



Frank H. Dotterweich College of Engineering

NATURAL GAS ENGINEERING

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What is Natural Gas Engineering?

Natural gas engineering is the profession in which knowledge of mathematics, geology, and other natural sciences gained by study, experience, and professional practice is applied with judgment to develop economic ways of supplying high purity natural gas for the benefit of mankind.

Natural gas engineers design, develop and operate process systems for natural gas resource discovery, production, and processing to manufacture a high purity gas product for transportation and distribution to various end-users.

A natural gas engineering education also provides knowledge for advanced training in business, education, energy systems, patent law, and other technology-based disciplines.

Accreditation:

The natural gas engineering program is accredited by the Engineering Accreditation Commission of ABET, which will provide assurance that the program will meet defined standards of quality. When accredited, the program will prepare students to acquire and apply new knowledge, undertake real-world design, communicate effectively, work in teams, analyze and interpret data and make decisions.

Tuition and Scholarships:

Low tuition provides a good value for education compared to other universities. Scholarships are available for qualified students at the institutional, college and department levels. Examples of departmental scholarships include those from the Houston Gas Producers Association, the American Petroleum Institute, Citgo Refining, the Dotterweich Memorial Fund, ExxonMobil, and the Valero-Kain Endowed Scholarship.

Outstanding Faculty:

Over 95% of our faculty have PhD degrees. Class sizes in the upper division natural gas engineering courses typically contain 15 to 25 students. Faculty are passionately engaged in both teaching and research.

Co-curricular opportunities:

The department assists students in identifying internship and research opportunities. Opportunities are also available for students to develop leadership skills and to participate in student organizations. Examples of organizations within the department include the American Association of Drilling Engineers and the Society of Petroleum Engineers. Students can also participate in college and university-wide organizations, such as the Society of Women Engineers, the Society of Hispanic Engineers, and the Student Government Association, to name a few.

Employment:

Companies that hire our graduates include C&J Energy Services, Energy Transfer, Fesco, Halliburton, Nalco Champion, National Oilwell Varco, Schlumberger, and Ulterra Drilling Technologies. Typical starting salaries after graduation are typically from \$65,000 to \$125,000, depending upon prior professional experience, company size and scope, job duties, and employment location.

Notable Alumni and Student Accomplishments:

Notable alumni include Wayne H. King, former Senior Vice-President of Valero Energy after which the department is named, Mike Howard, President and CEO of Howard Energy Partners, and Howard Garig, Drilling Operations Superintendent for the ExxonMobil World Wide Ventures Drill Team.



Students in the department received first place in the 2018 Javelina Research Symposium and for outstanding community service project by the American Association of Drilling Engineers student chapter.

Additional Information:

