing executive-level leadership, strategic thinking, and decision-making skills needed to succeed in a rapidly evolving global business environment.

Students gain hands-on experience through real-world projects, simulations, and case studies that strengthen managerial and problem-solving abilities. Taught by industry experts, the program combines modern business principles with an entrepreneurial mindset and valuable networking opportunities. Since 1978, the program has helped prepare numerous graduates for executive leadership roles, including many who have gone on to become CEOs and organizational leaders.

Degree Requirements: 48 Credit Hours

Required

Organizational Behavior
Financial Accounting
Quantitative Analysis for Business
Marketing Administration
Managerial Analysis
Managerial Finance
Management Information Systems
Supply Chain Management
Ethical Leadership and Critical Reasoning

Leadership Track

Effective Communication for Leaders
International Business
Leadership Development
Entrepreneurship/
Intrepreneurship &
Entrepreneurial Finance
Ethical Leadership & Critical Reasoning
Executive Coaching &
Corporate Politics
Strategic Analysis
Business Modeling for
Competitive Advantage
Functional Commercial Law
Financial Statement Analysis
for MBA

Contact

713-743-0700
mba@uh.edu



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Executive Doctorate in Business Administration | DBA

The Executive Doctorate in Business Administration (DBA) at the University of Houston is designed for experienced business leaders seeking to advance their careers through applied research, strategic thinking, and executive-level problem solving. The program equips students with advanced research and analytical skills that can be used to address complex organizational challenges and drive innovation.

Designed for working executives, the flexible curriculum combines online and in-person learning while providing opportunities to collaborate with faculty researchers and accomplished business professionals. Students develop original scholarship in their areas of interest, expand their professional networks, and gain the credentials needed for executive leadership roles or teaching opportunities in higher education.

Degree Requirements: 54 Credit Hours

Year 1

Grand Challenges in Business and Society

Thinking Strategically in the Global Marketplace

Principles of Research Methods

Research Symposium

Managing Change, Technology and Innovation

Quantitative Analysis

Directed Study 1

Year 2

Creation of New Business Knowledge for Real-World Impact

Application of Quantitative Methods

Generating Business Insights using Qualitative Analysis

Competing on Analytics

Current Topics in Finance, Accounting and Economics

Directed Study 2

Directed Study 3

Year 3

Dissertation Research (Proposal)

Dissertation Research (Defense)

Contact

713-743-2027

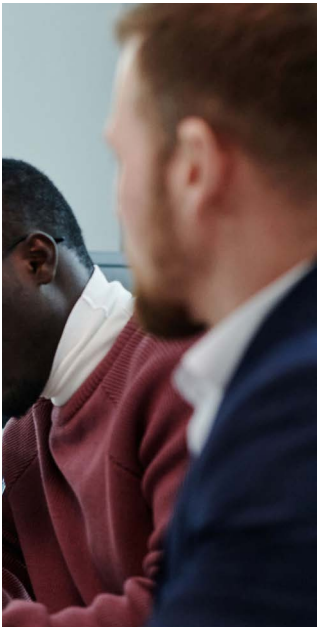
klhennessy@uh.edu



Master of Science in Finance (STEM) | MS

The Master of Science in Finance at the University of Houston provides students with advanced financial knowledge and practical skills for careers in corporate finance, investments, quantitative finance, energy finance, and real estate finance. This STEM-designated program offers flexible full-time, part-time, online, and in-person options to fit a variety of professional goals and schedules.

Students learn from world-class faculty and gain hands-on experience through industry-focused projects and strong connections to Houston’s finance, energy, healthcare, and real estate sectors. Graduates are well prepared for careers in a high-demand field, with many securing positions at leading organizations shortly after graduation.



Advising

Prof. Marcus Stewart

Executive Director
mcstewart@bauer.uh.edu

Prof. Kris Jacobs

Faculty Director
kjacobs@bauer.uh.edu

Investments and Portfolio Management Track

Foundation

- Analyzing Financial Statements
- Managerial Finance
- Quantitative Analysis for Business Decisions

Advanced Electives

- Derivatives I
- Portfolio Theory and Practice
- Derivatives II
- Programming in R - Finance Applications
- International Finance
- Experiential Learning in Finance
- Risk Management
- Introduction to Quantitative Investing
- Electric Power Markets
- Midstream Energy Finance
- Advanced Corporate Finance
- Fixed Income I
- Retirement and Estate Planning
- Fixed Income II
- Real Options in Energy Markets

Advanced Courses

- Valuation
- Capital Markets



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Corporate Finance Track

Foundation

Analyzing Financial Statements
Managerial Finance
Quantitative Analysis for Business Decisions

Advanced Courses

Valuation
Capital Markets

Advanced Electives

Advanced Corporate Finance
Portfolio Theory and Practice
Mergers & Acquisitions
International Finance
Experiential Learning in Finance
Risk Management
Midstream Energy Finance
International Business and Political Risk Management
Derivatives I
Fixed Income I
Derivatives II
Fixed Income II
Managerial Analysis
Real Options in Energy Markets
Private Equity and Investment Banking

Quantitative Finance Track

Foundation

Analyzing Financial Statements
Managerial Finance
Financial Econometrics

Advanced Courses

Valuation
Capital Markets

Advanced Electives

Derivatives I
Portfolio Theory and Practice
Derivatives II
Programming in R - Finance Applications
Stochastic Calculus and Computational Finance
Experiential Learning in Finance
Risk Management
Introduction to Quantitative Investing
Electric Power Markets
Midstream Energy Finance
Fixed Income I
Retirement and Estate Planning
Fixed Income II
Real Options in Energy Markets

Real Estate Finance Track

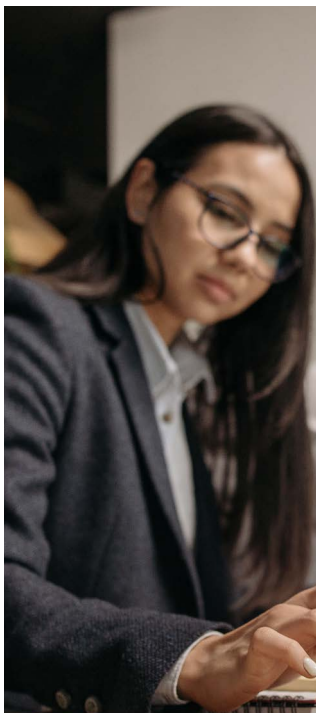
Required Track Electives

Real Estate Finance
Principles of Real Estate
Developing a Real Estate Project
Real Estate Market Analysis & Valuation

Energy Finance Track

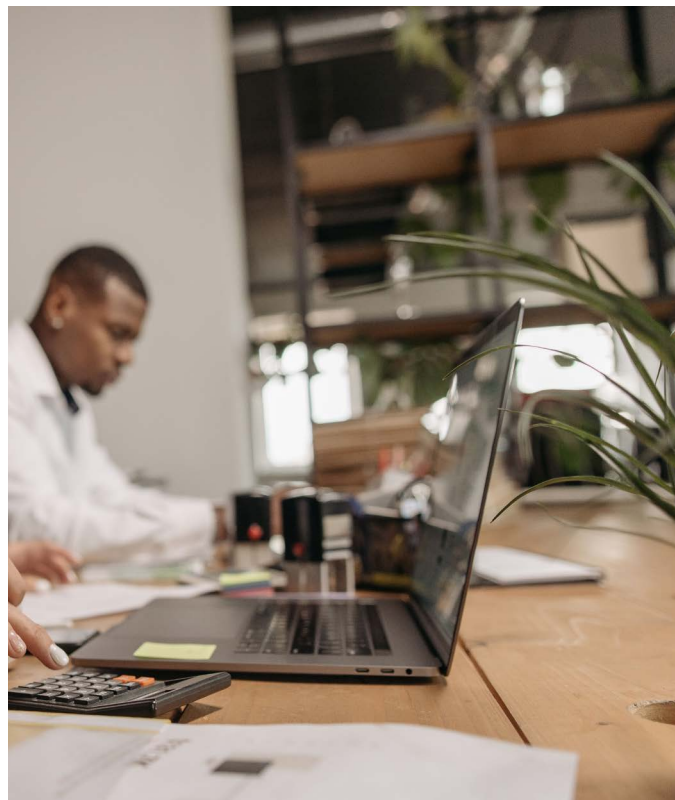
Required Track Electives

Energy Value Chain
Upstream Economics
Energy Trading
OR Energy Derivatives
Choice of any other energy elective



Master of Science in Accountancy (STEM) | MS

Develop the skill sets to advance your professional career in finance and accounting. Our MS in Accountancy can make your education count for the future you want. Customize your expertise through three tracks: Assurance and Financial Reporting, Tax Compliance and Consulting, and Business Advisory and Internal Audit to define your path forward in the accounting field and beyond.



Program Highlights

In a rapidly evolving profession, our program provides you with the skill sets you'll need to achieve your goals. That's our promise and our mission. Here are just a few of these advantages in your program:

- In-Person and Online options available
- Complete in as little as 12 months
- Flexible schedule for working professionals
- Optional Certificate in Applied Data Analytics in Accounting
- STEM-designated program
- Prestigious accounting accreditation through AACSB
- Mentor program that pairs new students with an alumnus or accounting professor

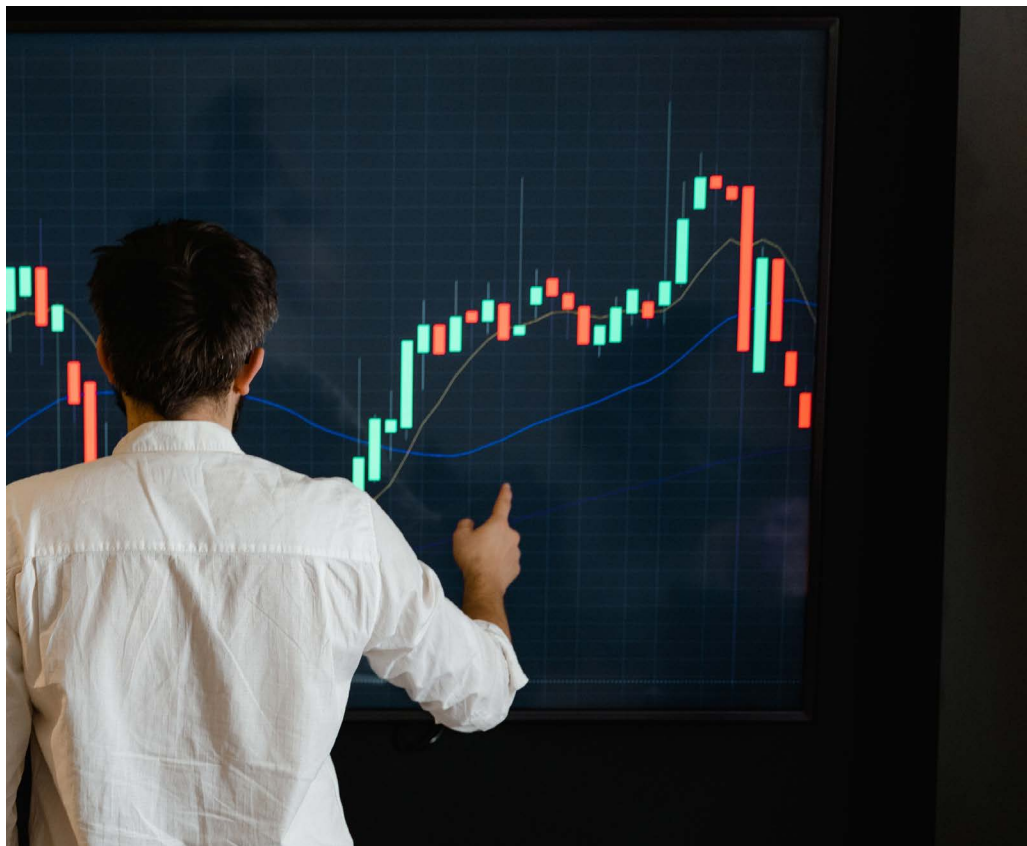
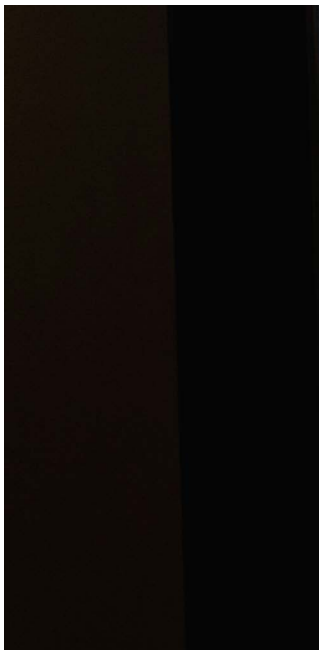
Course Highlights

The Master of Science in Accountancy focuses on coursework in accounting. Course topics covered in your program may include the following:

- Applied Data Analytics Tools in Accounting
- Financial Statement Analysis
- Control & Security of Financial Information
- Forensic Accounting
- Tax Research
- Partnership Tax



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Master of Science in Business Analytics (STEM) | MS

For you, data is the heart of business and industry. Data is what drives you. Accelerate this drive with an MS in Business Analytics and gain a stronger professional foothold in key areas of business and data-driven analytics. Achieve even better business strategy and performance through better business intelligence.

Program Highlights

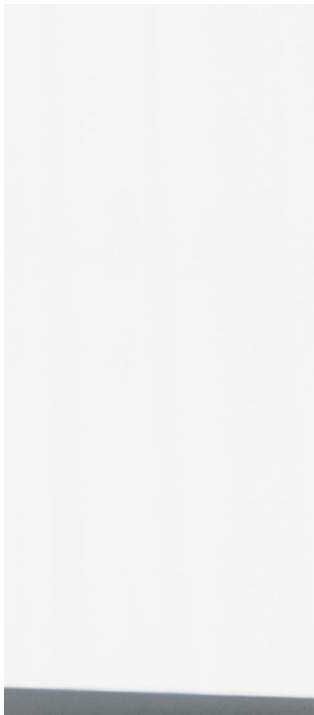
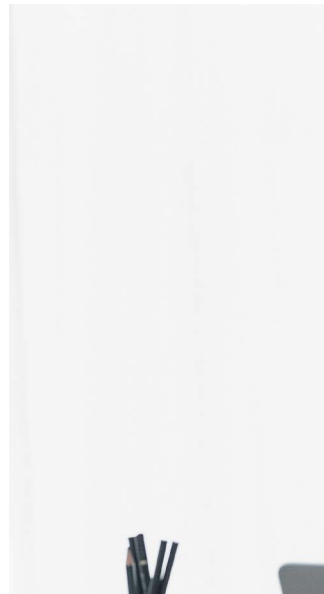
We build in advantages where we can so you can build the future you aspire to. That's our promise and our mission. Here are just a few of these advantages in your program:

- Learn online, in-person and full- or part-time
- Evening classes available
- Choose from Data Analytics and Data Management tracks
- STEM-certified curriculum
- Engage with AI technologies in data analytics
- Hands-on learning opportunities

Course Highlights

The Master of Science in Business Analytics focuses on coursework in data analytics, data management and business. Required and/or elective course topics covered in your program may include the following:

- Quantitative Foundations for Business Analytics
- Basic Programming for Business Analytics
- Research Design for Problems in Business Analytics
- Database Management Tools for Business Analytics
- Advanced Programming for Big Data Analytics
- Business Analytics – Frameworks and Methods



Master of Science in Management Information Systems (STEM) | MS

Business solutions come together for you when they are driven by the technology that connects the right ideas and information with the right people. With our MS in Management Information Systems you amplify your expertise in IT and business with the right people and project management skills to take the lead in tech-focused business strategy.



Program Highlights

We build in advantages where we can so you can build the future you aspire to. That's our promise and our mission. Here are just a few of these advantages in your program:

- STEM-certified
- Choose from online and in-person learning
- World-class faculty bring industry experience to learning
- Prepare for certifications in Project Management, Business Analytics, and Information Systems Auditing



Course Highlights

The Master of Science in Accountancy focuses on coursework in accounting and business. Required and/or elective course topics covered in your program may include the following:

- Business Applications of Database Management Systems I
- Transaction Processing Systems I
- IT Project Management
- Systems Analysis and Design
- Information Technology Management & Control
- Object Oriented Programming



degrees.bauer.uh.edu



Master of Science in Marketing | MS

For you, brands are more than products and celebrity personalities—they are the experiences that can give meaning to life itself for those who connect with these brands. Take the lead in making even more powerful connections to brand experience through this MS in Marketing that helps you propel creative strategy through the right analytics driving the right brand insights.



Program Highlights

We build in advantages where we can so you can build the future you aspire to. That's our promise and our mission. Here are just a few of these advantages in your program:

- Complete in as little as 12 months
- Learn online or in-person and full- or part-time
- Customize your degree with electives in Analytics, Digital Marketing, Product Management, and more
- In-program experiential learning opportunities in Houston's high-performance job market

Course Highlights

The Master of Science in Marketing focuses on coursework in business, management and marketing. Required and/or elective course topics covered in your program may include the following:

- Marketing Administration
- Intro to Digital Marketing
- Management of Marketing Information
- Business to Business Marketing
- Brand Management
- Entrepreneurship Capital



degrees.bauer.uh.edu



Master of Science in Management and Leadership | MS

A great leader is more than a source of expertise for those around them—they are a wellspring of inspiration and encouragement. Make the most of your passion for bringing out the best in those you guide forward with an MS in Management and Leadership. With the third-largest urban community of Houston as your backdrop you will have an immediate and powerful professional network on your side when you graduate.



degrees.bauer.uh.edu

Program Highlights

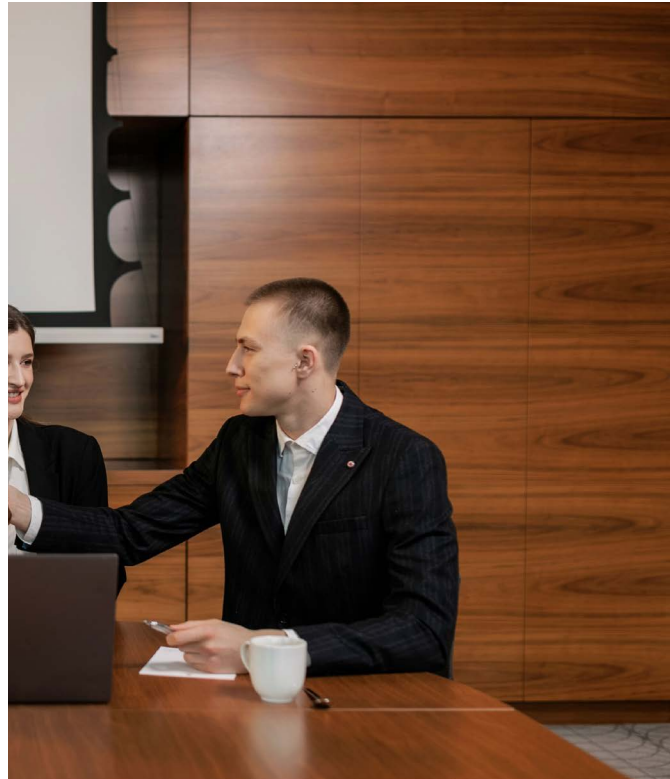
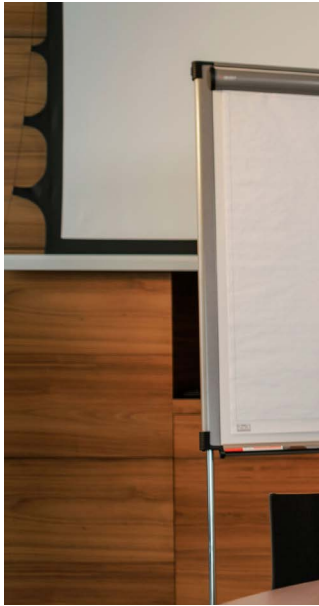
We build in advantages where we can, so you can build the future you aspire to. That's our promise and our mission. Here are just a few of these advantages in your program:

- Offered fully online
- Complete your program full-time or part-time
- Complete in as little as 12-18 months
- Customize your learning and career interests with relevant electives
- Learn from world-class, tenure-track faculty and real-world practitioners

Course Highlights

The Master of Science in Management and Leadership focuses on coursework in business, management and leadership. Required and/or elective course topics covered in your program may include the following:

- Organizational Behavior and Management
- Ethical Leadership and Critical Reasoning
- Managerial Decision-Making
- Effective Negotiations
- Strategic Analysis
- Leadership Development



degrees.bauer.uh.edu

Master of Science in Sales Leadership | MS

Sales is more than transactional relationships and the best leaders in this field understand that. Learn to foster the right relationships with customers that drive powerful sales strategy and performance, and lead other sales professionals in strengthening their relational sales approach with our MS in Sales Leadership. This low-residency program led by the renowned Stephen Stagler Sales Excellence Institute lets you more seamlessly advance your sales acumen while you continue working toward your goals in the field.

Program Highlights

We build in advantages where we can so you can build the future you aspire to. That's our promise and our mission. Here are just a few of these advantages in your program:

- Fully online
- Cohort-based
- Balance of synchronous and asynchronous learning
- Learn from faculty with real-world sales leadership credentials
- Cutting-edge curriculum in digital selling, strategic account management, digital transformation, sales enablement, customer relationship management and more

Course Highlights

The Master of Science in Sales Leadership focuses on coursework in leadership, management and sales. Required and/or elective course topics covered in your program may include the following:

- Managerial Finance
- Business Modeling
- Profitability and Cash Management
- Business Communications
- Leadership Development
- Sales Analytics


degrees.bauer.uh.edu

Master of Science in Supply Chain Management (STEM) | MS

You thrive when processes are moving forward efficiently and hitch-free—whether that's a production line or an inventory cycle. An MS in Supply Chain Management can give you the management tools you need to take the lead in driving up efficiency, accuracy, speed, and quality from end-to-end in the supply chain lifecycle.

Program Highlights

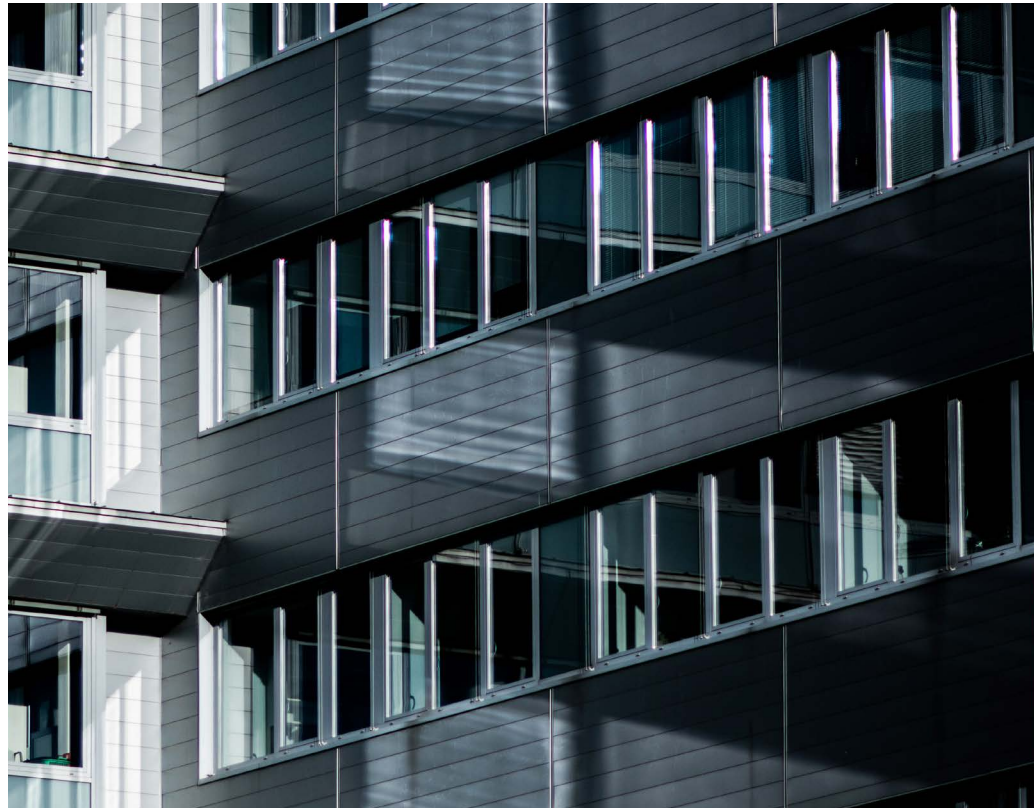
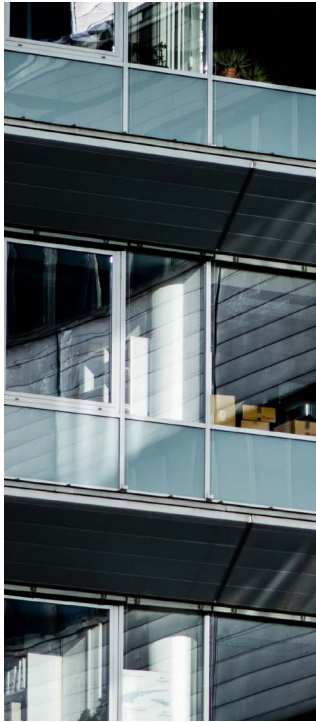
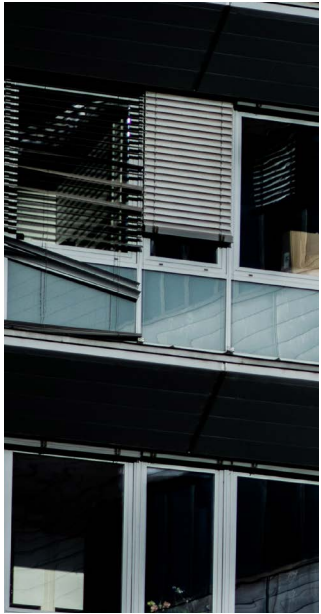
We build in advantages where we can so you can build the future you aspire to. That's our promise and our mission. Here are just a few of these advantages in your program:

- STEM-certified
- Learn online or in-person
- Evening classes available
- Immersive, experiential opportunities through Supply Chain Management Student Organization
- Take advantage of Houston as a global supply chain management hub

Course Highlights

The Master of Science in Supply Chain Management focuses on coursework in management and supply chain operations. Required and/or elective course topics covered in your program may include the following:

- Project Management
- Supply Chain Management Concepts
- Demand and Supply Integration
- Strategic Supply Management
- Logistics Management
- Process Analysis and Design
- Advanced Supply Chain Analytics


degrees.bauer.uh.edu

Master of Science in Real Estate | MS

Real Estate is a blend of business savvy, relationship-building and sales—and more importantly, an ever-changing industry that requires constant recalibration of expertise and insight. Our MS in Real Estate can prepare you to navigate industry shifts and develop a robust approach end-to-end in the real-estate cycle—from client leads to satisfied sellers and buyers.

Program Highlights

We build in advantages where we can so you can build the future you aspire to. That's our promise and our mission. Here are just a few of these advantages in your program:

- Access benefits through The Stanford Alexander Center for Real Estate, including: internships, scholarships, membership in professional organizations, and career placement support
- Bauer Graduate Real Estate Club offers professional development opportunities
- Practice-based education
- Learn in-person from real estate professionals

Course Highlights

The Master of Science in Real Estate focuses on coursework in business and commercial real estate sales. Required and/or elective course topics covered in this 30 credit hour program may include the following:

- Managerial Finance
- Intermediate Corporate Finance: Valuation
- Quantitative Analysis for Business Decisions
- Real Estate Finance
- Multifamily Real Estate
- Architectural History Survey



Master of Science in Human Resource Leadership | MS

Great HR leadership demands the right blend of attributes, skills and expertise across a number of disciplines—in other words: well-rounded. More than ever, a diversified background that continues to adapt with ever-shifting requirements and expectations within the HR field is critical for meaningful success and impact. Our MS in Human Resource Leadership can give you the tools and insights you need to grow as a leader in areas from recruiting and retention to training and development to labor relations and much more. The integration of strategic leadership thought and HRM skills is what sets the University of Houston apart from the others.



degrees.bauer.uh.edu

Program Highlights

We build in advantages where we can so you can build the future you aspire to. That's our promise and our mission. Here are just a few of these advantages in your program:

- Complete in as little as 12 months
- Preparation for SHRM certification
- Learn online or in-person and full- or part-time
- Program is fully composed of key HR skills

Course Highlights

The Master of Science in Human Resource Leadership focuses on coursework in HR and management and leadership. Required and/or elective course topics covered in your program may include the following:

- Strategic Human Resource Management
- Leadership Development
- Staffing & Talent Management
- People Analytics
- Compensation & Benefits
- Leading Change

Reflections & Testimonials



“Bauer has given me the ability to think big and be decisive, and the knowledge to make smart business decisions in order to succeed.”

Trevor T. Davis

Founder

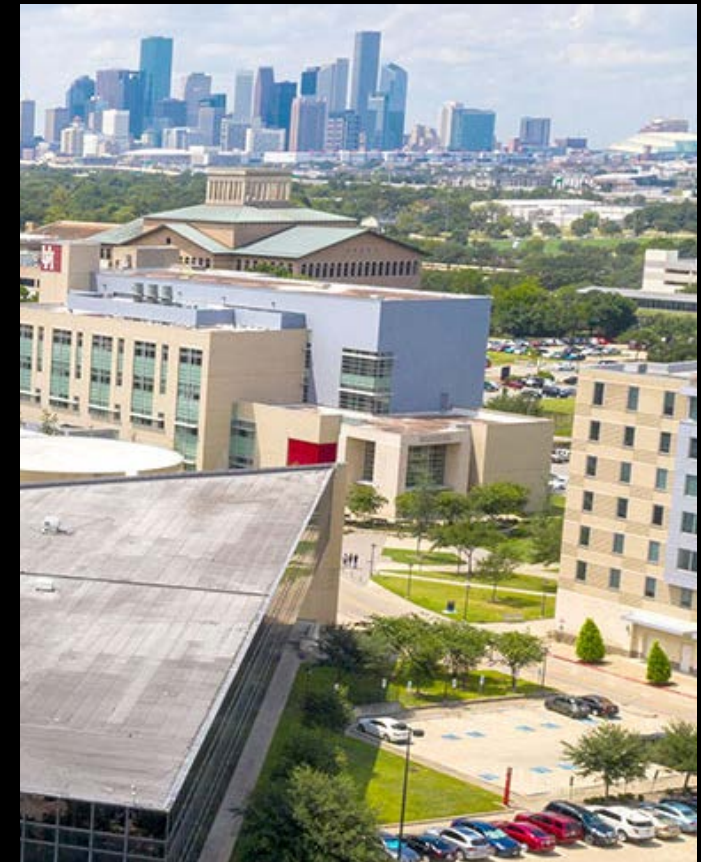
Hydra Offshore Construction



“The willingness of student leaders I have met at this school and their interest to guide encourages me to also pass on my experiences and knowledge in hopes of someone finding motivation from it. Bauer feels like home to an everlasting domino effect for students and our eagerness to give back and molds us into well rounded students and professionals.”

Zill Momin

Bauer MBA Candidate 2021



“I see myself as being somebody that can speak both languages. I speak the language of the traditional oil and gas industry, but I’m also very interested in these new technologies and I know a lot about them. And, having the MBA education that provides the commercial and fundamental business background, I can bridge that gap that brings us from the legacy industry to cleaner energy.”

Bryan Gottfried

Bauer MBA Candidate 2021



“The classrooms were very collaborative, and we had continuous networking events with each other, alumni, and corporations. The support I received made all the difference.”

Unnati Shakya

FT MBA ‘24



“You have professors who built careers in the profession you’re going into, and they came back to teach. They can introduce you to managing partners and leaders of firms, and you get a chance to hear them speak about what they are looking for in an employee.”

Joe Edens

MSACCY ‘17



“The willingness of student leaders I have met at this school and their interest to guide encourages me to also pass on my experiences and knowledge in hopes of someone finding motivation from it. Bauer feels like home to an everlasting domino effect for students and our eagerness to give back and molds us into well rounded students and professionals.”

Zill Momin

Bauer MBA Candidate 2021



“Stay open minded, stay curious and make a difference...As you pursue this lifelong learning, know that your Bauer family is always here for you. We want to hear your big ideas, we love to cheer for your future accomplishments, and we are always a source to support you. Your success is Bauer’s success.”

Xianjun Geng

Dean, C.T. Bauer College

Hugh Roy and Lillie Cranz Cullen Distinguished University Chair



“One thing that has stayed with me since I was at Bauer was having that curiosity and being able to maintain it... Remember to have an open mind and have a learner’s mindset. Don’t be shy of getting your hands dirty with something you are unfamiliar with.”

Zain Rauf

2023 Megawatt Winner in the 30 Under 30 Rising Supply Chain Stars

BBA ‘15



“One of the most meaningful parts of this experience has been creating spaces that bring people together through professional development, shared learning and community. Along the way, I have learned how powerful it can be when people feel supported, encouraged, and connected.”

Dhruvisha Shah

Outstanding MBA Student

BBA ‘26



College of Liberal Arts and Social Sciences

The College of Liberal Arts and Social Sciences (CLASS) is the heart of the University, dedicated to spurring intellectual curiosity, creativity, and transformative education. Encompassing humanities, social sciences, and health sciences, CLASS is truly a mosaic of disciplines that broaden perspectives, inspire potential, and advance possibilities yet unimagined.

The College's goal is to stimulate and expand students' cultural, mental and physical explorations through rich course offerings, study abroad programs and campus events. We encourage students to delve into the questions of life while building critical and analytical skills that animate professions and launch successful careers.

Our 584 faculty members educate nearly 10,000 undergraduate majors and minors and 1,200 graduate students, preparing them for future studies and professional achievements.



Undergraduate Program

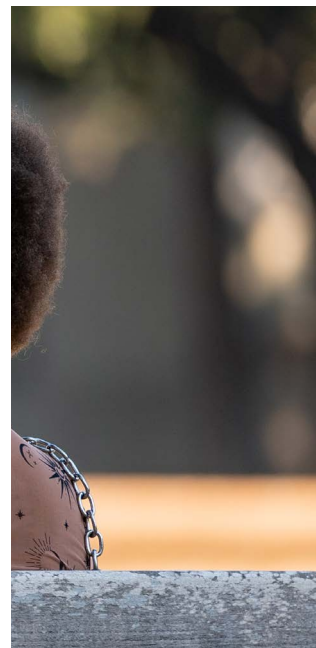
Economics | BS



Graduate Programs

Industrial Organizational Psychology | Ph.D.

Public History | MA



Bachelor of Science in Economics | BS

Economics is the study of how a society chooses to allocate its finite resources among the infinite demands of its members. This includes analysis of the decisions made by households and firms about production and consumption of finished goods, inputs to production, and labor services, in addition to analysis of the impact of public policies on these decisions and on the economic well-being of society and its members.

Specific subject areas studied in economics include aggregate analysis of business cycles and economic growth (macroeconomics), analysis of labor markets, public finance and taxation, industrial organization, international trade, the economics of money and banking, and studies in specialized fields.

The academic programs of the Department of Economics seek to develop students' capacity to think systematically and analytically about social issues. These analytical abilities give our graduates a strong fundamental background for success in professional life. The department's graduate programs prepare students for careers as economists in business, government, and the academic community. The undergraduate program has been designed to allow students maximum flexibility to orient their curriculum either toward preparation for graduate study in law, business, or economics, or toward professional courses and career placement.

Careers

Economist	Financial consultant
Financial risk analyst	Investment analyst
Data analyst	Actuary
Financial planner	Public sector roles
Accountant	
Economic researcher	



uh.edu/class/economics

Advising

Evan Jones

Academic Advisor I

713-743-1906

ecjones7@cougarnet.uh.edu

Sue Schindler

Academic Advisor III

713-743-4145

bschindl@central.uh.edu

Ever Abamba

Academic Advisor I

713-743-3804

eabamba@Central.UH.EDU

Natalia Calderon

Academic Advisor II

713-743-6688

ncaldero@Central.UH.EDU

Degree Requirements: 120 Credit Hours

Foundation Courses

ECON 2304 Microeconomic Principles

ECON 2305 Macroeconomic Principles

ECON 2370 Introduction to Economic Data Analysis

ECON 3332 Intermed Microeconomics

ECON 3334 Intermed Macroeconomics

ECON 3370 Introduction to Econometrics

ONE of the following:

- **MATH 1314** Calculus for Business and the Life Sciences
- **MATH 1431** Calculus I

Elective Courses

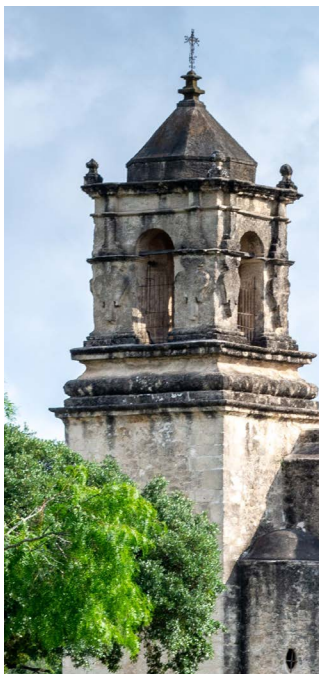
15 hours | advanced ECON electives

- any 3000 / 4000 level course

In addition to the academic experience, the department offers undergraduate students an opportunity for practical experience through our internship program. The internship program allows students to earn advanced economics credit while obtaining practical experience in a professional environment.

ECON 4390 Economics Internship

- This class is designed for students interested in working in selected private industry, federal, state and local government offices.

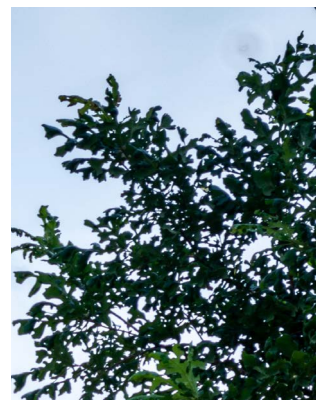


Master of Arts in Public History | MA

The Masters in Public History is a professional degree that prepares students for positions in various historical venues, government agencies, business enterprises, and educational institutions. The degree also is excellent preparation for the traditional Ph.D. in History.

CPH invites students to participate in its outreach and research. Our activities have four goals:

- To train excellent research historians.
- To collect, preserve, and share the history of Houston and the Gulf Coast region
- To build on faculty expertise in political, gender, environmental, race & ethnicity, ancient, urban, digital, oral, material culture, archives, and food history.
- To support graduate students and sustain the CPH.



Careers

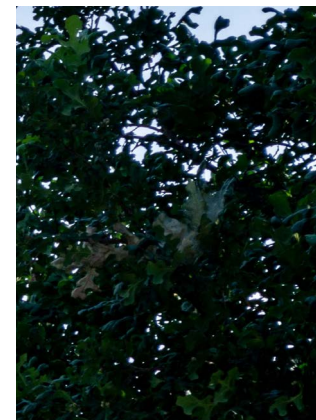
Museums
(curation, administration, interpretation)

Archives
(processing, public service, administration)

Public policy research

Historical editing
(professional journals and academic presses)

Corporate history
(in-house historian for large corporations)



Non-profit administration

Historical preservation (public and private sector)

Historical consulting (research, archival processing, exhibit design, and more)

Library services

Positions with federal agencies including the National Park Service

Writing popular history (magazines, newspapers, blogs)

Advising

Nancy Beck Young, Ph.D.

Director of the Center for Public History

Adviser of Public History

Professor of History

713-743-3085

nyoung@central.uh.edu



uh.edu/class/ctr-public-history

Non-Thesis Track MA: 36 Credit Hours

Introductory Seminar

HIST 6381 Readings in Public History

Portfolio & Oral Exam

Students in the non-thesis track will be required to prepare a portfolio over the course of their study.

- 2 Sample syllabi
- An extensive bibliography of public history readings
- Samples of all projects

A committee of faculty will conduct an oral examination based on the three components of the portfolio.

Public History Courses

12 credit hours

HIST 6383 Topics in Public History
(may repeat when topics vary)

- Application of Methods of Public History to Public Policy
- Business Decision Making
- Community Studies
- Cultural Resources Management
- Historical Editing
- Other Related Themes

HIST 6384 Oral History

Related non-history courses must have the approval of the Director or Associate Director.

Course Work

12 credit hours | course work in the student's major field.

Internships

9 credit hours | External and Internal Internships

Internships consist of supervised work experience in Public History, ordinarily in a private business, government agency, museum, community organization, or historical society usually in the Houston-Galveston metropolitan region. Each internship must be approved and supervised by the Director or Associate Director.

Thesis Track MA: 30 Credit Hours

Introductory Seminar

HIST 6381 Readings in Public History

Master's Thesis

History 6399 Master's Thesis

The thesis committee will conduct an oral examination in defense of the thesis after the student has completed the final draft.

Foreign Language

Before a student can be approved for degree candidacy, he or she must demonstrate proficiency in a foreign language relevant to the major area.

A quantitative option may be substituted for the foreign language requirement.

Public History Courses

6 credit hours

HIST 6383 Topics in Public History
(may repeat when topics vary)

- Application of Methods of Public History to Public Policy
- Business Decision Making
- Community Studies
- Cultural Resources Management
- Historical Editing
- Other Related Themes

HIST 6384 Oral History

Related non-history courses must have the approval of the Director or Associate Director.

Course Work

9 credit hours | course work in the student's major field.

Internships

6 credit hours | External and Internal Internships

Internships consist of supervised work experience in Public History, ordinarily in a private business, government agency, museum, community organization, or historical society usually in the Houston-Galveston metropolitan region. Each internship must be approved and supervised by the Director or Associate Director.



Doctor of Philosophy degree in Industrial Organizational Psychology | **Ph.D.**

The graduate program in Industrial and Organizational (I/O) Psychology at the University of Houston is one of the nation's oldest and most highly regarded programs. Since 1950, the program has focused on applying psychological theory and research to improve workplace effectiveness, employee well-being, and organizational performance. Students are trained as scientist-practitioners, learning to use evidence-based methods to solve real-world workplace challenges while advancing research and best practices in the field.

Through rigorous coursework, collaborative research, and the development of both technical and interpersonal skills, students gain the expertise needed for careers in consulting, research, human resources, and organizational development. The program maintains strong connections with organizations in the energy and healthcare sectors, providing opportunities to contribute to impactful research on topics such as workplace safety, stress, and human capital management. Graduates are well prepared to become leaders in both academic and applied settings.

Advising

Bradley Brummel, Ph.D.

Professor

Director of Industrial/
Organizational Psychology
Program

Director, Research on Ethics
and Leader Identity, Growth,
and Narratives (REaLIGN)
Laboratory
bjbrummel@uh.edu

Careers

Human Resources Manager

Team Development Manager

Professional Business
Development Consultant

Strategy Development
Professional

Workforce Insights Analyst

Behavioral Analyst

Policy Officer



uh.edu/class/psychology

Degree Requirements: 72 Credit Hours

Department Core

PSYC 6300 Statistics for Psychology

PSYC 6302 Experimental Design

PSYC 6370 Foundations of I/O

PSYC 6338 Foundations of Social Psych

PSYC 6351 I/O Research Methods

PSYC 6371 Personnel Psychology

PSYC 7305 Structural Equation Modeling

OR

PSYC 7306 Multilevel Modeling

PSYC 7363 Organizational Psychology

PSYC 7307 Applied Psychology

Directed Research/ Electives

21 credit hours | Directed Research or Electives

PSYC 6352 Dir Research in I/O

1 advanced I/O content seminar

Thesis Research

PSYC 6399 Masters Thesis

PSYC 7399 Masters Thesis

Disstertation Research

12 credit hours | Dissertation

PSYC 8399 Dissertation

PSYC 8699 Dissertation

PSYC 8999 Dissertation

Comprehensive examination

Each student takes a comprehensive examination (expected in August after the third year) after completing the Master's thesis. Students entering with a Master's Thesis Waiver should take Comprehensive Exams during August after the second year. This exam is a written test. Students are given two opportunities to pass.



Cullen College of Engineering

The mission of the Cullen College of Engineering at the University of Houston is to serve the Greater Houston community, Texas and the nation by educating engineers to assume leadership positions in the identification and solution of the complex technical challenges of society, to advance the state of knowledge through pioneering research and scholarly work, to facilitate the transfer of new technology to Texas and U.S. industries, to play a key role in economic development for the Greater Houston region and the State of Texas, and to benefit the public sector through service to the university, community, industry, government and the engineering profession.

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 – but 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.



Undergraduate Programs

Chemical Engineering | BSChE

Civil Engineering | BSCE

Computer Engineering | BSCPE

Electrical Engineering | BSEE

Industrial Engineering | BSIE

Mechanical Engineering | BSME

Petroleum Engineering | BSPE

Construction Engineering | BSCE

Systems Engineering | BSSE



Graduate Programs

Chemical Engineering | MChE (Non-Thesis)

Chemical Engineering | M.S. and Ph.D. Programs

Mechanical Engineering | MSME

Mechanical Engineering | MME

Industrial Engineering | MIE

Industrial Engineering | MSIE

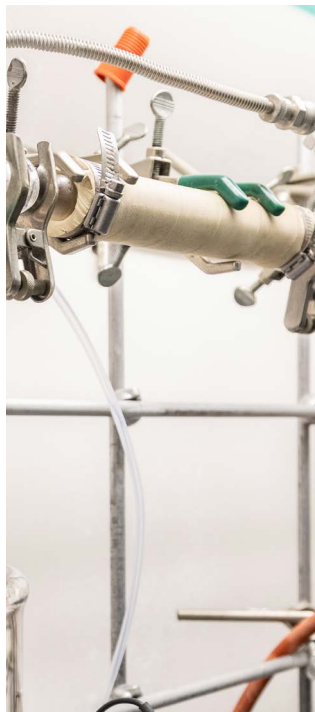
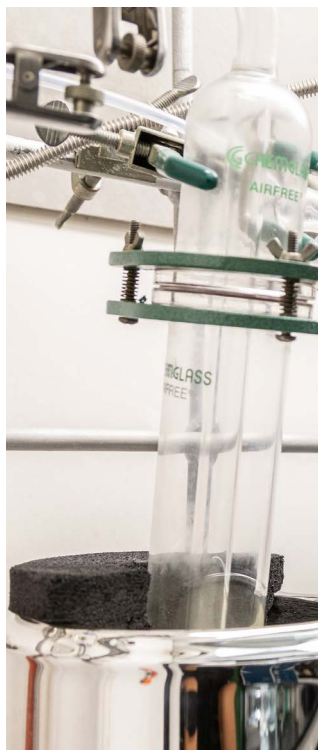
Engineering Management | MEMGMT

Petroleum Engineering | MSPetE

Environmental Engineering | MS

Materials Science & Engineering | MS





Bachelor of Science in Chemical Engineering | BSChE

The Department of Chemical and Biomolecular Engineering (CHBE) at the University of Houston is dedicated to producing graduates of the highest scholarship and with skills that will enable them to prosper in their careers and to adapt to a field in transition.

