

Energy Career Cluster



The Energy career cluster prepares individuals for careers in the designing, processing, planning, maintaining, generating, transmission, and distribution of traditional and alternative energy. This career cluster includes occupations ranging from petroleum engineers, rotary drill operators, chemical technicians and, power plant operators to solar photovoltaic installers and wind turbine service technicians.

Statewide Program of Study: Oil and Gas Exploration and Production

The Oil and Gas Exploration and Production program of study focuses on occupational and educational opportunities associated with processing, refining, and distributing petroleum and gas. This program of study includes the process of regulating the flow of oil into pipelines, controlling pumping systems, and operating and maintaining machinery to generate electric power.



Secondary Courses for High School Credit

- Level 1**
 - Foundations of Energy
 - Oil and Gas Production I

- Level 2**
 - Occupational Safety and Environmental Technology I
 - Oil and Gas Production II

- Level 3**
 - Occupational Safety and Environmental Technology II
 - Oil and Gas Production III

- Level 4**
 - Oil and Gas Production IV
 - Applied Mathematics for Technical Professionals
 - Career and Technical Education Project-Based Capstone
 - Practicum in Energy
 - Career Preparation for Programs of Study
 - Career Preparation for Programs of Study + Extended Career Preparation

Aligned Advanced Academic Courses

AP or IB	AP Chemistry IB Chemistry SL IB Chemistry HL
Dual Credit	Dual credit offerings will vary by Local Education Agency.

Students should be advised to consider these course opportunities to enrich their preparation. AP or IB courses not listed under the Secondary Courses for High School Credit section of this framework document do not count toward Completer status for this program of study.

Work-Based Learning and Expanded Learning Opportunities

Work-Based Learning Activities	<ul style="list-style-type: none"> • Shadow a chemical engineer in a lab at an oil and gas production company to learn about biofuels and other technologies that use oil • Intern in petroleum engineering to learn about planning, installing, and inspecting facilities for oil extraction
Expanded Learning Opportunities	<ul style="list-style-type: none"> • Tour oil and gas production facilities • Participate in SkillsUSA • Shadow a technician in the oil and gas industry

Industry-Based Certifications

- NCCER Core
- NCCER Instrumentation Level I
- Certified Logistics Technician (CLT)
- Certified Production Technician (CPT) 4.0
- Lean Six Sigma Green Belt Certification



Postsecondary Opportunities



Associate Degrees

- Chemical Technology/Technician
- Instrumentation Technology/Technician
- Manufacturing Engineering Technology/Technician
- Chemical Process Technology

Bachelor's Degrees

- Mechanical Engineering
- Chemical Engineering
- Engineering/Industrial Management
- Industrial Engineering

Master's, Doctoral, and Professional Degrees

- Mechanical Engineering
- Chemical Engineering
- Engineering/Industrial Management
- Industrial Engineering



Example Aligned Occupations

Rotary Drill Operators, Oil and Gas

Median Wage: \$52,000
Annual Openings: 914
10-Year Growth: 43%

Industrial Engineering Technologists and Technicians

Median Wage: \$62,096
Annual Openings: 787
10-Year Growth: 17%

Petroleum Engineers

Median Wage: \$134,225
Annual Openings: 1,443
10-Year Growth: 27%

Data Source: TexasWages, Texas Workforce Commission. Retrieved 3/8/2024



For more information visit:
<https://tea.texas.gov/academics/college-career-and-military-prep/career-and-technical-education/programs-of-study-additional-resources>



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Statewide Program of Study: Oil and Gas Exploration and Production

Course Information

Level 1

Course	Prerequisites Corequisites	Career Clusters
Foundations of Energy* 13040503 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: None Recommend Corequisites: None	
Oil and Gas Production I 13001250 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: None Recommend Corequisites: None	

Level 2

Course	Prerequisites Corequisites	Career Clusters
Occupational Safety and Environmental Technology I N1303680 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: None Recommend Corequisites: None	
Oil and Gas Production II 13001260 (1 credit)	Prerequisites: Oil and Gas Production I Corequisites: None Recommended Prerequisites: None Recommend Corequisites: None	

Level 3

Course	Prerequisites Corequisites	Career Clusters
Occupational Safety and Environmental Technology II N1303681 (1 credit)	Prerequisites: Occupational Safety and Environmental Technology I Corequisites: None Recommended Prerequisites: None Recommend Corequisites: None	
Oil and Gas Production III 13040500 (1 credit)	Prerequisites: Oil and Gas Production II Corequisites: None Recommended Prerequisites: None Recommend Corequisites: None	

* Indicates course is included in more than one program of study.

For additional information on the Energy career cluster, contact cte@tea.texas.gov or visit <https://tea.texas.gov/cte>



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Course Information

Level 4

Course	Prerequisites Corequisites	Career Clusters
Oil and Gas Production IV 13040501 (1 credit)	Prerequisites: Oil and Gas Production III Corequisites: None Recommended Prerequisites: None Recommend Corequisites: None	
Applied Mathematics for Technical Professionals* 12701410 (1 credit)	Prerequisites: Algebra I and Geometry Corequisites: None Recommended Prerequisites: None Recommend Corequisites: None	
Career and Technical Education Project-Based Capstone* First Time Taken: 12701500 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: None Recommend Corequisites: None	
Practicum in Energy* N1303910 (2 credits)	Prerequisites: None Corequisites: None Recommended Prerequisites: At least one of the following courses: Oil and Gas Production II/Lab, Occupational Safety and Environmental Technology I, Oil and Gas Production III, Occupational Safety and Environmental Technology II, Careers Preparation, Oil and Gas Production IV, Introduction to Process Technology, Introduction to Instrumentation and Electrical, Petrochemical Safety, Health, and Environment, Advanced Instrument and Electrical, AC/DC Electronics, Introduction to Renewable Energy, Energy and Natural Resources Technology/Lab Environmental Sustainability (PLTW), Solid State Electronics, Scientific Research and Design or Digital Electronics Recommend Corequisites: None	
Career Preparation for Programs of Study* First Time Taken: 12701121 (2 credits)	Prerequisites: at least one Level 2 or higher CTE course Corequisites: None Recommended Prerequisites: None Recommend Corequisites: None	
Career Preparation for Programs of Study + Extended Career Preparation* First Time Taken: 12701141 (2 credits)	Prerequisites: at least one Level 2 or higher CTE course Corequisites: None Recommended Prerequisites: None Recommend Corequisites: None	

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