<http://www.tamuk.edu/engineering/departments/chen/index.html>



Natural Gas Engineering Curriculum - Year 2023-2024

Fall	FRESHMAN YEAR	Spring
GEEN 1201 Engineering as a career	2	ENGL 1302 Rhetoric and Composition 3
ENGL 1301 Rhetoric and Composition	3	PHYS 2325/2125 University Physics I and Lab 4 <small>(Prereq: credit or /registration MATH 2413 or equivalent)</small>
CHEM 1311 General Inorganic Chemistry I <small>(Prereq: MATH 1314 & 1 yr HS Chemistry or CHEM 1481)</small>	3	MATH 2414 Calculus II 4 <small>(Prereq: MATH 2413)</small>
CHEM 1111 General Inorganic Chemistry Lab I <small>(Prereq or Coreq: CHEM 1311)</small>	1	CHEM 1312 General Inorganic Chemistry II 3 <small>(Prereq: CHEM 1311 & 1111)</small>
MATH 2413 Calculus I <small>(Prereq: MATH 1348)</small>	4	CHEM 1112 General Inorganic Chem. Lab II 1 <small>(Prereq: CHEM 1311 & CHEM 1111; Prereq or Coreq: CHEM 1312)</small>
HIST 1301 American History	3	
	16	15
	SOPHOMORE YEAR	
MATH 3320 Differential Equations <small>(Prereq: MATH 2414)</small>	3	MEEN 2355 Statics and Dynamics of Rigid Bodies 3 <small>(Prereq: PHYS 2325/2125 and MATH 2414)</small>
CHEM 3323 Organic Chemistry <small>(Prereq: CHEM 1312 and CHEM 1112)</small>	3	PHYS 2326 University Physics II 3 <small>(Prereq: PHYS 2325/2125 or PHYS 1302/1102 & cr./regis. in MATH 2414)</small>
CHEM 3123 Organic Chemistry Lab I <small>(Prereq or Coreq.: CHEM 3323)</small>	1	PHYS 2126 University Physics II Lab 1 <small>(Prereq: credit or registration in /regis. in PHYS 2326)</small>
GEOL 1303 Physical Geology	3	GEOL 4307 Applied Geology 3 <small>(Prereq.: GEOL 1303, MATH 1316, & CHEM 1111/CHEM 1311)</small>
GEOL 1103 Physical Geology Laboratory <small>(Prereq. or Coreq.: GEOL 1303)</small>	1	GEOL 4107 Applied Geology Laboratory 1 <small>(Prereq.: credit or registration in GEOL 4307)</small>
HIST 1302 American History	3	POLS 2301 Government and Politics of the US 3
*Language/Philosophy/Culture Elective	3	*Creative Arts Elective 3
	17	17
	JUNIOR YEAR	
POLS 2302 Government and Politics of Texas	3	CHEN 3310 Heat Transfer Phenomena 3 <small>(Prereq: NGEN 3392 & MEEN 3347)</small>
CEEN 3311 Strength of Materials <small>(Prereq: MEEN 2355 and MATH 2414)</small>	3	CHEN 3321 Process Simulation 3 <small>(Prereq: NGEN 3322, MATH 3320, and MEEN 3347)</small>
MEEN 3347 Thermodynamics <small>(Prereq: MATH 2414 and cr/reg PHYS 2325/2125)</small>	3	NGEN 3393/3193 Natural Gas Drilling Engineering 4 <small>(Prereq: NGEN 3322 and NGEN 3392)</small>
NGEN 3392 Fluid Transport Phenomena <small>(Prereq: MATH 3320 & credit or registration in MEEN 2355)</small>	3	IEEN 2310 Appl. Meth. In Eng. Stat. I 3
NGEN 3322/3122 Fund. of Reservoir Engineering <small>(Prereq.: Credit or registration in CHEM 3323, NGEN 3392 and GEOL 1303/GEOL 1103)</small>	4	*Communications Elective 3
	16	16
	SENIOR YEAR	
NGEN 4389 – Separation Processes <small>(Coreq.: CHEN 3310)</small>	3	NGEN 4383 Natural Gas Processes 3 <small>(Prereq: NGEN 4389)</small>
NGEN 4375 Natural Gas Distribution <small>(Prereq: NGEN 3392)</small>	3	NGEN 4387 Seismic Interp. & Well Logging 3 <small>(Prereq: NGEN 3393 and GEOL 4307)</small>
NGEN 4396 Natural Gas Production, Evaluation and Testing <small>(Prereq: NGEN 3392 and NGEN 3393)</small>	3	NGEN 4378/4178 Natural Gas & Hydrocarbon Measurement 4 <small>(Prereq: NGEN 3392 and NGEN 4375)</small>
NGEN 4298 – Capstone Design I	2	NGEN 4398 Capstone Design Project 3 <small>(Prereq: maximum of 6 SCH of NGEN coursework)</small>
*Social/Behavior Science Elective	3	
	14	13
Total Hours <u>124</u>		

*Electives are selected from the following:

- Creative Arts - ARTS 1303, ARTS 1304 or COMM 2304 or MUSI 1305, MUSI 2306, MUSI 2308, MUSI 2310 or THEA 2310.
- Language/Philosophy/Culture - ANTH 2302, ENGL 2331, 2342, ENGL 2362, FREN 1311, FREN 1312, FREN 2311, FREN 2312, HIST 2321, HIST 2322, PHIL 1301, SPAN 1313, SPAN 1314, SPAN 1373, SPAN 2301, SPAN 2302, SPAN 2311, SPAN 2312.
- Social/Behavioral Science - ANTH 2301 or ECON 2301, ECON 2302 or EDKN 2335 or EVEN 2372 or HSCI 2323 or POLS 2304, POLS 2340 or PSYC 2301 or SOCI 1301, SOCI 1306 or SOCI 2361.
- Communication - COMS 2374 or ENGL 2374 are preferred. This requirement may also be fulfilled by COMM 1307, COMS 1311, COMS 1315, or COMS 1336.