The Department of Chemical and Biomolecular Engineering is committed to providing a high-quality education for undergraduate students in Chemical Engineering through a comprehensive curriculum that emphasizes basic science, mathematics, engineering science, and engineering design. UH CHEE faculty members are expected to maintain their reputations as superior teachers and to provide a stimulating educational environment. The Department's varied and aggressively pursued research ensures that our faculty members remain at the technological forefront of their respective areas of specialization.

We are in service to the community at large and, in particular, to the City of Houston and the State of Texas, and to provide the local engineering community opportunities for advanced and continuing education.

Advising

Veronica Ellison

Undergraduate Advisor

713-743-4957

vellison@central.uh.edu

Careers

Chemical Engineer

Biotechnologist

Chemical Engineer Consultant

Energy Engineer

Environmental Engineering

Materials Engineer

Nuclear Engineer

Petroleum Engineer

Process engineer

Product development engineer

Project Engineer/Manager



chbe.uh.edu

Degree Requirements: 129 Credit Hours

Foundation Courses

CHEM 1331 Fundamentals of Chemistry I

CHEM 1111 Fundamentals of Chemistry I Lab

CHEM 1332 Fundamentals of Chemistry II

CHEM 1112 Fundamentals of Chemistry II Lab

CHEE 2331 Chemical Processes

CHEE 2332 Chemical Engineering Thermodynamics I

CHEE 3300 Materials Science and Engineering I

CHEE 3321 Analytical Methods for Chemical Engineers

CHEM 3332 Fundamentals of Organic Chemistry

CHEM 3221 Fundamentals of Organic Chemistry Laboratory

CHEM 3332 Fundamentals of Organic Chemistry

CHEE 3333 Chemical Engineering Thermodynamics II

CHEE 3334 Statistical/Numerical Techniques for Chemical Engineers

CHEE 3363 Fluid Mechanics for Chemical Engineers

CHEE 3367 Process Modeling and Control

CHEE 3369 Chemical Engineering Transport Processes

CHEE 3462 Unit Operations

CHEE 3466 Biological and Physical Chemistry

CHEE 4321 Chemical Engineering Design I

CHEE 4361 Chemical Engineering Practices

CHEE 4322 Chemical Engineering Design II

CHEE 4367 Chemical Reaction Engineering

CHEE 4366 Biomolecular Engineering Fundamentals

ECON 2304 Microeconomic Principles

ENGI 1100 Introduction to Engineering

ENGI 1331 Computing and Problem Solving for Engineers

ENGI 2304 Technical Communications for Engineers

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 2433 Calculus III

PHYS 1321 University Physics I

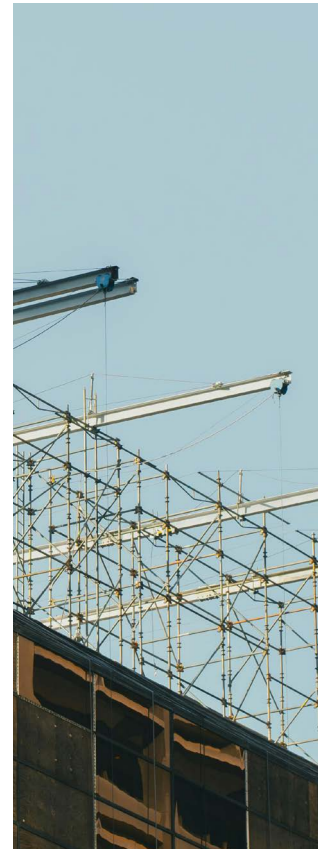
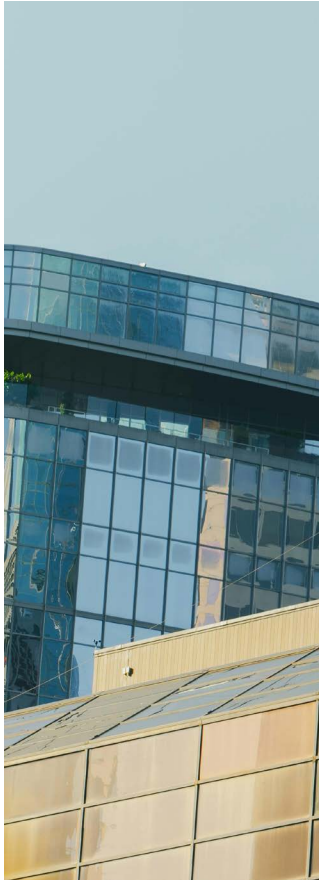
PHYS 1322 University Physics II

Elective Courses

3 Credit Hours | chemistry elective

3 Credit Hours | advanced science elective

6 Credit Hours | technical electives



Bachelor of Science in Civil Engineering | BSCE

Civil engineering is a broad field that encompasses numerous sub-disciplines including structural engineering, environmental engineering, geotechnical engineering, water resources engineering, geosensing systems engineering, transportation engineering, and others. Because the jobs available in the field of civil engineering are so diverse, UH's Bachelor of Science in Civil Engineering degree is designed to offer students a broad base to prepare graduates for a variety of positions. In the junior and senior year students can personalize their degree by choosing civil engineering electives focused on a specific civil engineering sub-discipline or they can choose electives spread across multiple areas of civil engineering. Further specialization after the senior year is offered through graduate education where students can focus on specific aspects of civil engineering, environmental engineering, or geosensing systems engineering.

Careers

Manufacturing
Logistics and Transportation,
Supply Chain
Energy
Oil And Gas
Healthcare
Retail
Hotel Chains
Airlines
Construction Companies
Banks
Government

Advising

Candace Charles

Undergraduate Advisor
713-743-8108
civil@egr.uh.edu



cee.uh.edu

Degree Requirements: 130 Credit Hours

Foundation Courses

CIVE 2330 Mechanics I (Statics)

CIVE 2332 Mechanics of Solids

CIVE 3331 Environmental Engineering

CIVE 3332 Engineering Materials

CIVE 3337 Structural Analysis

CIVE 3339 Geotechnical Engineering

CIVE 3434 Fluid Mechanics and Hydraulic Engineering

CIVE 4363 Concrete Design

CIVE 4369 Foundation Engineering

CIVE 4311 Professional Practice in Civil Engineering

CIVE 4332 Hydrology

CIVE 4333 Water and Wastewater Treatment

CIVE 4312 Civil Engineering Design Project

CHEM 1331 Fundamentals of Chemistry I

CHEM 1111 Fundamentals of Chemistry I Lab

CHEM 1332 Fundamentals of Chemistry II

CHEM 1112 Fundamentals of Chemistry II Lab

ENGI 1100 Introduction to Engineering

ENGI 1331 Computing and Problem Solving for Engineers

ENGI 2304 Technical Communications for Engineers

ENGI 2334 Introduction to Thermodynamics

INDE 2333 Engineering Statistics I

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 2433 Calculus III

MATH 3321 Engineering Mathematics

MECE 2334 Thermodynamics

MECE 3336 Mechanics II (Dynamics)

MECT 3341 Computer Aided Drafting

PHYS 1321 University Physics I

PHYS 1322 University Physics II

ONE of the following:

- **GEOL 1330** Physical Geology
- **BIOL 1361** Introduction to Biological Science I

Elective Courses

12 Credit Hours | Civil Engineering Electives



Bachelor of Science in Computer Engineering | **BSCPE**

Computer engineering combines electrical engineering and computer science. It is about the interface between machines (hardware) and computers (software). Electrical engineers and computer engineers do both things, but computer engineers are more involved with software than electrical engineers. 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 communication networks. Specialized areas within computer engineering include system architecture, computer chip design, layout design, package/board design and system integration.



Careers

Computer Engineer
Software Engineer
Hardware Engineer
Embedded Systems Engineer
Systems Engineer
Network Engineer
Cybersecurity Engineer
Cloud Engineer
Robotics Engineer
AI/Machine Learning Engineer
Electronics Engineer
Data Engineer
Technical Consultant
Product Manager

Advising

Patricia R. Dunn

Academic Advisor I
lkrobin3@central.uh.edu

Nichole S. Fearnley

Academic Advisor II
Nsfearnl@central.uh.edu



ece.uh.edu

Degree Requirements: 129 Credit Hours

Foundation Courses

CHEM 1311 Fundamentals of Chemistry

CHEM 1111 Fundamentals of Chm Lab

ENGI 1100 Introduction To Engineering

MATH 2413 Calculus I

ENGI 1331 Computing for Engineers

MATH 2414 Calculus II

PHYS 2325 University Physics I

PHYS 2125 University Physics Laboratory I

ECE 2201 Circuit Analysis I

MATH 2415 Calculus III

MATH 3321 Engineering Mathematics

PHYS 2326 University Physics II

PHYS 2126 University Physics Laboratory II

ECE 2202 Circuit Analysis II

ECE 2100 Circuit Analysis Laboratory

ECE 3331 Programming Applications in ECE

ECE 3441 Digital Logic Design

COSC 1437 Intro to Programming

ECE 3155 Electronics Lab

ECE 3355 Electronics

ECE 3436 Microprocessors

ECE 3337 Signal & System Analysis

ECE 3317 Applied EM Waves

COSC 2436 Programming & Data Structures

ECE 3457 Digital Electronics

INDE 2333 Engineering Statistics I

MATH 3336 Discrete Mathematics

ECE 4335 ECE Design I

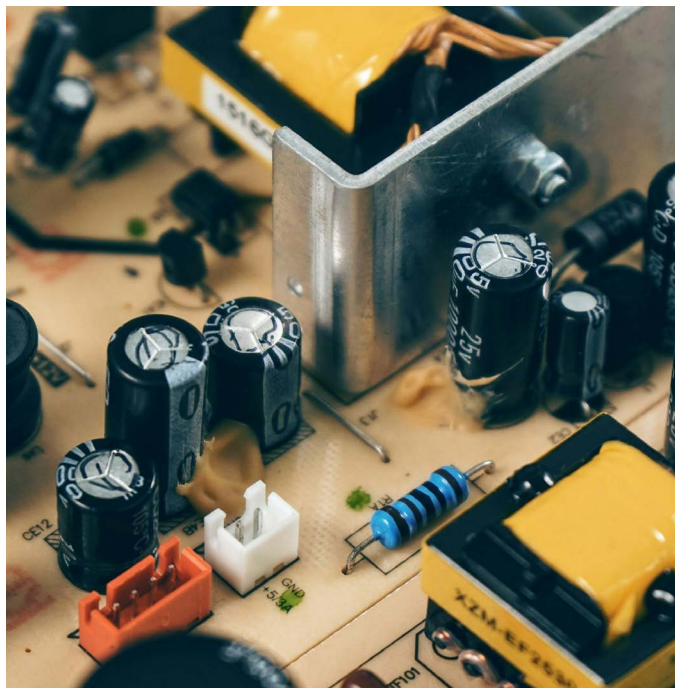
ECE 5367 Intro to Comp Architecture Design

ECE 4336 ECE Design II

COSC 4351 Fundamentals of Software Engineering

Elective Courses

11 Credit Hours | Approved Computer Engineering Electives and labs



Bachelor of Science in Electrical Engineering | BSEE

At the UH Cullen College of Engineering's Department of Electrical and Computer Engineering (ECE), undergraduates will get a broad sampling of courses from several areas involving electrical and electronic systems, but in your last two years you will choose from among six specialty areas: electronics; nanotechnology; power and alternative energy; computers and embedded systems; electromagnetics; and signals, systems and communication. Working in these areas involves the analysis and design of systems including antennas, robotics, power distribution, digital signal processing, semiconductor devices and integrated circuits, analog and digital control systems, communication networks and more! urriculum and 4 se urriculum and 4 semester hours of elective courses, and maintains the same focus ester hours of elective courses, and maintains the same focus

In the last two years of the BSEE degree plan, students must choose one of six Concentration Areas. The Concentration Area allows the student to choose a subset of Electrical Engineering that is of particular interest to the student, while still encouraging the student to take courses in related areas. Concentration Areas: Signals, Communications and Controls; Electronics; Nanosystems; Applied Electromagnetics; Power and Renewable Energy; Computers and Embedded System.

Advising

Patricia Dunn

Academic Advisor I

713-743-7534

prdunn@cougarnet.uh.edu

Careers

Defense Sector

Utility Sector

Aviation and Aerospace
Sectors

High-Tech Sector



ece.uh.edu

Degree Requirements: 129 Credit Hours

Foundation Courses

ECE 2201 Circuit Analysis I

ECE 2202 Circuit Analysis II

ECE 2100 Circuit Analysis Lab

ECE 3331 Programming
Applications in ECE

ECE 3436 Microprocessor
Systems

ECE 3337 Signals and Systems
Analysis

ECE 3355 Electronics

ECE 3155 Electronics Laboratory

ECE 3317 Applied
Electromagnetic Waves

ECE 3340 Numerical Methods
for ECE

ECE 3441 Digital Logic Design

ECE 4335 Electrical and

Computer Engineering Design I

ECE 4336 Electrical and
Computer Engineering Design II

ECON 2304 Microeconomic
Principles

CHEM 1331 Fundamentals of
Chemistry I

CHEM 1111 Fundamentals of
Chemistry I Lab

ENGI 1100 Introduction to
Engineering

ENGI 1331 Computing and
Problem Solving for Engineers

ENGI 2304 Technical
Communications for Engineers

INDE 2333 Engineering Statistics I

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 2433 Calculus III

MATH 3321 Engineering
Mathematics

PHYS 1121 University Physics
I Lab

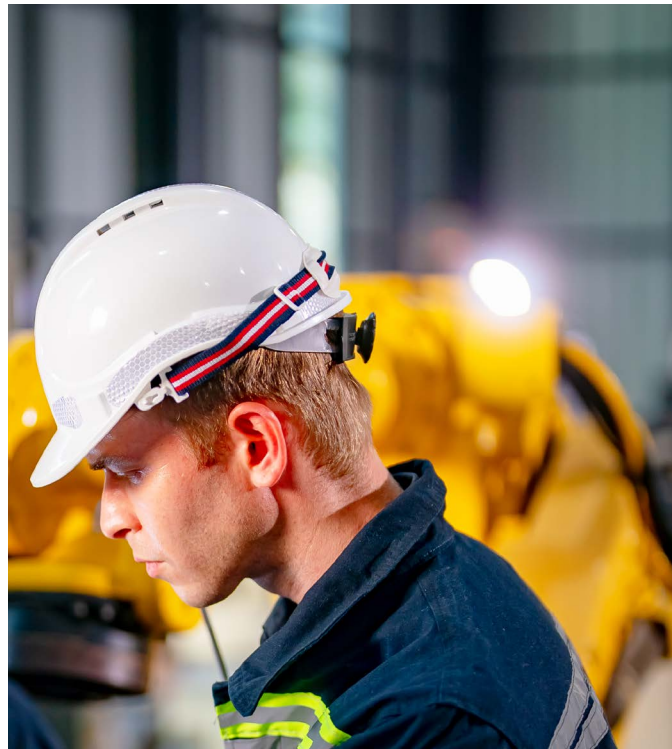
PHYS 1121 Physics Lab I

PHYS 1322 University Physics II

PHYS 1122 Physics Lab II

Elective Courses

12 Credit Hours | Civil
Engineering Electives



Bachelor of Science in Industrial Engineering | BSIE

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.

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.



Advising

Dr. Yaping Wang

Instructional Associate
Professor, Director of Industrial
Engineering Undergraduate
Program

713-743-9076

ypwang@central.uh.edu

Careers

Manufacturing

Logistics and Transportation,

Supply Chain

Energy

Oil And Gas

Healthcare

Retail

Hotel Chains

Airlines

Construction Companies

Banks

Government



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Degree Requirements: 125 Credit Hours

Foundation Courses

INDE 2333 Engineering Statistics I

INDE 2331 Computer Applications for Industrial Engineers

INDE 3330 Financial and Cost Management

INDE 3333 Engineering Economy I

INDE 3382 Stochastic Models

INDE 3364 Engineering Statistics II

INDE 3310 Statistical Process Quality Control and Improvement

INDE 3432 Manufacturing Processes

INDE 3381 Linear Optimization

INDE 4331 Analysis of Industrial Activities

INDE 4369 Facilities Planning and Design

INDE 3362 CAD/CAM

INDE 4370 Discrete Event Simulation

INDE 4111 Industrial Engineering Seminar

INDE 4320 Computer Integrated Manufacturing

INDE 4364 Big Data and Analytics

INDE 4315 Supply Chain Design and Management

INDE 4372 Operations Control

INDE 4337 Human Factors and Ergonomics

INDE 4334 Engineering Systems Design

CHEM 1331 Fundamentals of Chemistry I

CHEM 1111 Fundamentals of Chemistry I Lab

ENGI 1100 Introduction to Engineering

ENGI 1331 Computing and Problem Solving for Engineers

ENGI 2304 Technical Communications for Engineers

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 2433 Calculus III

MATH 3321 Engineering Mathematics

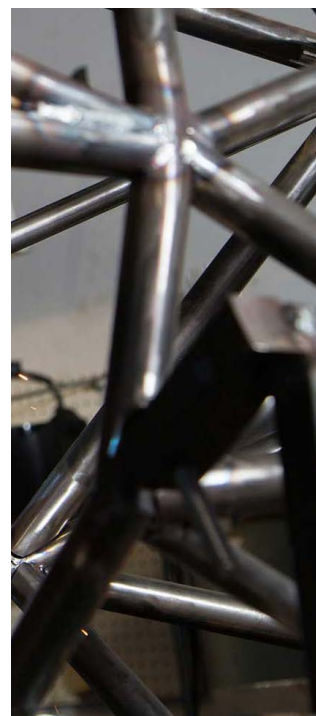
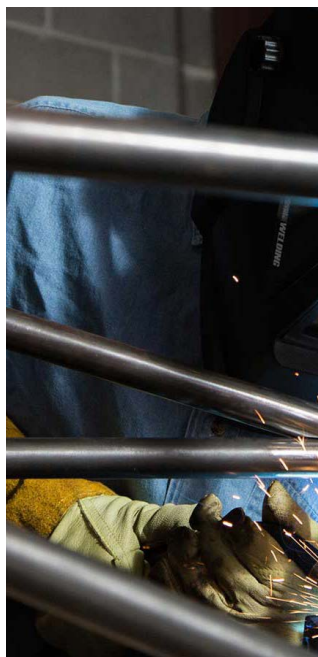
MECE 3400 Introductions to Mechanics

PHYS 1321 University Physics I

PHYS 1322 University Physics II

Elective Courses

3 Credit Hours | Technical Elective



Bachelor of Science in Mechanical Engineering | **BSME**

The Bachelor of Science in mechanical engineering at the University of Houston prepares students for careers in one of the most versatile engineering professions. Mechanical engineers are the jack-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, product reliability and safety, polymers, materials, and instrumentation and control of processes.

Undergraduate students in the mechanical engineering department are taught to connect the dots between classroom lessons and their real-world applications through project-based learning, hands-on laboratory research, Capstone design projects and seminars led by industry professionals. The department's curriculum provides students with the opportunity to learn how to think creatively and logically, and how to use new-found knowledge to address complex problems. Throughout the curriculum, but particularly in the three-course design sequence, students are challenged with creative design problems. To solve these problems, students use skills learned from classes in mechanics of materials, experimental methods, engineering analysis, controls, materials science, thermodynamics, fluid mechanics and heat transfer.

Careers

Mechanical & Product
Engineering

Energy & Sustainability

Aerospace & Defense

Manufacturing & Automotive

Consulting & Research

Advising

Walter de la Cruz

Undergraduate Advisor

713-743-4500

wwdelacr@central.uh.edu



mae.uh.edu

Degree Requirements: 128 Credit Hours

Foundation Courses

MECE 3336 Mechanics II (Dynamics)

MECE 2334 Thermodynamics

MECE 2361 Introduction to Mechanical Design

MECE 3338 Dynamics and Control of Mechanical Systems

MECE 3345 Materials Science

MECE 3245 Materials Science Lab

MECE 3369 Solid Mechanics

MECE 3360 Experimental Methods

MECE 3363 Introduction to Fluid Mechanics

MECE 3381 Introduction to Finite Element Methods for Mechanical Engineers

MECE 4364 Heat Transfer

MECE 4331 Design of Machine Elements

MECE 4343 Thermal Design

MECE 4340 Mechanical Engineering Capstone I

MECE 4341 Mechanical Engineering Capstone II

CHEM 1331 Fundamentals of Chemistry I

CHEM 1111 Fundamentals of Chemistry I Lab

CHEM 1332 Fundamentals of Chemistry II

CHEM 1112 Fundamentals of Chemistry II Lab

CIVE 2330 Mechanics I

ENGI 1331 Computing and Problem Solving for Engineers

ENGI 2304 Technical Communications for Engineers

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 2433 Calculus III

MATH 3321 Engineering Mathematics

MATH 3363 Introduction Partial Differential Equations

PHYS 1321 University Physics I

PHYS 1322 University Physics II

MECE 4371 Thermal-Fluids Lab

Elective Courses

Students with senior standing in Mechanical Engineering are required to take four technical electives. The elective requirements can be satisfied with one of the following options:

Take 4 MECE 5000-level or higher courses

Take 3 MECE 5000-level or high courses, and one course from the approved list of non-MECE 3000 / 4000 / 5000 level courses from other departments in engineering, math, or science.

Complete a senior honors thesis using MECE 3399 (Senior Honors Thesis I) and MECE 4399 (Senior Honors Thesis II), and then complete two MECE 5000-level or higher courses.

The drafting requirement (with no credit toward graduation) may be satisfied by completing MECT 1330 (Engineering Graphics) or MECT 3341 (Computer-Aided Drafting I). A computer-aided course is recommended.



Bachelor of Science in Petroleum Engineering | BSPE

The Bachelor of Science in Petroleum Engineering at the University of Houston provides students with a strong foundation in drilling, reservoir engineering, production operations, and energy exploration. Through a combination of engineering theory and practical application, students develop the technical and problem-solving skills needed to address challenges in both field and laboratory settings. Graduates are prepared for technical and leadership careers within the energy industry.

Students gain expertise in key petroleum engineering disciplines while expanding their knowledge through electives in areas such as geoscience, project management, and economics. Hands-on learning opportunities, including fieldwork, laboratory research, and a senior capstone project, allow students to apply their skills to real-world engineering challenges. The program also offers valuable industry experience through internships, co-ops, and research collaborations with leading energy companies, while providing pathways to advanced degrees in petroleum engineering, business, and energy management.

Advising

Anne Sturm

Undergraduate Advisor
masturm@uh.edu

Careers

Petroleum Engineer

Reservoir Engineer

Drilling Engineer

Production Engineer

Energy Consultant



petro.uh.edu

Degree Requirements: 127 Credit Hours

Foundation Courses

MATH 2413 Calculus I2

GEOL 1303 Physical Geology

GEOL 1103 Physical
Geology Lab

CHEM 1311 Fundamentals of
Chemistry

CHEM 1111 Fundamentals of
Chm Lab

ENGI 1100 Introduction To
Engineering

MATH 2414 Calculus II

PHYS 2325 University
Physics I (lecture)

CHEM 1312 Fundamentals of
Chemistry 2

CHEM 1112 Fundamentals of
Chm Lab

ENGI 1331 Computing and
Problem Solving for Engineers

MATH 2415 Calculus III

PHYS 2326 University
Physics II (lecture)

INDE 2333 Engineering
Statistics I

PETR 1111 Introduction to
Petroleum Engineering

PETR 2311 Reservoir
Petrophysics

PETR 2111 Petroleum
Petrophysics Lab

MATH 3321 Engineering
Mathematics

ENGI 2334 Introduction To
Thermodynamics

PETR 2313 Reservoir Fluids

ENGI 2304 Technical
Communications for Engineers

MECE 3400 Intro To Mechanics

PETR 3315 Introduction to
Well Logging

PETR 3362 Reservoir
Engineering I

PETR 3372 Petroleum
Production Operation

CHEE 3363 Fluid Mechanics for
Chemical Engineers

PETR 3318 Drilling
Engineering I

PETR 3321 Petroleum Pressure
Transient Testing

PETR 3310 Petroleum
Production Economics

PETR 4301 Reservoir
Characterization and Modeling

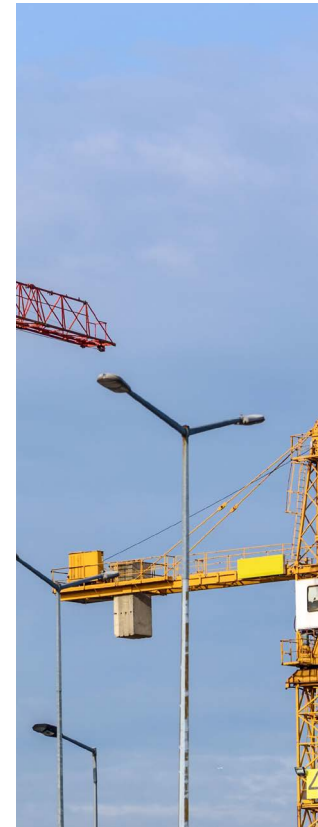
PETR 4311 Petroleum
Capstone Project I

PETR 4312 Petroleum
Capstone Project II

Elective Courses

9 Credit Hours | Petroleum
Technical Elective

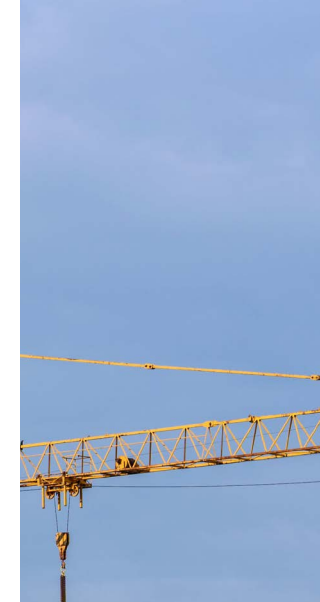
3 Credit Hours | Geoscience
Elective



Bachelor of Science in Construction Engineering | **BSCE**

The Bachelor of Science in Construction Engineering at the University of Houston combines engineering principles with business and management practices to prepare students for leadership roles in the construction industry. The program focuses on the planning, construction, and rehabilitation of critical infrastructure, equipping students with the technical knowledge and problem-solving skills needed to manage complex construction projects.

Students gain hands-on experience through a senior capstone project that incorporates estimating, scheduling, safety analysis, documentation, and resource planning. Opportunities for research, co-ops, and industry collaborations allow students to build professional connections while developing leadership and communication skills. The program also provides pathways to specialized graduate certificates and advanced degrees in construction management and technology project management, helping graduates expand their expertise and career opportunities.



Advising

Dr. Mahdi Safa

Assistant Professor

SYSE Advisor

msafa@central.uh.edu

Careers

Construction Engineering

Construction Manager

Project Engineer

Site Engineer, Energy

Infrastructure Engineer

Offshore Construction

Engineer

Construction Consultant

Urban Planner



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Degree Requirements: 128 Credit Hours

Foundation Courses

CHEM 1311 Fundamentals of Chemistry

CHEM 1111 Fundamentals of Chm Lab

ENGI 1100 Introduction To Engineering

MATH 2413 Calculus I

CHEM 1312 Fundamentals of Chemistry 2

CHEM 1112 Fundamentals of Chm Lab

ENGI 1331 Computing and Problem Solving for Engineers

MATH 2414 Calculus II

PHYS 2325 University Physics I (lecture)

ENGR 2301 Mechanics I (Statics)

INDE 2333 Engineering Statistics I

MATH 2415 Calculus III

PHYS 2326 University Physics II (lecture)

CIVE 2332 Mechanics of Solids

CNE 2311 Construction Engineering Fundamentals

ENGI 2304 Technical Communications for Engineers

MECE 3336 Mechanics II (Dynamics)

MATH 3321 Engineering Mathematics

CIVE 3332 Engineering Materials

CIVE 3337 Structural Analysis

CIVE 3380 Fundamentals of Plane Surveying

CNE 3310 Construction Engineering Project Management

CNE 3311 Construction Engineering Methods and Cost Estimating

CIVE 3339 Geotechnical Engineering

CNE 3301 Construction Safety Engineering

CNE 3322 Legal Aspects of Construction Engineering

CNE 3333 Building Information Modeling

CIVE 4363 Concrete Design

INDE 3333 Engineering Economy I

CNE 4326 Smart and Sustainable Urban Infrastructure

CIVE 3331 Environmental Engineering

CNE 4323 Health Care Infrastructure Design and Construction

CNE 4312 Construction Engineering Senior Capstone Design

CNE 4322 Construction Engineering Best Practices

CNE 4225 Utility System Construction

Elective Courses

12 Credit Hours | Construction Engineering Electives



Bachelor of Science in Systems Engineering | BSSE

The Bachelor of Science in Systems Engineering at the Cullen College of Engineering combines engineering, statistics, optimization, and risk management to prepare students for solving complex, real-world challenges. The interdisciplinary curriculum develops systems-thinking skills that enable students to analyze, integrate, and improve large-scale systems across industries such as energy, manufacturing, healthcare, and aerospace.

Students gain hands-on experience through undergraduate research opportunities and industry-sponsored senior capstone projects, where they apply their knowledge to practical engineering problems. The program emphasizes project management, optimization, leadership, and interdisciplinary collaboration, preparing graduates to design, manage, and sustain complex systems. With a broad and versatile skill set, graduates are well-positioned for careers in systems engineering, project management, aerospace, energy systems, supply chain operations, and risk and reliability engineering.

Careers

Systems Engineer

Project Engineer/Project Manager

Aerospace Engineer

Energy Systems Engineer

Supply Chain Systems Engineer

Risk and Reliability Engineer

Advising

Nirathi Keerthi Govindu, Ph.D.

Industrial and Systems Engineering

Instructional Assistant Professor

SYSE Advisor

ngovindu@central.uh.edu



ise.uh.edu

Degree Requirements: 125 Credit Hours

Foundation Courses

MATH 2413 Calculus I

ENGI 1100 Introduction To Engineering

CHEM 1311 Fundamentals of Chemistry

CHEM 1111 Fundamentals of Chm Lab

ENGI 1331 Computing and Problem Solving for Engineers

PHYS 2325 University Physics I (lecture)

MATH 2414 Calculus II

INDE 2331 Computer Applications for Industrial Engineers

MATH 2415 Calculus III

INDE 2333 Engineering Statistics I

PHYS 2326 University Physics II (lecture)

ENGI 2304 Technical Communications for Engineers

MATH 3321 Engineering Mathematics

CEA 3201 Computer Programming for Engineers

SYSE 3301 Fundamentals of Systems Engineering

SYSE 3315 Systems Architecture & Design

INDE 3364 Engineering Statistics II

INDE 3310 Statistical Process Quality Control and Improvement

INDE 3330 Financial and Cost Management

INDE 4331 Analysis of Industrial Activities

SYSE 3340 Systems Integration, Verification and Validation

INDE 3333 Engineering Economy I

INDE 3381 Linear Optimization

SYSE 3355 Systems Thinking

INDE 4370 Discrete Event Simulation

SYSE 4111 Systems Engineering Seminar

SYSE 4320 Project Management of Complex Systems

INDE 3382 Stochastic Models

INDE 4337 Human Factors & Ergonomics

INDE 4364 Big Data and Analytics

INDE 4315 Supply Chain Design and Management

SYSE 4334 Systems Engineering Capstone Design

Elective Courses

6 Credit Hours | Systems Concentration



Master of Science in Chemical Engineering | MChE (Non-Thesis)

The Master of Chemical Engineering (MChE) is a non-thesis graduate degree designed for engineers and scientists who seek to accelerate their careers in the chemical process industries. The program equips students with advanced, practice-focused skills in areas such as process design, plant operations, systems analysis, process economics, and technical leadership.

Distinct from traditional Master of Science programs and from business-focused MBA degrees, the MChE offers a targeted curriculum that integrates engineering depth with practical decision-making and management perspectives. The program is ideal for early- to mid-career professionals who aim to expand their technical expertise while developing the skills needed for leadership roles in industry.

The program welcomes applicants with undergraduate degrees either in chemical engineering or in related disciplines, including chemistry, mechanical engineering, and petroleum engineering.

The MChE degree requires completion of 10 graduate-level courses. Students benefit from a flexible yet structured curriculum, with course selections made within a carefully prescribed framework (detailed here) in consultation with the MChE program director. This approach ensures a strong technical foundation while allowing each student to tailor the program to their professional goals and prior background. The curriculum is designed to support rapid progress and timely completion, making it well suited for working professionals.

Degree Requirements: 30 Credit Hours

Group I New graduate-level (6000)

CHEE 3333 Chemical Engineering Thermodynamics II

CHEE 3363 Fluid Mechanics for Chemical Engineers

CHEE 3367 Process Modeling and Control

CHEE 3369 Chemical Engineering Transport Processes

CHEE 4367 Chemical Reaction Engineering

Group II Existing graduate-level

CHEE 6377 Introduction to Polymer Science

CHEE 6383 Advanced Unit Operations

CHEE 6390 Energy and the Environment

CHEE 7397 Selected Topics: Machine Learning for Chemical Engineers

CHEE 7397 Selected Topics: Chemical Engineering Fundamentals for CO₂-free Manufacturing

Group III

CHEE 6333 Transport Processes

CHEE 6335 Classical and Statistical Thermodynamics

CHEE 6337 Advanced Reactor Engineering

CHEE 6365 Fundamentals of Catalysis

CHEE 6367 Advanced Process Control

Coursework for ChE BS students in MChE — Energy Transition Concentration

At least 2 courses from Group III must be taken.

- Note that courses from Group I will not be available for these students; rather course counterparts in Group III should be chosen from.

The following 2 courses (directly related to Energy Transition, Group II) must be taken:

- **CHEE 6390** Energy and the Environment, and
- **CHEE 6397** Selected Topics: Chemical Engineering Fundamentals for CO₂-free Manufacturing

In addition to the above two courses, at least 1 graduate-level course related to Energy Transition must be taken, on approval from the MChE Program Director. Such a course may be any relevant course available in the Cullen College of Engineering, College of Natural Science and Mathematics, or C. T. Bauer College of Business. Examples include the following courses:

- Introduction to Carbon Capture Utilization and Storage - PETR 6341
- Carbon Capture Utilization and Sequestration - PETR 6342
- CO₂ EOR Sequestration - PETR 6343
- Subsurface Energy Storage - PETR 6344
- Introduction of Carbon Capture Utilization & Storage (CCUS)
- Carbon sequestration - GEOL 6389
- Earth and Atmospheric Sciences of Carbon Capture, Utilization, and Storage (CCUS) (New graduate course)

Because MChE/Energy Transition students will include working professionals, earning project-based credit will be of particular interest to them:

- **CHEE 6289, 6389** Chemical Engineering Project



chbe.uh.edu

Contact

**Graduate Studies
Coordinator**

grad-che@uh.edu

Coursework for ChE BS students in MChE (No Energy Transition Concentration)

At least 4 courses from the 10-course group in Group II and Group III combined must be taken.

Courses from Group I will not be available; rather their counterparts (see Group III) should be chosen from.

A number of additional CHEE electives will be available to choose from.

Any of the graduate-level CHEE electives will be available either face-to-face or online.

For successful completion of the degree requirements a total of 30 credit hours and a minimum GPA of 3.0 will be required.

Because MChE/Energy Transition students will include working professionals, earning project-based credit will be of particular interest to them:

- **CHEE 6289, 6389** Chemical Engineering Project



Chemical Engineering | M.S. and Ph.D. Programs

Master of Science

The M.S. degree is obtained through coursework only. This program focuses on advanced engineering fundamentals. Students with a B.S. degree in Chemical Engineering or related field must obtain 30 credit hours (10 courses) of core and elective courses to obtain a course-based M.S. degree. Recipients of the M.S. are broadly qualified for continued studies towards the Doctor of Philosophy degree. No financial aid is offered for M.S. students.

Full-Time M.S.

This course based program is intended for students with a Bachelor of Science in Chemical Engineering (or equivalent). This program focuses on advanced engineering fundamentals. Thirty semester hours of coursework are required, consisting of five core courses indicated plus five elective courses. No financial aid is offered for M.S. students. Candidates with a Bachelor of Science in Chemical Engineering can complete all requirements in 12 to 18 months.

Part-Time M.S.

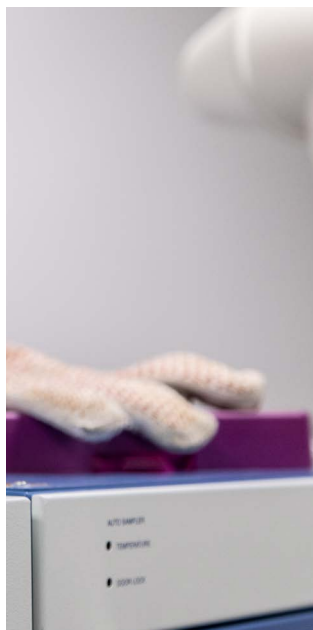
This program is intended for students with a Bachelor of Science in Chemical Engineering who are working in the industry. Thirty semester hours of coursework are required, consisting of the five core courses indicated plus five elective courses. The part time M.S. program has the entrance requirements as listed for the fulltime MS/PhD programs.



Doctor of Philosophy

Candidates for the Ph.D. degree are given intensive exposure to a specific field of engineering research as well as continued study of a broad range of engineering fundamentals. The main focus is individual research, and students are expected to expand the frontiers of knowledge in their area of endeavor. Moreover, candidates learn, absorb, and otherwise experience the general philosophy, methods, and concepts of research and scholarly inquiry so that after graduation they can approach significant problems that may or may not be related to their doctoral research. Acceptance into the full-time Ph.D. program is generally accompanied by departmental financial support.

Ph.D. candidates must complete a total of 30 credit hours of coursework. This includes the 4 core courses. Of the remaining 6 courses, at least two must be Chemical Engineering graduate courses. Graduate level courses from other departments may be approved on a case-by-case basis. A research project and doctoral dissertation must be completed, providing additional credit hours towards the doctoral degree. The dissertation is presented and defended in a public oral examination and should contain a significant new contribution to knowledge in Chemical Engineering.



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Graduate Courses

CHEE 6330 Foundations of Mathematical Methods in Chemical Engineering

CHEE 6331 Mathematical Methods in Chemical Engineering I

CHEE 6332 Mathematical Methods in Chemical Engineering II

CHEE 6333 Transport Processes I

CHEE 6335 Classical and Statistical Thermodynamics I

CHEE 6337 Advanced Reaction Engineering

CHEE 6360 Biochemical Engineering Fundamentals

CHEE 6365 Fundamentals of Catalysis

CHEE 6367 Advanced Process Control

CHEE 6375 Chemical Processing for Microelectronics

CHEE 6386 Air Pollution Problems and Control

CHEE 6388 Catalytic Processes

CHEE 7350 Applied Nonlinear Methods for Engineers

CHEE 6397, 7197, 7297, 7397 Select Topics

Other Courses

- Physics and Chemistry of Engineering Materials
- Experimental Methods in Chemical Engineering
- Tissue Engineering
- Introduction to Polymer Science
- Safety and Reliability
- Petrochemical Processes
- Transport Phenomena in Physiological Systems
- Cellular and Biological Transport Phenomena
- Plasma Processing: Principles and Applications
- Energy and the Environment
- Numerical Methods In Chemical Engineering
- Topics in Colloidal, Interfacial and Surfactant Processes

Contact

Graduate Studies Coordinator

grad-che@uh.edu



Master of Science in Mechanical Engineering | MSME

The MSME program is designed for students seeking advanced technical depth in mechanical engineering. Students may choose between a research-focused Thesis Track or a coursework-intensive Non-Thesis Track. The program requires completion of a minimum of 30 credit hours distributed as follows.

- Common Core Requirements
- Choose Your Track
 - Thesis Track (Research Focus)
 - Non-Thesis Track
- Specialized Concentration: Data Science

Common Core Requirements (9 hours)

Controls

MECE 6367 Control Systems Analysis and Design

MECE 6388 Optimal Control Theory

MECE 7361 System Identification

MECE 6666 Machine Learning

Materials

MECE 6361 Mechanical Behavior of Materials

MECE 6363 Physical Metallurgy

MECE 6364 Phase Transform in Materials

Mechanics

MECE 6377 Continuum Mechanics I

MECE 6397 Applied Solid Mechanics

Thermo-Fluids

MECE 6334 Convection Heat Transfer

MECE 6345 Fluid Dynamics I

Advising

Eugene Penzien

Academic Advisor

Mechanical and Aerospace Engineering

713-743-4505

megrad@uh.edu



mae.uh.edu

Choose Your Track

Option A: Thesis Track (Research Focus)

Best for students planning to pursue a Ph.D. or R&D careers.

Total credits: 30 hours, including:

- Math: 3 hours (MECE 6384 Methods of Applied Mathematics 1).
- Core courses: 9 hours (from list above).
- Electives: 9 hours (6000-level or above, exclusive of MECE 8111 Graduate Seminar and MECE 6368 Mechanical Design Project).
- Research/Thesis: 3 hours of Thesis I for MECE 6399 and 6 hours of Thesis II for MECE 7399.
- The remaining hours can be chosen from either MECE courses at 6000-level or above or a list of approved courses in the College of Engineering, the College of Natural Science and Mathematics, the Bauer College of Business, and the UH Law Center at 6000-level or above. If you choose non-MECE courses, no more than three hours from one academic unit (department or program) will be allowed. Approval of any course that falls outside of the description given here must be requested by petition to the Director of Graduate Studies. Approval must be received prior to enrollment in the course.

Key requirements: Successful defense of a Master's Thesis and at least a 3.00 GPA over all courses. The Director of Graduate Studies must approve the composition of the thesis examining committee prior to the defense date. The committee consists of at least three tenure-track faculty members, with one member from outside the Department.

Option B: Non-Thesis Track

Best for students seeking advanced technical skills for industry application.

Total credits: 30 hours, including:

- Math: 3 hours (MECE 6384 Methods of Applied Mathematics 1).
- Core courses: 9 hours (from list above).
- MECE electives: 9 hours (6000-level or above, exclusive of MECE 8111 Graduate Seminar and MECE 6368 Mechanical Design Project).
- Breadth electives: 9 hours can be chosen from either MECE courses at 6000-level or above or a list of approved courses in the College of Engineering, the College of Natural Science and Mathematics, the Bauer College of Business, and the UH Law Center at 6000-level or above. If you choose non-MECE courses, no more than three hours from one academic unit (department or program) will be allowed. Approval of any course that falls outside of the description given here must be requested by petition to the Director of Graduate Studies. Approval must be received prior to enrollment in the course. Three hours can be satisfied by completing the directed-study MECE 6368 Mechanical Design Project course. A statement of the intent of the directed study must be approved by petition to the Graduate Director prior to registration in MECE 6368. A report describing the results of the project must be filed with, and archived by, the instructor at the end of the course.
- Non-thesis students should not enroll in research or thesis courses (6399 and 7399).

Specialized Concentration: Data Science

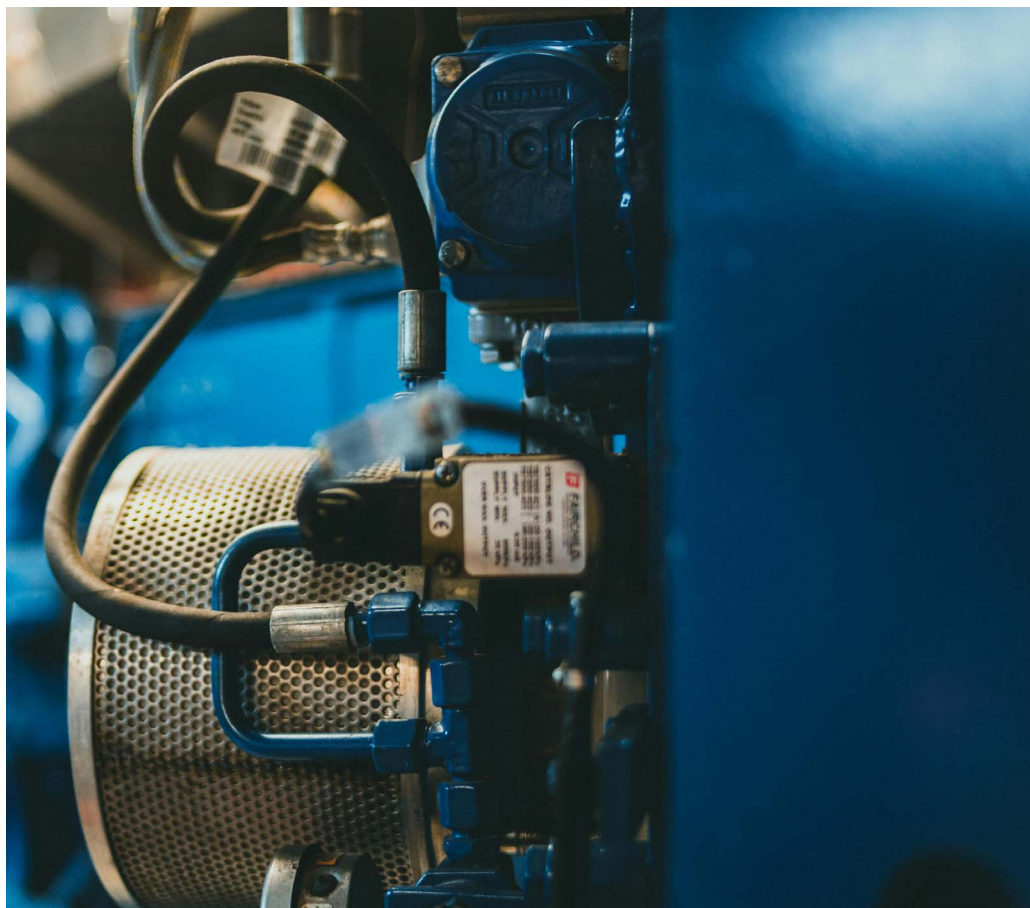
Students may elect to formally concentrate in Data Science.

Requirements: Replace 5 general elective courses with 5 Engineering Data Science (EDS) courses, including the three core MSDES courses:

- EDS 6333 or INDE 6333: Probability and Statistics or Probability and Statistics for Engineers
- EDS 6340 Introduction to Data Science
- EDS 6342 Introduction to Machine Learning

and two data-science-related MECE elective courses from the following pre-approved list:

- MECE 6379 Computer Methods in Mechanical Design
- MECE 6397 Data Analysis Methods
- MECE 6397 Machine Learning
- MECE 6397 Learning Meets System and Control



Master of Mechanical Engineering | **MME**

The Master of Mechanical Engineering (MME) is a non-thesis, professional degree program designed for practicing engineers and those seeking to advance their technical leadership skills. Unlike the research-focused Master of Science, the MME prioritizes practical application and flexibility, allowing students to broaden their expertise across engineering disciplines or integrate business and legal concepts into their technical training.

This program is available face-to-face or fully online (via UH-Extend), making it an ideal choice for working professionals in Houston's energy and aerospace sectors.

Advising

Eugene Penzien

Academic Advisor

Mechanical and Aerospace
Engineering

713-743-4505

megrad@uh.edu



mae.uh.edu

Degree Requirements

The MME is a 30-credit-hour program that offers significant flexibility in course selection.

- Total Credit Hours: 30 hours (10 Courses)
- Core Engineering Depth: Minimum of 21 credit hours from MECE courses at the 6000-level or above.
- Professional Breadth (Electives): The remaining 9 credit hours may be chosen from:
 - Additional MECE graduate courses.
 - Approved graduate courses from the Bauer College of Business, UH Law Center, College of Natural Sciences and Mathematics, or other Engineering departments.

Optional Project Track Students may choose to replace up to 6 credit hours of coursework with a Graduate Project (MECE 6368 & 6369). This hands-on track typically involves designing or constructing an engineering apparatus under faculty supervision, providing tangible evidence of technical mastery.

Admission requirements

Applicants are evaluated based on a holistic review of their academic and professional background.

- Education: Bachelor's degree in Mechanical Engineering or a related field (preferably from an ABET-accredited program).
- GPA: Minimum 3.00/4.00 GPA on the last 60 semester credit hours.
- Letters of Recommendation: Three letters attesting to your capacity for graduate-level work (at least two from tenure-track faculty preferred; one may be from an industry supervisor).
- GRE: Optional.

Graduation Requirements

To earn the degree, students must maintain:

- A minimum cumulative GPA of 3.00 over all courses.
- A minimum cumulative GPA of 3.00 specifically on all MECE courses.



Master's in Industrial Engineering | MIE

30 semester hours of graduate courses are required for the MIE degree.

These requisite degree program hours are in addition to any leveling courses.

All MIE students must take INDE 6111 (graduate seminar course) at least once during their studies.

Students must choose one of the six concentration areas listed below and complete the required courses for that concentration to fulfill the requirements of the MIE, Non-Thesis program.

Students are required to take the following two mandatory core courses:

- **INDE 6372** Advanced Linear Optimization
- **INDE 6333** Probability Stat For Engineers

Students must take three concentration elective courses (9 credit hours) designated for their chosen area of concentration. Each concentration includes a required course (bolded in the course list) that students must select as one of the three electives.

A minimum of three additional IE elective courses (any INDE courses and up to one IEEM course).

A maximum of two non-IE elective courses from the "List of Approved non-IE Elective courses". (Prior approval by the Director of Graduate Program is required for courses not in the list.)

Advising

Jocelyn Saldierna

Graduate Advisor (Industrial Systems Graduate Programs)

713-743-0381

jsaldier@central.uh.edu

List of Approved non-IE Elective Courses

College of Engineering

- All graduate level courses (6000 level or higher) that are not from the Division of Technology.

Division of Technology/College of Engineering

- **SCLT 6314** Measurement and Evaluation of Supply Chain Operations
- **SCLT 6316** Global Supply Chain Logistics
- **SCLT 6318** Supply Chain Strategies
- **TEPM 6303** Risk Assessment in Project Management
- **TEPM 6304** Quality Improvement in Project Management

College of Natural Sciences and Mathematics

- All graduate level courses, with the exception of the following: COSC 6301, 6302, 6303, 6304, 6305, 6306, 6308, 6309, 6310

College of Business

- All graduate level courses, with the exception of any courses in General Business Administration (GENB).
- Reminder: course(s) that do not receive a letter grade, but are graded S, U, or W will not be counted towards the degree plan.



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Concentration Elective Courses (3 Courses / 9 Credit Hours)

Concentration 1: Data Analytics

INDE 6334 Predictive Data Analytics (Required)

INDE 6360 Engineering Analytics

INDE 7344 Decision Modeling and Optimization

INDE 7397 Introduction to Data Mining

IEEM 6360 Data Analytics for Engr. Managers

Concentration 2: Operations Research

INDE 6370 Operation Research-Digital Simulation (Required)

INDE 6334 Predictive Data Analytics

INDE 7340 Integer Programming

INDE 7342 Nonlinear Optimization

INDE 7344 Decision Modeling and Optimization

Concentration 3: Statistics, Quality and Reliability

INDE 6363 Statistical Process Control (Required)

INDE 6334 Predictive Data Analytics

INDE 6336 Reliability Engineering

INDE 6360 Engineering Analytics

INDE 6370 Operation Research-Digital Simulation

Concentration 4: Supply Chain and Logistics

INDE 7390 Supply Chain Management (Required)

INDE 6332 Engineering Project Management

INDE 6339 Materials Handling

INDE 6361 Production Planning & Inventory Control

INDE 6365 Engineering Economy II

Concentration 5: Digital Design and Manufacturing

INDE 6383 Engineering Design and Prototyping (Required)

INDE 6336 Reliability Engineering

INDE 6361 Production Planning & Inventory Control

INDE 6363 Statistical Process Control

INDE 7397 Advanced Manufacturing

Concentration 6: Occupational Safety Engineering

INDE 6337 Human Factors Systems Design (Required)

INDE 6321 System Safety Engineering

INDE 6361 Production Planning & Inventory Control

INDE 6365 Engineering Economy II

INDE 6383 Engineering Design and Prototyping



Master of Science in Industrial Engineering | MSIE

30 semester hours of graduate courses are required for the MSIE degree. This includes 21 hours of course work, 3 hours of research, and 6 hours of thesis.

These requisite degree program hours are in addition to any leveling courses.

All MSIE students must take INDE 6111 (graduate seminar course) at least once during their studies.

Students must choose one of the six concentration areas listed below and complete the required courses for that concentration to fulfill the requirements of the MSIE, Thesis program.

All MSIE students are required to take the following two mandatory core courses (6 credit hours):

- **INDE 6333** Probability Stat For Engineers
- **INDE 6372** Advanced Linear Optimization

Students must take three concentration elective courses (9 credit hours) designated for their chosen area of concentration. Each concentration includes a required course (bolded in the course list) that students must select as one of the three electives. A minimum of three additional IE elective courses (any INDE courses and up to one IEEM course).

Two elective courses (IE courses or non-IE elective courses from the “List of Approved non-IE Elective courses”. Prior approval by the Director of Graduate Program is required for courses not in the list.)

3 hours of research, and 6 hours of thesis.

Advising

Jocelyn Saldierna

Graduate Advisor (Industrial Systems Graduate Programs)

713-743-0381

jsaldier@central.uh.edu

List of Approved non-IE Elective Courses

College of Engineering

- All graduate level courses (6000 level or higher) that are not from the Division of Technology.

Division of Technology/College of Engineering

- **SCLT 6314** Measurement and Evaluation of Supply Chain Operations
- **SCLT 6316** Global Supply Chain Logistics
- **SCLT 6318** Supply Chain Strategies
- **TEPM 6303** Risk Assessment in Project Management
- **TEPM 6304** Quality Improvement in Project Management

College of Natural Sciences and Mathematics

- All graduate level courses, with the exception of the following: COSC 6301, 6302, 6303, 6304, 6305, 6306, 6308, 6309, 6310

College of Business

- All graduate level courses, with the exception of any courses in General Business Administration (GENB).
- Reminder: course(s) that do not receive a letter grade, but are graded S, U, or W will not be counted towards the degree plan.



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Concentration Elective Courses (3 Courses / 9 Credit Hours)

Concentration 1: Data Analytics

INDE 6334 Predictive Data Analytics (Required)

INDE 6360 Engineering Analytics

INDE 7344 Decision Modeling and Optimization

INDE 7397 Introduction to Data Mining

IEEM 6360 Data Analytics for Engr. Managers

Concentration 2: Operations Research

INDE 6370 Operation Research-Digital Simulation (Required)

INDE 6334 Predictive Data Analytics

INDE 7340 Integer Programming

INDE 7342 Nonlinear Optimization

INDE 7344 Decision Modeling and Optimization

Concentration 3: Statistics, Quality and Reliability

INDE 6363 Statistical Process Control (Required)

INDE 6334 Predictive Data Analytics

INDE 6336 Reliability Engineering

INDE 6360 Engineering Analytics

INDE 6370 Operation Research-Digital Simulation

Concentration 4: Supply Chain and Logistics

INDE 7390 Supply Chain Management (Required)

INDE 6332 Engineering Project Management

INDE 6339 Materials Handling

INDE 6361 Production Planning & Inventory Control

INDE 6365 Engineering Economy II

Concentration 5: Digital Design and Manufacturing

INDE 6383 Engineering Design and Prototyping (Required)

INDE 6336 Reliability Engineering

INDE 6361 Production Planning & Inventory Control

INDE 6363 Statistical Process Control

INDE 7397 Advanced Manufacturing

Concentration 6: Occupational Safety Engineering

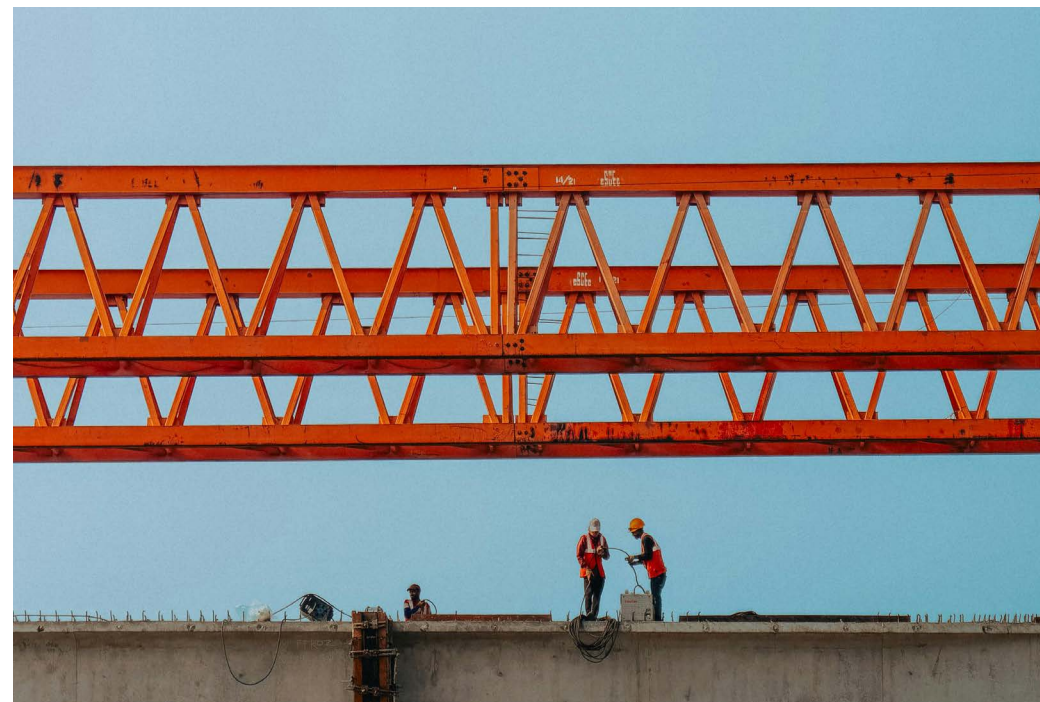
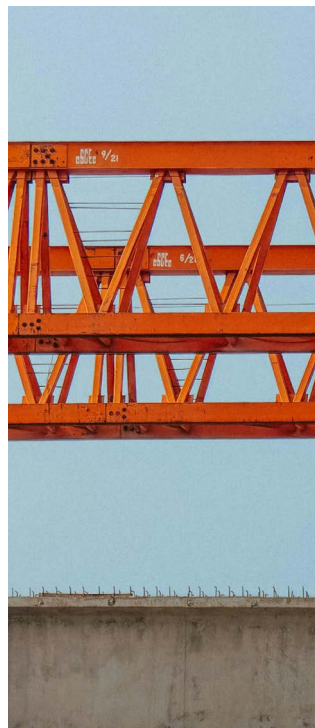
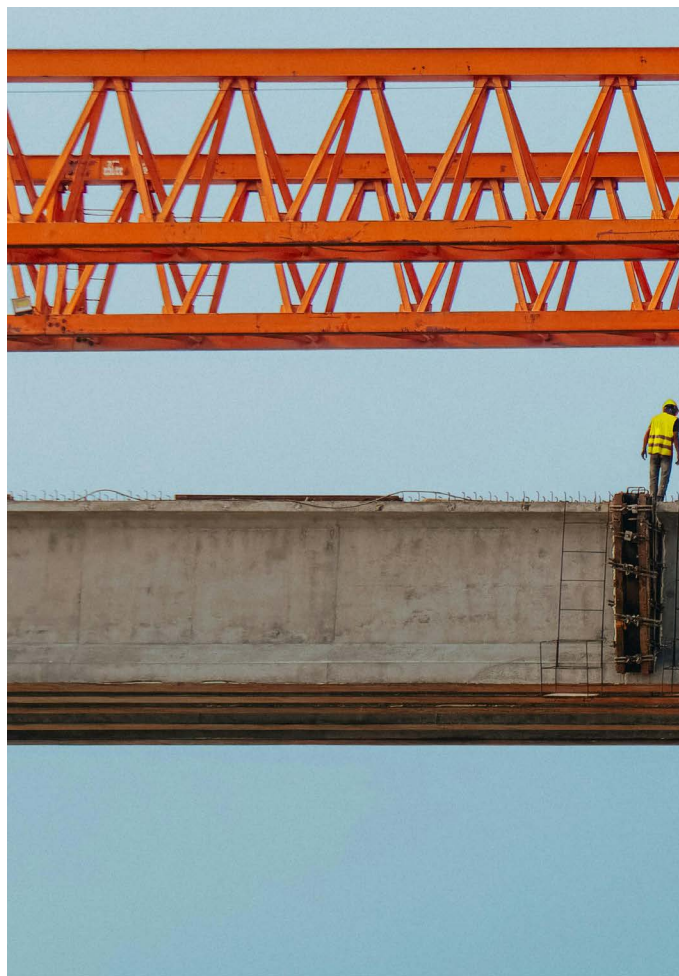
INDE 6337 Human Factors Systems Design (Required)

INDE 6321 System Safety Engineering

INDE 6361 Production Planning & Inventory Control

INDE 6365 Engineering Economy II

INDE 6383 Engineering Design and Prototyping



Master of Science in Civil Engineering | MSCE

The Department of Civil Engineering offers graduate study in environmental, geosensing systems, geotechnical, materials, hydraulic/water resources, and structural engineering. The department has well equipped research laboratories fitted with state-of-the-art instruments. The structural laboratory has more than 2,500 square feet of strong floor with a 2.5-million-pound MTS testing system, a large panel tester with forty 100-ton jacks, a biaxial fatigue tester and a walk-in chamber for large scale environmental testing. The materials testing laboratory is equipped with a 2-foot-deep strong floor and a 400-kip Tinius-Olsen universal testing machine. The geotechnical facility includes a laboratory with triaxial testing capability, sophisticated pile test chambers and fully equipped grouting and soil mechanics laboratories. The hydraulic facility is equipped with a fluid mechanics/wave mechanics laboratory with a 50-ft long tilting flume and state-of-the-art ADV and LSPIV. The environmental laboratories encompass a 2,000 square foot analytical research facility with state-of-the-art instrumentation that allows for analysis of most contaminants in soil, water and air as well as microbial and molecular analysis. The geosensing laboratory includes an optical laboratory and specialized airborne and terrestrial based remote sensing equipment.

Contact

713-743-4254

civilgrad@egr.uh.edu



cee.uh.edu

Degree Requirements

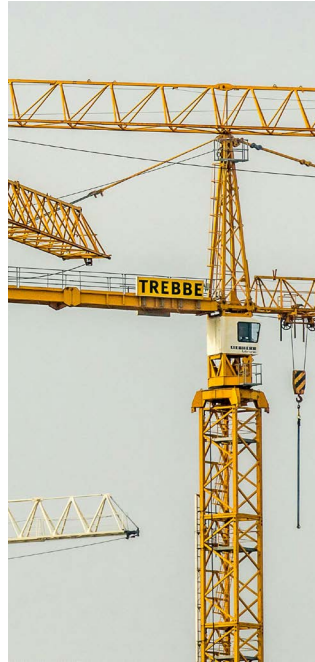
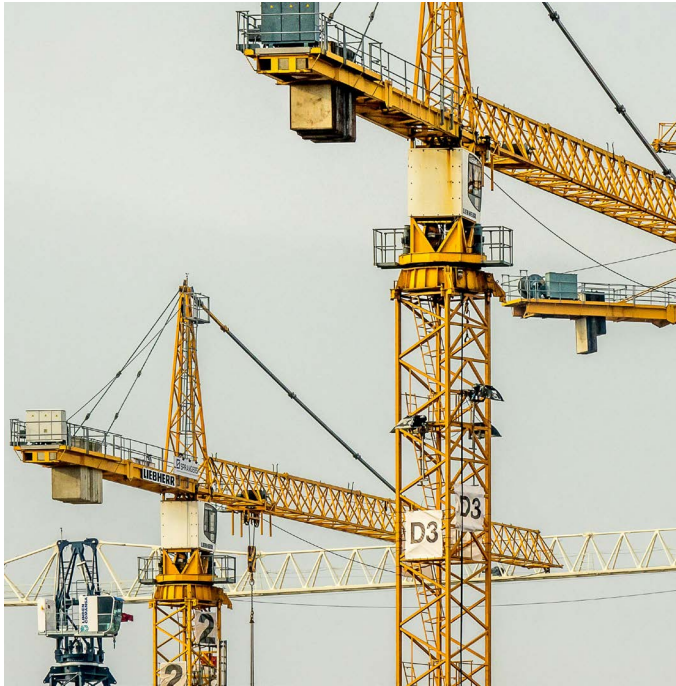
Starting in the Fall 2021 semester, there will be 4 required core courses enforced for structural focused MS students as listed below

- **CIVE 6337** Matrix Analysis of Structures or **CIVE 7397** Matrix Structural Analysis and Introduction to Finite Element Method
- **CIVE 6350** Advanced Mechanics of Materials
- **CIVE 6355** Introduction to Dynamics of Structures
- One of these three courses:
 - **CIVE 6335** Advanced Concrete Design
 - **CIVE 6338** Advanced Steel Design
 - **CIVE 7397** Masonry Structures Design

Non thesis students are required to take 31 hours of organized courses, 10 courses (3 hours each) plus a 1 hour seminar. The information presented in all but items 3 and 6 below apply to the non thesis degree.

The thesis program requires 21 semester credit hours of courses plus a thesis as follows:

- 9 credit hours of thesis (CIVE 6398, 6399, 7399). Registration in CIVE 6398 and 6399 in one semester is followed by registration in CIVE 7399 in subsequent semesters and is repeated continuously until the thesis is completed. Other research courses (CIVE 6198 through 6598) may be required. Registration in thesis should be continuous and uninterrupted.
- The courses must be in accordance with a degree plan, approved by the student's Advisor and the Director of Graduate Studies.
- No more than 6 hours of graduate credit may be transferred from another institution. Also, a maximum of 6 hours of P.B. credit may be changed to graduate credit. Transferred and P.B. courses must have a grade of B or better.
- The student is required to take CIVE 6111 (Graduate Seminar) during his/her registration in the thesis or research courses. This is in addition to the 21 hours of courses and 9 hours of thesis and research course requirements described above. Full-time, supported students must register in CIVE 6111 every semester unless permission is granted by the department chairman and the Advisor for an exception.
- A final GPA of at least 3.0/4.0 over all courses attempted is required for graduation.
- No course in which a grade less than C is received will count within the degree program. A grade of C+ or less in 4 courses attempted during the program will result in final dismissal of the student from graduate study.
- Technology courses will not be counted within the degree program.
- A course cannot be attempted more than three times; a grade of "W" is considered an attempt.



Doctor of Philosophy in Civil Engineering | Ph.D.

The Doctor of Philosophy in Civil Engineering requires 24 hours of course work, plus 2 one-hour seminars beyond the Masters Degree, or 36 hours of course work, plus 2 one-hour seminars if student has a Bachelors degree only.

The student first begins as a pre-PhD student until they pass the Qualifying Examination, they are then Ph.D. students. Once the student passes the Candidacy Exam, they are considered Ph.D. Candidates. During the period of study, the students are expected to carry out original research, which must be written up in a dissertation and defended before a committee.

Generally, Ph.D. students are offered financial aid in the form of teaching and/or research assistantship. Financial support includes medical insurance and qualifies the student for the lower, Texas-Resident Tuition. A tuition scholarship may also be awarded that covers up to nine hours of tuition per semester.

Contact

713-743-4254

civilgrad@egr.uh.edu



uh.edu/architecture

Ph.D. Course Requirements

The following are minimum requirements that may be exceeded in any case:

- Course requirements:
 - M.S. to Ph.D.— A total of at least 24-credit hours of course work (8 courses) beyond the M.S. (excluding prerequisites and remedial courses) is required for the Ph.D. degree. A minimum of 12 hours of credit (4 graduate-level courses) in Civil Engineering Courses in the student's major and supporting areas. No Civil Engineering course with a grade of less than a "B-" shall count within the degree program and a maximum of six hours of courses outside Civil Engineering with a grade of "C+" shall be counted within the degree program.
 - B.S. to Ph.D.— A total of at least 36-credit hours of course work (12 courses) (excluding prerequisites and remedial courses) is required for you going directly from the B.S. degree to the Ph.D. degree. A minimum of 18 hours of credit (6 graduate-level courses) in Civil Engineering Courses in the student's major and supporting areas. No Civil Engineering course with a grade of less than a "B-" shall count within the degree program and a maximum of six hours of courses outside Civil Engineering with a grade of "C+" shall be counted within the degree program.
- Two seminars: CIVE 6111
- At least 30-credit hours in research and dissertation; this includes a minimum of 18 Ph.D. research hours (any combination of CIVE 8198 through 8598) and a minimum of 12 hours of dissertation hours (any combination of CIVE 8399, 8699, or 8999).
- Pass the qualifying examination (See the qualifying exam policy).
- Pass the research proposal examination (at the time to form the dissertation committee)
- Achieve a final GPA of at least 3.25/4.0 over all courses attempted in the Ph.D. program.
- Successfully defend a dissertation



Master's in Engineering Management | MEMGMT

Engineering Management (EM) bridges the gap between engineering and technological problem-solving abilities of engineers with administrative skills for leading the day-to-day operations of today's complex organizations within the current global economy. The scope of EM includes engineering principles, business functions, and advanced technologies.

The Industrial and Systems Engineering (ISE) department at the Cullen College of Engineering offers a 30-credit hour online Master's in Engineering Management degree. Upon graduation, students will be well-versed in various engineering and management theories, concepts, tools, practices, and procedures essential for effective leadership and management within their organizations.

This program is designed for technical professionals seeking to advance into engineering leadership roles. In this online master's degree program, you will cultivate technical leadership skills through collaborative learning and teamwork. Throughout the curriculum, you will engage with theoretical frameworks and practical implementations, honing your abilities in management, collaborative problem-solving, interpersonal communication, and leadership. With these skills, you will gain the capability to challenge existing paradigms and effectively bridge technical innovations with the dynamic demands of the business environment.

1. Leveraging AI to make business decisions with deep engineering expertise.
2. Bridging gaps between general management and engineering management.
3. Leadership in engineering amidst the dawn of digital innovation.



Core Courses

As part of the interdisciplinary nature of EM degree, courses within Cullen College of Engineering and Bauer College of Business are carefully selected to offer the best learning experience in the EM discipline. Students are required to enroll in six required core courses in ISE Department in Cullen College of Engineering:

- **IEEM 6330** Managing Engineering Functions
- **IEEM 6335** Engineering Management of Organizations
- **IEEM 6361** Operations Management for Engineering Managers
- **IEEM 6360** Data Analytics for Engineering Managers
- **INDE 6332** Engineering Project Management
- **INDE 6380** Accounting for Engineering Managers

Two management selected courses from Bauer College of Business and two technical courses offered by Cullen College of Engineering in any engineering discipline selected by the student. All selected courses must be approved by the program director.



ise.uh.edu

Contact

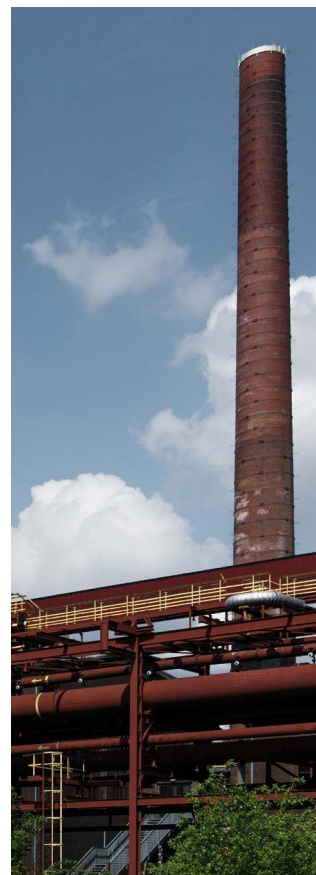
Matthew Hu, Ph.D.

Industrial and Systems Engineering

Engineering Management Program Director

713-743-4180

mhu9@central.uh.edu



Master of Science in Petroleum Engineering | MSPetE

The Master of Petroleum Engineering at the University of Houston prepares students to address complex energy challenges through advanced study in petroleum engineering and applied research. Located in Houston, the center of the global energy industry, the program combines rigorous academic training with real-world industry perspectives. Students learn from faculty with extensive research and professional experience while developing the technical expertise needed to meet the evolving demands of the energy sector.

The curriculum emphasizes the connection between classroom learning and practical application through research, professional development, and industry engagement. Graduates are equipped to pursue careers with major energy companies, service providers, drilling firms, and independent oil and gas producers in both domestic and international markets. The program prepares students for technical, operational, and leadership roles while fostering the skills needed to become innovators and decision-makers in industry, academia, and government.

Thesis Option

After admission into the Master of Science in Petroleum Engineering (non-thesis option), students may inquire with the Academic Advisor for Petroleum Engineering about how to pursue a Master of Science in Petroleum Engineering degree. They must meet certain requirements below. The Master of Science in Petroleum Engineering (thesis option) requires 24 credit hours of the same approved courses as the non-thesis option (beyond the introductory leveling courses in Petroleum Engineering) plus 6 credit hours dedicated to the Masters Thesis (PETR 6399 & PETR 7399). Such an option is particularly appropriate for students intending a career in research and who plan to pursue a Ph.D. degree.

Advising

Anne Sturm

Petroleum Engineering
Academic Advisor

masturm@uh.edu

Trina Johnson

Petroleum Engineering
Academic Advisor

tajohnson@uh.edu

Non-Thesis Option

Degree Requirements: 30 Credit Hours



petro.uh.edu

Leveling Courses

Students with an undergraduate engineering degree other than Petroleum Engineering must complete leveling courses after admission. These courses provide a foundation in petroleum engineering and do not count toward the master's degree.

PETR 6351 Introduction to Petroleum Engineering

PETR 6362 Reservoir Engineering I

PETR 6364 Origin/Development of Oil & Gas Reservoirs

PETR 6328 Petroleum Fluid Properties and Phase Equilibria

Core Courses

PETR 6302 Reservoir Engineering II

PETR 6312 Well Logging: Evaluation of Petroleum Formations

PETR 6368 Well Drilling & Completion I

PETR 6372 Petroleum Production Operations

Advanced Elective Courses

PETR 6314 Pressure Transient Testing

PETR 6320 Enhanced Oil Recovery

PETR 6322 Integrated Reservoir Project Management

PETR 6326 Applied Reservoir Simulation

PETR 6330 Fundamentals of Hydraulic Fracturing

PETR 6332 Reserves Estimation I: Deterministic

PETR 6338 Applied Math Methods in Petroleum Engineering

PETR 6340 Unconventional Resource Engineering

PETR 6341 Introduction to Carbon Capture Utilization & Storage

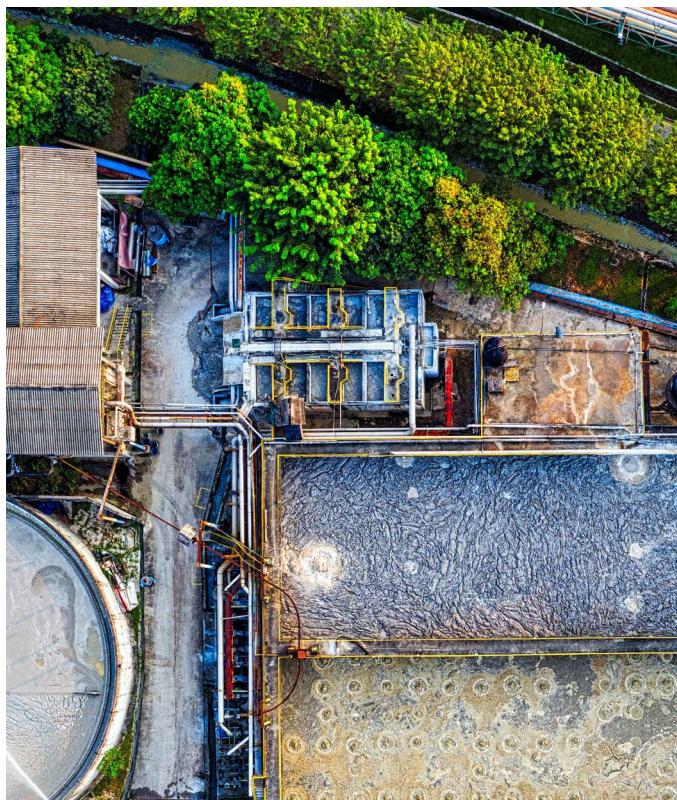
PETR 6342 Carbon Capture Utilization & Sequestration

PETR 6343 CO₂ EOR Sequestration

PETR 6344 Subsurface Energy Storage

PETR 6350 Natural Gas Engineering

PETR 6354 Reservoir Engineering Fundamentals



Master of Science in Environmental Engineering | MS

The University of Houston's environmental engineering program is a multidisciplinary effort 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. The environmental engineering graduate program 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.

Contact

713-743-4254

environmental@egr.uh.edu



cee.uh.edu

Degree Requirements: 30 Credit Hours

Graduate Seminar

CIVE 6111 Graduate Seminar
in Environmental Engineering

Thesis

CIVE 6399 Master's Thesis
CIVE 7399 Master's Thesis

Core Courses

CIVE 6361 Engineering
Hydrology
CIVE 6377 Environmental
Chemistry
CIVE 6378 Principles of
Environmental Modeling
CIVE 6391 Environment
Engineering Microbiology

Advanced Elective Courses

4 electives (thesis track)
or 6 electives (non-thesis)
from below:

CIVE 6362 Water Quality
Engineering
CIVE 6373 Experimental
Methods in Environmental
Engineering
CIVE 6387 Physicochemical
Treatment Processes
CIVE 6388 Hazardous Waste
Processes
CIVE 6390 Municipal Drinking
Water Treatment
CIVE 6392 Mass Transfer in
Environmental Systems

CIVE 6322 Stormwater
Management

CIVE 6331 Hydraulics of Open
Channel Flow

CIVE 6358 Deep Learning for
Engineers

CIVE 6359 SAR Remote
Sensing in Geosciences

CIVE 6374 Digital Imaging
Metrology

CIVE 6376 Physical Geodesy

CIVE 6380 Introduction to
Geomatics and Geosensing

CIVE 6381 Applied Geospatial
Computations

CIVE 6382 Lidar Systems and
Applications

CIVE 6383 Remote Sensing of
Hydrology

CIVE 6384 Satellite Altimetry
and Interferometric Synthetic
Aperture Radar

CIVE 6393 Geostatistics

CIVE 7342 Engineering
Geographic Information Systems



Master of Science in Materials Science & Engineering | **MS**

The Materials Science and Engineering Program at the University of Houston is an interdisciplinary program with faculty from Mechanical, Chemical and Electrical Engineering Departments. In addition, significant collaboration occurs with the materials faculty in the College of Natural Sciences and Mathematics. The principal objectives of the materials science and engineering program may be summarized as follows: to study the mechanical, optical, electrical and electronic behavior of engineering and engineered materials used in all engineering applications. The specific areas covered by this program range from metallic alloys, polymers, ceramics and composites for advanced mechanical/aerospace engineering applications to thin films and coatings for electronics and superconducting ceramics for energy-related applications.

Contact

Victoria Foster

Graduate Academic Advisor
vsfoste2@central.uh.edu

Dr. Megan Robertson

Program Director
mlrobert@central.uh.edu



materials.egr.uh.edu

Degree Requirements: 30 Credit Hours

Thermodynamics Core

CHEE 6335 Classical and Statistical Thermodynamics

CHEM 6313 Thermodynamics and Kinetics

CHEM 6322 Statistical Thermodynamics

PHYS 6327 Statistical Physics I

MECE 6397 Statistical Mechanics of Materials

Materials Core

MTLS 6300 Physics and Chemistry of Engineering Materials

CHEE 6300 Physics and Chemistry of Engineering Materials

MECE 6363 Physical Metallurgy

ECE 6348 Material Science of Thin Films

CHEM 6375 Physical Inorganic Chemistry II

Core Courses

CIVE 6361 Engineering Hydrology

CIVE 6377 Environmental Chemistry

CIVE 6378 Principles of Environmental Modeling

CIVE 6391 Environment Engineering Microbiology

Thesis Option

- Six hours of thesis (6399 and 7399) and at least 3 hours of research (6398) in the department of faculty advisor.
- Thesis: The thesis committee shall consist of at least three (3) faculty members. Student's advisor will serve as the chairman of the committee. At least two committee members need to be affiliated with the Materials Science and Engineering program.
- At least 15 hours should be in coursework offered by the College of Engineering.

Non-Thesis Option

- At least 9 hours of additional coursework in course listed in Materials Science and Engineering course offering. (Appendix C)
- At least 18 hours should be in coursework offered by the College of Engineering.

Reflections & Testimonials



“For me personally, this recognition reflects the strength of the civil engineering graduate program at the University of Houston, where advanced research and high-level engineering industry practice are closely integrated. I would also like to acknowledge my advisor, Dr. Dimitrios Kalliontzis, whose mentorship has continually encouraged me to aim higher and push the boundaries of structural engineering research and practice.”

Yousef Abu Amneh

PCI Project Precast Award of Excellence
CEE Ph.D. student



“I’m grateful for the research opportunities available to undergraduate students at the University of Houston, and this award reflects the impact they’ve had on my academic journey. Although I walked into that auditorium as the only undergraduate student in the room, I walked out with the reassurance that hard work and sacrifices pay off.”

Sarai Juarez Uribe

Mechanical engineering technology
undergraduate
first place winner
inaugural Rice BioWear Workshop



“I’m really honored to be named a Guggenheim Fellow and proud to be part of the University of Houston’s dynamic community... This recognition reflects the creativity, support and dedication of my students, collaborators and university leadership. It highlights our shared commitment to education, research and innovation, developing energy technologies that make a meaningful impact on how people live, work and connect, and educational and outreach programs that inspire our future generations to excel in science and technology.”

Haleh Ardebili

Guggenheim Fellow

Kamel Salama Endowed Professor of Mechanical
& Aerospace Engineering

Assistant vice president for Entrepreneurship and
Startup Ecosystem at UH

University of Houston



“After completing my M.Sc. at the University of Wyoming, I enrolled at UH for my Ph.D. The decision was shaped by UH’s strong focus on energy research, its connection to the oil & gas industry in Houston, and its active role in emerging energy transition technologies like CCUS and hydrogen storage... Alongside my professors, I also recognize the role of my peers, colleagues, and family members, who have supported and motivated me throughout this journey. Their combined influence has been essential in both my academic achievements and professional growth.”

Mohamed Sarhan

UH Externship Program 24’

Petroleum Engineering Ph.D. 24’



“I’ve been able to work across just about every part of the energy value chain; I’ve worked in refining and midstream in biofuels, biogas and renewable power, so the last eight years have been very energy-transition-focused. I credit my strong engineering foundation and background that started at UH with the ability to move across those parts of the industry seamlessly.”

Justice Akuchie

Chemical Engineering BSChE 04’

Project Engineer

Shell



“My time at the Cullen College of Engineering was instrumental in shaping my professional career. The curriculum and hands-on projects provided a solid foundation in engineering and problem-solving skills. The collaborative environment encouraged teamwork and communication skills, which are crucial in any professional setting.”

Sharon Moonsammy

UH Alumni

ARIA Signs & Design + Architectural Products



Cullen College of Engineering Technology Division

The Technology Division uniquely prepares technology savvy industry leaders that solve real-world challenges. Students earn accredited degrees in wide-ranging disciplines from engineering technologies, biotechnology and computational health informatics to consumer sciences, computer networking, construction management, digital media, human resource development, and information security systems. Strong partnerships with industry inspire innovation and provide students with opportunities to gain meaningful experiences that complement their theoretical knowledge. Our students are among the best prepared for the evolving workforce.





Undergraduate Programs

Biotechnology | BS

Computer Engineering Technology | BS

Computer Information Systems | BS

Construction Management | BS

Digital Media | BS

Electrical Power Engineering Technology | BS

Human Resource Development | BS

Mechanical Engineering Technology | BS

Retailing and Consumer Science | BS

Supply Chain & Logistics Technology | BS

Technology Leadership and Innovation Management | BS



Graduate Programs

Engineering Technology

- **Biotechnology** | MS
- **Mechanical Engineering Technology** | MS
- **Computational Health Informatics** | MS
- **Network Communications** | MS

Construction Management | MS

Supply Chain & Logistics Technology | MS

Global Retailing | MS

Technology Project Management | MS

Cybersecurity | MS

Foresight | MS





Bachelor of Science in Biotechnology | BS

The Biotechnology program prepares students with a strong foundation in skills that transform our future world. With practical, hands-on training, innovative research and teaching, the program attracts students who are eager to discover ways to contribute to the health of society and the environment. The Bioprocessing and Bioinformatics tracks offer the flexibility to adapt the degree based on interests, educational background and career goals.

The Bachelor of Science Program in Biotechnology is intended to provide students with strong core science concepts and an application-oriented undergraduate education. Strongly interdisciplinary, this innovative program draws faculty and courses from the College of Technology and the College of Natural Science and Math. The program's objective is to prepare students for employment opportunities in the critically important and dynamic biotechnology industry. In addition, the curriculum will provide students with knowledge and core set of skills that span across basic sciences, technology, engineering, and mathematics (STEM) education. With an emphasis on environmental biotechnology, this is the first program in the state of Texas that integrates bioprocessing, nanobiotechnology, bioinformatics and environmental biotechnology into the undergraduate curriculum.

Careers

Agricultural Biotechnology
Medical Biotechnology
Industrial Biotechnology
Environmental Biotechnology
Forensics Biotechnology

Advising

Carlos Gonzalez

Undergraduate Advisor
713-743-0549
cagonzalez15@uh.edu

Aaron Solari

Undergraduate Advisor
713-743-3899
apsolari@uh.edu



et.uh.edu

Degree Requirements: 120 or 121 Credit Hours

Foundation Courses

BCHS 3304 General Biochemistry I

BCHS 3201 Biochemistry I Lab

BIOL 1361 Introduction to Biological Science I

BIOL 1161 Introduction to Biological Science I Lab

BIOL 1362 Introduction to Biological Science II

BIOL 1162 Introduction to Biological Science II Lab

BIOL 3332 Elementary Microbiology

BIOL 3132 Elementary Microbiology Lab

BTEC 1322 Introduction to Biotechnology

BTEC 3100 Biotechnology Research Methods and Applications

BTEC 3301 Principles of Genomics/Proteomics and Bioinformatics

BTEC 3302 Molecular Genetics and Biotechnology

BTEC 3317 Biotechnology Regulatory Environment

BTEC 3321 Current Good Manufacturing Practices in Biotechnology

BTEC 4350 Biotechnology Capstone Experience

CHEM 1331 Fundamentals of Chemistry I

CHEM 1111 Fundamentals of Chemistry I Lab

CHEM 1332 Fundamentals of Chemistry II

CHEM 1112 Fundamentals of Chemistry II Lab

CHEM 3331 Fundamentals of Organic Chemistry

CHEM 3221 Fundamentals of Organic Chemistry Lab

CIS 2334 Information Systems Applications

ELET 2300 Introduction to C++ Programming

MATH 1330 Precalculus

MATH 1431 Calculus I

PHYS 1301 Introductory General Physics I

PHYS 1101 General Physics I Lab

HDCS 3300 Organizational Decisions in Technology

OR

TLIM 3340 Organizational Leadership and Supervision

TLIM 3363 Technical Communications

One of the following:

- **MATH 2311** Introduction to Probability and Statistics
- **TMTH 3360** Applied Technical Statistics
- **PSYC 3301** Introduction to Psychological Statistics
- **MATH 3339** Statistics for Sciences

Elective Courses

6 credit hours | free elective

3 credit hours | approved electives

Biomanufacturing Track

BTEC 3320 Introduction to Quality Assurance and Quality Control in Biotechnology

BTEC 4301 Principles of Bioprocessing

BTEC 4101 Principles of Bioprocessing Lab

BTEC 4319 Microbial Biotechnology

3 credit hours | approved electives

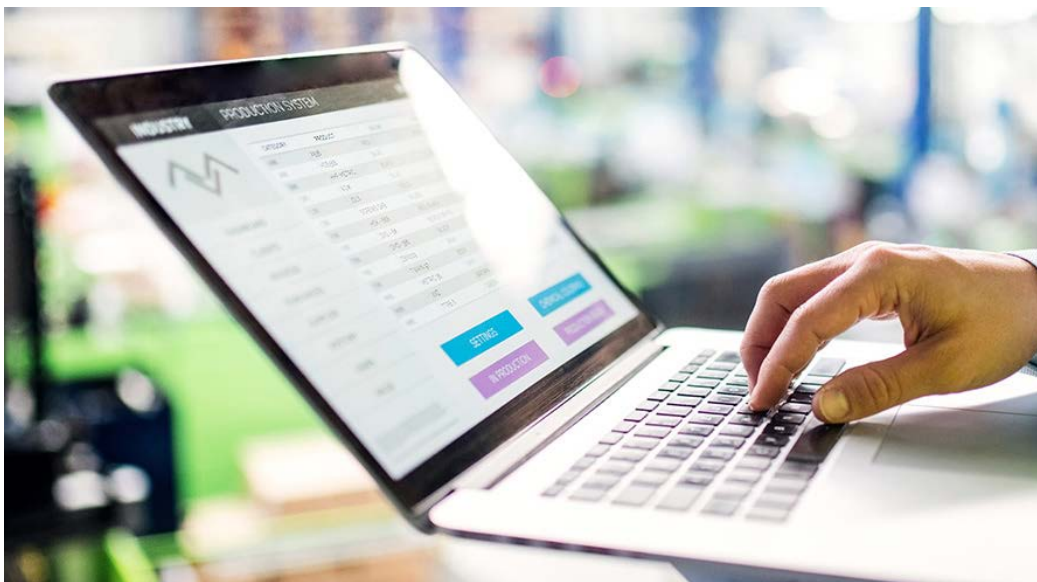
Biomanufacturing Track

BTEC 4300 Principles of Bioinformatics

CIS 3343 Info Systems Analysis & Design

CIS 3365 Database Management

3 credit hours | approved electives



Bachelor of Science in Computer Engineering Technology | BS

The Computer Engineering Technology, Bachelor of Science degree is a research-oriented, project-based, practical program where students learn about analog and digital electronics, microprocessor architecture and programming, hardware and software design, networked embedded systems, operating systems, communication, and computer networks. The CET program incorporates applications such as cyber-physical systems, smart and clean energy, healthcare and bio-medical systems, smart sensors, and embedded controls.

The goal of the Computer Engineering Technology program is to provide students with a high quality applications-oriented undergraduate education based on state-of-the-art technology as a preparation for productive employment in the broad field of microcomputer applications. With computers assisting nearly every professional and leisure activity of modern life, people who can design, install, configure, network, and repair microcomputer systems can make a valuable contribution to business and industry. People familiar with both the hardware and software requirements of computers are especially valuable. The Computer Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET.



Careers

Computer Systems Engineer
Computer Test Engineer
Computer Field Specialist
Interface Designer
Software Specialist
Computer Networking Specialist
Data Analyst
Digital Applications Specialist
Network Administrator
System Administrator
Systems Analyst
Software Developer

Advising

Carlos Gonzalez

Undergraduate Advisor
713-743-0549
cagonzalez15@uh.edu

Aaron Solari

Undergraduate Advisor
713-743-3899
apsolari@uh.edu



et.uh.edu

Degree Requirements: 124 Credit Hours

Foundation Courses

ELET 1400 Circuit Theory and Lab I

ELET 1401 Circuit Theory and Lab II

ELET 2303 Digital Systems

ELET 2103 Digital Systems Lab

ELET 2305 Semiconductor Devices and Circuits

ELET 2105 Semiconductor Devices and Circuits Lab

ELET 3301 Linear Systems Analysis

ELET 3402 Communications Circuits

ELET 3403 Sensor Applications

ELET 3405 Microprocessor Architecture

ELET 3425 Embedded Systems

ELET 4308 Senior Project

ELET 4208 Senior Project Lab

ELET 4421 Computer Networks

CHEM 1301 Foundations of Chemistry

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 3321 Engineering Mathematics

OR

MATH 3307 Statistical Applications

MECT 3341 Computer-Aided Drafting I

MECT 4188 Ethics in Engineering Technology

TECH 3366 Applied Numerical Methods

TLIM 3363 Technical Communications

PHYS 1301 Introductory General Physics I

PHYS 1101 General Physics I Lab

PHYS 1302 Introductory General Physics II

PHYS 1102 General Physics II Lab

ONE of each of the following:

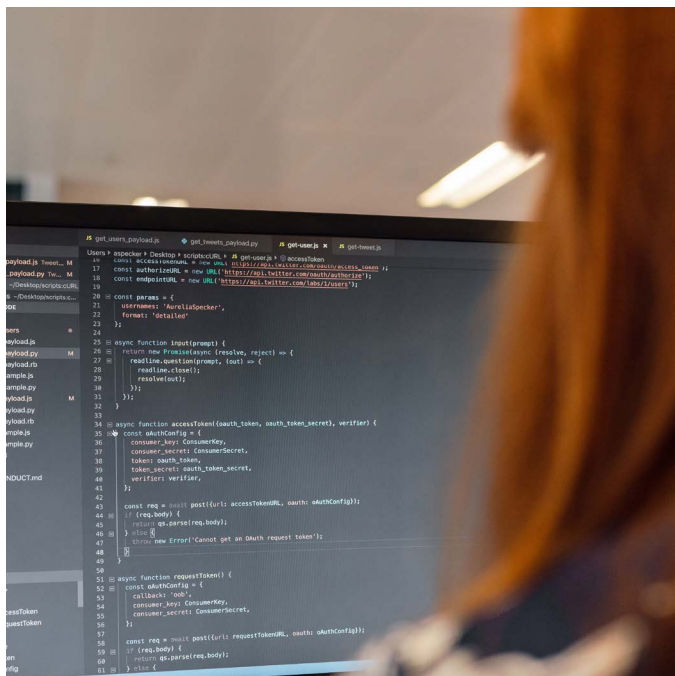
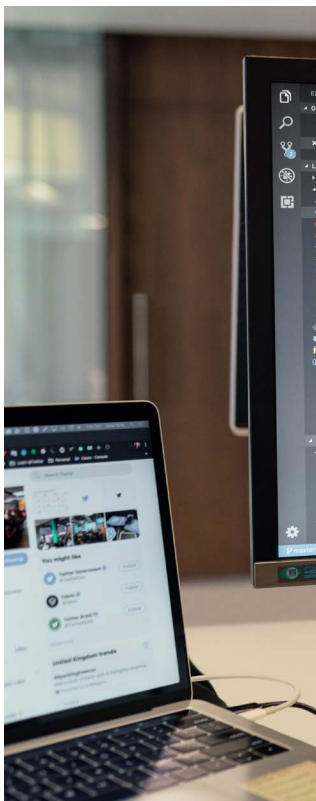
- **HDCS 3300** Organizational Decisions in Technology
- **TLIM 3340** Organizational Leadership and Supervision

Intermediate Courses

3 credit hours | free electives

12 credit hours of approved electives, selected from the following:

- **ELET 4300** Unix Operating System
- **ELET 4302** Data Communication Systems
- **ELET 4309** Object-Oriented Applications Programming
- **ELET 4315** Telecommunications
- **ELET 4325** Advanced Microcomputer Networks
- **ELET 4327** Optical Circuits
- **ELET 4332** Physiological Systems Modeling and Simulation
- **ELET 4350** Overview of Computational Health Informatics
- **ELET 4351** Biomedical Data Mining
- **ELET 4352** Computational Tools for Technology
- **ELET 4354** Biomedical Image Analysis
- **ELET 4355** Biomedical Signal Analysis
- **ELET 4360** Sustainable and Resilient Technology Development



Bachelor of Science in Computer Information Systems | BS

The Bachelor of Science in Computer Information Systems prepares students to use technology to improve organizational operations and solve real-world business challenges. Through hands-on learning, students develop skills in computing, network systems, and information technology while learning how to apply these tools effectively within modern organizations. The program also emphasizes staying current with evolving technologies and industry practices.

Students can explore career paths in software engineering, where they design and develop software solutions to address complex problems, and cybersecurity, where they help protect systems, networks, and data through security tools and policies. Faculty-mentored research opportunities in areas such as artificial intelligence, data science, and cybersecurity allow students to gain valuable research experience and insights into advanced studies.

Beyond the classroom, students can build professional connections through involvement in student organizations and industry events. These experiences help develop leadership, communication, and networking skills while providing guidance from industry professionals and preparing graduates for successful careers in information technology.

Advising

Kathryn Delgado

Undergraduate Advisor
(713) 743-9971
kvdelgado@uh.edu

Shivam Rana

Undergraduate Advisor
(713) 743-2650
skrana2@CougarNet.UH.EDU

Lida Hedayatpour

Undergraduate Advisor
(713) 743-1145
lhedayatpour@uh.edu

Careers

Software Engineer

Systems Administrator

Cybersecurity

Software Architect

Database Administrator

Information Systems Security
Engineer

Information Technology
Manager



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Degree Requirements: 121 Credit Hours

CIS Environment

ACCT 2301 Principles of Financial Accounting

ACCT 2302 Principles of Managerial Accounting

TLIM 3360 Law and Ethics in Technology & Innovation

TLIM 3340 Organizational Leadership and Supervision
OR

MANA 3335 Introduction to Organizational Behavior and Management

TLIM 4341 Production & Service Operation

OR

SCM 3301 Supply Chain Management Fundamentals

TLIM 4342 Quality Improvement Methods

Major Courses

CIS 1348 Information Systems Application Development

DIGM 1376 User Experience (UX) Principles

CIS 2334 Information Systems Applications

CIS 2336 Web Application Development

CIS 2337 Fundamentals of Information Security

CIS 2347 Information Systems Infrastructure and Networking

CIS 2368 Advanced Information Systems Development

CIS 3320 Information Visualization

CIS 3330 Information Systems in Organizations

CIS 3339 Enterprise Applications Development

CIS 3343 Information Systems Analysis & Design

CIS 4355 Information Systems Operations

CIS 4365 Database Management

CIS 4374 Information Systems Project Management

CIS 4375 Information Systems Capstone

Approved Technical Electives

12 Hours

- Six hours must be at the 3000 level or above.



Bachelor of Science in Construction Management | BS

The Construction Management program provides the ultimate balance of construction, business, and engineering courses. The program emphasizes the critical skills that are highly sought in today and tomorrow's job markets. Graduates of the CM program are prepared to enter rewarding professions such as project managers, field operations engineers, construction estimators, and construction planners.

The objective of Construction Management program is to provide graduates with knowledge and skills that are valued by commercial, industrial and heavy civil sectors of the construction industry. Graduates gain knowledge of construction materials and methods, structural systems, soils, site development, surveying, contract administration, codes, plans and specifications, planning, estimating, scheduling, and evaluating project performance. The curriculum provides fundamental and advanced coursework that incorporates current standards and technology for managing and providing quality construction. Software is applied in curriculum courses to prepare students for the utilization of computer applications in construction management. The four-year program is accredited by The American Council for Construction Education (ACCE).



Advising

Van Stevens

Undergraduate Advisor
713-743-4022
vstevens@uh.edu

Nicole Stidham

Undergraduate Advisor
713-743-1788
nmstidham@uh.edu

Careers

Construction Manager

Project Manager

Superintendent

Field Engineer

Scheduler

Estimator

Project Controls Specialist



cee.uh.edu

Degree Requirements: 120 Credit Hours

Foundation Courses

CNST 1361 Construction Management I

CNST 2351 Construction Estimating I

CNST 3185 Construction Experience

CNST 3265 Construction Layout and Site Development

CNST 3301 Construction Equipment and Methods

CNST 3331 Construction of Planning and Scheduling

CNST 3355 Strength of Construction Materials

CNST 3155 Construction Materials and Testing

CNST 3372 Soil Mechanics and Foundations

CNST 4220 Comprehensive Construction Management and Emerging Practices

CNST 4302 Construction Law and Ethics

ACCT 2301 Principles of Financial Accounting

ACCT 2302 Principles of Managerial Accounting

COMM 1332 Fundamentals of Public Speaking

ECON 2304/2305 Micro or Macroeconomics Principles

BUSI 4350 Business Law and Ethics

MATH 1313 Finite Math with Applications

MATH 1330 Precalculus

MATH 1431 Calculus I

MATH 2311 Introduction to Probability and Statistics

PHYS 1301 Introductory General Physics I

PHYS 1302 Introductory General Physics II

OR

EOL 1330 Physical Geology

PHYS 1102 General Physics II Lab

Process And Industrial Track

CNST 1315 Project Drawings and Graphics

CNST 1325 Process and Industrial Construction

CNST 2325 Process and Industrial Subsystems

CNST 2345 Contract Documents for Capital Projects

CNST 3210 Safety for Industrial Projects

CNST 3365 Cost Estimating Capital Projects

CNST 4315 Steel Construction

CNST 4335 Capital Projects Development

CNST 4345 Reinforced Concrete Structures

CNST 4385 Field Operations for Capital Projects

Commercial Construction Track

CNST 1301 Construction Materials and Methods

CNST 1330 Graphics I

CNST 2321 Mechanical and Electrical Systems

CNST 2341 Construction Documents

CNST 3205 Construction Safety Management

CNST 3351 Construction Estimating II

CNST 4311 Structural Steel and Timber Construction

CNST 4331 Construction Management II

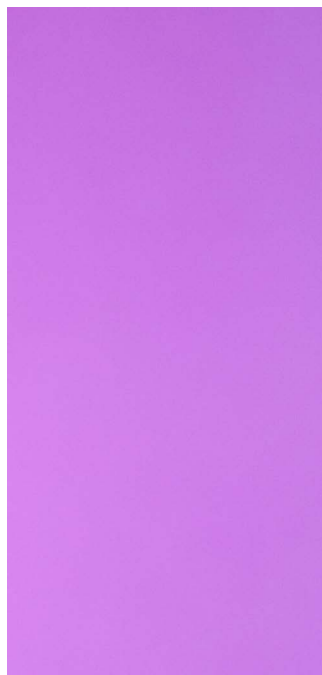
CNST 4341 Project Controls

CNST 4381 Reinforced Concrete and Building Codes

Elective Courses

6 credit hours of approved business electives, selected from the following:

- **MANA 3335** Introduction to Organizational Behavior and Management
- **MARK 3336** Introduction to Marketing
- **FINA 3332** Principles of Financial Management
- **SCM 3301** Service and Manufacturing Operations
- **ENTR 3310** Entrepreneurship
- **ENTR 3312** Corporate Entrepreneurship



Bachelor of Science in Digital Media | BS

The Convergence of Art, Science, Technology, and Business

The Digital Media program is characterized by a curriculum which stresses the “producer” and “strategist” aspects of digital media and emphasizes the research/business aspect of the discipline along with its technical and aesthetic aspects. Digital Media is a dynamic and ever-changing field and includes some of the largest industries in the United States.

Digital Media prepares students to succeed as digital media strategists and producers across print, packaging, eMedia, UX, AI/VR, social media, and motion media.



Contact

Dr. Elizabeth Rodwell

Program Coordinator
erodwell@central.uh.edu

Careers

Leadership

Creativity

Print

Computer Graphics

Web Design and eMedia

eCommerce

Photography

Motion Media

Advising

Kathryn Delgado

Undergraduate Advisor
(713) 743-9971
kvdelgado@uh.edu

Shivam Rana

Undergraduate Advisor
(713) 743-2650
skrana2@CougarNet.UH.EDU

Lida Hedayatpour

Undergraduate Advisor
(713) 743-1145
lhedayatpour@uh.edu



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Degree Requirements: 120 Credit Hours

Core Courses

DIGM 1300 Introduction to Digital Media

DIGM 1350 Graphics for Digital Media

DIGM 1376 User Experience (UX) Principles

DIGM 2325 Information Technology Applications for Digital Media

DIGM 2353 Page Layout & Design

DIGM 2357 Content Strategy & Development

DIGM 2376 User Experience (UX) Principles 2

DIGM 3354 Principles of Visual Production

DIGM 3357 Social Media Applications & Analytics

DIGM 3358 Augmented & Virtual Reality

DIGM 4351 Portfolio Development for Digital Media

DIGM 4372 Digital Media Production Management

DIGM 4378 Senior Project

DIGM 4379 Transmedia Marketing

CIS 3320 Information Visualization

Approved Technical Electives

12 Hours

Any DIGM courses not applied to major coursework

- **DIGM 2351** Web Design
- **DIGM 3356** ePublishing
- **DIGM 3370** Two Dimensional C.G.I Animation
- **DIGM 3374** Video Production 2
- **DIGM 4375** Package Design
- **DIGM 4382** Simulation and Gaming
- **CIS 2336** Web Application Development
- **HDCS 4369** Entrepreneurship
- **HDCS 4374** Entrepreneurship E-Tailing
- **HDCS 4375** Strategies in Digital Retail
- **ELET 2300** Introduction To C++ Programming
- **COSC 1336** Computer Science & Programming
- **SCLT 2380** Distribution Channels
- **SCLT 3381** Industrial and Consumer Sales



Bachelor of Science in Electrical Power Engineering Technology | BS

Earning a degree in Electrical Power Engineering Technology provides you with the right combination of skills for designing, analyzing, and improving computer-based power generation, delivery, and end-user systems. In addition to studying electrical motors and generators, computer-based controls, and alternative energy sources, you will learn about electrical power generating transmission and distribution systems, electrical power protection systems, and power electronics that increase the reliability and efficiency of electrical energy systems.

The goal of the Electrical Power Engineering Technology program is to provide students with a high quality applications-oriented undergraduate education based on state-of-the-art technological equipment associated with electrical technology. This goal is achieved through several objectives such as continuing to update specific courses in the program to ensure relevance to the latest industrial changes, supporting the development of appropriate computer facilities, promoting the integration of advanced technology in all courses, and encouraging professional growth and development of the faculty. The program is designed to satisfy the educational needs of the urban Houston community by providing a climate that fosters self-awareness, personal growth, and a desire for lifelong learning.



Careers

Design engineer
Product engineer
Applications engineer
Customer representative for engineering firms
Marketing representative for engineering firms
Plant engineer

Advising

Carlos Gonzalez

Undergraduate Advisor

713-743-0549

cagonzalez15@uh.edu

Aaron Solari

Undergraduate Advisor

713-743-3899

apsolari@uh.edu



et.uh.edu

Degree Requirements: 124 Credit Hours

Foundation Courses

ELET 1400 Circuit Theory and Lab I

ELET 1401 Circuit Theory and Lab II

ELET 2301 Poly-Phase Circuits and Transformers

ELET 2101 Poly-Phase Circuits and Transformers Lab

ELET 2303 Digital Systems

ELET 2103 Digital Systems Lab

ELET 2305 Semiconductor Devices and Circuits

ELET 2105 Semiconductor Devices and Circuits Lab

ELET 3301 Linear Systems Analysis

ELET 3405 Microprocessor Architecture

ELET 3307 Electrical Machines and Controls

ELET 3107 Electrical Machines and Controls Lab

ELET 3312 Programmable Logic Controllers & Motor Control Systems

ELET 3112 Rotating Machine Controls Lab

ELET 4303 Computer-Based Power Distribution and Transmission

ELET 4305 Senior Design in Electrical Power Engineering Technology

ELET 4317 Computer-Based Electrical System Protection and Safety

ELET 4319 Electrical Power Systems and Industry Practices

ELET 4326 Power Converter Circuits

ELET 4126 Power Converter Circuits Lab

MATH 1431 Calculus I

MATH 1432 Calculus II

MECT 1365 Elements of Materials and Processes

MECT 3341 Computer-Aided Drafting
OR

MECT 4188 Ethics in Engineering Technology

PHYS 1301 Introductory General Physics I

PHYS 1101 General Physics I Lab

PHYS 1302 Introductory General Physics II

PHYS 1102 General Physics II Lab

TLIM 3363 Technical Communicatitons

ONE of each of the following:

- **MATH 3307** Statistical Applications
- **MATH 3321** Engineering Mathematics

ONE of each of the following:

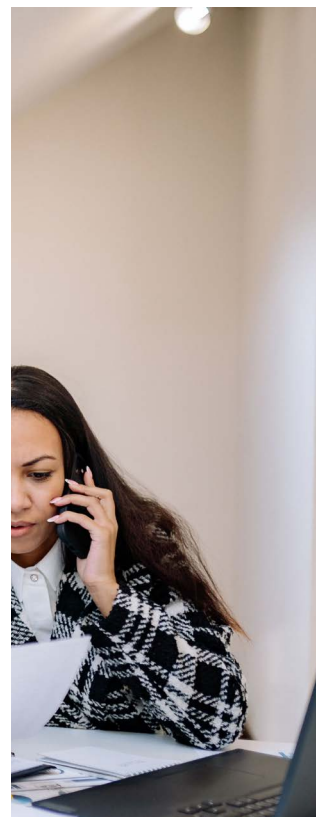
- **TLIM 3340** Organizational Leadership and Supervision
- **HDCS 3300** Organizational Decisions in Technology

Elective Courses

3 credit hours | free electives

12 credit hours of approved electives, selected from the following:

- **ELET 4300** Unix Operating System
- **ELET 4302** Data Communication Systems
- **ELET 4309** Object-Oriented Applications Programming
- **ELET 4315** Telecommunications
- **ELET 4325** Advanced Microcomputer Networks
- **ELET 4327** Optical Circuits
- **ELET 4332** Physiological Systems Modeling and Simulation
- **ELET 4350** Overview of Computational Health Informatics
- **ELET 4351** Biomedical Data Mining
- **ELET 4352** Computational Tools for Technology
- **ELET 4354** Biomedical Image Analysis
- **ELET 4355** Biomedical Signal Analysis
- **ELET 4360** Sustainable and Resilient Technology Development



Bachelor of Science in Human Resource Development | BS

HRD is leading people, teams, and organizations through change and innovation. HRD professionals are experts in workforce training, career management, and organizational change and development.

Graduates of the HRD program are prepared to work in a wide range of industries including energy, transportation, healthcare, retail, and education. Job titles include training specialist, training manager, instructional designer, human resources manager, organizational development manager, training facilitator, and human resource development consultant.

The HRD program offers online, hybrid, and face-to-face classes at the University of Houston and the University of Houston at Sugar Land.

Careers

Instructional Designer

Instructor/Facilitator

Program Evaluator

Performance Consultant/Coach

E-Learning Consultant

Program Designer

Individual Development &
Career Counselor

Organization Change Agent

Organization Design Consultant

HR Strategic Advisor

Advising

Esperanca Rosa

Undergraduate Advisor

(713) 743-4463

edrosa@central.uh.edu

Sharice Wasson-Irons

Undergraduate Advisor

(713) 743-2662

snwassonirons@uh.edu



hdcs.uh.edu

Degree Requirements: 120 Credit Hours

Major Courses

HDCS 3300 Org Decisions
(student may apply previous
credit for MANA 3335)

HRD 3310 Talent Management

HRD 3340 Principles of Human
Resource Development

TECH 1301 Intro to Data
Analytic Tools

HRD 3346 Performance
Assessment & Evaluation

HRD 3350 Workforce Diversity
and Globalization
(student may apply previous
credit for INTB 3354 or
INTB 3350)

HRD 3351 Instructional
Design for Human Resource
Development

HRD 4301 Global Leadership
in Human Resource
Development

HRD 4344 Designing
E-Learning

HRD 4350 Organization
Development & Consulting

HRD 4352 Facilitation
Strategies

HRD 4396 Internship in Human
Resource Development

TECH 3365 Appl of Discrete
Mthds in Tech

TLIM 3345 Human Resources
in Technology
(student may apply previous
credit for MANA 4330)

TLIM 4342 Quality
Improvement Methods

Professional Studies Area of Specialization or Minor

Minor approved course work (15 credit hours)

- See academic advisor for approval of a 15 hour content block that addresses your career goals.

Electives (12 credit hours)



Bachelor of Science in Mechanical Engineering Technology | BS

The Mechanical Engineering Technology program offers advanced teaching and research laboratories with courses in computer aided engineering, biomedical systems, advanced material design, manufacturing, systems integration, oil and gas applications, energy and efficient project management. Students gain highly developed expertise in design, analysis and manufacturing mechanical systems.

This program includes courses that are directed at both computer-aided manufacturing and computer-aided design and drafting. Individuals interested in manufacturing technology apply fundamental principles of mechanical design and manufacturing processes to new and existing manufacturing systems. Courses focus on manufacturing planning and management, automated manufacturing systems, quality control, and robotics. Computer-aided design and drafting is an essential component of the design procedure; courses focus on computer graphics and applied mechanical design.

The Mechanical Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET.



Advising

Carlos Gonzalez

Undergraduate Advisor

713-743-0549

cagonzalez15@uh.edu

Aaron Solari

Undergraduate Advisor

713-743-3899

apsolari@uh.edu

Careers

Design engineer

Product engineer

Applications engineer

Customer representative for
engineering firms

Marketing representative for
engineering firms

Plant engineer



et.uh.edu

Degree Requirements: 124 Credit Hours

Foundation Courses

MECT 1330 Engineering Graphics

MECT 1364 Materials and Processes I

MECT 2354 Introduction to Mechanics

MECT 3318 Fluid Mechanics Applications

MECT 3118 Fluid Mechanics Applications Lab

MECT 3331 Applied Thermodynamics

MECT 3342 Elements of Plant Design

MECT 3355 Strength of Materials

MECT 3155 Strength of Materials Lab

MECT 3358 Dynamics of Mechanisms

MECT 3360 Automated Manufacturing Systems

MECT 3365 Computer-Aided Design I

MECT 3367 Quality Control Technology

MECT 4188 Ethics in Engineering Technology

MECT 4331 Heat Transfer Applications

MECT 4372 Materials Technology

MECT 4172 Materials Technology Lab

MECT 4275 Senior Design Project I

MECT 4276 Senior Design Project II

CHEM 1301 Foundations of Chemistry

CHEM 1101 Foundations of Chemistry Lab

ELET 2300 Introduction to C++ Programming

ELET 2307 Electrical-Electronic Circuits

MATH 1330 Precalculus

MATH 1431 Calculus I

MATH 1432 Calculus II

PHYS 1301 Introductory General Physics I

PHYS 1101 General Physics I Lab

PHYS 1302 Introductory General Physics II

PHYS 1102 General Physics II Lab

TELS 3363 Technical Communications

ONE of each of the following:

- **TELS 3340** Organizational Leadership and Supervision
- **HDCE 3300** Organizational Decisions in Technology

Elective Courses

3 credit hours | free electives

12 credit hours of computer-aided design and manufacturing electives, selected from the following:

- **MECT 3362** Industrial Work Measurement
- **MECT 3330** Advanced Engineering Graphics
- **MECT 3364** Materials and Processes II
- **MECT 3366** Learn Manufacturing
- **MECT 3368** Economic Analysis of Technology
- **MECT 4323** Applications in Stress Analysis
- **MECT 4341** Materials Selection and Management
- **MECT 4345** Fundamentals and Applications of Fuel Cell

- **MECT 4350** Principles in Mechatronics
- **MECT 4360** Fundamentals of Biomechanics
- **MECT 4364** Smart Manufacturing Systems Design
- **MECT 4365** Computer-Aided Design II
- **MECT 4367** Industrial Maintenance and Reliability
- **MECT 4368** Simulation of Manufacturing Systems
- **MECT 4384** Manufacturing Systems Control
- **MECT 3341** Computer-Aided Drafting I
- **MECT 4326** Fundamentals of Offshore Systems
- **MECT 4328** Fundamentals of Pipeline Design

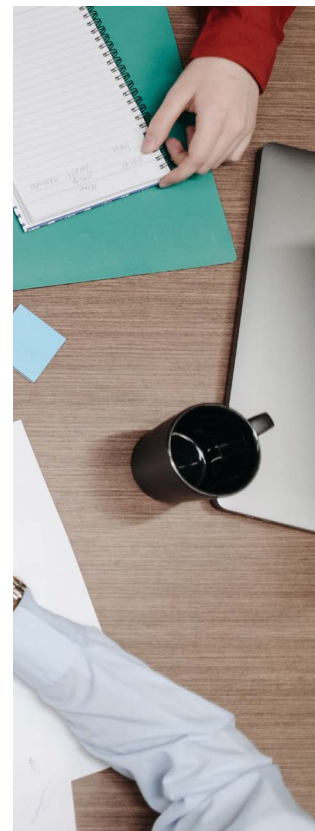
- **MECT 4330** Valve Design
- **MECT 4332** Fundamentals of Drilling Technology
- **MECT 4337** Downhole Drilling Tools and Technology



Bachelor of Science in Retailing and Consumer Science | BS

Retailing and Consumer Science (RCS) at the University of Houston is a unique, on-campus/online undergraduate program for those seeking to understand consumers and retailing. It focuses on consumer-oriented business practices in the fields of retailing, technology entrepreneurship, e-tailing, sales, customer service, and public relations. Consumer orientation is key in meeting customer demand that drives business success.

The program offers specializations in Retailing and Consumer Science, Technology Entrepreneurship, e-Tailing, Training and Development and Professional Studies. The professional studies option is designed for students who have completed an associate's degree or an extensive content block and wish to build upon this content to complete their bachelor's degree. The program builds on prior academic experience, providing additional knowledge in merchandising, consumer science, sales, and training and development.



Advising

Esperanca Rosa

Undergraduate Advisor
(713) 743-4463
edrosa@central.uh.edu

Careers

Marketing/Advertising

Merchandise Buying/Planning

Fashion Designer

Entrepreneurship

Sales and Sales-Related

Visual Merchandising
Coordinator

Store Operations

Product Developer

Public Relations Manager

It and E-Commerce

Distribution, Logistics, Supply
Chain Management

Sharice Wasson-Irons

Undergraduate Advisor
(713) 743-2662
snwassonirons@uh.edu



hdcs.uh.edu

Degree Requirements: 120 Credit Hours

Major Courses

HDCS 2301 Consumer Science

HDCS 3300 Org Decisions
(student may apply previous
credit for MANA 3335)

OR

TLIM 3340 Organizational
Leadership and Supervision

HDCS 3303 Retailing and
Consumer Science

HDCS 3304 Visual
Merchandising

HDCS 3376 Resources in
Technology Entrepreneurship

HDCS 3384 Consumer Sales

HDCS 4300 Research Concepts
in HDCS

HDCS 4303 Merchandising
Systems

HDCS 4369 Entrepreneurship
(student may apply previous
credit for ENTR 3310)

HDCS 4375 Strategies in Digital
Retail (student may apply
previous credit for MARK 3336)

OR

SCLT 2380 Distribution
Channels

HDCS 4380 Merchandising

HDCS 4386 Communication
Strategies for Retailing and
Supply Chain

HDCS 4393 Internship in Retail
and Consumer Sciences

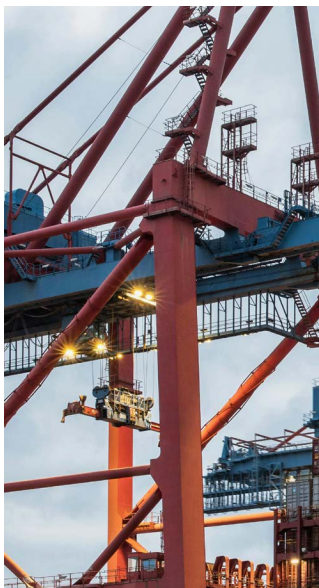
TECH 3365 Appl of Discrete
Mthds in Tech

Electives

15 Semester Hours

- **HDCS 3302** Consumer Textiles
- **HDCS 4302** Apparel Analysis
- **HDCS 4370** Technology Entrepreneurship
- **HDCS 4372** Forecasting for Tech Entrep.
- **HDCS 4374** Entrepreneurial E-Tailing
- **HDCS 4375** Strategies in Digital Retail
- **HDCS 4394** Internship in Retailing and Consumer Sciences
- **HDCS 4396** Tops-Hum Dv & Cnsmr Sci
- **HRD 3310** Talent Management

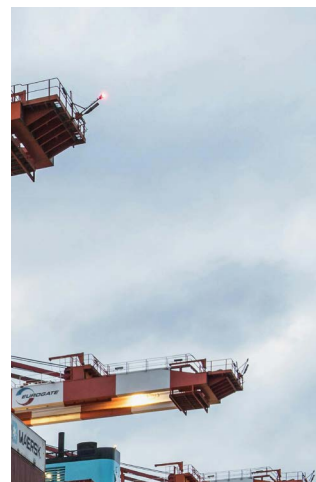
Students are encouraged to pursue a minor in eTailing, Fashion Merchandising or Technology Entrepreneurship.



Bachelor of Science in Supply Chain & Logistics Technology | BS

Supply Chain and Logistics Technology is managing (planning and executing) the flow of materials, their transformation into finished goods, and their ultimate delivery as finished goods to the final buyer. Its primary areas of operations include inventory, transportation, production, and procurement and the information flow to facilitate these activities. With a BS in Supply Chain and Logistics Technology, students make ideal candidates for transportation coordinators, category analysts, customer service supervisors, purchasing agents, doc supervisors, Directors of logistics, warehouse managers, distribution managers, transportation managers, project managers, and Directors of regional or country groups, with opportunities to move into positions such as VPs of global logistics, VPs of supply chain, or Directors of global supply chain operations.

Through classroom work and the real-world experience gained through internships and senior practicum, students will develop strong competencies in technical aspects of production, procurement, transportation, distribution, information management, transactions, and quality; conceptual skills associated with of marketing, customer service, least total cost, asset management, process integration, globalization of trade; and interpersonal skills such as leadership, project management, and collaboration.



Careers

Sales — Inside and Outside

Supply chain analyst

Operations

International/domestic logistics
management

Warehouse management

Transportation management/
operations

Inventory management

Advising

Drop-in academic advising is available for undergraduate students on Wednesdays from 9:00 AM – 3:30 PM. Check-in for undergraduate advising at SR2, Room 555 (Main Campus) or SAB1, Suite 307 (Sugar Land).

Zuleyma Reyes

zlgarci2@central.uh.edu

713-743-6049

Kurt Shimada

kishimada@uh.edu

713-743-7029



et.uh.edu

Degree Requirements: 120 Credit Hours

Foundation Courses

SCLT 2362 Introduction to Logistics Technology

SCLT 2380 Distribution Channels

SCLT 3384 Logistics Technology and Processes

SCLT 3385 Transportation Economics Policy

SCLT 3387 Procurement

SCLT 3389 Transportation Law

SCLT 4312 Inventory and Materials Handling

SCLT 4375 Global Supply Chain

SCLT 4380 Quality Systems

SCLT 4387 Financial Evaluation for Supply Chain Management

SCLT 4389 Practicum in Supply Chain & Logistics Technology

ACCT 2301 Principles of Financial Accounting

COMM 3356 Business and Professional Communications

DIGM 3353 Visual Communications Technology

ECON 2304 Microeconomic Principles

ECON 2305 Macroeconomic Principles

ITEC 1301 Introduction to Computer Application Technology

MATH 1313 Finite Math

MATH 1311 Elementary Mathematical Modeling

MATH 1314 Calculus for Business

TLIM 3360 Law and Ethics in Technology and Innovation

TMTH 3360 Applied Technical Statistics

ONE of each of the following:

- **TLIM 3340** Organizational Leadership and Supervision
- **HDCS 3300** Organizational Decisions in Technology

Operations Track

SCLT 3381 Industrial and Consumer Sales

MECT 1365 Elements of Materials and Processes

TLIM 4341 Production and Service Operations

9 credit hours | approved electives

Systems Management Track

CIS 2332 Information Technology Hardware and Systems Software

CIS 2334 Information Systems Application

CIS 3343 Info Systems Analysis & Design

CIS 3365 Database Management

6 credit hours | approved electives

Global Logistics Track

SCLT 3340 Geography for Global Supply Chain

SCLT 3375 Maritime Operations

SCLT 3376 Global Trade Intermediaries

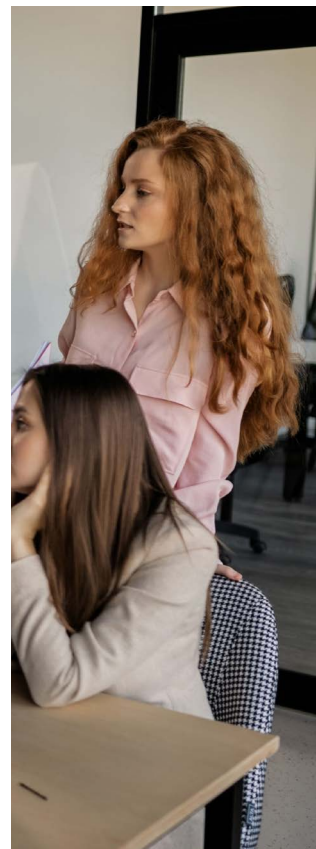
9 credit hours | approved electives

Directed Emphasis Track

18 Hours of transfer coursework related to Supply Chain may be applied by department approval.

Elective Courses

See uh.edu/technology for elective course listings



Bachelor of Science in Technology Leadership and Innovation Management | BS

The Bachelor of Science in Technology Leadership and Innovation Management (TLIM) prepares students for leadership and project management roles in technology-driven organizations. Accredited by the Association of Technology, Management, and Applied Engineering (ATMAE), the program focuses on developing forward-thinking leaders who can navigate technological change, drive innovation, and deliver measurable results.

Students build skills in applied innovation, leadership, project management, problem-solving, and process improvement while learning to optimize resources and lead successful teams. Coursework also emphasizes organizational development, quality management, emergency management, and effective business communication. Through practical, real-world experiences, students learn to apply leadership and innovation strategies across corporate, government, nonprofit, and community organizations while aligning organizational goals with technological advancement.

Careers

Organization Leader
Project Manager
Business Development Manager
Strategist
Executive Director
Technology Manager
Innovation Manager
Human Development Manager
Marketing Specialist
Operations Manager
Data Analyst
Regulatory Compliance Manager

Advising

Kathryn Delgado

Undergraduate Advisor
(713) 743-9971
kvdelgado@uh.edu

Shivam Rana

Undergraduate Advisor
(713) 743-2650
skrana2@CougarNet.UH.EDU

Lida Hedayatpour

Undergraduate Advisor
(713) 743-1145
lhedayatpour@uh.edu



ist.uh.edu

Degree Requirements: 120 Credit Hours

Core Courses

SCLT 2362 Introduction to Logistics Technology

TLIM 3300 Leadership & Innovation Fundamentals

TLIM 3363 Technical Communications

TLIM 3340 Organizational Leadership and Supervision

TLIM 3371 Budgeting & Financial Principles

TLIM 3330 Innovation Principles

TLIM 3355 Project Management Principles

CIS 3320 Information Visualization

TLIM 3345 Human Resources in Technology

TLIM 3350 Emergency Management Principles

TLIM 3331 Innovation Development

TLIM 3365 Team Leadership

TLIM 3360 Law & Ethics for Tech & Innovation

TLIM 4341 Production & Service Operations

TLIM 4342 Quality Improvement Methods

TLIM 4371 Leading Change In the Workplace

TLIM 4372 Proposal & Project Writing

TLIM 4350 Occupational Safety & Environmental Health

TLIM 4390 Current Issues in Leadership & Innovation

TLIM 4378 Senior Project

Area of Specialization

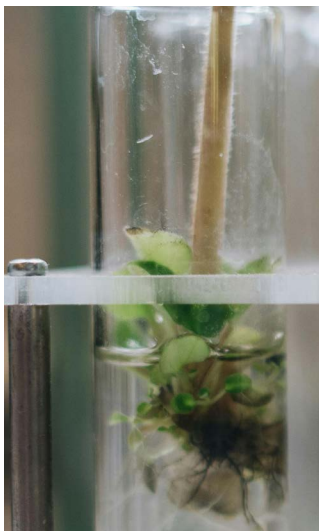
15 Semester Hours

Students can fulfill area of specialization with a combination of minors or approved Community college transfer block or accelerated subplan plus minor or block of coursework approved by program coordinator (primarily veterans). Students are encouraged to complete an Applied Innovation minor. Students may not declare the Leadership and Innovation minor.

Contact

Brian Mehring

TLIM Program Coordinator
bgmehring@uh.edu



Master of Science in Engineering Technology – Biotechnology | MS

Biotechnology Track

The Biotechnology specialization emphasizes bioprocessing, protein engineering, computational biology, and federal regulations, and is designed to prepare individuals to conduct or supervise research and development in biotechnology or medical fields. This is a highly inter- and multi-disciplinary degree with the flexibility to allow students to tailor the coursework to meet their individual career goals.

Contact

Dr. Venkatesh Balan

Program Coordinator
vbalan@uh.edu

Advising

Donnella Dillon

Graduate Advisor
(713) 743-2994
dmdillon@central.uh.edu

Hawa Ture

Graduate Advisor
(713) 743-5416
hture@uh.edu



et.uh.edu

Degree Requirements: 30 Credit Hours

Core Courses

BTEC 6304 Computational Methods in BTEC

BTEC 6325 Molecular Techniques

Prescribed Electives

BTEC 6100 Seminar in Biotechnology

BTEC 6101 Biotechnology Techniques Metho

BTEC 6105 Bioprocessing Laboratory

BTEC 6300 Standards in Biotechnology

BTEC 6302 Introduction to Regulatory Affairs

BTEC 6303 Protein Engineering Technology

BTEC 6304 Computational Methods in BTEC

BTEC 6305 Bioprocessing in Biotechnology

BTEC 6397 Selected Topics in BTEC

Research Credits Thesis Track

BTEC 6399 Thesis (repeat for 2 semesters)

Research Credits Project Track

BTEC 6396 Masters Project in BTEC

Course Only Track

BTEC 6319 Advances in Microbial Biotechnology

BTEC 6320 Quality Control in Drug Manufacturing

BTEC 6397 Selected Topics in BTEC

TEPM 6301 Project Management Principles

TEPM 6304 Quality Improvement in Project Management

ELET 6352 Matlab for Engineering Technology

ELET 6356 Health Analytics and Visualization

ELET 6351 Biomedical Data Mining

ELET 6353 Applied Statistics for Technology

ELET 6325 Practicum in Engineering Technology

ENTR 7390 Technology Entrepreneurship

FORE 6311 Introduction to Foresight

BIOL 6320 Molecular Biology



Master of Science in Engineering Technology – Mechanical Engineering | **MS**

Mechanical Engineering Technology Track

The Mechanical Engineering Technology specialization builds upon ABET- accredited mechanical bachelor's degrees and related fields, providing students with highly developed expertise in the design and analysis of mechanical systems. This specialization provides an integrated multi-disciplinary program designed to prepare individuals with practical and theoretical skills in technology that focus on applied mechanical engineering. This relationship facilitates the translation of research findings to meet current industry needs. With state-of-the-art teaching and research laboratories, the MET specialization offers courses and cutting-edge research experiences in several applied areas including instrumentation and measurement, biomedical systems, advanced materials design, manufacturing, systems integration, oil and gas applications, and energy.



Contact

Dr. Zheng Fan

Program Coordinator
fanzheng@central.uh.edu

Advising

Donnella Dillon

Graduate Advisor
(713) 743-2994
dmdillon@central.uh.edu

Hawa Ture

Graduate Advisor
(713) 743-5416
hture@uh.edu



et.uh.edu

Degree Requirements: 30 Credit Hours

Core Courses

MECT 6305 Analytical Method
in Engineering Technology

Prescribed Electives

ELET 6319 The Principle
& Application of Fuel Cell
Technology

MECT 6317 Applications in
Stress Analysis

MECT 6318 Advanced Fluid
Mechanics

MECT 6320 Comp Integrated
Mfg

MECT 6322 Computer Aided
Engineering I

MECT 6323 Applied Heat
Transfer

MECT 6340 Materials Selection
and Management

MECT 6345 Materials Selection
for Energy Sources

MECT 6347 Rheology Energy
Related Fluids

MECT 6350 Cnc Machine
Languages

MECT 6397 Selected Topics

• Topic(s):

- Advanced
Engineering Graphics
- Energy Systems
Economics
- Principles of
Mechatronics
- Maintenance and
Reliability
- Smart Manufacturing
Systems Design
- Systems Simulations

Course Only Track Approved Electives

Advisor Approved Electives

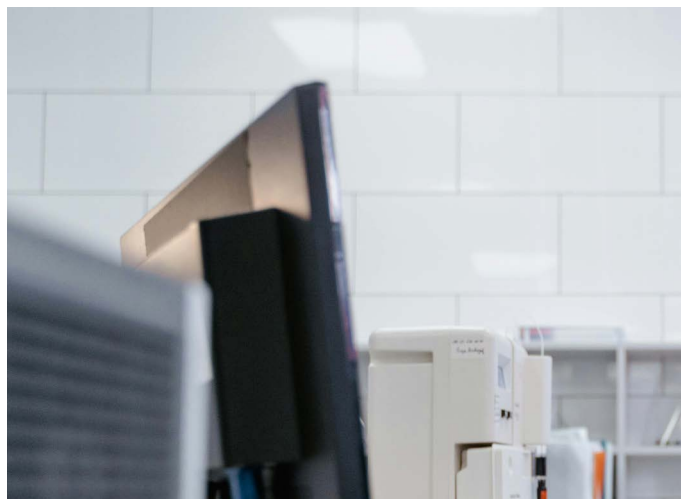
Research Credits Thesis Track

MECT 6399 Thesis
(repeat for 2 semesters)

Research Credits Project Track

MECT 6396 Master's Project

Approved Electives



Master of Science in Engineering Technology – Computational Health Informatics | MS

Computational Health Informatics Track

The Computational Health Informatics specialization is a highly interdisciplinary degree that prepares the next generation of engineers for a career in the technological transformation of healthcare. This specialization places specific emphasis on mobile computing, medical imaging and instrumentation, wearable sensors, multimodal data mining, and information security as applied to healthcare delivery. Driven by a strong market demand, the program is designed to provide students with a solid background in analytical methodologies, computational tools, devices, physiological modeling and simulation, and biomedical devices relevant to healthcare applications for detecting diseases, assisting with treatment, and monitoring efficacy of therapeutic interventions.



Contact

Dr. Luca Pollonini

Program Coordinator

lpollonini@uh.edu

Advising

Donnella Dillon

Graduate Advisor

(713) 743-2994

dmdillon@central.uh.edu

Hawa Ture

Graduate Advisor

(713) 743-5416

hture@uh.edu



et.uh.edu

Degree Requirements: 30 Credit Hours

Core Courses

ELET 6350 Overview of Computational Health Informatics

ELET 6351 Biomedical Data Mining

Prescribed Electives

ELET 6331 Fundamentals of Medical Imaging

ELET 6352 Matlab for Engineering Technology

ELET 6353 Applied Statistics for Technology

ELET 6354 Biomedical Image Analysis

ELET 6356 Health Analytics and Visualization

ELET 6358 Optical Brain Imaging

Course Only Track Approved Electives

ELET 6308 Mobile Computing

ELET 6325 Practicum in Engineering Technology

BTEC 6304 Computational Methods in BTEC

FORE 6311 Introduction to Foresight

CIS 6321 Principles of Cybersecurity

MIS 7373 Business Applications of Database Management Systems I

MIS 7376 Systems Analysis and Design

ENTR 7390 Technology Entrepreneurship

Research Credits Thesis Track

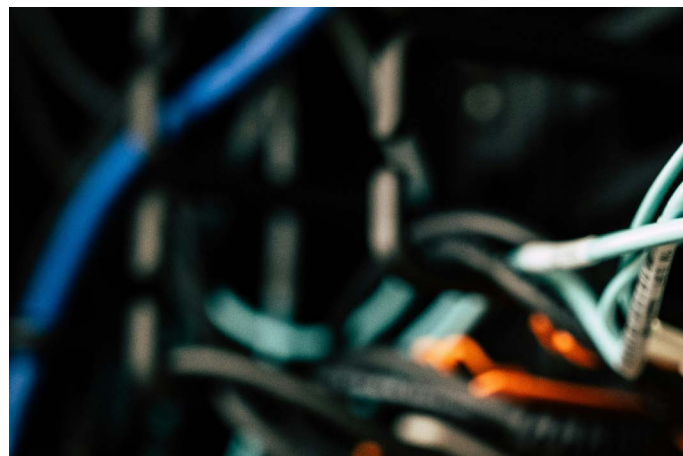
additional 6 Credit hours from Proscribed elective or approved elective courses

ELET 6399 Master's Thesis

Research Credits Project Track

additional 9 Credit hours from Proscribed elective or approved elective courses

ELET 6396 Master's Project



Master of Science in Engineering Technology – Network Communications | MS

Network Communications Track

The Network Communication specialization builds upon ETAC and ABET-accredited bachelor's degree programs in computer science, electronic, or electrical engineering technology, and related fields and provides an advanced knowledge of computer networks with a diverse set of courses in networking fundamentals, security, network management, protocols, programming, and algorithms. Furthermore, application areas such as optical networking, sensor networks, smart grid, mobile computing, and wireless networks are also available. Advanced applied research opportunities provide an enriching academic experience. Additionally, the program encourages practical experiences through industry partnerships. Our graduates fill vital engineering management and supervisory roles in every industry where networking technologies are essential, including energy, chemical, healthcare, telecommunications and aerospace.



Contact

Dr. Bin Hu

Program Coordinator
bhu11@central.uh.edu

Advising

Donnella Dillon

Graduate Advisor
(713) 743-2994
dmdillon@central.uh.edu

Hawa Ture

Graduate Advisor
(713) 743-5416
hature@uh.edu



et.uh.edu

Degree Requirements: 30 Credit Hours

Core Courses

ELET 6318 Analysis of Data Networks

TEPM 6301 Project Management Principles

Prescribed Electives

ELET 6100 Seminar in Engineering Technology

ELET 6300 Computer Network Programming

ELET 6302 Advanced Wireless Networks

ELET 6303 Applied Neural Networks

ELET 6311 Applications of Info Theory

ELET 6312 Network Management

ELET 6313 Network Security

ELET 6315 Sensor Networks

ELET 6316 Network Routing Algorithms and Protocols

ELET 6317 Optical Networks

ELET 6325 Practicum in Engineering Technology

ELET 6398 Spec Probs in Microcomp. System

Course Only Track Approved Electives

Advisor Approved Electives

Research Credits Thesis Track

ELET 6399 Master's Thesis (repeat for 2 semesters)

Approved Electives

Research Credits Project Track

ELET 6396 Master's Project

Approved Electives



Master of Science in Construction Management | MS

The Construction Management (CM) master's degree program provides the knowledge and skills essential for successful leadership positions in the construction industry. The curriculum focuses on both fundamental knowledge and advanced topics. Fundamental courses include estimating, scheduling, contracting, and project management and advanced courses include risk analysis, decision making, computer applications, green construction, quality management, leadership, modeling and optimization, and building information modeling. The program attracts students and working professionals with a diverse background in engineering, construction, and architecture. Our graduates are prepared to work in the construction industry and in academia.

Often referred to as the jobs of the future, science, technology, engineering, and mathematics (STEM) jobs are among the highest paying and in-demand jobs today. This program supports such jobs and is STEM designated, which recognizes its rigor and provides the added benefit of an extended optional practical training (OPT) time period of an additional 24 months to international students.



Contact

Dr. Ahmed Senouci

Construction Management
Program Chair

asenouci@central.uh.edu

Dr. Lu Gao

Construction Management
Graduate Program Coordinator

lgao5@central.uh.edu

Advising

Hawa Ture

Graduate Advisor

(713) 743-5416

hture@uh.edu



cee.uh.edu

Degree Requirements: 30 Credit Hours

Core Courses

TECH 6360 Exp Design & Data Analysis

TEPM 6301 Project Management Principles

CNST 6307 Statistical and Optimization Methods in Construction Management

CNST 6308 Data Analysis in Construction Management

Project or Thesis

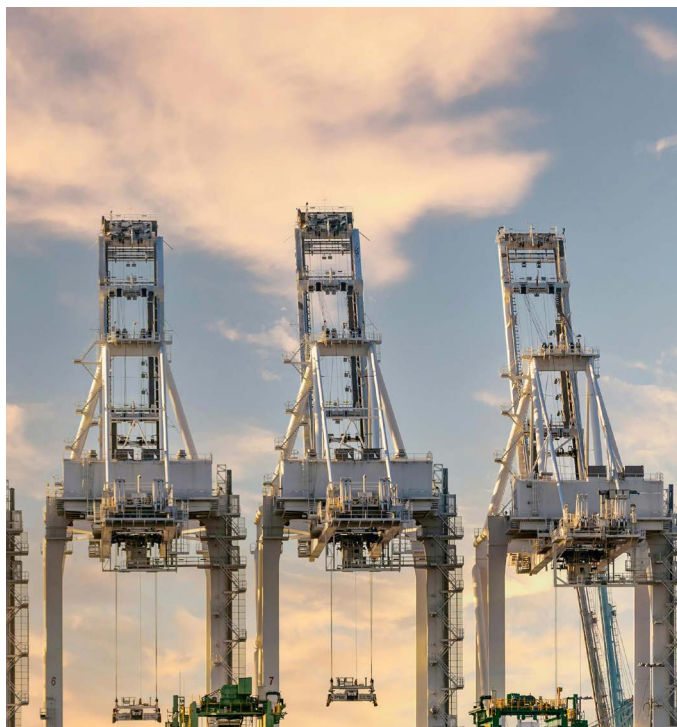
CNST 6396 Master's Project

CNST 6399 Thesis
(repeated for 2 semesters)

Course Only Track Approved Electives

Advisor Approved Electives

- **CNST 6310** Construction Contract Administration
- **CNST 6320** Cost Analysis and Bidding
- **CNST 6330** Project Planning & Management
- **CNST 6335** Introduction to the Oil and Gas Industry
- **CNST 6340** Best Practices in Construction
- **CNST 6350** Decision Making and Risk Management
- **CNST 6360** Computer Applications in Construction Management
- **CNST 6370** Quality Management & Six Sigma in Const Management
- **CNST 6375** Building Information Modeling Applications for Construction Management
- **CNST 6380** Leed & Green Construction Principles in Const Management
- **CNST 6390** Leadership for Construction Managers



Master of Science in Supply Chain and Logistics Technology | MS

The Master of Science in Supply Chain and Logistics Technology (SCLT) is designed for the professional who seeks advanced preparation in logistics, inventory management, transportation, sales, and procurement. Required courses focus on the development of project management skills that are designed to prepare graduates for responsible leadership roles in technology and information-based workplaces. Course topics in the SCLT area of emphasis include logistics and transportation strategies, supply chain operations measurement and evaluation, global logistics and transportation, and procurement strategies.

Science, technology, engineering, and mathematics (STEM) jobs are extremely sought after, and this program supports STEM designated jobs in fields related to SCLT with its own STEM designation. This designation recognizes the rigor of the program and provides the added benefit of an extended optional practical training (OPT) time period of an additional 24 months to international students.

Advising

Donnella Dillon

Graduate Advisor

(713) 743-2994

dmdillon@central.uh.edu

Contact

Dr. Zheyong Bian

Program Director

zbian2@central.uh.edu



ise.uh.edu

Degree Requirements: 30 Credit Hours

Core Courses

SCLT 6314 Measurement and Evaluation of Supply Chain Operations

SCLT 6316 Global Supply Chain Logistics

SCLT 6318 Supply Chain Strategies

SCLT 6320 Procurement Strategies

Required TEPM Specialized Courses

TEPM 6301 Project Management Principles

TEPM 6302 Leadership and Team Building

TEPM 6303 Risk Assessment in Project Management

TEPM 6304 Quality Improvement in Project Management

Research Track

TEPM 6391 Project Management Seminar

TEPM 6395 Integration Project

Thesis Track

SCLT 6399 Master's Thesis (repeated for two semesters)

Course Only Track Approved Electives

CIS 6321 Principles of Cybersecurity

CIS 6322 Secure Enterprise Computing

CIS 6324 Cybersecurity Risk Management

ECON 6352 Quantitative Methods and Applications

ETIM 6310 Fundamentals of Innovation

ETIM 6311 Advanced Innovation Methods

ETIM 6312 Legal Issues in Technology

- UH Technology Leadership and Innovation Management bachelor's graduates are not permitted to take this course for master's credit

GRET 6334 Global E-Tailing Systems

GRET 6335 Regional Retail Markets

INDE 6370 Operation Research-Digital Simulation

INDE 6363 Statistical Process Control

INDE 6364 Experimental Design and Regression

SCLT 6396 Internship in Logistics

SCLT 6397 Selected Topics

TEPM 6308 Project Procurement Practices



Master of Science in Global Retailing | MS

Technology is bringing radical changes to retailing. The Master of Science (MS) in Global Retailing offers unmatched opportunities to learn new strategies and gain deeper insight into the worldwide dynamics and impact of multi-cultural consumer behavior, data analytics, profitability, financial models, channel strategies, E-Commerce, and management models.

This program goes beyond teaching theory to practical applications. Executives in residence and UH faculty provide a stimulating experience in which students explore cross-cultural trends in retail management, including international product sourcing and distribution, applied retail market research and evaluation, and international trade regulations.

The program uniquely prepares innovative, agile retail marketers to successfully propel their careers and emerge as leaders of businesses throughout the global marketplace.



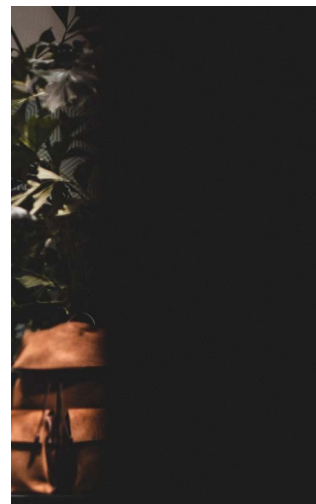
Contact

Daeun Chloe Shin

Program Coordinator of Global
Retailing Program

Assistant Professor

dshin5@central.uh.edu



Degree Requirements: 30 Credit Hours

Core Courses

GRET 6332 Consumer Issues
and Applications for
Global Retailing

GRET 6333 Retail Management
and Cross-Cultural Perspectives

GRET 6334 Global
E-Tailing Systems

GRET 6335 Regional
Retail Markets

GRET 6336 Global Retail
Analysis of World Regions

HDCS 6300 Quantitative and
Statistical Methods in HDCS

OR

TECH 6360 Exp Design &
Data Analysis

Thesis Track

GRET 6399 Master's Thesis in
Global Retailing
(repeat for two semesters)

Course Only Track

6 Hours | Advisor-approved
Electives

Specialization Electives

6 Hours | Advisor-approved
Electives



hdc.s.uh.edu



ise.uh.edu

Master of Science in Technology Project Management | MS

The degree plan for a Master of Science (MS) in Technology Project Management is designed specifically to prepare individuals with undergraduate degrees in a wide-range of disciplines for responsible leadership roles in technology-based and professional workplaces.

The courses provide in-depth preparation in project management skills. Being able to plan and manage projects of all kind is an increasingly important skill for those working in a variety of industries.

Often referred to as the jobs of the future, Science, Technology, Engineering, and Mathematics (STEM) jobs are among some of the highest paying and in-demand jobs today. The MS in Technology Project Management program is STEM designated. While this not only recognizes the rigor of this program, it also provides an added benefit for international students through an OPT extension.

Advising

Hawa Ture

Graduate Advisor
(Technology Project
Management)
hture@uh.edu

Degree Requirements: 30 Credit Hours

Core Courses

TEPM 6301 Project
Management Principles

TEPM 6302 Project Leadership
and Team Building

TEPM 6303 Risk Assessment in
Project Management

TEPM 6304 Quality
Improvement in
Project Management

TEPM 6305 Project
Manager Tools

TEPM 6306 Project
Manager Office

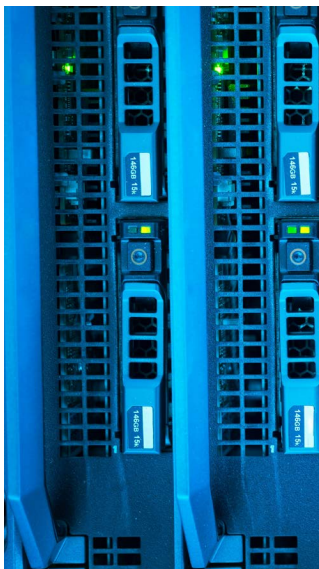
TEPM 6307 Advanced Project
Management

TEPM 6308 Project
Procurement Practices

Research

TEPM 6391 Project
Management Seminar

TEPM 6395 Integration Project



Master of Science in Cybersecurity | MS

The Master of Science (MS) degree in Cybersecurity is a hands-on program that prepares students for responsible leadership roles in technology and information-based workplaces. Designed for working professionals, the program connects theory and experiential learning to equip technology professionals with the skills required to assess the security needs of information systems and to lead and manage the implementation and maintenance of the recommended security solutions.

This program focuses on the development of key management skills within a project management framework. In collaboration with the Center for Information Security Research and Education, students are given the opportunity to engage in state-of-the-art applied research. The Cybersecurity master's is recognized as a National Security Agency/Department of Homeland Security Center of Academic Excellence in Information Assurance Education.

Advising

Donnella Dillon

Graduate Advisor
cotgrad@uh.edu

Careers

Cybersecurity Engineer
Cyber Crime Analyst
Security Architect



ist.uh.edu

Degree Requirements: 30 Credit Hours

Core Courses

CIS 6321 Principles of Cybersecurity

CIS 6322 Secure Enterprise Computing

CIS 6323 Applied Cryptography

CIS 6324 Cybersecurity Risk Management

CIS 6325 Network Security

CIS 6326 Critical Thinking in Information Security

TEPM 6301 Project Management Principles

Project or Thesis

CIS 6399 Master's Thesis

CIS 6396 Internship in Information Security

Prescribed Electives

3 Hours | Advisor-approved Electives



Master of Science in Foresight | MS

The Master of Science in Foresight is an interdisciplinary program that prepares students to become professional futurists or to bring a futures perspective to their current careers. This program uses a wide range of theoretical and practical models to examine the sources, patterns, and causes of change in order to map probable, plausible, and preferable futures.

The unique and rigorous curriculum prepares graduates to enter an emerging professional field that enables businesses, government, non-profits, and other organizations to anticipate and prepare for the future. The degree draws from other academic disciplines including Business, Government and Education. Courses include Futures Research, World Futures, Systems Thinking, Strategic Planning, and Social Change.



Contact

Andy Hines

Program Coordinator of
Foresight
ahines@uh.edu

Careers

Analyst
Consultant
Director of Futures Strategy
Editor
Futurist
Global Trends Manager
Human Resources Planner
Ideation Leader

Degree Requirements: 30 Credit Hours

Core Courses

FORE 6311 Introduction to
Foresight

FORE 6319 Proseminar in
Foresight

FORE 6331 Social Change

FORE 6333 Systems Thinking

FORE 6351 Futures Research

FORE 6371 World Futures

HDCS 6331 Advanced
Strategies For Futures Planning

Project, Internship, or Thesis

FORE 6395 Master's
Project in Foresight

FORE 6396 Internship

FORE 6399 Master's Thesis

Domain Courses

3 Hours | Advisor-approved
Electives



hdcs.uh.edu

Reflections & Testimonials



“By enrolling in Digital Media program, I not only gained knowledge in areas of my interest but also developed essential skills to pursue a career as a Digital Media strategist and producer.”

Katherine Morales

Digital Marketing Specialist

Josephson Dunlap



“Digital Media program teaches how to think. It’s not about tools or the medium, but how to tackle problems and solve them that makes this program unique.”

Rebecca Castelan

Communications Assistant

Houston Arts Alliance



“They equipped me with the skills to contribute meaningfully to discussions at work and to create comprehensive research reports. This ability to present findings clearly and effectively has been a key asset in my professional development.”

Isabella Carrillo

Retail and Consumer Science, 2022



“Being part of the RCS undergrad program helped me discover the GRET program. I never imagined that I would continue my studies after I graduated from the Retailing program, but I felt that there was still so much for me to learn from my peers as well as the professors. Right after my first semester within the program, I obtained an internship working at Academy within product development which has always been a goal I set for myself! So I felt very accomplished and motivated right from the start.”

Nada Awad

Global Retailing Graduate Student



“By being a part of the RCS program and a member of NRFSA, I was able to apply for the NRF student program next-gen scholarship, which I qualified for as a semifinalist. This achievement allowed me to travel to the conference for free and opened so many doors for my future career.”

Cherokee Zarate

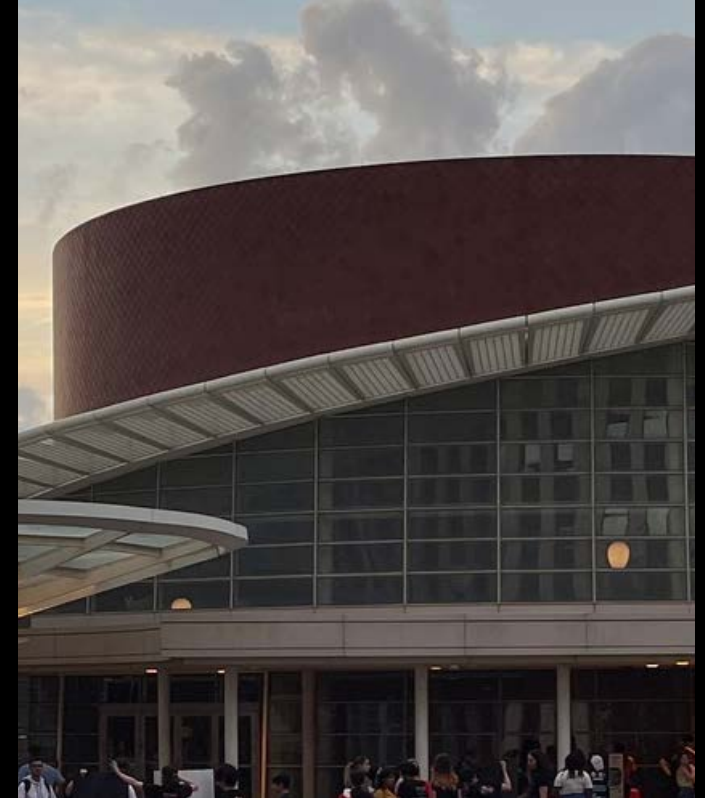
Retailing And Consumer Science, 2024



“It wasn’t just trying to understand theory by reading a book. The class was very practical, with labs set up to help us break into networks and act like attackers to better understand how they think, how they break into systems, and how we can fix them.”

Prathibha Muraleedhara

Cybersecurity



College of Natural Sciences & Mathematics

The College of Natural Sciences and Mathematics (NSM) is committed to excellence in teaching, research, and service in the physical and biological sciences, computer science, and mathematics. NSM's location in the nation's fourth-largest city and energy capital of the world presents numerous opportunities for collaboration with the oil and gas industry, Texas Medical Center, NASA's Johnson Space Center, and other entities. NSM hosts more than 5,000 students and confers more than 900 degrees awarded each year, with more than 200 ranked faculty, including four National Academy of Sciences members. NSM also enjoys a solid research funding base with \$30 million in annual research expenditures, academic collaborations with numerous institutions, industry consortia and partnerships, and outreach programs with local school districts. The College's innovative resources, including a centralized testing and tutoring center and peer-led team learning workshops ensure student success.



Undergraduate Programs

Chemistry | BS

Computer Science | BS

Physics | BS

Environmental Sciences | BS

Geophysics | BS

Geology | BS



Graduate Programs

Chemistry | MS (Thesis)

Chemistry | MS (Non-Thesis)

Chemistry | Ph.D.

Computer Science | MS

Physics | MS

Physics | Ph.D.

Geophysics | MS

Geophysics | Ph.D.

Geology | MS

Geology | Ph.D.





Bachelor of Science in Chemistry | **BS**

The Department of Chemistry's teaching and research encompasses organic, inorganic, and physical chemistry. Energy and biomedical applications and materials chemistry are research focus areas. Our faculty strongly supports undergraduate research. The best way to learn about the excitement of chemistry is to perform research in a laboratory with experienced graduate students and postdoctoral researchers. Chemistry faculty members welcome undergraduates into their research groups as early as the sophomore year. Recognized as some of the best teachers on campus, the department's faculty members have won numerous university level and NSM teaching awards. Several have won multiple teaching awards.

Careers

Research Chemist
Production Chemist
Data Scientist
Chemistry Teacher,
Postsecondary
Chemical Technician
Lab Technician

Advising

Ashley Cook

Director

713-743-4884

aecook2@central.uh.edu



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Degree Requirements: 120 Credit Hours

Foundation Courses

PHYS 1321 University Physics I

PHYS 1121 University
Physics I Lab

PHYS 1322 University Physics II

PHYS 1122 University
Physics II Lab

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 2433 Calculus III

MATH 3321 Engineering
Mathematics

CHEM 1331 Fundamentals of
Chemistry I

CHEM 1111 Fundamentals of
Chemistry Lab I

CHEM 1332 Fundamentals of
Chemistry II

CHEM 1112 Fundamentals of
Chemistry Lab II

CHEM 2233 Inorganic
Chemistry I

CHEM 2133 Inorganic
Chemistry I Lab

CHEM 3331 Fundamentals of
Organic Chemistry I

CHEM 3221 Fundamentals of
Organic Chemistry I Lab

CHEM 3332 Fundamentals of
Organic Chemistry II

CHEM 3222 Fundamentals of
Organic Chemistry II Lab

CHEM 3369 Analytical
Chemistry

CHEM 3119 Analytical
Chemistry Lab

CHEM 4365 Inorganic
Chemistry II

CHEM 4115 Inorganic
Chemistry II Lab

CHEM 4369 Analytical
Chemistry II

CHEM 4229 Instrumental
Methods of Analysis Lab

CHEM 4370 Physical Chemistry I

CHEM 4270 Physical
Chemistry I Lab

CHEM 4372 Physical Chemistry II

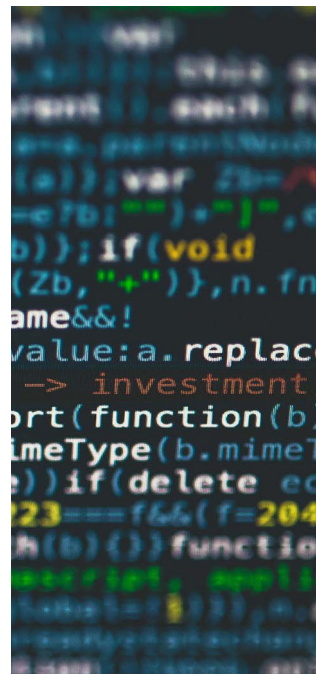
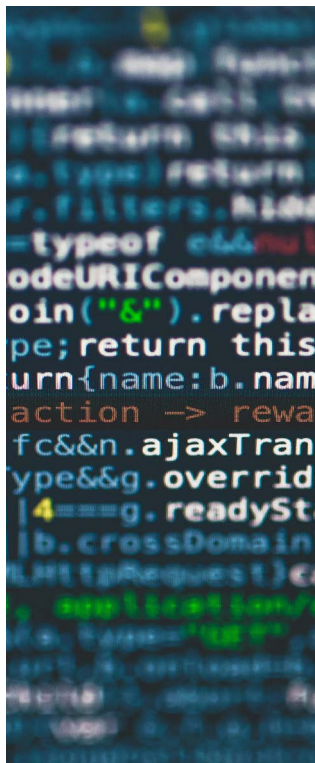
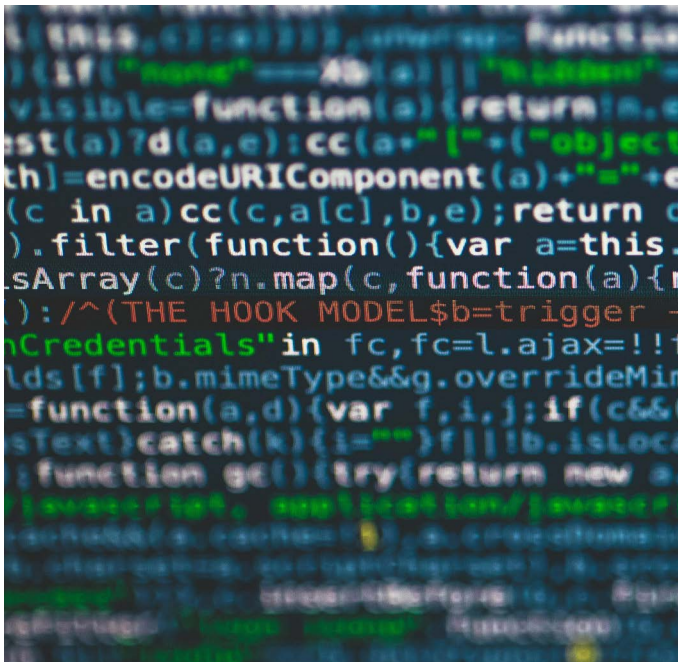
CHEM 4272 Physical
Chemistry II Lab

CHEM 4336 Fundamental
Biochemistry

Elective Courses

3 credit hours | approved advanced chem elective

- 3000 / 4000 level course



Bachelor of Science in Computer Science | BS

Computer science is the systematic study of computing systems and computation. Numerous professional opportunities exist for graduates with computer science degrees, including hardware development, software engineering, Internet systems and technology, game design, computer graphics, animation, robotics, artificial intelligence, security, data analytics, medicine, biotechnology, business management and consulting, computational modeling, as well as graduate study in computing-related fields.

The Bachelor of Science in Computer Science at the University of Houston is rigorous. All students majoring in computer science must take a substantial number of courses in mathematics. Students considering majoring in computer science should have shown considerable ability in mathematics and logical reasoning. Students majoring in computer science also receive extensive instruction in state-of-the-art computing architectures, operating systems, compilers, and software engineering methods and practices. Therefore, they combine a good mathematical background with the ability to design and develop quality software on a large scale.

Advising

Sandra Merino-Osorio

Assistant Director

713-743-5965

semerino@uh.edu

Jessica Davis

Academic Advisor III

713-743-2641

jdavis3@central.uh.edu

Sara Jordan

Academic Advisor II

713-743-2490

smjordan2@uh.edu

Ashley Rosebrough

Academic Advisor II

713-743-2814

anrosebrough@uh.edu

Careers

Software Developer

Web Developer

Computer Programmer

Database Architect

Information Security Analyst

Computer and Information
Systems Manager



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Degree Requirements: 120 Credit Hours

Foundation Courses

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 3339 Statistics for the Sciences

COSC 1306 Computer Science and Programming

COSC 1430 Introduction to Programming

COSC 2430 Programming and Data Structures

COSC 2440 Computer Organization and Architecture

COSC 3320 Algorithms and Data Structures

COSC 3340 Introduction to Automata and Computability

COSC 3360 Fundamentals of Operating Systems

COSC 3380 Design of File and Database Systems

MATH 336 Discrete Mathematics

ONE of the following:

- **MATH 2331** Linear Algebra
- **MATH 3321** Engineering Mathematics

Elective Courses

3 credit hours | software engineering elective, selected from the following:

- **COSC 4351** Fundamentals of Software Engineering
- **COSC 4353** Software Design

Computer Science students must complete 14 credit hours of nsm approved natural sciences; 8 of those hours (2 labs and 2 lectures) must be in the same discipline.

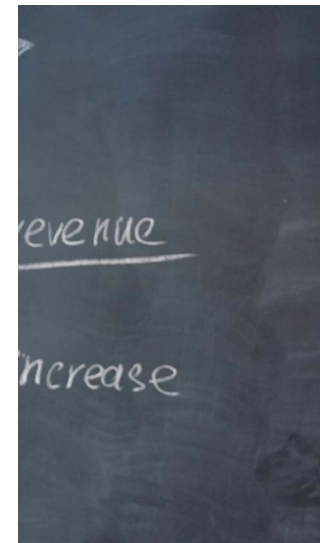
- 12 credit hours | advanced COSC electives – 3000 / 4000 level courses



Bachelor of Science in Physics | BS

Physics is the most basic and fundamental science. Physicists attempt to understand the natural laws around us, inside us, and in the universe beyond us. Physicists use experimental, analytical, and numerical skills to solve problems. Physicists make significant contributions in many fields. In the last century, physicists have received several Nobel prizes in chemistry, biology and economics.

Those who have a natural curiosity for investigating how things work and are good at math would enjoy physics as a major. Students considering majoring in physics should have strong science and math backgrounds.



Advising

Dr. Lisa Koerner

Undergraduate Faculty Advisor

713-743-3502

lkoerner@central.uh.edu

Ashley Cook

Director

713-743-4884

aecook2@central.uh.edu

Careers

Medical Physicist

Systems Analyst

Renewable Energy Consultant

Geophysicist

Astrophysicist

Lab Manager

Research Scientist

Astronomer

Meteorologist



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Degree Requirements: 120 Credit Hours

Foundation Courses

PHYS 1321 University Physics I

PHYS 1121 University
Physics I Lab

PHYS 1322 University Physics II

PHYS 1122 University
Physics II Lab

PHYS 3309 Intermediate
Mechanics

PHYS 3110 Seminar in
Advanced Laboratory Analysis

PHYS 3313 Advanced
Laboratory I

PHYS 3214 Advanced
Laboratory II

PHYS 3315 Modern Physics I

PHYS 3316 Quantum Mechanics

PHYS 3327 Thermal Physics

PHYS 4321 Intermediate
Electromagnetic Theory I

PHYS 4322 Intermediate
Electromagnetic Theory II

CHEM 1331 Fundamentals of
Chemistry I

CHEM 1111 Fundamentals of
Chemistry I Lab

CHEM 1332 Fundamentals of
Chemistry II

CHEM 1112 Fundamentals of
Chemistry II Lab

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 2433 Calculus III

MATH 2331 Linear Algebra

MATH 3331 Differential
Equations

MATH 3363 Introduction to
Partial Differential Equations

MATH 3364 Introduction to
Complex Analysis

ONE of the following:

- **PHYS 3312** Modern Optics
and
- **PHYS 3112** Modern
Optics Lab
or
- **PHYS 4421** Electronic
Devices and their
Applications

Elective Courses

7 credit hours | free elective

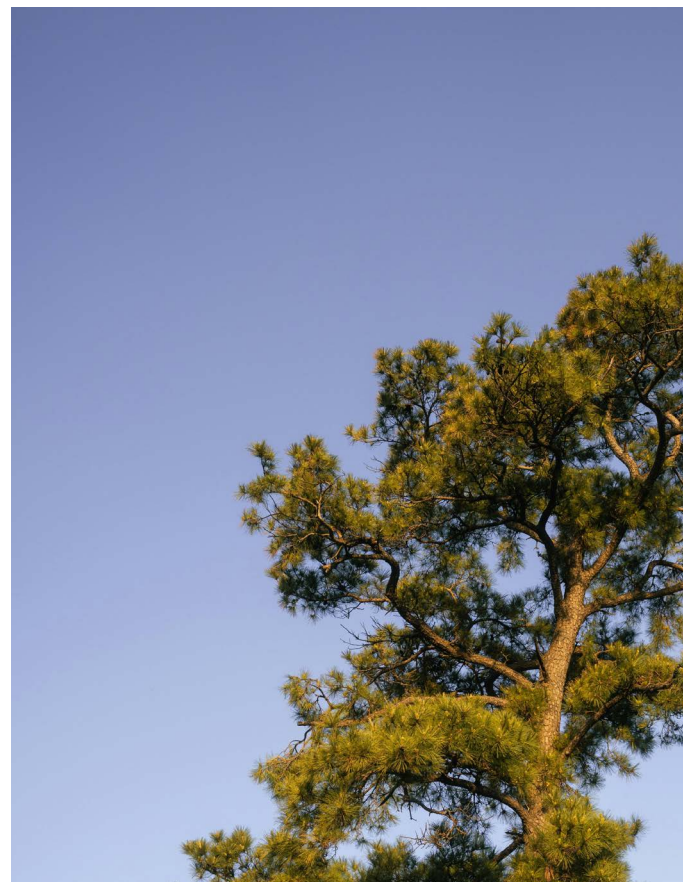
6 credit hours | approved
advanced PHYS electives –

- 3000 level / 4000 level

Capstone Requirement:

All students in the College of Natural Sciences and Mathematics must complete the Capstone requirement. Physics majors may satisfy the capstone by completing:

- An approved minor
- A double major
- A senior research project
- A senior honors thesis
- 6 credit hours of NSM-designated interdisciplinary capstone courses



Bachelor of Science in Environmental Sciences | BS

The study of interactions among physical, chemical, and biological components of the environment. The degree plan has options in environmental geosciences and atmospheric sciences. Areas of study include climate change, conservation, water quality, groundwater and soil contamination, use of natural resources, waste management, sustainable development, and air pollution.



Advising

Regina Capuano

Associate Professor of
Geology, Hydrogeology, and
Geochemistry
Faculty Advisor Environmental
Sciences B.S. and Atmospheric
Science B.S.

713-743-2957
capuano@uh.edu

Ashley Cook

Director
713-743-4884
aecook2@central.uh.edu

Careers

Environmental Scientist
Ecologist
Conservation Specialist
Sustainability Consultant
Energy Analyst
Environmental Educator
Environmental Engineer

Degree Requirements: 120 Credit Hours

Foundation Courses

GEOL 1330 Physical Geology

GEOL 1130 Physical Geology Lab

BIOL 1361 Introduction to
Biological Science I

BIOL 1161 Introduction to
Biological Science I Lab

BIOL 1362 Introduction to
Biological Science II

BIOL 1162 Introduction to
Biological Science II Lab

CHEM 1331 Fundamentals of
Chemistry I

CHEM 1111 Fundamentals of
Chemistry I Lab

CHEM 1332 Fundamentals of
Chemistry II

CHEM 1112 Fundamentals of
Chemistry II Lab

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 2433 Calculus III

MATH 3339 Statistics for the
Sciences

PHYS 1321 University Physics I

PHYS 1121 University
Physics I Lab

PHYS 1322 University Physics II

PHYS 1122 University
Physics II Lab

ONE of the following course
sequences:

- **GEOL 1302** Introduction
to Global Climate Change
and
- **GEOL 1102** Introduction to
Global Climate Change Lab
or
- **GEOL 1350** Introduction
to Meteorology
and
- **GEOL 1150** Introduction
to Meteorology Lab



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Environmental Geoscience Track

6 credit hours | required courses:

- **GEOL 3340** Geologic Field Methods
- **GEOL 3370** Mineralogy

15 credit hours from the following Group 1 electives:

- **GEOL 3331** Environmental Geology
- **GEOL 3338** Environmental Hydrology
- **GEOL 4331** Geospatial Analysis and Applications
- **GEOL 4334** Environmental Data Analysis
- **GEOL 4356** Environmental Science Field Research
- **GEOL 4365** Environmental Geochemistry
- **GEOL 4367** Geochemical Reaction Modeling

Additional 18 credit hours of approved electives from the Group 2 course list, see advisor for list.

Atmospheric Science Track

6 credit hours | required courses:

- **GEOL 3342** Principles of Air Pollution
- **GEOL 3378** Principles of Atmospheric Science

15 credit hours from the following Group 1 electives:

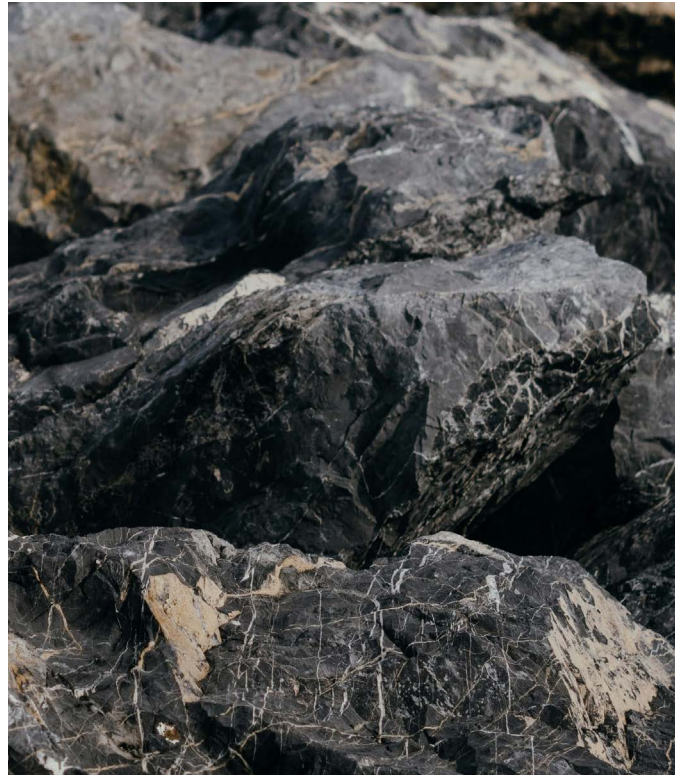
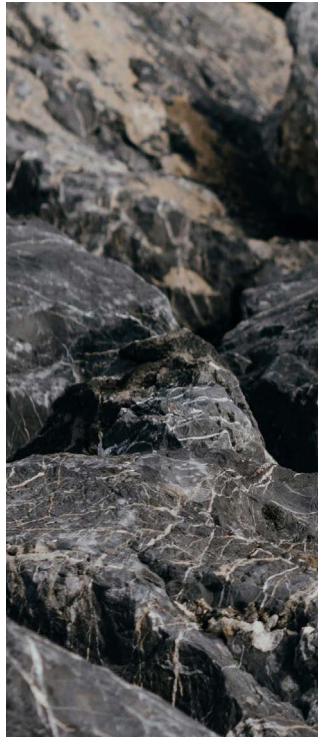
- **GEOL 3382** Atmospheric Chemistry
- **GEOL 4334** Environmental Data Analysis
- **GEOL 4346** Air Pollution Meteorology
- **GEOL 4343** Atmospheric Instrumentation
- **GEOL 4356** Environmental Science Field Research
- **GEOL 4336** Atmospheric Radiation
- **GEOL 4340** Aerosols and Climate

Additional 18 credit hours of approved electives from the Group 2 course list, see advisor for list.

Capstone Requirement

All students in the College of Natural Sciences and Mathematics must complete the Capstone requirement. Students may satisfy the Capstone by:

- Completing an approved minor
- A double major
- A senior research project
- A senior honors thesis
- 6 credit hours of NSM-designated interdisciplinary capstone courses



Bachelor of Science in Geophysics | BS

Housed in the Department of Earth and Atmospheric Sciences, Geophysics students study the Earth using gravity, magnetic, electrical, and seismic methods. Geophysicists study Earth's interior structure, the Earth's interior temperature distribution, the origin of the magnetic field, and large-scale crustal features, such as mountain belts and ocean basins. A few popular branches of study include seismology, hydrology and physical oceanography. Major applications of geophysics are in oil, gas and mineral explorations. Geophysical applications are also found in many environmental and engineering studies.

Careers

Geophysicist

Research Geophysicist

Geoscience Technician

Petrophysicist

Geoscience Team Leader

Advising

Daniel Hauptvogel

Instructional Associate
Professor

Geology and Geophysics
Undergraduate Advisor

713-743-0532

dwhauptvogel@uh.edu

Ashley Cook

Director

713-743-4884

aecook2@central.uh.edu



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Degree Requirements: 120 Credit Hours

Foundation Courses

GEOL 1330 Physical Geology

GEOL 1130 Physical
Geology Lab

GEOL 3340 Geologic Field
Methods

GEOL 3345 Structural Geology

GEOL 3145 Structural
Geology Lab

GEOL 3350 Stratigraphy

GEOL 3150 Principles of
Stratigraphy Laboratory

GEOL 3325 Rocks and Minerals

GEOL 4330 Introduction to
Geophysics

GEOL 4355 Geophysical
Field Camp

GEOL 4381 Geophysical
Signals and Analysis

GEOL 4370 Global Seismology

CHEM 1331 Fundamentals of
Chemistry

CHEM 1111 Fundamentals of
Chemistry Lab I

CHEM 1332 Fundamentals of
Chemistry II

CHEM 1112 Fundamentals of
Chemistry Lab II

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 2433 Calculus III

MATH 3321 Engineering
Mathematics

MATH 3363 Introduction to
Partial Differential Equations

MATH 3364 Introduction to
Complex Analysis

PHYS 1321 University Physics I

PHYS 1121 Physics Laboratory I

PHYS 1322 University Physics II

PHYS 1122 Physics Laboratory II

ONE of the following:

- **GEOL 3370** Mineralogy
- **GEOL 3372** Petrography

Elective Courses

12 credit hours | advanced geophysics electives, selected from the following:

- **GEOL 3383** Remote Sensing
- **GEOL 4332** Applications of GPS and LIDAR
- **GEOL 4379** Groundwater and Engineering Geophysics
- **GEOL 4385** Introduction to Marine Geophysics

3 credit hours | advanced geoscience electives, selected from the following:

- **GEOL 3331** Environmental Geology
- **GEOL 3338** Environmental Hydrogeology
- **GEOL 3377** Oceanography
- **GEOL 3383** Remote Sensing
- **GEOL 4331** Geospatial Analysis and Applications
- **GEOL 4365** Environmental Geochemistry
- **GEOL 4382** Introduction to Petroleum Geology
- **GEOL 4397** Selected Topics-Geology

Capstone Requirement

All students in the College of Natural Sciences and Mathematics must complete the Capstone requirement. Geophysics majors may satisfy the capstone by completing:

- **GEOL 4355** Geophysical Field Camp
- **GEOL 4381** Geophysical Signals and Analysis



Bachelor of Science in Geology | BS

Geology students study the evolution and development of Earth and processes that shape its internal and external structure; it includes the study of the solid earth as well as its fluid envelopes. Geoscientists are charged with a wide variety of tasks, such as finding adequate supplies of natural resources, protecting our natural environment from environmental degradation, reducing the risks associated with geologic hazards, documenting and understanding the evolution of life through time, and providing insights into past and future changes in global climate. The department runs a summer field camp in Geology at the Yellowstone-Bighorn Research Association field station near Red Lodge, Montana. UH faculty and students work on field projects in various remote parts of the world such as Antarctica, Asia, South America, as well as in Texas and the Gulf of Mexico.

Careers

Environmental consulting
Resource management
Mining and mineral exploration
Waste management and remediation
Remote sensing and spatial analysis
Land surveying and mapping
Engineering geology and hazards
Machine learning and data management
Science communication and policy

Advising

Daniel Hauptvogel

Instructional Associate
Professor

Geology and Geophysics
Undergraduate Advisor

713-743-0532
dwhauptvogel@uh.edu

Ashley Cook

Director

713-743-4884
aecook2@central.uh.edu



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Degree Requirements: 120 Credit Hours

Foundation Courses

CHEM 1331 Fundamentals of Chemistry I

CHEM 1111 Fundamentals of Chemistry I Lab

CHEM 1332 Fundamentals of Chemistry II

CHEM 1112 Fundamentals of Chemistry II Lab

MATH 1431 Calculus I

MATH 1432 Calculus II

MATH 2433 Calculus III

PHYS 1321 University Physics I

PHYS 1121 University Physics I Lab

PHYS 1322 University Physics II

PHYS 1122 University Physics II Lab

GEOL 1330 Physical Geology

GEOL 1130 Physical Geology Lab

GEOL 3330 Paleobiology

GEOL 3130 Paleobiology Lab

GEOL 3340 Geologic Field Methods

GEOL 3345 Structural Geology

GEOL 3145 Structural Geology Lab

GEOL 3350 Stratigraphy

GEOL 3150 Principles of Stratigraphy Lab

GEOL 3355 Field Geology I

GEOL 3360 Field Geology II

GEOL 3370 Mineralogy

GEOL 3372 Petrography

GEOL 3373 Igneous and Metamorphic Petrogenesis

GEOL 3374 Sedimentary Petrogenesis

GEOL 4330 Introduction to Geophysics

Elective Courses

Additional 18 credit hours of approved electives (including NSM Capstone Requirement).

- Historical Geology, Computer Science, Biology, and Foreign Language are highly recommended.

6 credit hours | advanced geoscience electives, selected from the following list:

- **GEOL 3331** Environmental Geology
- **GEOL 3338** Environmental Hydrogeology
- **GEOL 3377** Oceanography
- **GEOL 3383** Remote Sensing
- **GEOL 4331** Geospatial Analysis and Applications
- **GEOL 4365** Environmental Geochemistry
- **GEOL 4382** Introduction to Petroleum Geology
- **GEOL 4397** Selected Topics in Geology

Capstone Requirement

All students in the College of Natural Sciences and Mathematics must complete the Capstone requirement. Students may satisfy the Capstone by:

- Completing an approved minor
- A double major
- A senior research project
- A senior honors thesis

6 credit hours of NSM-designated interdisciplinary capstone courses



Master of Science in Chemistry | MS (Thesis)

The Department of Chemistry at the University of Houston offers programs leading to Master of Science (MS) degree in analytical, biological, inorganic, materials, organic, physical and theoretical chemistry. With nationally recognized faculty who pursue research which provides a rich learning environment with the use of a wide variety of instrument facilities and excellent technical staff who support the research and teaching efforts within the department, students will have acquired a broad and in-depth knowledge of the discipline. Students have the option to pursue a thesis track option by demonstrating research competence with the successful completion and defense of acceptable thesis research, or a non-thesis track where students demonstrate technical competence with successful completion of formal graduate-level course work in Chemistry and related disciplines. Our graduates successfully find employment after they graduate in academia and industry.

Advising

P. Shiv Halasyamani

Faculty Advisor

713-743-7716

psh@uh.edu

MyTrang Baccam

Staff Advisor

713-743-4341

mbaccam@uh.edu

Degree Requirements

Diagnostic Examinations

Prior to the first day of class, new graduate students take four diagnostic examinations in the areas of organic, inorganic, physical and analytical chemistry. These are used by the Department to assess the student's preparation for graduate study and to help guide the student in course selections.

Research Divisions and Programs

Immediately following the diagnostic examinations, a meeting is scheduled between the new student and the Graduate Chair to determine course enrollment for the first semester. At that time, the student must elect a division with which to be associated. The divisions are:

- Inorganic
- Organic
- Physical Chemistry



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Inorganic Division

Required Course

CHEM 6374 Physical
Inorganic Chem I

Elective Course Options

CHEM 6311 Mechanisms

CHEM 6312 Bonding

CHEM 6313 Thermodynamics
& Kinetics

CHEM 6314 Spectroscopy

CHEM 6321 Quantum
Chemistry

CHEM 6332 Inorganic Material
Analysis
(prerequisite: CHEM 6374)

CHEM 6375 Physical Inorganic
Chem II
(prerequisite: CHEM 6374)

CHEM 6376 Organometallic
Chemistry

CHEM 6377 Solid State
Chemistry
(prerequisite: CHEM 6374)

Organic Division

Required Courses

CHEM 6311 Mechanisms

CHEM 6351 Organic Structure
Detrm

*Note: at the discretion of the
research advisor, CHEM 6374
can be substituted for
CHEM 6351*

CHEM 6352 Orgnc React &
Synthesis

CHEM 6353 Physical Organic
Chem

Elective Course Options

CHEM 6312 Bonding

CHEM 6313 Thermodynamics
& Kinetics

CHEM 6314 Spectroscopy

CHEM 6374 Physical
Inorganic Chem I

CHEM 6376 Organometallic
Chemistry

CHEM 6332 Inorganic
Material Analysis
(prerequisite: CHEM 6374)

CHEM 6375 Physical
Inorganic Chem II
(prerequisite: CHEM 6374)

CHEM 6377 Solid
State Chemistry
(prerequisite: CHEM 6374)

Physical Division

Required Courses

CHEM 6321 Quantum
Chemistry

CHEM 6322 Statistical
Thermodynamics

CHEM 6324 Molecular
Spectroscopy

CHEM 6313 Thermodynamics
& Kinetics

Elective Course Options

6 Credit Hours of
Elective courses

*Must be selected with
approval of advisor*

Master's Thesis Hours

Completion of 6.0 letter-graded credit hours of Master's Thesis in the semester of anticipated graduation. Once enrolled in Master's Thesis, registration must be continuous and no grade is given until the Thesis is approved by the NSM Office of Academic Affairs.

- **CHEM 6399** Masters Thesis
- **CHEM 7399** Masters Thesis

Seminar Requirements

Credit Hours: 2.0

CHEM 6111 Graduate Colloquium

Note: Graduate students must take CHEM 6111 (Graduate Colloquium, one hour credit) in each long semester during which a full 9 credit hours of lecture-based courses are not taken during their first two years of study. At a minimum, students must be enrolled in CHEM 6111 once in their graduate career. Although participation in the Graduate Colloquium is required each semester the student is enrolled at the University, enrollment after the first two years of study is not required.

CHEM 6112 Graduate Seminar

Note: Graduate students must take CHEM 6112 (Graduate Seminar, one hour credit) in each long semester during which a full 9 credit hours of lecture-based courses are not taken during their first two years of study. At a minimum, students must be enrolled in CHEM 6112 once in their graduate career. Although participation in the Graduate Seminar is required each semester the student is enrolled at the University, enrollment after the first two years of study is not required.

Other Requirements

CHEM 6115 Sem in Chm Lab Instruct

Note: Students holding a teaching assistantship must register for CHEM 6115 (TA training, one hour credit) in each long semester during which they are teaching a course they have not previously taught and during which a full 9 credit hours of combined lecture-based courses and seminar courses are not taken.

CHEM 6015 Sem in Chm Lab Instruct

Note: Students holding a teaching assistantship who are already enrolled in 9 credit hours must register for CHEM 6015 (TA training, zero hour credit) during any semester in which they are a TA for a course they have not previously taught.

A final oral M.S. thesis defense is required, and a finished Thesis must be submitted to the NSM Office of Academic Affairs by the deadline posted on the College website.

All courses must be in Chemistry or pre-approved courses in related fields at the 6000 level or above.

Chemistry coursework requirements must be met within the first five long terms (Fall and Spring terms). Graduate students cannot take coursework after the first five long terms in residence without approval from the Graduate Committee. Exceptions are granted only under extraordinary circumstances.

Two grades of C+ or less will result in the student being placed at the bottom of the priority list for receipt of a teaching fellowship.



Master of Science in Chemistry | MS (Non-Thesis)

The Department of Chemistry at the University of Houston offers programs leading to Master of Science (MS) degree in analytical, biological, inorganic, materials, organic, physical and theoretical chemistry. With nationally recognized faculty who pursue research which provides a rich learning environment with the use of a wide variety of instrument facilities and excellent technical staff who support the research and teaching efforts within the department, students will have acquired a broad and in-depth knowledge of the discipline. Students have the option to pursue a thesis track option by demonstrating research competence with the successful completion and defense of acceptable thesis research, or a non-thesis track where students demonstrate technical competence with successful completion of formal graduate-level course work in Chemistry and related disciplines. Our graduates successfully find employment after they graduate in academia and industry.



Advising

P. Shiv Halasyamani

Faculty Advisor
713-743-7716
psh@uh.edu

MyTrang Baccam

Staff Advisor
713-743-4341
mbaccam@uh.edu



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Non-Thesis Plan

A minimum of 30.0 approved Credit Hours of formal graduate-level courses in Chemistry and related disciplines, with prior explicit Departmental approval to include:

- CHEM 6311 Mechanisms
- CHEM 6313 Thermodynamics & Kinetics
- CHEM 6374 Physical Inorganic Chem I
- Chemistry Division course, selected with approval of the Graduate Chair
- Elective courses selected from graduate-level CHEM courses
- Note: Graduate courses outside the department may be substituted with prior written permission from the Graduate Chair.

Other requirements:

- Four diagnostic examinations must be taken no later than the beginning of the second semester of study.
- A maximum of 6.0 hours may be transferred to satisfy the degree requirements, with permission of the Graduate Committee, provided that they were taken at the graduate level but not while in pursuit of an earned degree, the grades are B or higher, and the courses were taken within 5 years from the time of the graduation at UH.



Doctor of Philosophy in Chemistry | Ph.D.

The Department of Chemistry at the University of Houston offers programs leading to a Doctor of Philosophy (PhD) degree in analytical, biological, inorganic, materials, organic, physical and theoretical chemistry. With nationally recognized faculty who pursue research which provides a rich learning environment with the use of a wide variety of instrument facilities and excellent technical staff who support the research and teaching efforts within the department, recipients will have acquired a broad and in-depth knowledge of the discipline meeting the national standards of the discipline. Our graduates successfully find employment after they graduate in academia, government labs, and industry.



Advising

P. Shiv Halasyamani

Faculty Advisor

713-743-7716

psh@uh.edu

MyTrang Baccam

Staff Advisor

713-743-4341

mbaccam@uh.edu

Degree Requirements

Diagnostic Examinations

Prior to the first day of class, new graduate students take four diagnostic examinations in the areas of organic, inorganic, physical and analytical chemistry. These are used by the Department to assess the student's preparation for graduate study and to help guide the student in course selections.

Research Divisions and Programs

Immediately following the diagnostic examinations, a meeting is scheduled between the new student and the Graduate Chair to determine course enrollment for the first term. At that time, the student must elect a division with which to be associated. The divisions are:

- Inorganic
- Organic
- Physical Chemistry

A limited number of students may also request to participate in the Chemical Physics Program or the Chemical Biology Interdisciplinary Program.

A student who requests to participate in either of the latter two programs must obtain permission from the Graduate Chair and is subject to special requirements for participating in the programs and graduation. Students interested in the Chemical Physics or the Chemical Biology Interdisciplinary Programs should contact the Graduate Chair before the start of the first term.

Inorganic Division

Required Course

CHEM 6311 Mechanisms

CHEM 6374 Physical
Inorganic Chem I

CHEM 6377 Solid State
Chemistry

Elective Course Options

CHEM 6312 Bonding

CHEM 6313 Thermodynamics
& Kinetics

CHEM 6314 Spectroscopy

CHEM 6321 Quantum
Chemistry

CHEM 6332 Inorganic Material
Analysis
(prerequisite: CHEM 6374)

CHEM 6375 Physical Inorganic
Chem II
(prerequisite: CHEM 6374)

CHEM 6376 Organometallic
Chemistry

Organic Division

Required Courses

CHEM 6311 Mechanisms

CHEM 6351 Organic Structure
Detrm

CHEM 6352 Orgnc React &
Synthesis

Elective Course Options

CHEM 6312 Bonding

CHEM 6313 Thermodynamics
& Kinetics

CHEM 6314 Spectroscopy

CHEM 6330 Advanced
Polymer Chemistry

CHEM 6332 Inorganic
Material Analysis

CHEM 6353 Physical
Organic Chem

CHEM 6374 Physical
Inorganic Chem I

CHEM 6375 Physical
Inorganic Chem II

CHEM 6376 Organometallic
Chemistry

CHEM 6377 Solid
State Chemistry

CHEM 6399 Masters Thesis

CHEM 6394 Sel Tops-Organic
Chm

PCOL 6345 Drug Design and
Discovery

Physical Division

Required Courses

CHEM 6313 Thermodynamics
& Kinetics

CHEM 6314 Spectroscopy

CHEM 6333 Fund-Chemical
Analysis

Elective Course Options

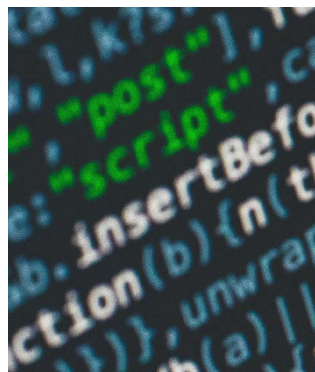
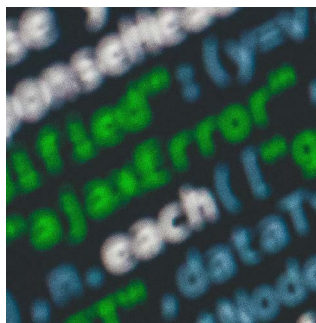
9 Credit Hours of
Elective courses

In addition to the three
required courses, three (3)
additional 6000 or 7000-level
graduate courses to be
decided by the student and
his/her advisor. The following
are strongly recommended.

- **CHEM 6321** Quantum
Chemistry
- **CHEM 6322** Statistical
Thermodynamics



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Master of Science in Computer Science | MS

The M.S. in Computer Science provides a theoretical and applied understanding of various specialties in the computing field. Students can choose the non-thesis option or thesis option. The former is non-research based while the latter is research focused that prepares students to continue into a Ph.D. program. Either option prepares a student to pursue a career in a variety of job sectors.

Our program places a strong emphasis on specialty to ensure students gain the in-demand skills and knowledge necessary for today's careers in computing. M.S. students are required to pursue a track specialization in Core Computer Sciences, Data Analysis, Parallel and Distributed Systems, or Interactive Media.

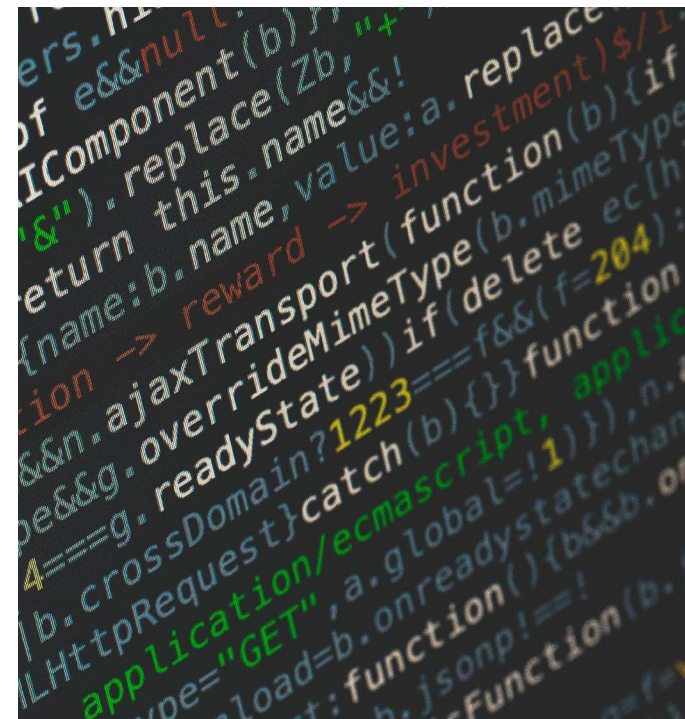
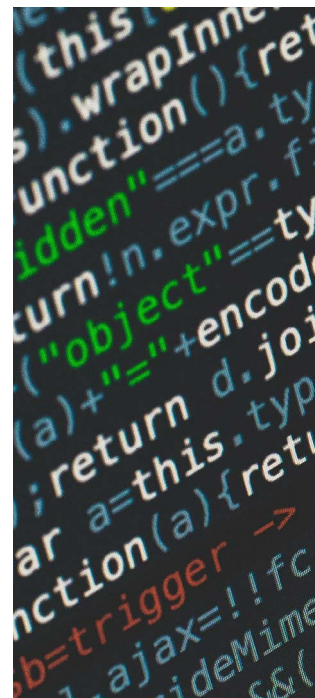
The M.S. in Computer Science is a traditional face-to-face/in-person program. There is currently no option to complete it fully online.

M.S. Tracks

Tracks allow M.S. students to specialize in key areas within computer science. The M.S. Core Computer Science track is the default track unless an alternate track is declared. Students can declare a track using the form available in the Graduate Advising Office located in PGH 501. A track can be changed while enrolled in the M.S. program. To graduate, students must complete all track requirements which includes completing all track courses, maintaining a 3.0 or higher GPA in all track courses, and all other M.S. degree requirements including the total number of credits to complete the degree.

M.S. Tracks Include:

- Core Track
- Data Analysis Track
- Parallel and Distributed Systems Track
- Interactive Media Track



Core Track

The Core Track balances core components of the computer science program including theory, systems and computational science.

Block 1: Theory

COSC 6320 Data Structures & Algorithms

COSC 6342 Machine Learning

COSC 6364 Numerical Analysis

COSC 6369 Theory of Computation

Block 2: Systems

COSC 6340 Database Systems

COSC 6360 Operating Systems

COSC 6361 Language & Compilers

COSC 6377 Computer Networks

COSC 6385 Computer Architecture

Data Analysis Track

The Data Analysis Track emphasizes a practical approach to the study of data science, imparting fundamentals supported by hands-on skills acquisition and problem solving involving real-world applications. The track facilitates preparation for positions in product development and research in industries pursuing image computing, data mining, and data analysis as well as for advanced studies in the field.

Block 1: Introductory

COSC 6323 Statistical Methods in Research

COSC 6335 Data Mining

COSC 6336 Natural Language Processing

COSC 6339 Big Data Analytics (effective 2019-2020 catalog)

COSC 6340 Database Systems

COSC 6342 Machine Learning

COSC 6344 Visualization

COSC 6368 Artificial Intelligence

COSC 6373 Computer Vision

COSC 6380 Digital Image Processing

Block 2: Advanced Topics

COSC 6391 Biomedical Image Analysis

COSC 7336 Advanced Natural Language Processing

COSC 7362 Advanced Machine Learning

COSC 7373 Advanced Computer Vision

COSC 7378 Advanced Image Computing

Parallel and Distributed Systems Track

This systems-focused track emphasizes theory, design and evaluation of parallel computations, protocols, and vector and distributed data applications.

Block 1: Introductory

COSC 6327 Shared Memory Programming

COSC 6365 Introduction to High Performance Computing

COSC 6374 Parallel Computation

COSC 6377 Network Systems

COSC 6376 Cloud Computing

COSC 6384 Real-Time Systems

COSC 6326 Distributed Algorithms

Block 2: Advanced Topics

COSC 6339 Big Data Analytics

COSC 6375 Computer Systems Performance Evaluation

COSC 7364 Advanced Parallel Computations

COSC 7388 Advanced Distributed Computing



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Interactive Media Track

This track studies theoretical and applied aspects of interface, visualization, graphics and gaming.

Block 1: Introductory

COSC 6344 Visualization

COSC 6355 Ubiquitous Computing

COSC 6356 Computer Animation and Simulation

COSC 6358 Introduction to Game Development

COSC 6372 3D Computer Graphics

COSC 6373 Computer Vision

COSC 6380 Digital Image Processing

Block 2: Specialization

COSC 6348 Introduction to Game Art & Animation

COSC 6349 Intermediate Game Art & Animation

COSC 6359 Intermediate Game Development

Thesis Option

Requires a minimum of 30 credit hours, with a defended thesis, subject to the following:

- At least 15 credit hours of graduate level COSC lecture courses
 - Excludes COSC 6300-6311 deficiency courses
 - Excludes COSC 6397 special topics courses
 - Includes track courses
- An additional 9 credit hours must be taken from:
 - Graduate level COSC lecture courses
 - Excludes COSC 6300-6311 deficiency courses
 - COSC 6397 Special Topics (limit 6 hours)*
 - COSC 6398 Special Problems (limit 6 hours)*
 - Outside department courses (limit 6 hours)*
 - Transfer coursework from a previous institution (limit 6 hours, which is stricter than the university standard)*
- COSC 6399 and COSC 7399 in two consecutive terms prior to graduation (total of 6 credits hours). A student must be enrolled in COSC 7399 in the term of graduation.

*Requires prior approval from the director of graduate studies via a Graduate & Professional Student Petition

A student in the thesis option of the M.S. degree program must complete a thesis. Details on preparation of a thesis document can be found on the Thesis Guidelines page.

No later than one term before the anticipated graduation date of the student, a thesis advisory committee must be formed, which consists of the advisor and at least two (2) other members: one other member of the Computer Science faculty and one from outside the Department of Computer Science (either faculty from another department, another university or from industry). The thesis advisory committee will be the comprehensive examination committee. The thesis is not considered to be complete until the student passes a comprehensive examination, which is primarily a defense of the thesis. The examination will be given upon the request of the student with the approval of the research advisor.

The comprehensive examination is open to the University community and must be publicized at least two weeks in advance. Details on how to announce the defense can be found on the Thesis Guidelines page.

Non-Thesis Option

Requires a minimum of 30 credit hours, with no thesis requirement, subject to the following:

- At least 21 credit hours of graduate level COSC lecture courses
 - Excludes COSC 6300-6311 deficiency courses
 - Excludes COSC 6397 special topics courses
 - Includes track courses
- An additional 9 credit hours must be taken from:
 - Graduate level COSC lecture courses
 - Excludes COSC 6300-6311 deficiency courses
 - COSC 6397 Special Topics (limit 6 hours)*
 - COSC 6398 Special Problems (limit 6 hours)*
 - Outside department courses (limit 6 hours)*
 - Transfer coursework from a previous institution (limit 6 hours, which is stricter than the university standard)*

*Requires prior approval from the director of graduate studies via a Graduate & Professional Student Petition

Advising

Yvette Elder

Staff Advisor

M.S. Program

713-743-3364

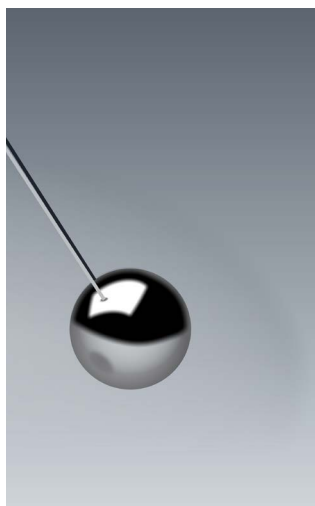
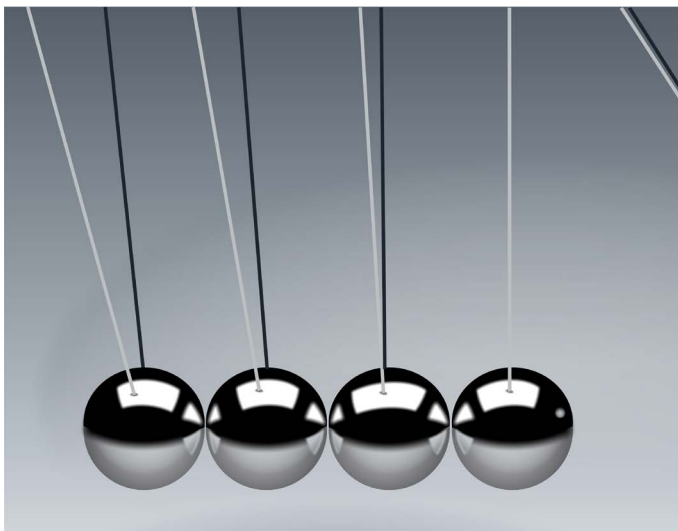
yelder@uh.edu

Zhigang Deng

Faculty Advisor

713-743-1018

zdeng4@uh.edu



Master of Science in Physics | MS

To receive the degree of Master of Science in Physics, a student must satisfy one of the two sets of requirements stated.

Advising

Oomman Varghese

Faculty Advisor

713-743-3808

okvarghese@uh.edu

Aleksandra Novikova

Staff Advisor

713-743-3523

abnovikova@uh.edu

Thesis Option

A student must successfully complete a minimum of 30 semester hours for which graduate credit is accepted by the department. These 30 semester hours must include:

- **Physics 6313** Methods of Mathematical Physics (formerly Physics 6303)
- **Physics 6327** Statistical Physics
- **Physics 6315** Quantum Mechanics
- **Physics 6319** Advanced Mechanics I (formerly Physics 6309)
- **Physics 6321** Electrodynamics
- A student is required to be registered for phys 6x99 and/or phys 7x99 for a minimum of three, but no more than six semester hours in the graduating semester.
- The student must select a thesis advisor before the second semester of graduate work has been completed. Shortly after a thesis advisor has been selected, a thesis committee must be selected jointly by the student and the thesis advisor. The committee must consist of the advisor, at least two members of the physics graduate faculty, and at least one University of Houston graduate faculty member from outside the department. A list of prospective committee members must be submitted to the graduate studies committee and to the dean of the College of Natural Sciences and Mathematics for approval.
- The student must present an acceptable thesis of original scientific research in physics and defend it orally before the thesis committee. Copies of the final draft of the thesis must be given to the members of the committee prior to the deadline published in the Academic Calendar. The student must provide copies to the committee at least two weeks, and preferably one month, prior to the defense. Written announcement of the thesis defense must be sent to the physics graduate faculty at least one week prior to the thesis defense.
- The student must maintain a B average in the core graduate courses and may not make more than two B- grades in the core courses listed above.



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Non-Thesis Option

A student must successfully complete a minimum of 36 semester hours for which graduate credit is accepted by the Physics Department. 15 of these 36 hours must include the following courses:

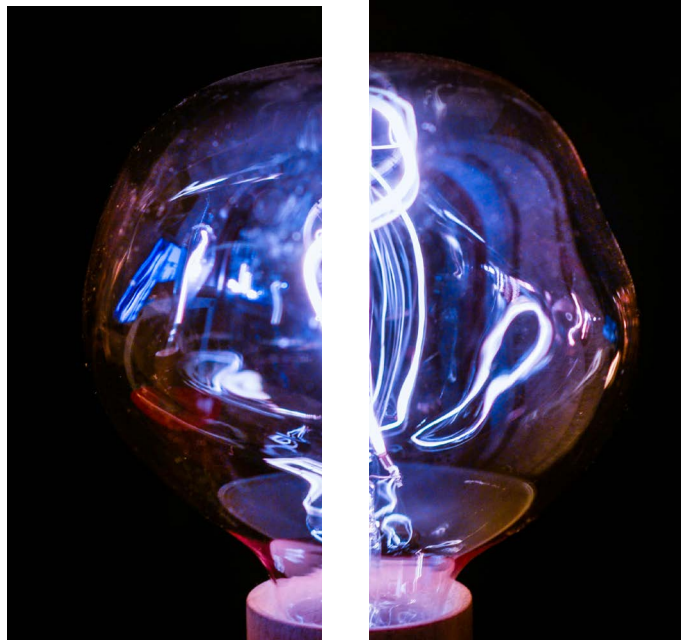
- **Physics 6313** Methods of Mathematical Physics (formerly Physics 6303)
- **Physics 6319** Advanced Mechanics I (formerly Physics 6309)
- **Physics 6315** Quantum Mechanics
- **Physics 6321** Electrodynamics
- **Physics 6327** Statistical Physics
- In addition, 21 semester hours of work in either advanced physics and/or other fields will be required. It is implicit in all this that a student who desires to fill in part or all of these 21 semester hours with advanced courses in a field outside of physics will already have taken prerequisite courses that are required to qualify him/her for the desired graduate level courses.
- An advisor will be assigned to each non-thesis master's student from among the physics faculty belonging to the Graduate Studies Committee. The Graduate Studies Committee chairman, or the department chairman, will have the responsibility to make this assignment during the student's first semester of graduate work. Students must discuss all their course plans with their advisors, and to gain approval for a given course load before the beginning of each semester.
- The student must maintain a B average in the core graduate courses and may not make more than two B- grades in the core courses listed above.

Additional Requirements for All Master's Students

In addition to the requirements listed above, there are several procedural matters which also must be completed before a master's degree is awarded by the University of Houston. These are summarized below.

The original copy of the thesis with the signature page must be given to the Graduate Office of the College of Natural Sciences and Mathematics.

Exception to any of these regulations will be considered on an individual basis by special petition to the Graduate Studies Committees.



Doctor of Philosophy in Physics | Ph.D.

To receive the degree of Doctor of Philosophy (Ph.D.) in Physics, a student must satisfy one of the two sets of requirements stated.

Advising

Oomman Varghese

Faculty Advisor

713-743-3808

okvarghese@uh.edu

Aleksandra Novikova

Staff Advisor

713-743-3523

abnovikova@uh.edu

Course Requirements

Basic Core

Physics 6313 Methods of Mathematical Physics

Physics 6319 Advanced Mechanics I

Physics 6315 Quantum Mechanics I

Physics 6316 Quantum Mechanics II

Physics 6321 Electrodynamics

Physics 6327 Statistical Physics

Advanced Core/Elective

Four courses with a minimum of two from the Advanced Core list below. At most, one of the remaining classes can be outside of the department with permission from the Chair of the Dissertation Committee and the Chair of the Graduate Studies Committee. Advanced Core courses include:

- **Physics 6354** Methods of Mathematical Physics II
- **Physics 6363** Graduate Laboratory
- **Physics 6328** Advanced Statistical Mechanics
- **Physics 6350** Computational Physics
- **Physics 6365** Quantum Many-Body Theory
- **Physics 6366** Quantum Field Theory
- **Physics 6387** Solid State Physics I

Advanced Elective courses will be offered at regular intervals. Some electives offered in recent years include:

- General Relativity and Gravitation
- Solid State Physics II
- Atmospheric Physics
- Particle Physics
- Biological Physics
- Scattering Theory
- Seismic Physics I and II
- Physics and Application of Semiconductors
- Optics



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Qualification for Ph.D. Candidacy

Full-time students must advance to candidacy to Ph.D. no later than 2 years after entry into the Ph.D. program (for part-time students, the equivalent requirement is within the first 36 hours of graduate coursework). No comprehensive examination is given by the Department of Physics. Instead, to advance to candidacy, a student must (i) take all six Basic Core courses and earn a grade of B or better in each one as well as in the final exam within two attempts, and (ii) earn such a grade at the first attempt in at least four (4) of the six Basic Core courses. A student who earns less than a B grade in three (3) or more Basic Core courses at the first attempt will be dismissed from the program due to failure to advance to candidacy. If the failure is due to extenuating circumstances, the student can appeal the decision to the Graduate Studies Committee.

With approval of the Graduate Studies Committee, students who feel that they possess an adequate knowledge of a Basic Core course may simply take, and pass with a grade of B or better, an exam of the course to be given approximately a week prior to the beginning of the semester. However, it is counted as one of the two attempts at qualification and the student will be required to take the class the following semester.

Any requests for deviation from these requirements must be made in writing to the Graduate Studies Committee.

Original Research Requirements

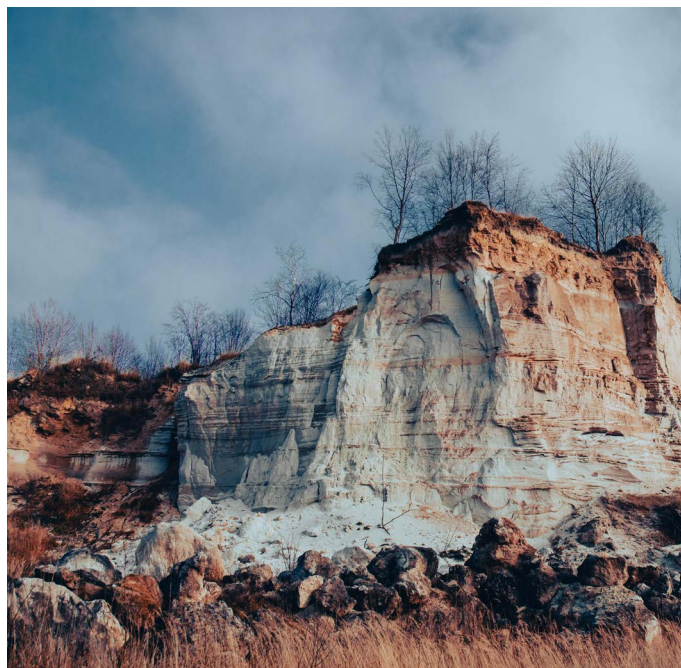
An acceptable dissertation based on original research in Physics must be presented and defended orally before the student's Doctoral Dissertation Committee. Copies of the final draft of the dissertation must be given to the members of the Committee prior to the deadline published on the NSM Graduate webpage. The student must provide copies of the final draft to the Committee at least two weeks (preferably one month) prior to the defense. Written announcement of the dissertation defense must be sent to the Physics Graduate Faculty at least one week prior to the date of the defense.

Students should select a Dissertation Advisor (Research Advisor), ideally before the second semester of graduate work has been completed, but absolutely before the beginning of the student's third academic year. Shortly after a Dissertation Advisor has been selected, a Dissertation Committee must be selected. The student and the Advisor should jointly select the Committee. The Dissertation Committee must consist of the Dissertation Advisor, at least two (typically three) additional graduate faculty members from the Physics Department, and at least one UH faculty member from outside the department. A list of the committee members must be submitted to the Graduate Studies Committee for approval and for subsequent approval by the Dean of Natural Sciences and Mathematics.

Students must assemble their Dissertation Committee within the first semester after they pass all of the Ph.D. Core courses listed above, or at the beginning of their third academic year whichever comes first. A Dissertation Committee must be on file with the department by Year 3 and with the College no later than the semester prior to the anticipated graduating semester.

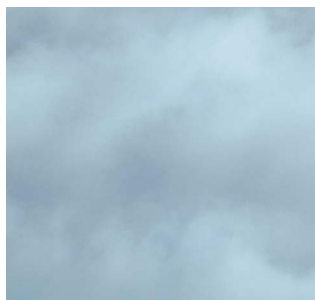
Annual Progress Evaluation (APE): Before the end of the student's third academic year, AND IN EACH SUBSEQUENT ACADEMIC YEAR, the student must make an oral presentation to their Dissertation Committee. The Committee must certify that the student is making adequate progress toward completion of their Ph.D. in a timely manner.

Any requests for deviation from these requirements, or any special considerations, must be made in writing to the Graduate Studies Committee.



Master of Science in Geophysics | MS

The Department of Earth and Atmospheric Sciences (EAS) offers a wide range of courses leading to the Master of Science in Geophysics degree. A wide variety of electives allows concentration in areas such as exploration, geotechnical, or environmental geophysics, solid earth geophysics, petroleum exploration, marine geophysics, earthquake seismology, and geodynamics. Graduates will typically pursue careers with resource companies; geophysical service companies; various federal, state, and local government agencies; in the financial sector; in education; or will continue study to pursue a doctorate.



Advising

Shuhab Khan

Faculty Advisor
Geology/Geophysics
713-743-5404
sdkhan@uh.edu

Aketra Bowens

Staff Advisor
Atmospheric Sciences,
Geology, Geophysics
713-743-6716
acbowens@cougarnet.uh.edu

Summer Crawley

Staff Advisor
Atmospheric Sciences,
Geology, Geophysics
713-743-5023
sdcrawle@central.uh.edu

Plan I: Thesis Option

All students completing the thesis option must complete and defend a thesis acceptable to the department.

This option requires a minimum of 30.0 approved Credit Hours, to include

- EAS lecture courses (GEOL) at the 6000 level or higher Credit Hours: 15.0
 - Geophysics Core courses Credit Hours: 12.0 (listed below)
 - Additional Earth & Atmospheric Sciences lecture course Credit Hours: 3.0
- Elective courses Credit Hours: 9.0
 - Selections should be courses at the 6000 level, or above, and 6.0 credit hours can be selected from approved courses outside the area of EAS, but relevant to the degree program, with prior permission from the Geology Graduate Faculty Advisor.
 - No more than 6.0 Credit Hours of special problems courses can be counted towards the required 30.0 Credit Hours minimum.
- Letter-graded thesis courses (GEOL 6399 & GEOL 7399) Credit Hours: 6.0

Plan II: Non-Thesis Option

Completing a thesis is not required, but students must take additional coursework and have the option of completing a capstone research project.

Students may satisfy the MS Plan II degree requirements by satisfactorily completing a minimum of 36.0 approved Credit Hours, to include

- EAS lecture courses (GEOL) at the 6000 level or higher Credit Hours: 30.0
- Elective courses Credit Hours: 6.0
 - Geophysics Core courses Credit Hours: 12.0 (listed below) o Elective EAS lecture courses Credit Hours: 18.0
 - Any EAS courses at the 6000 level or higher may be taken as electives.
 - Additionally, students may select up to 6.00 credit hours of elective courses at the 6000 level or higher from approved courses outside the EAS department, as long as these courses are relevant to their degree program. This selection requires prior approval from the Geophysics Graduate Faculty Advisor.

Note: Research hours do not count toward this degree.

Students with a cumulative GPA of 3.00 or above and demonstrated abilities to conduct research may petition to switch to a thesis-based degree. In order to do this, the student must have an advisor and committee members willing to supervise them. The thesis research advisor, Geophysics Graduate Faculty Advisor, and Department Chair must sign a petition indicating approval of the change to a thesis-based MS degree and it must be filed with the department academic advisor. The student must successfully defend their thesis proposal (as outlined below) after they have completed their core course requirements. This change will not extend the 5-year limit to complete the MS degree.

Plan II: Non-Thesis Option - Professional MS Geophysics with a specialization in Petroleum Geophysics

Completing a thesis is not required, but students must take additional course work and complete a capstone project.

Students may satisfy the MS Plan II degree requirements by satisfactorily completing a 36.0 approved formal Credit Hours and 3.0 capstone project Credit Hours, to include

A Fixed Curriculum meeting or exceeding the core course requirements of Plan II that includes

- **GEOL 6381** Petroleum Geology
- **GEOL 6380** Sequence Stratigraphy
- **GEOL 6350** Advanced Structural Geology
- **GEOL 6395** Petroleum Seismology
- **GEOL 6390** 3-D Seismic Exploration I
- **GEOL 7325** Petrophysics and Formation Evaluation
- **GEOL 6393** Seismic Amplitude Interpretation
- **GEOL 7333** Seismic Wave & Ray Theory
- **GEOL 7341** Geophysical Data Processing
- **GEOL 7321** Multicomponent Seismic Exploration
- **GEOL 7330** Potntl Fld Mtds-Geophys
- **GEOL 7323** Borehole Geophysics
- **GEOL 7301** Capstone Project

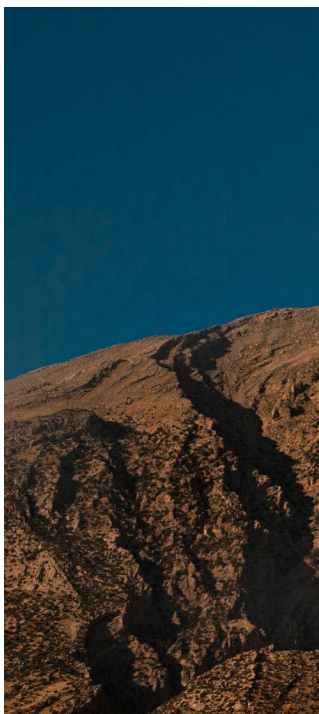


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Geophysics Core Course Requirements

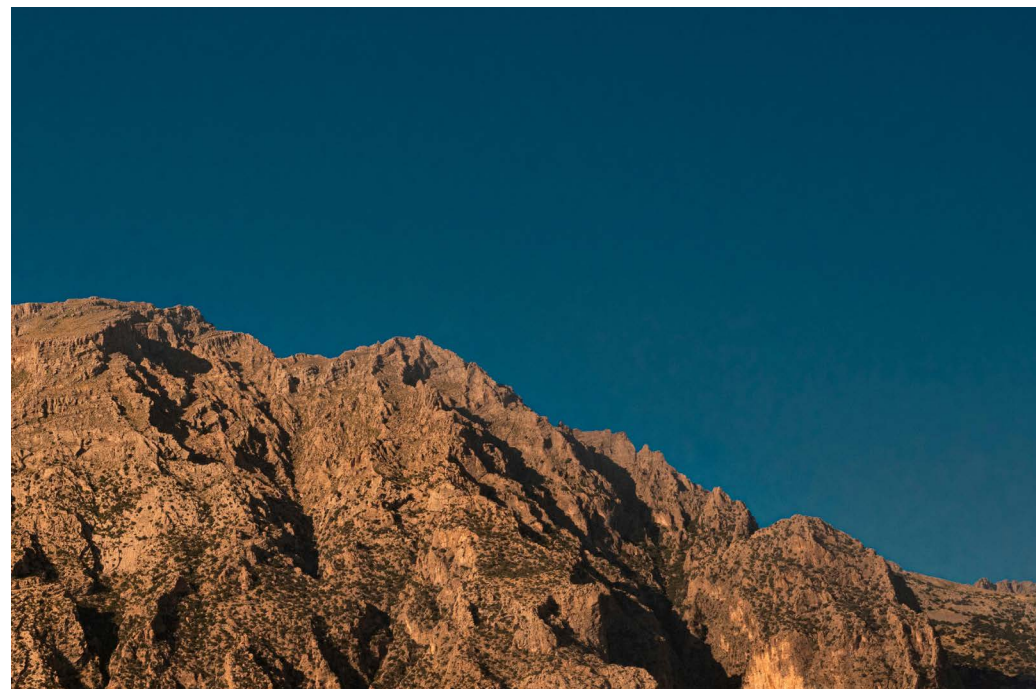
Upon completion of their program, students are expected to have breadth and a fundamental background in the essential elements Geophysics. To provide a fundamental background in the essential elements of geophysics, all MS students are required to take the courses listed below. Students are encouraged to consult with the Geophysics Graduate Faculty Advisor to make their selections of the remaining graduate courses.

- **GEOL 7330** Potntl Fld Mtds-Geophys
- **GEOL 7341** Geophysical Data Processing
- **GEOL 7333** Seismic Wave & Ray Theory
- **GEOL 7324** Rock Physics



Doctor of Philosophy in Geophysics | Ph.D.

The Department of Earth and Atmospheric Sciences (EAS) offers a wide range of courses leading to the degree of Doctor of Philosophy in Geophysics. A wide variety of electives allows concentration in areas such as exploration, geotechnical, or environmental geophysics, solid earth geophysics, petroleum exploration, marine geophysics, earthquake seismology, and geodynamics. Graduates will typically pursue careers with resource companies, geophysical service companies, various federal, state, and local government agencies, in the financial sector, or in education/academia.



Advising

Shuhab Khan

Faculty Advisor
Geology/Geophysics
713-743-5404
sdkhan@uh.edu

Aketra Bowens

Staff Advisor
Atmospheric Sciences,
Geology, Geophysics
713-743-6716
acbowens@cougarnet.uh.edu

Summer Crawley

Staff Advisor
Atmospheric Sciences,
Geology, Geophysics
713-743-5023
sdcrawle@central.uh.edu



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Degree Requirements

To earn the Geophysics PhD, students must complete:

- The course requirements
- Degree milestones, including qualification, dissertation proposal, dissertation defense, and publication requirements

Ph.D. students entering with a MS degree

EAS lecture courses Credit Hours: 18.0

Selections should be EAS courses at the 6000 level, or above, and 6.0 credit hours can be selected from approved courses outside the area of Earth and Atmospheric Sciences, but relevant to the degree program, with prior permission from the Geology Graduate Faculty Advisor.

Letter-graded Doctoral Dissertation course Credit Hours: 6.0 - 12.0

The remaining hours may include Coursework, Doctoral Research, Seminars, and Special Problems

Ph.D. students entering with a Bachelor's degree

Geophysics Core Courses Credit Hours: 12.0 (see list below)

Formal EAS elective courses Credit Hours: 12.0

Selections should be courses at the 6000 level, or above, and 6.0 credit hours can be selected from approved courses outside the area of Earth and Atmospheric Sciences, but relevant to the degree program, with prior permission from the Geology Graduate Faculty Advisor.

Letter-graded Doctoral Dissertation course Credit Hours: 6.0 - 12.0

The remaining hours may include Coursework, Doctoral Research, Seminars and Special Problems

Students are encouraged to consult with the Geophysics Graduate Faculty Advisor to make their selections of graduate courses.

Geophysics Core Courses

To provide a fundamental background in the essential elements of geophysics, all PhD students entering with a Bachelor's degree are required to take the following 4 courses:

- **GEOL 7324** Rock Physics
- **GEOL 7330** Potntl Fld Mtds-Geophys
- **GEOL 7333** Seismic Wave & Ray Theory
- **GEOL 7341** Geophysical Data Processing
- Course substitutions may be allowed on an individual basis, with prior approval from the Geophysics Graduate Faculty Advisor.



Master of Science in Geology | MS

The Department of Earth and Atmospheric Sciences (EAS) will provide all of its students with educational programs that encompass the fundamental principles of the geosciences and the body of knowledge associated with applying these principles to the study of the Earth and planetary materials. Students successfully completing the MS program will be prepared for a career as a professional geoscientist and prepared to pursue a more advanced degree.

Advising

Shuhab Khan

Faculty Advisor
Geology/Geophysics
713-743-5404
sdkhan@uh.edu

Aketra Bowens

Staff Advisor
Atmospheric Sciences,
Geology, Geophysics
713-743-6716
acbowens@cougarnet.uh.edu

Summer Crawley

Staff Advisor
Atmospheric Sciences,
Geology, Geophysics
713-743-5023
sdcrawle@central.uh.edu

Geology Courses

GEOL 6312 The Mechanics of Sediment Transport

GEOL 6313 Applied Geomorphology

GEOL 6325 Remote Sensing

GEOL 7331 Seismic Structural Geology

GEOL 7332 Tectonic Interpretation and Seismic Tomography

GEOL 6338 Paleoclimate

GEOL 6339 Igneous Petrology

GEOL 6340 Metamorphic Petrology

GEOL 6341 Geochemistry

GEOL 6343 Organic Geochemistry

GEOL 6344 Light Stable Isotope Geochemistry

GEOL 6346 Geochemistry of Water-Rock Systems

GEOL 6350 Advanced Structural Geology

GEOL 6352 Microtectonics

GEOL 6353 Planetary Materials

GEOL 6354 Geomechanics of the Upper Crust

GEOL 6365 Conventional and unconventional exploration of the Permian Basin, West Texas

GEOL 6366 Hydrogeology

GEOL 6371 Analytical Methods in Inorganic Geochemistry

GEOL 6372 Petroleum Geochemistry

GEOL 6373 Petroleum Systems Analysis

GEOL 6374 Radiogenic Isotope Geochemistry

GEOL 6375 Tecton Himalayan-Tibet Orogen

GEOL 6376 Adv Tect and Sedimentation

GEOL 6378 Basin Analysis for Petroleum Exploration

GEOL 6379 Applied Biostratigraphy

GEOL 6380 Sequence Stratigraphy

GEOL 6381 Petroleum Geology

GEOL 6388 Geospatial Analysis and Applications

Non-Thesis Option - Professional MS Geology with a specialization in Petroleum Geology

Completing a thesis is not required, but students must take additional course work and complete a capstone research project.

Students may satisfy the MS Plan II degree requirements by satisfactorily completing a 36.0 approved formal Credit Hours and 3.0 capstone project Credit Hours, to include

A Fixed Curriculum meeting or exceeding the core course requirements of Plan II that includes

- **GEOL 6363** Carbonate Sedimentology
- **GEOL 6358** Terrigenous Depositional System
- **GEOL 6372** Petroleum Geochemistry
- **GEOL 6381** Petroleum Geology
- **GEOL 6380** Sequence Stratigraphy
- **GEOL 6350** Advanced Structural Geology
- **GEOL 6395** Petroleum Seismology
- **GEOL 6390** 3-D Seismic Exploration I
- **GEOL 7325** Petrophysics and Formation Evaluation
- **GEOL 6393** Seismic Amplitude Interpretation
- **GEOL 6379** Applied Biostratigraphy
- **GEOL 6351** Basin Modeling
- **GEOL 7301** Capstone Project

After completion of 18 hours, students are encouraged to begin developing plans for the completion of their capstone project. Specific dates for completion of the capstone project tasks will be distributed to each student the semester they graduate. Those tasks include a written and approved proposal, an oral or poster presentation, and a written final project report. All must be approved by their advisor(s) prior to the semester grade due date.

Non-Thesis Option

Completing a thesis is not required, but students must take additional coursework and have the option of completing a capstone research project.

Students may satisfy the MS Plan II degree requirements by satisfactorily completing a minimum of 36.0 approved Credit Hours, to include

- EAS lecture courses (GEOL) from the Geology Section of courses, listed below at the 6000 level or higher Credit Hours: 24.0
- Elective courses Credit Hours: 12.0
 - Selections should be courses at the 6000 level, or above, and 6.0 credit hours can be selected from approved courses outside the area of EAS, but relevant to the degree program, with prior permission from the Geology Graduate Faculty Advisor.
 - A Capstone Project can fulfill 3 hours of electives (GEOL 7301 - Capstone Project)

Note: Research hours do not count toward the Non-Thesis degree.

Students with a cumulative GPA of 3.0 or above and demonstrated abilities to conduct research may petition to switch to a thesis-based degree. In order to do this, the student must have an advisor and committee members willing to supervise them. The thesis research advisor, Geology Graduate Faculty Advisor, and Department Chair must sign a petition indicating approval of the change to a thesis-based MS degree and it must be filed with the department academic advisor. The student must successfully defend their thesis proposal (as outlined below) after they have completed their course requirements. This change will not extend the 5-year limit to complete the MS degree.



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Thesis Option

All students completing the thesis option must complete and defend a thesis acceptable to the department.

This option requires a minimum of 30.0 approved Credit Hours, to include

- EAS lecture courses (GEOL) in geology section of courses, listed below, at the 6000 level or higher Credit Hours: 15.0
- EAS elective lecture courses Credit Hours: 9.0
 - Selections should be courses at the 6000 level, or above, and 6.0 credit hours of courses can be selected from approved courses outside the area of EAS, but relevant to the degree program, with prior permission of the Geology Graduate Faculty Advisor
- No more than 6.0 Credit Hours of special problems courses can be counted towards the required 30.0 Credit Hour minimum.
- Letter-graded thesis courses (GEOL 6399 & GEOL 7399) Credit Hours: 6.0



Doctor of Philosophy in Geology | Ph.D.

The Department of Earth and Atmospheric Sciences (EAS) will provide all its students with educational programs that encompass the fundamental principles of the geosciences and the body of knowledge associated with applying these principles to the study of the Earth and planetary materials. Students successfully completing the PhD program will be prepared for a career as a researcher, educator, or professional geoscientist.

Advising

Shuhab Khan

Faculty Advisor
Geology/Geophysics
713-743-5404
sdkhan@uh.edu

Aketra Bowens

Staff Advisor
Atmospheric Sciences,
Geology, Geophysics
713-743-6716
acbowens@cougarnet.uh.edu

Summer Crawley

Staff Advisor
Atmospheric Sciences,
Geology, Geophysics
713-743-5023
sdcrawle@central.uh.edu

Geology Courses

GEOL 6312 The Mechanics of Sediment Transport

GEOL 6313 Applied Geomorphology

GEOL 6325 Remote Sensing

GEOL 7331 Seismic Structural Geology

GEOL 7332 Tectonic Interpretation and Seismic Tomography

GEOL 6338 Paleoclimate

GEOL 6339 Igneous Petrology

GEOL 6340 Metamorphic Petrology

GEOL 6341 Geochemistry

GEOL 6343 Organic Geochemistry

GEOL 6344 Light Stable Isotope Geochemistry

GEOL 6346 Geochemistry of Water-Rock Systems

GEOL 6350 Advanced Structural Geology

GEOL 6352 Microtectonics

GEOL 6353 Planetary Materials

GEOL 6354 Geomechanics of the Upper Crust

GEOL 6365 Conventional and unconventional exploration of the Permian Basin, West Texas

GEOL 6366 Hydrogeology

GEOL 6371 Analytical Methods in Inorganic Geochemistry

GEOL 6372 Petroleum Geochemistry

GEOL 6373 Petroleum Systems Analysis

GEOL 6374 Radiogenic Isotope Geochemistry

GEOL 6375 Tecton Himalayan-Tibet Orogen

GEOL 6376 Adv Tect and Sedimentation

GEOL 6378 Basin Analysis for Petroleum Exploration

GEOL 6379 Applied Biostratigraphy

GEOL 6380 Sequence Stratigraphy

GEOL 6381 Petroleum Geology

GEOL 6388 Geospatial Analysis and Applications

Degree Requirements

To earn the Geology PhD, students must complete:

- The course requirements
- Degree milestones, including qualification, dissertation proposal, dissertation defense, and publication requirements



publications.uh.edu

PhD students entering with a MS degree

EAS lecture courses Credit Hours: 18.0

- Selections should be courses at the 6000 level, or above, and 6.0 credit hours can be selected from approved courses outside the area of Earth and Atmospheric Science, but relevant to the degree program, with prior permission from the Geology Graduate Faculty Advisor.

Letter-graded Doctoral Dissertation course Credit Hours: 6.0 - 12.0

The remaining hours may include Coursework, Doctoral Research, Seminars and Special Problems

PhD students entering with a Bachelor's degree

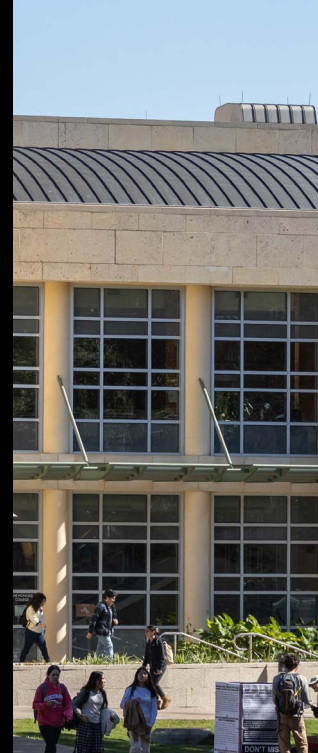
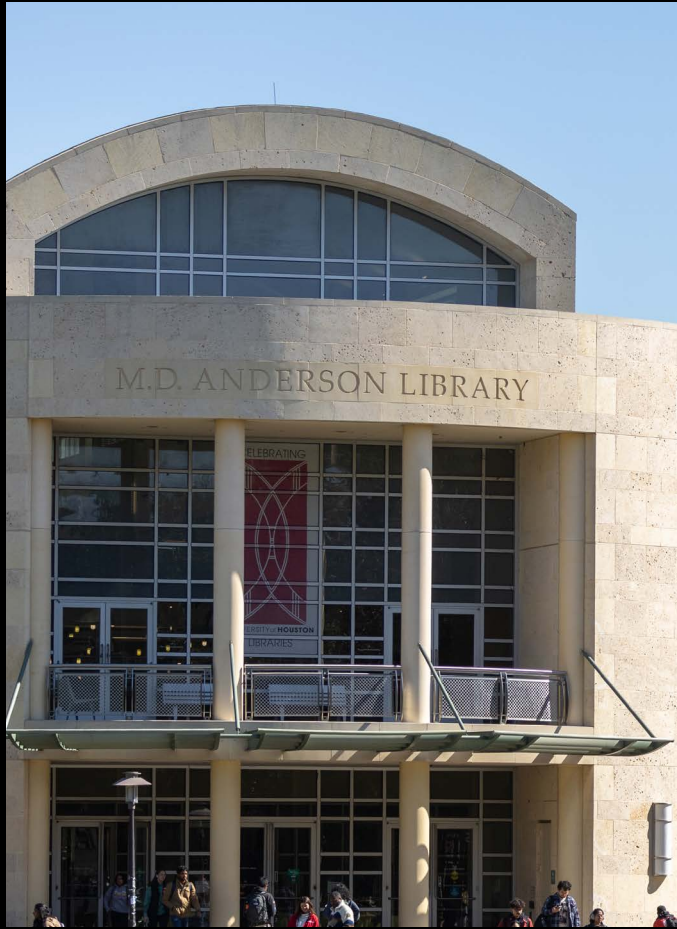
EAS lecture courses from Geology Section of courses, listed below at the 6000 level or higher Credit Hours:15.0

Elective courses Credit Hours: 9.0

- Selections should be EAS courses at the 6000 level, or above, and 6.0 credit hours can be selected from approved courses outside the area of Earth and Atmospheric Science, but relevant to the degree program, with prior permission from the Geology Graduate Faculty Advisor.

Dissertation Credit Hours: 6.0 - 12.0

The remaining hours may include Coursework, Doctoral Research, Seminars and Special Problems



The Honors College

The Honors College provides the advantages of a small community amid the rich and diverse settings of a large, urban university. Our students are part of an elite group of university intellectuals whose enthusiasm for materials covered within our coursework can be felt throughout The Honors College's hallways and Commons. In addition to exclusive amenities and special privileges, our students benefit from a dynamic learning environment and one-on-one mentoring from world-renowned faculty. Through a challenging and well-balanced curriculum,

our students learn both the skills they will need for professional success, and how and when to apply them. The Honors College at the University of Houston is a nationally recognized, intellectually stimulating learning community.

As a vibrant, leading presence within the University, the Honors College attracts highly talented and motivated students and educators to a collegial environment where tradition is honored and possibilities are both created and realized.

Advising and Resources

Prospective, recently admitted, or suspension readmission students, please see information at: <http://www.uh.edu/honors/students/prospective-students/>, email honors@uh.edu, or call **713-743-9010**.

Honors (all majors)

Megan Booth

mnbooth@uh.edu

713-743-6598

Larry Lyke

llyke@uh.edu

713-743-8023

Jaccline Njeri

jwnjeri@central.uh.edu

713-743-0657

Aaron Reynolds

aareynol@Central.UH.EDU

713-743-2982



uh.edu/honors/

Energy & Sustainability Minor

The Energy & Sustainability minor welcomes students from all majors. Although housed in the Honors College, it is open to all qualified students. The program takes an aggressively interdisciplinary approach to the study of sustainable energy systems. It pays special attention to the crowded intersection of energy security and environmental stewardship. Here we find technical, economic, environmental, and political issues raised by the production and consumption of different fuels. These range from the traditional environmental impacts of energy use on air, water, and land to the global challenges of climate change.

The most significant issues of the 21st century loom large in this course, and students are encouraged to learn to think creatively and independently about them. Breadth of understanding is a central goal of interdisciplinary study, and our minor offers a blend of courses in an array of disciplines, including business, engineering, the natural sciences, architecture, economics, political science, and history.

The required introductory and capstone courses combine with the wide choice of electives and research projects in many of the classes to give students ample flexibility to learn in depth about topics of special interest or to acquire a breadth of knowledge about energy and sustainability. Understanding these two closely-related topics will be essential to responsible citizenship in the coming decades.

Honors Engineering

The Cullen College of Engineering and the Honors College jointly offer a program for Honors College students with majors in engineering: the Honors Engineering Program (HEP).

The HEP is a challenging program that encourages a sense of community among Honors students in Engineering and provides an improved experience by offering courses tailored to the needs of these capable, enthusiastic students. As an example, the freshman-level HEP courses, beginning with ENGI 1100 Honors, emphasize team-based, project-oriented learning in small classes, restricted to HEP students. These fun, hands-on courses focus on fostering creative, open-ended thinking and engineering design. HEP students will fulfill many required courses in Honors sections of required engineering courses.

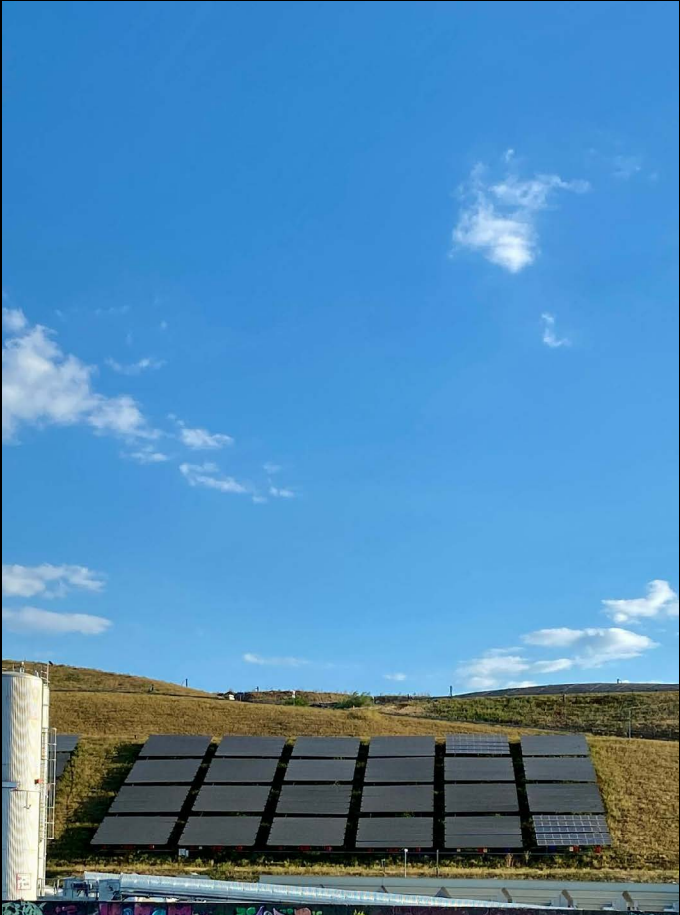
Many HEP students find they are earning internships and other opportunities by virtue of their participation in HEP. In addition, HEP students have access to the Honors Engineering Program list-serve to find out about upcoming HEP events, such as meetings with industry representatives, field trips to engineering companies and sporting events, and various social events.

To join the Honors Engineering Program, students must be accepted to the Honors College and to the Cullen College of Engineering.



Graduate Certificates

Whether you aim to innovate, influence policy, or manage risk, our graduate programs prepare you to drive solutions that matter.



Certificates

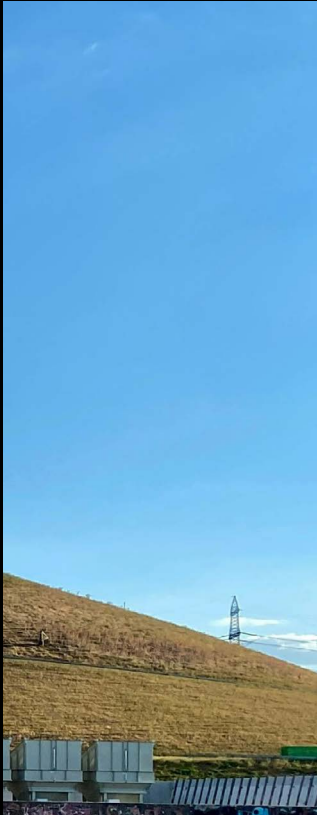
Fundamentals of Petroleum Engineering

Hydrogeology

Energy Finance

Process Safety Engineering

Earth and Atmospheric Sciences of
Carbon Capture, Utilization, and Storage (CCUS)



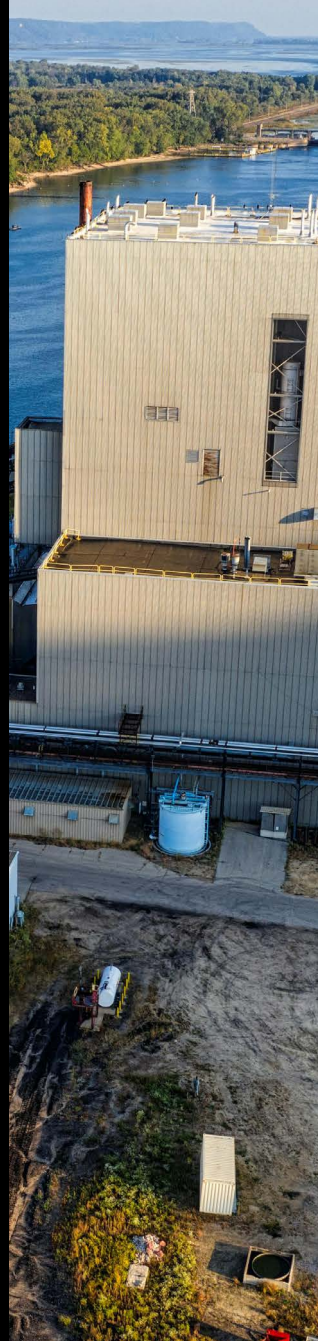
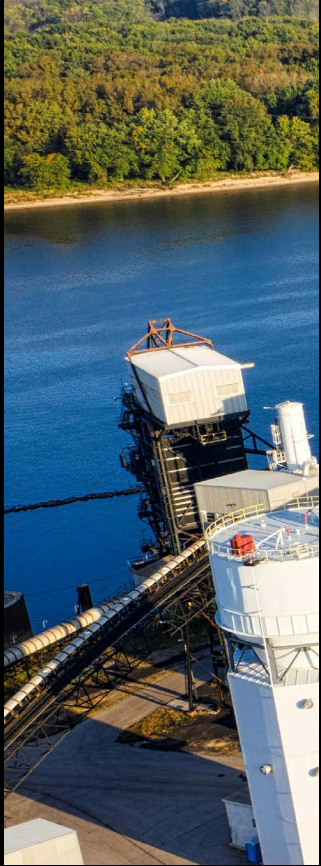
Energy Investment Analysis

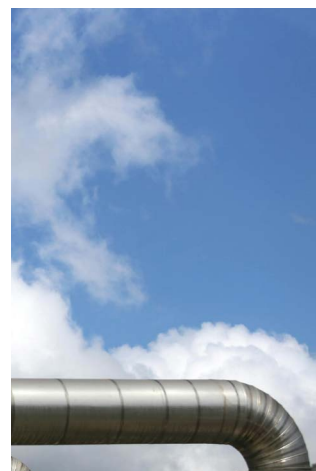
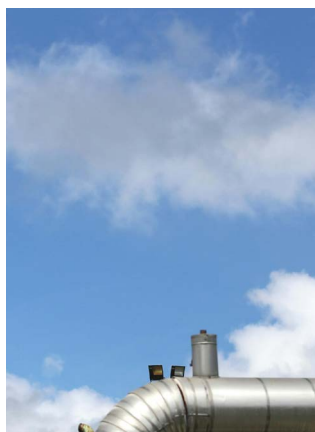
Energy Risk Management

Global Climate, Energy, and Environment

Energy Policy Certificate

Energy Innovations in
Carbon Capture, Utilization, and Storage (CCUS)





Fundamentals of Petroleum Engineering

The Fundamentals of Petroleum Engineering Certificate at Cullen College of Engineering provides professionals from non-petroleum backgrounds with essential knowledge of petroleum engineering concepts. The program covers topics like petroleum composition, reservoir engineering, and petroleum fluid behavior, making it ideal for career advancement in the energy sector. With Houston's strong demand for skilled energy professionals, UH's petroleum engineering department offers a competitive edge through this specialized certificate. Graduates emerge with a foundational understanding that can support transitions into energy-related roles.

What You'll Achieve

- Gain a broad understanding of petroleum engineering principles, including reservoir estimation and petroleum fluid analysis.
- Earn the Fundamentals of Petroleum Engineering Certificate to enhance career credentials.
- Develop interdisciplinary skills valuable for roles intersecting engineering, energy, and environmental fields.

How You Will Benefit

- Broaden career opportunities by adding petroleum engineering expertise to an existing professional background.
- Increase competitiveness for jobs in oil and gas, energy transition, and engineering consulting industries.
- Build confidence to pivot into energy-related careers, even without a traditional petroleum engineering degree.

Job Opportunities

Graduates of this certificate program are well-positioned to enter or advance in roles across top employers like Shell, Chevron, ExxonMobil, and Marathon Oil. With Houston serving as a hub for the energy sector, a foundation in petroleum engineering opens opportunities in

- Drilling
- Reservoir management
- Sustainability initiatives
- Consulting

Contact

Anne Sturm

Academic Advisor

Cullen College of Engineering

masturm@uh.edu



uh.edu/energy/programs

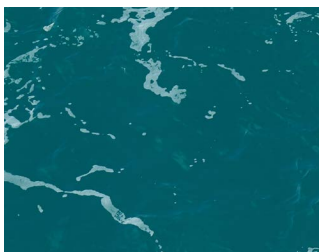
Requirements

Credit hours required for this certificate: 12.0 Credit Hours

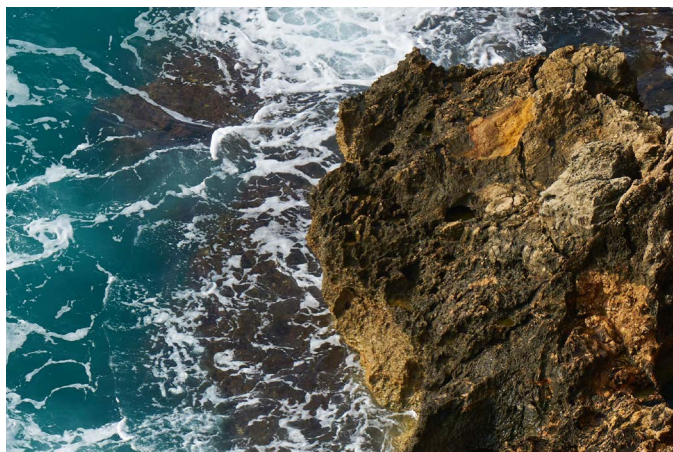
This certificate is intended as a specialized certificate to meet the current demands of the oil industry for professionals.

- **PETR 6328** Petroleum Fluid Property & Phase Equilibrium
- **PETR 6351** Introduction to Petroleum Engineering
- **PETR 6362** Reservoir Engineering I
- **PETR 6364** Origin and Development of Oil and Gas Reservoirs

Graduate



Hydrogeology



The Hydrogeology Certificate is designed for professionals seeking formal recognition of their expertise in hydrogeology without completing a full advanced degree. Offered through the Department of Earth and Atmospheric Sciences, the program provides students with foundational and applied knowledge in hydrogeology, geospatial analysis, and geochemistry. Certification courses are integrated into the department's regular graduate offerings, making them accessible on a rotating basis.

What You'll Achieve

- Develop technical proficiency in geospatial analysis, hydrogeology principles, and geochemical methods.
- Fulfill the coursework required to earn a recognized Hydrogeology Certification.
- Gain hands-on experience through lab-based learning and fieldwork components.

How You Will Benefit

- Broaden career opportunities in environmental consulting, government agencies, and the energy sector.
- Strengthen field, laboratory, and analytical skills essential for hydrogeology and environmental science roles.
- Build a foundation to transition into or advance within the environmental and hydrogeological industries.

Job Opportunities

The Hydrogeology Certificate prepares students for careers in high-demand fields such as environmental consulting, energy, and government research. Employers like the U.S. Geological Survey (USGS), EPA, and leading environmental firms seek professionals with hydrogeology expertise. With hands-on training and formal certification, graduates are positioned to meet the growing need for specialists in

- Groundwater management
- Environmental assessments
- Geoscience applications

Contact

Xun Jiang, Ph.D

Academic Advisor

Department of Earth and
Atmospheric Sciences

xjiang7@uh.edu



uh.edu/energy/programs

Requirements

Core Course Requirements

12.0 Credit Hours

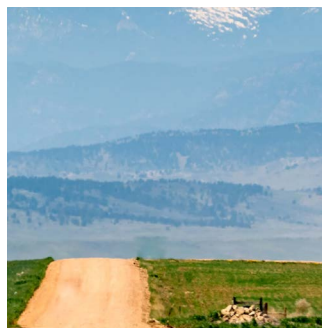
Course substitutions may be allowed on an individual basis, with prior approval from the Hydrogeology Certificate faculty advisor.

- **GEOL 6341** Geochemistry
- **GEOL 6346** Geochemistry of Water-Rock Systems
- **GEOL 6366** Hydrogeology
- **GEOL 6388** Geospatial Analysis and Applications

Elective Course Options

3.0 Credit Hours

- **GEOL 6332** Air Pollution Meteorology
- **GEOL 6335** Atmospheric Numerical Modeling
- **GEOL 6370** Atmospheric Biogeochemistry
- **GEOL 6357** Soils and Paleosols
- Or other approved electives (see certificate advisor for list), with prior approval from the Hydrogeology Certificate faculty advisor.



Energy Finance



The Energy Finance Certificate at C.T. Bauer College offers MBA and MS students a comprehensive understanding of the physical and economic aspects of the energy value chain. Students explore how assets, operations, and financial strategies contribute to value creation in the energy industry. Designed specifically for those seeking a managerial or broader economic perspective on energy businesses, the program integrates real-world applications through electives tied closely to industry practices.

What You'll Achieve

- Develop an in-depth understanding of the energy value chain and the economics behind energy operations.
- Enhance strategic thinking regarding asset management, operations, and financial decision-making in the energy sector.
- Earn an Energy Finance Certificate recognized by leaders across consulting, midstream, trading, and investment firms.

How You Will Benefit

- Strengthen the ability to evaluate energy assets, operations, and investment opportunities from a managerial and economic viewpoint.
- Expand professional networks through access to Bauer's career fairs, energy-focused events, and case competitions.
- Position yourself competitively for leadership roles in consulting, trading, midstream operations, and energy finance.

Job Opportunities

Graduates of the Energy Finance Certificate program are in demand across consulting firms like Deloitte and McKinsey, midstream companies like Kinder Morgan, and top investment firms such as Goldman Sachs and BlackRock. Through partnerships with GEMI and career development activities at Bauer, students are well-prepared to transition into impactful roles within the energy finance sector.

Contact

Greg Bean

Executive Director

Bauer College of Business

gsbean@bauer.uh.edu



uh.edu/energy/programs

Certificate Requirements

Credit hours required for the certificate: 9.0

Complete 9 credit hours from the following:

- | | |
|---|--|
| • FINA 7A30 Advanced Corporate Finance | • FINA 7397 Selected Topics in Finance |
| • FINA 7A33 Mergers & Acquisitions I | ◦ Topic(s): |
| • FINA 7A97 Selected Topics in Finance | ▪ Energy Value Creation |
| ◦ Topic(s): | ▪ Energy Insurance and Risk Management |
| ▪ Strategy for Project Finance | ▪ Future of Value Creation in the O & G Industry |
| ▪ Techniques for Project Finance | |
| ▪ Fixed Income Security Analysis | • ACCT 7397 Selected Topics in Accounting |
| • FINA 7352 Energy Derivatives | ◦ Topic(s): |
| • FINA 7360 International Finance | ▪ Oil and Gas Accounting |

Graduate



Process Safety Engineering

The Graduate Certificate in Process Safety Engineering equips engineers with specialized skills to understand, manage, and implement safety techniques within process and energy-related industries. Developed and taught by oil and gas industry experts and academic leaders, the curriculum emphasizes real-world applications critical to manufacturing, refinery, and downstream operations. Students gain foundational expertise essential for advancing safety and environmental practices across various sectors.

What You'll Achieve

- Complete coursework in Process Safety and Reliability, Systems Safety Engineering, and Human Factors System Design.
- Earn a Graduate Certificate in Process Safety Engineering recognized across the oil, gas, and process industries.
- Build technical expertise to lead safety, risk management, and emergency response initiatives in complex industrial environments.



How You Will Benefit

- Strengthen problem-solving and risk assessment abilities critical to high-stakes engineering fields.
- Learn directly from industry professionals and academic experts at the center of Houston's energy sector.
- Enhance career advancement opportunities in safety engineering and environmental management roles.

Job Opportunities

Graduates of this program are in demand by leading oil and gas companies, engineering consulting firms, and government regulatory agencies. Employers value the technical safety expertise and industry insight gained through the program's specialized courses. Partnerships with companies like Chevron and Shell enhance opportunities for students to stand out in competitive job markets focused on

- Process safety
- Risk management
- Environmental compliance

Contact

Dr. Lawrence Schulze

Associate Professor

Cullen College of Engineering

ljschulz@central.uh.edu



uh.edu/energy/programs

Requirements

Graduation Requirements

In order to meet the graduation requirements for this certificate, students must earn at least a 3.00/4.00 overall GPA

Required Courses

The program will require students to take the following three courses (9 SCH) approved courses:

- **CHEE 6379** Safety and Reliability
- **INDE 6321** System Safety Engineering
- **INDE 6337** Human Factors Syst Dsgn

Energy Investment Analysis

The Energy Finance program at C.T. Bauer College of Business prepares students with specialized financial skills tailored to the energy sector. Combining finance fundamentals with energy-specific coursework, the program gives students a competitive edge in areas like investment analysis, risk management, and capital budgeting for energy projects. Students benefit from direct connections to the Gutierrez Energy Management Institute (GEMI) and access to Houston’s leading energy companies. Graduates are equipped to excel in finance, investment banking, and corporate finance roles within the dynamic energy industry.

What You’ll Achieve

- Gain deep expertise in energy markets, project finance structures, valuation methods, and risk assessment for energy investments.
- Develop advanced financial modeling and investment analysis skills specifically focused on oil, gas, renewables, and power generation sectors.
- Build a unique interdisciplinary foundation combining finance and energy knowledge, positioning themselves for leadership roles in the industry.

How You Will Benefit

- Differentiate themselves in the finance industry with specialized energy-sector expertise.
- Expand professional networks through events, industry panels, and partnerships supported by GEMI.
- Increase employability and career flexibility with internship opportunities and pathways to graduate degrees like the MSF or MBA.

Job Opportunities

Graduates of the Energy Finance program are highly sought after by top energy companies like Shell, ExxonMobil, and Chevron, as well as investment banks and private equity firms specializing in energy investments. Career paths include roles such as

- Energy investment analyst
- Corporate finance analyst
- Commodities trader

Contact

Greg Bean
Executive Director
Bauer College of Business
gsbean@bauer.uh.edu



uh.edu/energy/programs

Requirements

Credit hours required for the certificate: 9.0

Complete 9 credit hours from the following:

- | | | |
|--|--|---|
| <ul style="list-style-type: none">• FINA 7A97 Selected Topics in Finance<ul style="list-style-type: none">◦ Topic(s):<ul style="list-style-type: none">▪ Fixed Income Security Analysis▪ Strategy for Project Finance▪ Techniques for Project Finance | <ul style="list-style-type: none">• FINA 7397 Selected Topics in Finance<ul style="list-style-type: none">◦ Topic(s):<ul style="list-style-type: none">▪ Energy Analysis▪ Financial Risk Management▪ Future of Value Creation in the O & G Industry | <ul style="list-style-type: none">• ACCT 7397 Selected Topics in Accounting<ul style="list-style-type: none">◦ Topic(s):<ul style="list-style-type: none">▪ Oil and Gas Accounting |
| <ul style="list-style-type: none">• FINA 7A30 Advanced Corporate Finance• FINA 7A33 Mergers & Acquisitions I• FINA 7360 International Finance• FINA 7376 Energy Trading | <ul style="list-style-type: none">• Midstream Energy Finance• Energy Value Creation• Electric Power Markets | <ul style="list-style-type: none">• BZAN 7320 Business Modeling For Competitive Advantage |

Energy Risk Management

The Energy Investment Analysis Certificate at C.T. Bauer College of Business prepares students to evaluate energy projects, assess financial risks, and make informed investment decisions within the oil & gas, renewables, and broader energy sectors. Offered through the Bauer College of Business, the program delivers a flexible curriculum designed for working professionals and graduate students seeking energy-specific financial expertise. Students gain practical skills in energy asset valuation, risk management, and financial modeling. Upon completion, graduates are ready to pursue specialized finance roles across a range of energy industries.

What You'll Achieve

- Master financial analysis, modeling, and valuation techniques tailored to energy investments.
- Gain a deep understanding of risk management strategies and market dynamics in the energy sector.
- Develop expertise in evaluating the regulatory, economic, and technological factors influencing energy projects and investments, environments.

How You Will Benefit

- Strengthen their credentials with a specialized certification that enhances career advancement in energy finance.
- Expand professional opportunities by building financial expertise highly valued in energy companies, investment banks, and consulting firms.
- Increase competitiveness for roles in project finance, M&A, private equity, and corporate finance within the global energy sector.

Job Opportunities

Graduates of the Energy Investment Analysis program are in demand across oil and gas giants like ExxonMobil and Shell, renewable energy leaders like NextEra Energy, and top investment banks such as Goldman Sachs and JPMorgan. Career paths include

- Energy financial analyst
- Project finance specialist
- M&A analyst

With the continued evolution of the energy industry toward renewables and sustainable investments, specialized financial skills are increasingly vital and offer graduates a strong competitive advantage.

Contact

Graduate Admissions Office

Bauer College of Business

mba@uh.edu



uh.edu/energy/programs

Requirements

Credit hours required for this certificate: 12.0

Students must complete FINA 7352 plus an additional 9 credit hours from the elective list below for a total of 12 credit hours.

Required:

- **FINA 7352** Energy Derivatives

Elective Options:

- **FINA 7A10** Valuation
- **FINA 7A97** Selected Topics in Finance
 - Topic(s):
 - Fixed Income Security Analysis
- **FINA 7A33** Mergers & Acquisitions I
- **FINA 7371** Energy Value Chain
- **FINA 7350** Derivatives I: Options
- **FINA 7351** Derivatives II: Forwards, Futures and Swaps

- **FINA 7376** Energy Trading

- **FINA 7397** Selected Topics in Finance

- Topic(s):

- Financial Engineering
- Energy Analysis
- Financial Risk Management
- Energy Insurance and Risk Management
- Future of Value Creation in the O & G Industry
- Energy Value Creation

- **MIS 7397** Selected Topics in Management Information Systems

- Topic(s):

- Energy Trading Systems



Global Climate, Energy, and Environment

The Global Climate, Energy, and Environment Certificate equips graduate students and working professionals with the technical and policy knowledge to address critical sustainability challenges. Through an interdisciplinary curriculum blending environmental science, engineering, energy systems, and climate policy, students develop a systems-thinking approach to solving global issues. Leveraging Houston's status as an energy hub, the program connects students with industry leaders, consultancies, and policymakers. It is ideal for those seeking a deeper understanding of the technical and regulatory aspects of climate adaptation and energy transition.

What You'll Achieve

- Gain expertise in climate science, energy system sustainability, and environmental engineering solutions.
- Develop the ability to assess and design strategies for climate mitigation and adaptation.
- Build interdisciplinary skills by integrating engineering principles with climate policy frameworks.

How You Will Benefit

- Strengthen systems-thinking and problem-solving skills for complex climate and energy challenges.
- Broaden professional opportunities in the growing fields of sustainability, climate resilience, and energy transition.
- Enhance technical communication skills by bridging scientific, engineering, and policy domains.

Job Opportunities

As industries worldwide shift toward low-carbon and sustainable practices, there is rising demand for professionals who understand both the technical and policy dimensions of climate and energy issues. Graduates of this program are highly sought after by energy companies, consulting firms, government agencies, and nonprofit organizations driving climate action and sustainability initiatives.



Contact

Civil and Environmental Engineering Graduate Advising

Cullen College of Engineering
ceeegrad@egr.uh.edu



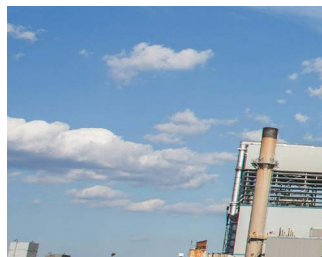
uh.edu/energy/programs

Requirements

Certificate Total: 9.0 Credit Hours

The courses are independent and can be taken in any order.

- **GCEE 6310** Global Climate: Energy, Environment, and Economy
- **GCEE 6320** Global Climate: Physical Models
- **GCEE 6330** Global Climate: Economic Models



Energy Policy



The Energy Policy Graduate Certificate program at Hobby School of Public Affairs equips students with specialized knowledge to analyze and influence energy-related decisions across government, industry, and nonprofit sectors. Focused on energy economics and policy analysis, the program offers a streamlined pathway to earn a credential faster than completing a full master's degree. Students have opportunities to collaborate with faculty on research related to sustainable energy, regulatory frameworks, and climate change. Additionally, credits earned can be applied toward the Master of Public Policy for those pursuing further graduate studies.

What You'll Achieve

- Gain fluency in energy economics, cost-benefit analysis, and the dynamics of energy pricing in policy development.
- Earn a specialized Energy Policy Graduate Certificate that can be applied toward a Master of Public Policy degree.
- Develop the ability to critically analyze and contribute to energy-related decisions in various sectors.

How You Will Benefit

- Build specialized knowledge in energy policy that enhances career advancement opportunities.
- Shorten the time and cost to earn an additional academic credential while gaining real-world policy insight.
- Strengthen research and analytical skills through opportunities to work alongside faculty on energy and climate-related projects.

Job Opportunities

Graduates from the Energy Policy program are well-prepared for careers with major energy corporations like Chevron, Shell, and ExxonMobil, as well as consulting firms such as McKinsey & Co. and Deloitte. Common career paths include:

- Policy analysis
- Regulatory affairs
- Sustainability management
- Energy consulting

With the growing emphasis on sustainable energy and regulatory oversight, this specialized credential positions students at the forefront of an evolving and in-demand industry.

Contact

Scott Mason

Hobby School of Public Affairs

smason@uh.edu



uh.edu/energy/programs

Requirements

Certificate Total: 12.0 Credit Hours

Core Course:

- **POLC 6314** Policy Research Methods I: Introduction to Statistics

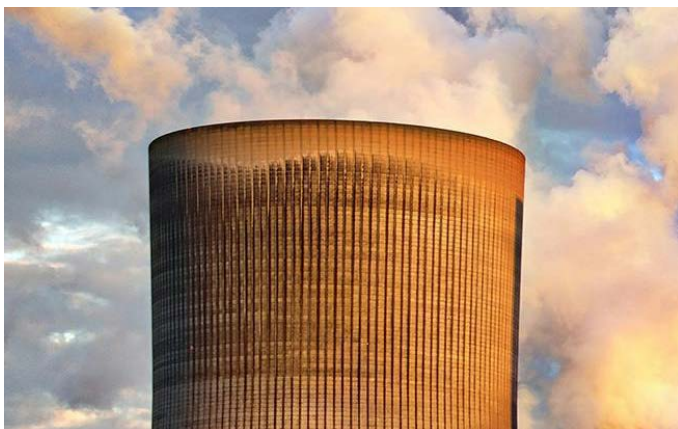
POLC Course Electives (one of the following):

- **POLC 6311** Leadership and Professional Development
- **POLC 6312** Public Finance
- **POLC 6313** Policy Analysis I: Microeconomics
- **POLC 6315** Policy Research Methods II: Multivariate Analysis
- **POLC 6316** Policy Research Methods III: Advanced Quantitative Modeling
- **POLC 6320** Policy Analysis II: Political Analysis
- **POLC 6330** Philosophy and Public Policy I

- **POLC 6331** Philosophy and Public Policy II

Energy-Related Course Electives:

- **ECON 6345** Energy Economics
- **FINA 7352** Energy Derivatives
- **FINA 7371** Energy Value Chain
- **FINA 7372** Upstream Economics
- **FINA 7373** Petrochemical and Refining Economics
- **FINA 7376** Energy Trading
- **LAW 5211** Energy and the Environment
- **LAW 5355** Oil and Gas
- **PETR 6336** Petroleum Energy Markets



Earth and Atmospheric Sciences of Carbon Capture, Utilization, and Storage (CCUS)

The graduate certificate in Earth and Atmospheric Sciences of Carbon Capture, Utilization, and Storage (CCUS) offers critical domain knowledge and skills in geological carbon storage (GCS). GCS is an indispensable component of the decarbonization economy. We target graduate students who want to pursue a career in energy transition. Students need to take three required courses and can finish this certificate program in two semesters. The educational outcomes include learning key concepts and skills in GCS. The professional outcomes may include new internship, employment, and/or career advancement opportunities.



Admissions Requirements

Students seeking this certificate must have:

- Bachelor's degree in science or engineering, or additional course work to make up undergraduate deficiencies may be required.
- Well-qualified candidates in other fields may be approved by this Certificate Program Faculty Advisor.
- Deficiencies will be noted at the time of admission. • A minimum cumulative grade point average (GPA) of 3.00 (A=4.00) is required in the last 60 hours of all course work.
- Transcripts are required
- GRE scores are not required.

Courses used for certification may also count toward the requirements for a graduate degree in the Department of Earth and Atmospheric Sciences, University of Houston.



publications.uh.edu



Certificate Requirements

Credit hours required for this certificate: 9.0

Students need to take 3 required courses:

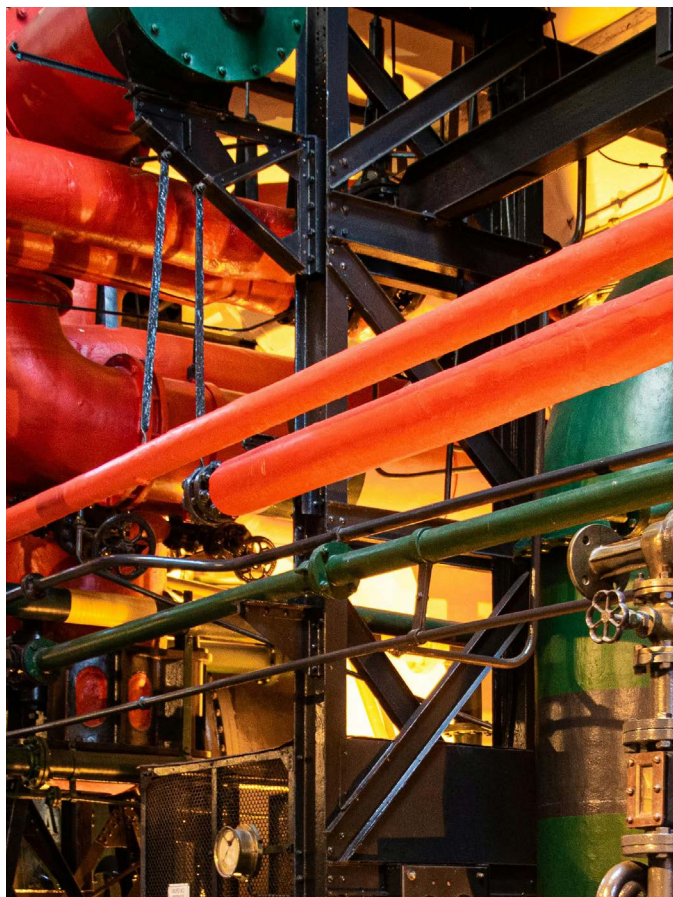
- **GEOL 6397** Introduction of Carbon Capture Utilization & Storage (CCUS)
- **GEOL 6389** - Carbon Sequestration
- **GEOL 6397** Earth and Atmospheric Sciences of Carbon Capture Utilization & Storage (CCUS)

All three courses for the certificate program are required. There are no electives. There is no capstone requirement.



Energy Innovations in Carbon Capture, Utilization, and Storage (CCUS)

The global focus on reducing carbon emissions is driving an increase demand for expertise in CCUS. This certificate will enhance students' and industry professionals' knowledge, preparing them for a rapidly growing sector.



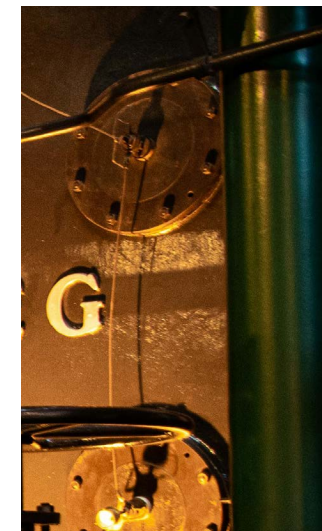
Admissions Requirements

While all prospective applicants may apply, the most successful applicant has undergraduate academic preparation as an engineer. A cumulative GPA of at least a 3.0 on a 4.0 scale of all your undergraduate coursework completed is favored. Work experience is considered a plus for the individual student's overall knowledge base; however, work experience is not a requirement for admission.

Official transcripts and proof of English Language proficiency are required.



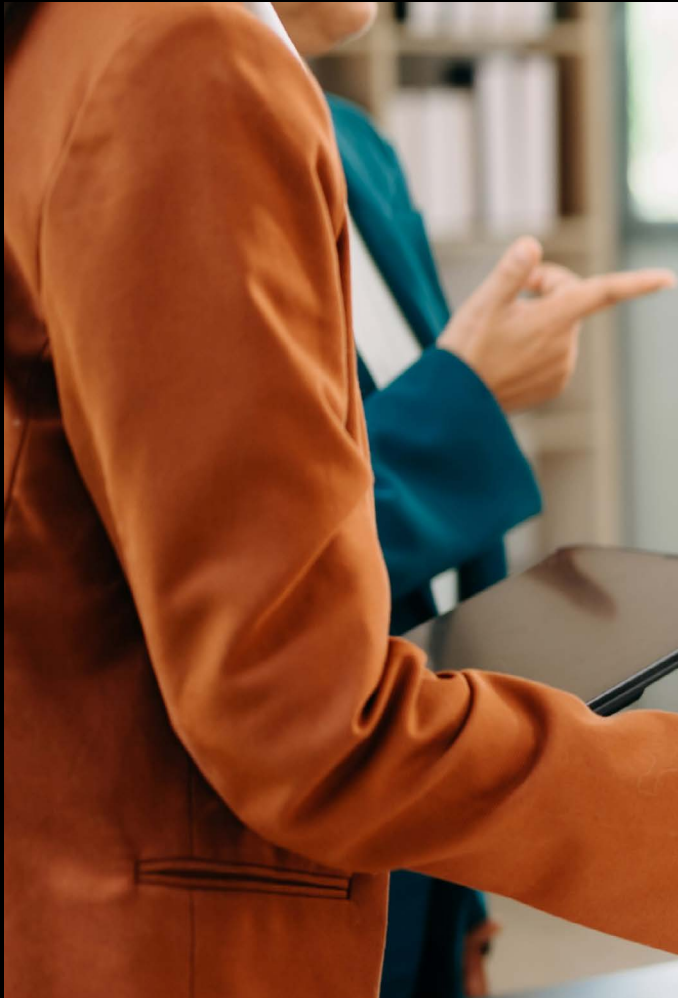
publications.uh.edu



Certificate Requirements

Certificate students must complete 12 hours of the assigned coursework with a 3.0/4.0 GPA. Students must be enrolled in the semester in which they seek graduation.

- PETR 6341 - Introduction to Carbon Capture, Utilization and Storage Credit Hours: 3.0
- PETR 6342 - Carbon Capture Utilization and Sequestration Credit Hours: 3.0
- PETR 6343 - CO2 EOR and Sequestration Credit Hours: 3.0
- PETR 6344 - Subsurface Energy Storage Credit Hours: 3.0



Micro-Credentialing Programs by UH Energy

Decarbonization and the energy transition require many workers in the incumbent energy industry to transform their knowledge base and skills. Upskilling and reskilling programs that address the skills gap and offer opportunities for continued education are critical for workforce development and social equity. As The Energy University, UH is committed to

shepherding an efficient and innovative energy transition, and to that end has designed micro-credentialing courses for rising seniors in related fields and/or energy-industry professionals with the mission to upskill, reskill and prepare these individuals to address the myriad of global energy challenges facing society today and tomorrow.

Programs and Credentials

Sustainability Credentials

- Sustainable Energy Development Program
- Carbon Capture Utilization and Storage (CCUS)
- Operational Risk Management in Offshore Energy
- Plastics Circular Economy
- The Hydrogen Economy
- Managing Non-Technical Risks in Energy

Electrical Engineering Credential

- Electrification in Energy

Chemical Engineering Credential

- Advances of Elastomers: Science and Technology

Robotics Credentials

- Automation and Autonomy of Mobile Robots using ROS
- AI & Robotics for Energy Integrity



uh.edu/energy/programs

Sustainable Energy Development Program

UH Energy is pleased to announce the new asynchronous version of the Sustainable Energy Development Energy Value Chain Bronze Badge. We are offering this unique introductory program in collaboration with the Bauer College of Business. This program provides a high-level perspective on both today's energy value chain and the evolving energy transition.

Why this Credential?

The world is changing faster than at any time in history – especially in the world of energy. Society today has 3 fundamental expectations for our energy future: It must be affordable, accessible & reliable, and environmentally responsible. These requirements make up the Energy Trilemma. Advancing solutions that simultaneously satisfy all elements of this trilemma are the foundation and essence of Sustainable Energy Development.

Who Should Enroll?

To meet this challenge, and in response to the needs identified by key leaders in energy, UH Energy developed the Sustainable Energy Development Program in 2020. It is an interactive online program, to equip you – the rising energy professional – with skills, knowledge and expertise to tackle the Energy Trilemma.

What You Will Earn

Sustainable Energy Development Energy Value Chain Bronze Badge. The earned badges are a permanent addition to your skillset and resume. After successfully completing the program, you can incorporate micro-credential badges from UH into your LinkedIn profile and resume.

Overview

Duration: 6 weeks

Format: Online

Schedule

The program is available online, and you have up to 6 weeks to complete 8 study modules, at your own pace and on your own schedule. Weekly “office hours” are available for real-time discussion of the course materials and questions. Program topics include energy measurements, energy transition, energy efficiency, electricity generation, recycling, industrial energy use, transportation fuels, transnational comparisons, public policy, and government incentives.



Carbon Capture Utilization and Storage (CCUS)

UH offers an online executive education program that examines the global market framework, technology, economics, policies, opportunities, and challenges of Carbon Capture Utilization and Storage (CCUS). The UH Energy's CCUS program is taught by world recognized experts from the energy industry.

Why this Credential?

The energy transition poses significant challenges to our society and way of life and requires three fundamentals for energy sustainability:

- accessible and reliable supply and access,
- affordable and globally cost-competitive supply and consumption, and
- environmentally and socially responsible supply and consumption.

CCUS is a fundamental requirement for successful de-carbonization and is recognized as such by the International Energy Agency and the US Department of Energy. The broad commercial deployment of CCUS will impact industries such as oil and gas, petrochemicals, electric power, cement and manufacturing as well as hydrogen, and the circular plastics economy.

Who Should Enroll?

The following are eligible for this program:

- Industry Professionals
- Graduate students and students with senior status in bachelor's programs (subject to availability of seats).

What You Will Earn

Instruction for the CCUS badge consists of 20-hour online learning sessions with self-paced learning modules and live meetings. Micro-credential badges are awarded after successful completion of the program. The earned badges are a permanent addition to your skillset and resume. After successfully completing the program, you can incorporate micro-credential badges from UH into your LinkedIn profile and resume.

Overview

Duration: 12 weeks

Format: A self-paced online course with 9 learning modules, 3-4 live Zoom meetings, and in-person networking opportunities.

Instructors

Dr. Ramanan Krishnamoorti

Vice President, Energy and Innovation
University of Houston

Clint Wood

Partner, Co-Leader CCUS Service Line
McKinsey & Company

Mike Nasi

Partner
Jackson Walker LLP
Counsel
Southern States Energy Board

Jane Stricker

Senior Vice President, Energy Transition & Executive Director, Houston Energy, Transition Initiative
The Greater Houston Partnership

Cindy Yeilding

Senior Vice President, BP (retired), Board of Directors: *Denbury, Center for Houston's Future*

Nigel Jenvey

Vice President of Energy Transition Project Development
Baker Hughes

Charles McConnell

Executive Director, UH Center for Carbon Management in Energy
University of Houston

Josie Long

Senior Pipeline Consultant
Process Performance Improvement Consulting

Jonathan Wiens

Chief Executive Officer
Low Carbon Infra (Warwick Carbon Solutions)

Scott Nyquist

Special Advisor, Senior Partner Emeritus
McKinsey & Company

Greg Santoni

Partner, Co-Leader CCUS Service Line
McKinsey & Company

Dr. Ganesh Thakur

Professor, Cullen College of Engineering
University of Houston

Erin Billeri

Business Development Manager, Americas
Global CCS Institute

Testimonials

"I really enjoyed the opportunity to participate in this class. . . This class helped me better understand the marketplace and considerations that go into these investments. Impressive set of experts across the industry. Very helpful to not only hear about their expertise - but engaging conversation around the CCUS environment."

Katie Wright

DDC Public Affairs, Senior Vice President

"I found the instructors to be highly knowledgeable, and I gained valuable insights from the information they shared. Given that this subject is evolving, I'm excited to continue learning and staying updated on the latest developments. Thanks for the knowledge shared. It was a pleasure to participate in this program!"

Mariella Infante

Ryder Scott, Senior Petroleum Engineer

"This is a great course. I cannot express enough how impressed I am with the quality of the teachers, the organization of the class, and in how much the course aided me in my own field. Thank you all for your assistance and willingness to provide this course. I hope this and others like it continue for the foreseeable future."

Alex Breeden

Project Canary, Senior Business Analyst

"I am very interested in the subject of CCUS. I think the course is quite amazing. The presenters, to a person, are excellent and the material is thorough, understandable and form a firm foundation of knowledge for anyone who has an interest in CCUS and who has a concern for the future of the planet."

Gregory Miller

uh.edu/energy/programs

Curriculum

A self-paced online course with 9 learning modules and 4 live Zoom meetings to interact with the instructors and peers. The live meetings start at 6 p.m. (CST). It will also include in-person networking opportunities.

Plastics Circular Economy

Effective plastic recycling and circularity require precise material identification and characterization. This course covers key plastic types, additives, and waste classification techniques using spectroscopy, AI, and machine learning. Learn industry-standard methods for sorting and analyzing plastic waste, including marine plastics and microplastics, with hands-on demonstrations of real-world applications.

Why this Credential?

The circular plastics economy requires skilled workforce who understand details of plastics components, production and processing, classifications, and how to identify and quantify waste plastic compositions. This course will briefly introduce a systems level approach to plastic circularity, including interconnected systems of supply chain and resource flows, government, policy, regulatory frameworks, marketplace, infrastructure, and user practices. It will also discuss the major plastic types and their properties, how they are produced and handled, the major industry producers and their geographical locations, and plastic formulations and roles of additives.

The majority of this course will focus on characterization techniques required for identification of plastic compositions, additives, contaminants, such as infrared, near-infrared, ultra-violet, Raman, laser-induced breakdown, and nuclear magnetic resonance (NMR) spectroscopies; hyperspectral imaging; mass spectrometry; and density, and evolving standards for waste identification. The role of artificial intelligence (AI) and machine learning (ML) in plastic sortation will also be discussed through case studies. We will also include collection (and tracking), identification, and characterization of marine plastics and microplastics. This course will include hands-on demonstrations of characterization techniques, such as chemical spectroscopy and hyperspectral imaging.

Who Should Enroll?

This course is appropriate for:

- Scientists/engineers/technicians from the chemical, materials, and waste management industries who wish to increase their knowledge of the plastics circular economy
- Have a B.S. degree in science/engineering/technology (or higher).

What You Will Earn

Instruction for each badge consists of 15-hour online learning sessions with lectures and group discussions. Micro-credential badges are awarded for every module, five in total, for the Workforce Training Program in Circular Plastics. The earned badges are a permanent addition to your skillset and resume. After successfully completing the program, you can incorporate micro-credential badges from UH into your LinkedIn profile and resume.

Overview

Duration: 15 hours/6 weeks per badge

Format: Online recorded lectures, Optional in-person activities and virtual alternatives.

Curriculum

Badge 1: Introduction to Plastics Circular Economy

Learning Objectives: To understand basic principles of current plastic recycling processes; the circular economy and how this differs from a linear economy; how waste is currently processed by materials recovery facilities; current uses of recycled plastics; impacts of plastic waste (water, soil); how the current policy and regulatory framework impacts recycling efficacy; and basic ideas on life cycle and technoeconomic analyses as applied to plastics and recycling.

Badge 2: Polymer Taxonomy and Recovered Material Identification

Learning Objectives: To understand how polymers are classified and produced (and connection to their intended use), and how they can be identified in sorting and separation processes used in materials recovery and recycling facilities.

Badge 3: Measurements and Characterization Tools for Circular Plastics

Learning Objectives: To understand different types and forms of plastics and how this governs their usage. To understand essential physical properties of plastics (e.g., thermal, mechanical, rheological, structure/morphology) and how these properties enable their use and impact their recycling efficacy. To understand characterization tools used for exploring these properties.



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Badge 4: New Frontier of Polymer Recycling and Reuse

Learning Objectives: To understand the next frontier of recycling and methods that go beyond traditional mechanical recycling practices.

Badge 5: Valuation, Life Cycle Analysis, and Technoeconomic Analysis

Learning Objectives: To understand valuation principles and business models that govern the use of waste plastics in products, and to understand life cycle and technoeconomic assessments that govern the environmental impact of plastics and their recycling processes.

Instructors

Megan Robertson, Ph.D.

Professor, Chemical Engineering,
University of Houston

Gail Buttorff, Ph.D.

Research Associate Professor, Hobby School of Public Affairs, Associate Director, Center for Public Policy,
University of Houston

Meng Li, Ph.D.

Professor, Founding Director, Bauer Human-Centered AI Institute,
University of Houston

Mary Ellen Ternes, B.E (ChE), J.D.

Partner
Earth & Water Law, LLC

Jenny Oakley, Ph.D.

Senior Water Resources Scientist,
Houston-Galveston Area Council

Debalina Sengupta, Ph.D.

Assistant Vice President, Chief Operating Officer, Energy Transition Institute,
University of Houston

Sribala Gorugantu, Ph.D.

Assistant Professor, Chemical Engineering,
University of Houston

Stacey Louie, Ph.D.

Associate Professor, Civil and Environmental Engineering,
University of Houston

Jagos Radovic, Ph.D.

Research Associate Professor, Director of Center for Petroleum Geochemistry (UH-CPG),
University of Houston

Kalyan Sehanobish, Ph.D.

Director,
Materials & Adhesives Research Services (MARS)

Joe Powell, Ph.D.

Aspire Shell Endowed Chair and Executive Director for Energy Transition Institute, Professor, Department of Chemical and Biomolecular Engineering,
University of Houston

Tracy Hester, J.D.

Instructional Professor of Law, Co-Director, Environment, Energy and Natural Resources Law Center, Founding Co-Director, CCME,
University of Houston

Pablo Pinto, Ph.D.

Distinguished Professor, Hobby School of Public Affairs, Director, Center for Public Policy,
University of Houston

Scott Coye-Huhn

Vice President, Energy, Biomaterials & Circularity,
SCS Global Services

Anil Bhowmick, Ph.D.

Research Professor, Rubber Science and Technology,
University of Houston

Alamgir Karim, Ph.D.

Dow Chair and Welch Foundation Professor, Director, International Polymer & Soft Matter Center,
University of Houston

Scott Trenor, Ph.D.

Technical Director,
The Association of Plastic Recyclers (APR)

Justin Bower

Director, Community & Environmental Planning,
Houston-Galveston Area Council

Operational Risk Management in Offshore Energy

The Operational Risk Management in Offshore Energy micro-credential examines how risk is created, shaped, and managed across the full life cycle of offshore oil and gas assets. Rather than treating risk as a narrowly technical or procedural issue, this program approaches risk as a dynamic and systemic condition influenced by operational pressures, organizational decisions, governance structures, human factors, and leadership choices. Participants explore how risk accumulates over time, from early design and planning through operations, intervention, late-life asset management, and the transition toward decommissioning. Through instructor-led modules, live industry SME roundtables, case-based learning, and a capstone project, participants develop practical insight into how local operational decisions connect to broader systemic vulnerabilities.

Why this Credential?

Offshore risk is rarely the result of a single failure. Major incidents and near-misses are often the product of cumulative technical, organizational, and leadership decisions made over time. This micro-credential is designed to help professionals move beyond compliance-focused thinking toward a deeper understanding of how systemic risk develops and persists. This credential enables participants to:

- Recognize how operational pressures and organizational drift increase exposure
- Understand the limitations of barriers, controls, and SEMS when governance and leadership are weak
- Identify inherited risk conditions in aging and late-life assets
- Strengthen decision-making across on-scene operations and senior leadership contexts
- Apply lessons from major offshore incidents to current-day practice

The result is a stronger, more integrated approach to operational risk management that supports safer, more resilient offshore operations.

Who Should Enroll?

This program is intended for professionals involved in offshore operational decision-making, including:

- Offshore Installation Managers (OIMs)
- Drilling, completions, and production personnel
- Operations and asset integrity leaders
- HSE and process safety professionals
- Marine, logistics, and maintenance personnel
- Engineers and reliability professionals
- Contractor and service company leaders
- Regulators and oversight professionals

The course is especially valuable for those working from on-scene management through senior leadership, as well as professionals who need to understand how technical, organizational, and governance factors intersect in real offshore environments. Curriculum The program consists of 12 weeks and includes instructor-led content, live SME engagement, and a capstone project.

What You Will Earn

Instruction for the Operational Risk Management in Offshore Energy badge consists of self-paced learning modules and live meetings. Digital badges are awarded after successful completion of the program. The earned badges are a permanent addition to your skillset and resume. After successfully completing the program, you can incorporate micro-credential badges from UH into your LinkedIn profile and resume.



Overview

Duration: 12 weeks

Format: Online



Curriculum

Core Topics Include:

- Introduction to Operational Risk Management in Offshore Energy
- Risk Across the Lifetime of an Offshore Asset
- Operational Pressure, Work Complexity, and Organizational Drift
- SEMS, Governance, and Organizational Accountability
- Barriers, Controls, and Critical Risk Management
- Human Factors, Leadership, and Contractor Interfaces
- Major Offshore Incident Case Integration
- Late-Life Operations and Decommissioning Risk

Live Engagement:

- Four live SME Roundtables, featuring industry, regulatory, and academic experts
- Capstone integration session and final team presentation
- Real-world discussion connecting theory to offshore practice

Capstone Project:

- The program concludes with a capstone project in which participants apply course concepts to a realistic offshore risk scenario, integrating operational and systemic risk factors into a structured assessment and presentation.

Instructors

Jim Pettigrew

Senior Director
JNT83

S. Camille Peres, Ph.D.

Certified Human Factors
Professional
*Nuclear Regulatory
Commission (NRC)*

Faisal Khan, Ph.D.

Mike O'Connor Chair II Professor
and Department Head of
Chemical Engineering
Texas A&M University



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Clint Boman, CSP

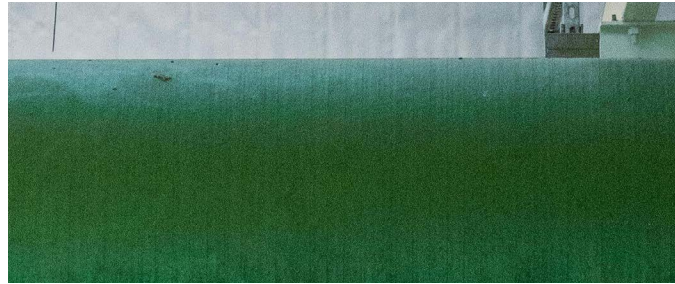
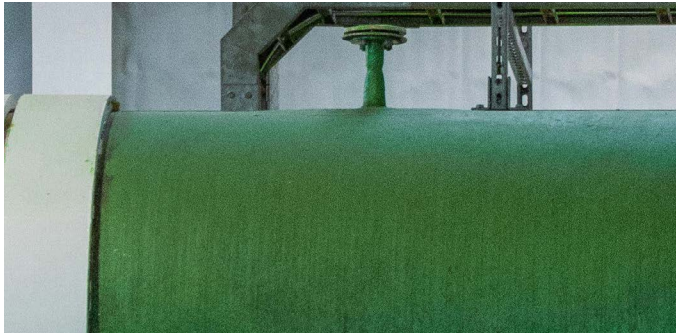
Senior Vice President of HSE
*Gulf of America
decommissioning company*

Mick Will

Consulting Engineer, Registered
Safety and Environmental
Management Systems (SEMS)
Auditor

Alton Payne, JD, Ph.D.

Professor, International Business
Law & Logistics, Houston
City College (Chief Standards
Development, BSEE-DOI)



CO₂ Enhanced Oil Recovery (EOR)

This program provides a comprehensive introduction to global oil market and energy flow, with a strong emphasis on CO₂ Enhanced Oil Recovery (EOR) and the business landscape shaping the future of low-carbon energy systems. Participants will explore global energy and EOR landscape, understand the fundamentals of EOR processes, examine emerging opportunities and challenges from business standpoints, and gain insights into the legal and regulatory frameworks shaping the industry.

Why this Credential?

This credential provides a clear, business-focused understanding of CO₂-Enhanced Oil Recovery (EOR) within today's evolving energy and CCUS landscape. Learners explore global oil markets and energy flows, fundamentals of CO₂-EOR processes, economic viability, and project cash-flow modeling. The program also examines the legal and regulatory frameworks shaping CO₂-EOR, along with the investment risks, market drivers, value-chain economics, and long-term operational considerations that influence project success. Through expert-led modules and real-world cases, participants gain the knowledge needed to evaluate, design, and advance CO₂-EOR projects with confidence.

Who Should Enroll?

This program is designed for general managers, directors, and mid-level professionals across the energy industry seeking to deepen their practical understanding of CO₂ Enhanced Oil Recovery (EOR) and its evolving role within CCUS value chains. It is particularly well-suited for senior professionals responsible for strategic planning, asset development, commercial decision-making, or technology deployment who want actionable insights into EOR fundamentals, project economics, regulatory drivers, and emerging business models. Participants will gain the technical grounding and global business perspective needed to evaluate opportunities, guide organizational strategy, and engage confidently in conversations around CO₂ EOR and low-carbon business growth.

What You Will Earn

Instruction for the CO₂-EOR badge consists of 20-hour online learning sessions with self-paced learning modules and live meetings. Micro-credential badges are awarded after successful completion of the program. The earned badges are a permanent addition to your skillset and resume. After successfully completing the program, you can incorporate micro-credential badges from UH into your LinkedIn profile and resume.

Overview

Duration: 12 Weeks

Format: Online

Curriculum

Self-paced online course with 9 learning modules and 4 live Zoom meetings (6 p.m. CST), plus optional in-person networking opportunities.

Instructors

Dr. Ramanan Krishnamoorti

Vice President, Energy and Innovation
University of Houston

Mike Nasi

Partner
Jackson Walker LLP
Counsel
Southern States Energy Board

Cindy Yeilding

Senior Vice President, BP
(retired), Board of Directors:
Denbury, Center for Houston's Future

Greg Bean

Executive Director, Gutierrez
Energy Management
Institute at Bauer College of
Business
University of Houston

Charles McConnell

Executive Director, UH Center for
Carbon Management in Energy
University of Houston

Steve Melzer

Founder CO₂ & ROZ Specialist
Melzer Consulting
Consulting Engineer
Enhanced Oil Recovery Institute

Frederick Eames

Partner
Hunton Andrews Kurth LLP

Qaraman Hasan

Research Scholar
University of Houston Law Center

Scott Nyquist

Special Advisor, Senior Partner
Emeritus
McKinsey & Company

Govind Hegde

Energy Transition Team Lead
America
Wood

Dr. Ganesh Thakur

Professor, Cullen College of
Engineering
University of Houston

Luciano Di Fiori

Partner
Co-Leader Energy Solutions
McKinsey & Company

Srinivasan KV

Senior Operations Manager
Wood

Victor Sharma

Postdoctoral Researcher
University of Houston



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The Hydrogen Economy

With the energy industry going through dynamic transition, energy professionals – current and future – need to be informed and equipped to meet challenges of today and tomorrow. The Hydrogen Economy is an essential program that provides key insights about this key component of the evolving global energy system. Designed and presented by industry leaders and accomplished faculty from the University of Houston, the program offers a unique balance of industrial expertise and academic rigor.

The Hydrogen Economy is offered jointly by the University of Houston and the American Institute of Chemical Engineers. Successful candidates will receive digital badges from UH Energy and certificates from AIChE for each of the three course modules.

Why this Credential?

The energy transition is in progress, and the world is grappling with the energy trilemma: How can we supply energy that is affordable, secure and reliable, and environmentally responsible, for everyone? There is no single solution to this formidable challenge. But hydrogen is a key component of the most credible sustainable energy scenarios, with significant growth projected for the global energy system over the next 30 - 50 years.

Hydrogen is currently used heavily in the process industries, and it is seen as a significant future replacement option for the fossil fuels that are now used in power generation, transportation, and industry. However, most hydrogen today is produced from fossil energy sources. It will need to be decarbonized if it is to take its place as a dominant player in sustainable energy.

Our interactive, online educational program shares insights into the technology, economics, policy, and business drivers and barriers for hydrogen, both in the short term and in the long term. It examines hydrogen's production, transportation, safety, use, and commercial opportunities, and considers both onshore and offshore applications. It also includes real time review meetings

with instructors, and a capstone project to consolidate the learnings, to better equip students with skills, knowledge and expertise to thrive in the hydrogen economy.

Up to 10-fold growth in hydrogen demand is projected if adopted as an energy vector to decarbonize heavy duty transportation and other difficult-to-decarbonize industry sectors.

After successfully completing this program, participants will be able to understand:

- Key characteristics and drivers for hydrogen as the decarbonization fuel of choice
- Fundamentals for the existing hydrogen market, and how it is poised to change
- Policy and strategy: Critical factors in building The Hydrogen Economy
- Hydrogen as a means for transporting and storing renewable energy
- Current and emerging options for producing hydrogen, including offshore options
- Basics of hydrogen safety
- Technical options for storing and transporting hydrogen, including decision factors
- Fuel cells and their roles in transportation, in the electric grid, and in domestic and commercial power supply
- Hydrogen fueled vehicles – from forklifts, trains and ships to aircraft
- Hydrogen as a fuel to decarbonize industry
- Trade-offs for use of hydrogen vs. electrification vs. advanced renewable hydrocarbon fuels as vectors for decarbonization

Who Should Enroll?

The Hydrogen Economy Program caters to two distinct groups:

- **Industry Professionals:** Those already in the energy industries are seeing significant changes almost daily. The Hydrogen Economy Program provides new information, new insights, and new skills for professionals to help them manage new demands and be a valuable part of the energy transition.
- **For Future Energy Professionals:** This program is ideal for students preparing themselves for a successful energy career and professional life. The Hydrogen Economy Program provides a unique perspective and skillset, giving students a competitive edge, understanding, and competence as they enter the energy marketplace.

What You Will Earn

Digital badges are awarded for each module, and a set of three badges earns a “Silver Belt” from UH Energy. Successful students will also receive a certificate of completion from AIChE. The badges and belts provide a permanent record, endorsed by UH Energy and the University of Houston, that can be made a part of your resume to credential your new skills.

Overview

Duration: Each badge takes 15 hours to complete over 3 weeks - 3 badges in total.

Format: Online

Instructors

Dr. Ramanan Krishnamoorti
Vice President, Energy and Innovation
University of Houston

Greg Bean
Executive Director of the Gutierrez Energy Management Institute, Bauer College of Business
University of Houston

Dr. Birol Dindoruk
American Association of Drilling Engineers Endowed Professor
University of Houston

Dr. Ram Seetharam
Energy Center Officer
Hydrogen Program Lead
University of Houston

Brian Maxwell
Founder and CEO
Green Hydrogen International

Dr. Olga Marina
Leader
High Temperature Steam Electrolysis

Paul Munsterman
Director of Business Development, large projects
Linde

Charles McConnell
Executive Director, UH Center for Carbon Management in Energy
University of Houston

Dr. Joe Powell
Founding Executive Director, Energy Transition Institute,
University of Houston

Nigel Jenvey
Vice President of Energy Transition Project Development
Baker Hughes

Andy Steinhubl
Chairman of the Board
Center for Houston's Future (CFH)

Tim Cortes
Chief Technology Officer
Plug

Dr. Katherine (Kathy) Ayers
Vice President of R&D
Nel Hydrogen US



Testimonials

"I'm so happy to have completed the Hydrogen Economy Silver Belt Program at the University of Houston."

Daniela Ismail
EIT, MBA – Zero Emission Business Development Manager/Women in Hydrogen 50

"Completed Badge 1 on Hydrogen Production - highly recommend this micro-credential course at UH Energy."

Ram Seetharam
Energy Center Officer & Hydrogen Lead at University of Houston

"Thank you to UH Energy for presenting the Hydrogen Economy program for those of us wanting more than a superficial view of the potential role of hydrogen in the energy transition."

Kay McCall
Board member and advisor

"Excellent program from UH, outstanding instructors and guest speakers."

Ricardo Chona
Business Development Manager



uh.edu/energy/programs

Curriculum

This micro-credentialing program delivers a multi-disciplinary understanding of challenges and solutions involved in developing a viable hydrogen economy. It is taught by world-class instructors, including leaders from industry and the marketplace and accomplished faculty from the University of Houston, the Energy University, in the Energy Capital of the World. The Hydrogen Economy is a part of UH Energy's Sustainable Energy Development portfolio.

The program is offered in 15-hour modules, each module taking place over a three-week period. This program provides a deeper look at hydrogen – one of the most promising vehicles for decarbonizing the global energy system. The three badges explore:

- **Badge 1:** Hydrogen Production
- **Badge 2:** Hydrogen Transportation, Safety and Use
- **Badge 3:** Commercial Opportunity for Hydrogen

A capstone project is included, to consolidate the multidisciplinary learnings of this exciting new program.

Managing Non-Technical Risks in Energy

The energy industry is at a crossroads navigating the growing global demand for affordable energy while facing mounting pressure to operate sustainably and responsibly. Beyond engineering and technology, companies are being evaluated on how they manage complex non-technical risks from stakeholder engagement and community impacts to environmental and regulatory challenges. This three-badge micro-credential program equips professionals with the tools, strategies, and real-world insights needed to lead confidently in today's evolving energy landscape.

Why this Credential?

The energy industry is navigating an era of complex transitions, from evolving stakeholder expectations and social license to operate, to increasing regulatory scrutiny, climate impacts, and geopolitical uncertainty. These developments have intensified the need for energy companies to proactively manage a range of non-technical risks, risks that are often outside traditional engineering or operational scopes but have significant implications for project success and long-term resilience.

To meet this need, UH Energy, in collaboration with the Society of Petroleum Engineers (SPE)– Asset Management Technical Section (AMTS), offers the Managing Non-Technical Risks in Energy program. This upskilling professional development opportunity is designed to equip energy professionals with practical tools, skills, and frameworks to navigate today's risk environment. Whether you're new to non-technical risk management or seeking to strengthen your organization's approach, this program provides the insight and structure needed to integrate social, environmental, reputational, and stakeholder risks into enterprise-wide risk strategies.

The program is delivered through a modular badging system, which is flexible, skills-based micro-credentials designed for working professionals.

Each badge includes:

- Two instructional modules
- Five virtual learning sessions (1.5 hours) per module
- One real-time group engagement session (2 hours) per module
- Interactive case studies and applied learning experiences

Participants must complete assessments and meet performance standards to earn each badge. Badges can be taken individually or as part of a 3-badge series that forms a comprehensive development pathway in managing non-technical risks.

By the end of the program, you'll be able to:

- Define and categorize key non-technical risks in energy operations
- Apply frameworks to assess environmental and social impacts, risks, and opportunities
- Design stakeholder engagement plans that reflect community expectations
- Identify emerging risks, such as climate and reputational risks
- Strengthen alignment with permitting, compliance, and governance requirements

Who Should Enroll?

The Managing Non-Technical Risks in Energy Program caters to two distinct groups:

- **Industry Professionals:** Applicants from within the energy sector, who may have roles in defining and managing Non-Technical Risks, in functions including C-Suite and Senior Management, Operations, Project Management, Supply Chain, Public and Government Affairs, Sustainability, Health Safety Environment (HSE), Communications, Investor Relations, Community Relations, and other consulting-type roles.
- **Aspiring Energy Industry Professionals:** Anyone who aspires to work in the energy industry or is already in working to develop and build skills and competencies in Non-Technical Risk Management.

What You Will Earn

Micro-credential badges are awarded for every two modules, three in total, for the Managing Non-Technical Risks in Energy Program. The earned badges are a permanent addition to your skillset and resume. After successfully completing the program, you can incorporate micro-credential badges from UH into your LinkedIn profile and resume.

Overview

Duration: 8 weeks per badge

Format: Online, Asynchronous

Instructors

Carolina Ortega

Vice President, Sustainability
and Communications
Milestone Environmental Services

Amy Mifflin

Principal Consultant & Partner
Sustrio Inc.

Krish (Ravi) Ravishankar

Senior Director, ESG Analytics
& Reporting, Sustainability,
Worldwide Environmental Affairs
Occidental Oil & Gas Corporation
(OXY)

Chris Angelides

Honorary Consul of The
Republic of Cyprus to Texas,
Managing Director
Ernst & Young LLP
Adjunct Professor
University of Houston

Suryanarayanan

Radhakrishnan, Ph.D.
Managing Director of UH
Energy, Professor of Practice
Retired, Bauer College of
Business,
University of Houston

Marie Merle Caekebeke

Sustainability Executive -
Strategic Engagement
Baker Hughes



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Curriculum

Badge 1: Managing Environmental and Social Risks and Impacts

Module 1: Foundations of Environmental & Social Risk and Impact Management

- Understand foundational principles of environmental and social risk
- Explore how non-technical risks impact business performance, permitting, and public trust
- Examine the role of ethics, accountability, and governance in managing risk

Module 2: Environmental Risks, Impacts, and Opportunity Paths

- Analyze how environmental and social risks affect financial outcomes
- Evaluate risk and impact pathways that influence investment and project decisions
- Identify opportunities for value creation through proactive non-technical risk management

Badge 2: Frameworks, Standards, and Implementation

Module 1: Reporting Frameworks & Standards

- Understand major global standards (e.g., GRI, TCFD, SASB, CSRD) and their relevance to energy
- Examine how regulatory trends are shaping reporting and disclosure expectations
- Build practical skills in aligning risk data with frameworks and communicating performance

Module 2: Operationalizing Non-Technical Risk Management

- Apply risk frameworks to internal operations, planning, and decision-making
- Integrate non-technical risk into enterprise risk management (ERM) systems and KPIs
- Design stakeholder engagement strategies aligned with material risks and project phases

Badge 3: Advanced Applications

Module 1: Non-Technical Risk Management & Supply Chain Management

- Apply non-technical risk strategies to supply chain and contractor management
- Identify and address non-technical risks and sustainability risks across tiers of suppliers
- Analyze real-world case studies to build supply chain resilience and traceability

Module 2: Future Trends, Challenges, and Opportunities

- Explore emerging trends such as climate risk disclosure, digital tools, and regulatory shifts
- Assess future challenges in energy transition, reputation, and global stakeholder expectations
- Build strategic foresight for leading non-technical risk management in evolving business contexts



Electrification in Energy

UH Energy and the Subsea Systems Institute are proud to offer this 3-badge program, which introduces essential electrical engineering concepts for electrification in the energy industry. The program is designed to meet the growing demand for the development, maintenance, and safety inspection of energy production, transportation, and delivery systems.

Why this Credential?

UH Energy and the Subsea Systems Institute are proud to offer this program designed to introduce and deepen understanding of electrical engineering principles critical to electrification of the energy industry. Electrification plays a vital role in enhancing the efficiency, reliability, and environmental performance of energy systems across the value chain—from production and processing to transportation and end-use delivery.

This program responds directly to the increasing need for skilled professionals who can develop, operate, and maintain electrically powered infrastructure and ensure its safety and resilience. Participants will gain foundational and applied knowledge that supports the design, integration, and inspection of electrified systems within both traditional and emerging energy platforms, including offshore and subsea environments. By bridging engineering theory with real-world applications, the program prepares attendees to contribute meaningfully to the future of energy.



Instruction for each badge consists of six modules, with each module taking 1-2 hours to complete, over six weeks. Badges do not have to be completed in order.

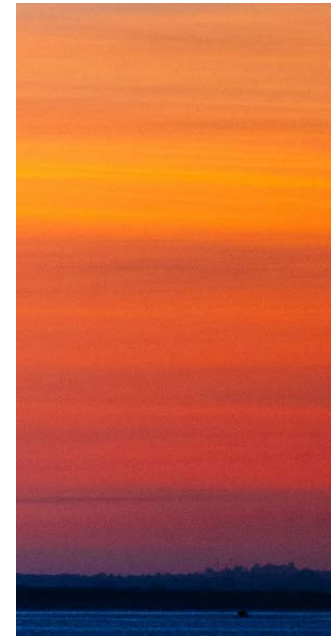
Who Should Enroll?

The Electrification in Energy Program is designed for the following groups:

- **Managers** who want a better understanding of electrical engineering to make decisions related to energy systems.
- **Technicians and maintenance personnel** who are involved in the day-to-day operation of energy systems.
- **Energy industry personnel** who want to extend their system capability by understanding more about electrical engineering.

What You Will Earn

Micro-credential badges are awarded every six modules, three in total, for the Electrification in Energy Program. Badges do not need to be completed in order. The earned badges are a permanent addition to your skill set and resume. After successfully completing the program, you can incorporate micro-credential badges from UH into your LinkedIn profile and resume.



Overview

Duration: Each badge consists of 6 modules, with each module taking 1-2 hours to complete. 3 badges (18 modules) in total

Format: Online

Curriculum

Instruction for each badge consists of six 1-2 hour modules, taking place over a six-week period. A healthy mix of UH Faculty modules (blue) and Industry Instructor modules (red) provide a well-rounded learning experience.

Badge I: Power Fundamentals

- Overview I Intro to Electrification in Energy
- Intro to Electrical Engineering
- 3-Phase Circuits
- Electric Power Systems
- Power Electronics
- Electric Machines

Badge II: Offshore Power

- Overview II Offshore Use and Business Cases
- Power Systems (Platform/Subsea/Wells)
- Process Controls
- Reliability API 17N&Q
- Offshore Power and Renewables
- Safety/Regulatory and Legal Frameworks

Badge III: Subsea Electrification

- Overview III Subsea Use and Business Cases
- Subsea pumps/compressors API 17X
- Subsea Electric Systems
- Subsea controls API 17F
- Subsea Power Transmission
- Subsea Power Systems API 17Z/Umbilicals API 17E

Industry Speakers

Burkhard Sommer

Principal Systems Architect
SLB OneSubsea

Ray Fleming

Subsea Controls Lead
BP

Jerry Zhou

Senior Systems Engineer
Shell

David Saul

Chief Consultant
Astrimar

Mark Schnatzmeyer

Senior Engineering Specialist
Subsea Equipment Associates

Jon Kitchel

Electrical and Power Engineering Chapter Manager
Chevron

Dave Burns

Principle Electrical Engineer
Shell

Dr. Caroline Roberts Haritonov

Managing Director
Astrimar

Christopher Curran

Subsea Systems Engineer
CJC Enterprises LLC

Yogita Akhare

Senior Electrical Engineer
ABS Technology Team

Richard Barratt

Technical Sales Manager
Siemens Energy

UH Instructors

Dr. Kaushik Rajashekara

Distinguished Professor of Engineering
University of Houston

Dr. Xingpeng Li

Associate Professor
University of Houston

Dr. Harish Sarma Krishnamoorthy

Associate Professor
University of Houston



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Advances of Elastomers: Science and Technology

UH is proud to offer this micro-credentialing program that discusses advances of different elastomers and their composites, sustainability issues, challenges of product manufacturing, and applications. It is taught by the world-class instructors, including accomplished faculty from the University of Houston, and leaders from industry.

Why this Credential?

Elastomers are unique and critical materials. Their applications range from aircraft tires to tank pads to sonar dome windows. Numerous applications use elastomers as one of the components. Without the elastomers, these products would simply fail. Their specifications are also changed depending on the conditions of use (tires for conventional vehicle vs tires for EV). In addition, companies are more concerned about sustainability and environment. There are many advances in elastomeric materials in recent years. These cover new synthetic rubbers, their compounds and composites, natural monomers, elastomer nanocomposites, sustainable materials, recycling, energy considerations for rubber industries, environmental analysis, elastomer applications in a number of products like EV tires, seals for oil and gas industry etc. This course will address most of these aspects.

What You Will Earn

This micro-credentialing program offers an understanding of advances of different elastomers and their composites, sustainability issues, challenges of product manufacturing and applications. The program is offered in 16-hour modules. The certificate, also named the micro-credentialing badge, provides a permanent record endorsed by the University of Houston, and can be made a part of your resume to credential your new skills.

Who Should Enroll?

- The Program has been designed with many groups in mind:
- Those who are working in the tire and non-tire industries.
- Those who are working in the oil and gas industries.
- Those already in the rubber industries are seeing significant changes in recent years.
- Those who are involved in polymer companies trying to understand the extreme conditions for development of their materials.
- Those who want to develop a career/business in the field of elastomers in critical areas.
- Those in the sales and marketing with an engineering degree who would like to get acquainted with the use of elastomers in critical applications.
- Those who do not have the polymer background, but would like to learn and implement.

The Program will provide new information, new insights, and new skills that one needs to know for new demands. The lectures will be delivered by a team of experts from industry and academia. International participants are also welcome.

To International participants: The course will be online and the lecture period has been fixed from 8:00am to 12:00pm (CST) each day so that interested international participants can participate in the program.

Overview

Duration: 4 virtual sessions

Format: Online

Topics Include

Advances of synthetic rubbers

Molecules from nature for polymerization

Polymer and Rubber nanocomposites

Sustainable materials in the rubber industry

Recycling and devulcanization

Advances in tire technology

Advances of elastomers in the oil and gas industries

Environmental analysis/Energy considerations/Net-zero carbon economy



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Learning Objectives

After successfully completing this program, participants will be able to understand:

- Advances in elastomers and elastomeric compounds
- Natural monomers
- Fundamentals of elastomer science to make materials superior with long life
- Sustainable materials
- Recycling technology
- Behaviour of elastomers
- Advances in tire technology
- Advances of elastomers and their compounds in oil and gas industries
- Environmental analysis/Net zero carbon economy

Instructors

This credentialing program is taught by the world-class instructors, including accomplished faculty from the University of Houston, and leaders from industry.

Dr. Ramanan Krishnamoorti
University of Houston

Dr. Megan Robertson
University of Houston

Dr. Joseph B. Powell
*University of Houston &
Formerly Shell*

Dr. Brendan Rodgers
*Formerly Goodyear Tire &
ExxonMobil*

Dr. Anil K. Bhowmick
*University of Houston &
Formerly IIT*

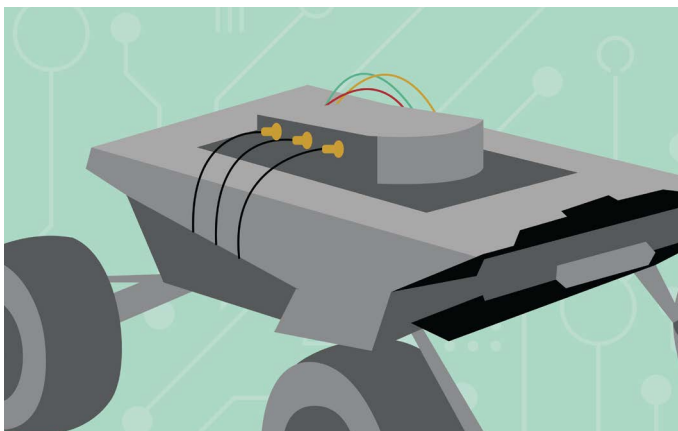
Dr. Sudhin Datta
Formerly ExxonMobil

Dr. Xuming Chen
SLB

Credentialing Program Prerequisites

Either:

- Industry professional
- Rising senior in a bachelor's degree program or graduate student; business, engineering, or technology preferred.



Automation and Autonomy of Mobile Robots using ROS

The Automation and Autonomy of Mobile Robots Program is offered jointly by the University of Houston and the University of Houston Clear Lake. Successful candidates will receive digital badges from UH Energy.

Why this Credential?

Robotic systems are extensively used across multiple industries today, from manufacturing, to energy, to space exploration. Being familiar with the electrical and programming fundamentals of robotics, as well as some of the tools commonly used by industry and academia, can provide a considerable edge for students looking to pursue careers or research in many fields.

This course will first cover some of the electrical and embedded system basics. Afterward, the basics of the Robotics Operating System, widely used for robotics applications, will be covered. Using ROS, the student will learn about and apply SLAM, an almost ubiquitous robotic navigation technique. Finally, the students will put together a mobile robot kit and program it to take part in a competition.

Who Should Enroll?

The following groups are eligible for this program:

- **Undergrad students** looking to get into robotics or expand their knowledge
- **Grad students** that want to refresh knowledge and gain more experience with SLAM and ROS
- **Recent graduates** that want to strengthen their job prospects

What You Will Earn

A digital badge is awarded from UH Energy. The digital micro-credentialing badge provide a permanent record, endorsed by UH Energy and the University of Houston, that can be made a part of your resume to credential your new skills.

Overview

Duration: 6 weeks

Format: Weekly In-Person

Guest Speakers

Dr. James Dabney

Program Director of Systems Engineering, Professor, College of Science and Engineering
University of Houston Clear Lake

Joshua Sooknanan

NASA/JSC

Kimberly Hayes

CTO, Co-Founder
Valkim Technologies

Carol Fairchild

University of Houston Clear Lake

Hasan Danaci

Schlumberger

Chirag Dhoka Jain

Northeastern University

Schedule

Lecture 1: Electrical Foundations Review (Dr. Unwala)

- Sensors and Actuators
- Embedded Systems
- Post-Lecture Speaker: Joshua Sooknanan (NASA)

Lecture 2: Robotics Software (Dr. Nguyen)

- Linux Architecture
- Intro to ROS
- Post-Lecture Speaker: Carol Fairchild (UHCL) and Kimberly

Lecture 3: SLAM and Navigation (Dr. Nguyen)

- Sensor Fusion
- Simultaneous Localization and Mapping (SLAM), and Navigation
- Post-Lecture Speaker: Hasan Danaci (Schlumberger)

Lab: Robot Car (Dr. Nguyen and Miguel Pagan)

- Car Kit Assembly
- Car Programming and Competition
- Post-Lecture Speaker: Chirag Dhoka Jain (Northeastern University)

Each class session begins at 9am and ends at 1pm at the University of Houston Clear Lake campus in the Delta Building, 2700 Bay Area Blvd, Houston, TX 77058.



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Instructors

Dr. Luong Nguyen

Associate Professor of Computer Engineering
University of Houston Clear Lake

Dr. Ishaq Unwala

Associate Professor of Computer Engineering
University of Houston Clear Lake

Miguel Pagan

Lecturer of Computer Engineering
University of Houston Clear Lake

AI & Robotics for Energy Integrity

Stay ahead in the energy industry with our AI & Robotics for Energy Integrity course. Learn how AI and robotics are transforming inspection through machine learning, deep learning, and photogrammetry. Taught by experts from industry and the University of Houston, this course blends fundamentals with hands-on practice to help you integrate smart inspection tools into your workflow. Ideal for professionals ready to boost efficiency and innovation in real-world energy applications.

Why this Credential?

Integrating robotics into inspection processes significantly enhances efficiency in data collection. The ability of robots to gather extensive data strengthens the demand for robust data analysis and management solutions. Artificial Intelligence (AI) has emerged as a powerful tool for analyzing complex data sets, significantly enhancing efficiency, innovation, and decision-making across various industries. The synergistic use of robots and AI can revolutionize inspection methodologies, streamline processes, and set new industry benchmarks. To stay with the trend, we offer this AI & Robotics for Energy Integrity course that uses popular inspection methods and use cases to provide an ideal introduction of AI for professionals in the energy industry. This course is instructed by subject matter experts from both industry and the University of Houston, and will help participants enhance their understanding of AI and seamlessly integrate AI and robotic solutions into their workflows.

In this course, participants will learn and experience the three popular use-cases and methods that have been widely used in robotic inspection in the energy industry: machine learning and its usage in non-destructive testing (NDT), deep learning that gives robots a “vision” to analyze inspection data, and photogrammetry that enable rapid 3D reconstruction essential for digital twinning assets in inspection and management. The course offers a detailed summary of fundamental principles, hands-on practice, and an integration showcase. Participants will gain insight into the powerful combination of robots and AI technologies and will also be equipped with practical knowledge on how to implement these technologies effectively in real-world scenarios.

Who Should Enroll?

The following groups are eligible for this program:

- **Engineers and technicians** seeking to boost their robotic inspection and maintenance expertise with AI technology.
- **Individuals who are interested in the latest trends in AI** and are looking to implement this with robotics for enhanced inspection and maintenance tasks.
- **Industry professionals** aiming to exploit robotic and AI-based inspection solutions, seeking in-depth knowledge on machine learning, computer vision inspection, and photogrammetry.

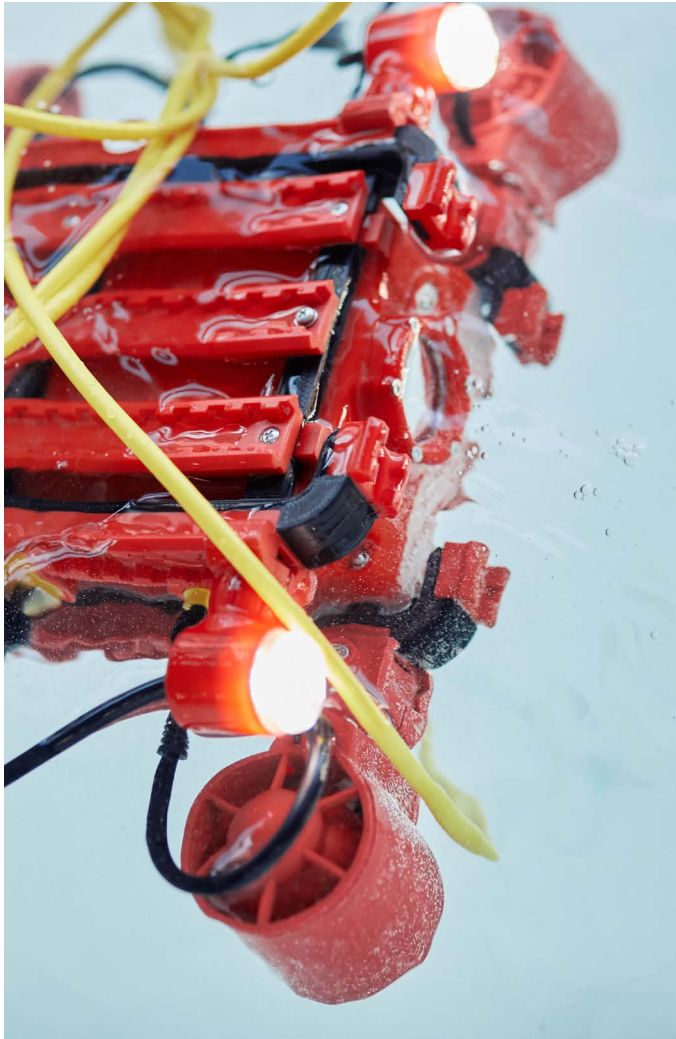


What You Will Earn

- A digital badge will be issued after successfully completing this course.
- Texas professional development hours and continuing education units available

After successfully completing this module, participants should be able to:

- Gain a comprehensive knowledge of AI's role in analyzing and interpreting data derived from robots and become familiar with the model training process.
- Have a solid grounding in deep learning and computer vision, understanding how robots perceive, analyze, and act in their surroundings.
- Apply the skills to use AI in complex data analysis and management while understanding the associated challenges and risks.
- Continue to develop expertise in applying AI and robotics to address the needs, challenges, and opportunities within the energy sector.



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Overview

Duration: 2-3 hours a week for 7 weeks

Format: Hybrid

Instructors

Dr. Vedhus Hoskere

Assistant Professor of Civil and Environmental Engineering
University of Houston

Dr. Gangbing Song

Moores Professor of Mechanical Engineering
University of Houston

Pete Peterson

Head of Product Management and Marketing
XaaS Lab

Kimberley Hayes

CTO, Co-Founder
Valkim Technologies

Matt Alberts

Head of Project Management
Future Technologies Venture
Founder of Societa AI

Dr. Suchet Bargoti

CTO
Abyss Solutions



Division of Energy and Innovation
UNIVERSITY OF **HOUSTON**