Program Competencies

Associate of Science in Safety Technology

The Safety Technology Associate Degree program incorporates the historical, current and emerging regulations and technologies in safety, health and environmental practices, with a focus on the oil and gas industry. Coursework and assignments are geared toward real world safety case studies and safety problems facing the oil and gas industry.

Safety Technology graduates will demonstrate the knowledge, skills and abilities to perform the following safety, health and environmental competencies related to the oil and gas industry and beyond:

I. Research information pertaining to the business or operation, using appropriate tools and references (e.g., Internet, federal and state regulations, consensus standards, insurance and loss control references) to obtain general risk data.

II. Evaluate actual business and operations data (e.g., monitoring and surveillance data, OSHA logs, incidence reports, safety and health programs and insurance loss data) by comparing the data against internal history as well as national or industry standards in order to recognize and define risk.

III. Conduct surveys of the business or operation in accordance with the accepted survey methodology (e.g., observing the facility; referring to process flow charts; verifying safety; health and environmental systems; programs and documentation; and interviewing employees and management) in order to recognize hazards and controls.

IV. Communicate the results of surveys to management with appropriate documentation in order to inform about risks and to recommend and justify actual and potential loss scenarios.

V. Evaluate risks using established analytical techniques.

VI. Select hazard control measures by reviewing options and choosing the most appropriate to manage the risk.

VII. Communicate hazard control measures to management by identifying resources and implementation strategies in order to manage risk.

VIII. Assist with the implementation of controls (e.g., organized committees, safety teams, providing or conducting training, maintaining records, collaborating with contractors, selecting equipment, managing regulator program and safety program records) in order to manage risk.

IX. Verify that recommended hazard controls are implemented using management and evaluation techniques (e.g., site surveys, review of records, audits, interviews with key personnel and follow-up with the responsible individuals) and strategies to management and employees through organized committees,
training about the risks, recommendations and justifications for the actions to manage current and potential loss scenarios.

X. Investigate incidents, accidents and near misses using established techniques in order to determine root causes and formulate or update corrective action plans.

XI. Access the effectiveness of hazard controls by analyzing performance data (e.g., behavior safety observations, job safety analysis, short service employee programs, stop work authority programs, loss data and incident rates) in order to ensure risks are adequately managed.

XII. Identify catastrophic and emergency response scenarios (e.g., fires/explosions, natural disasters, chemical releases, terrorism and medical emergencies) using established techniques to anticipate risks.

XIII. Develop and document action plans for responding to disasters and other emergencies.

XIV. Provide support to incident command operations to manage responses to disasters and other emergencies.

XV. Understand the organizational roles and responsibilities for safety among management, supervisors, employees and the safety, health and environmental technologist.

**Associate of Science in Petroleum Services**

The Petroleum Services Associates degree curriculum emphasizes teamwork, project planning, technical applications, organization, leadership and safety. Students gain technical problem-solving skills and develop a strong foundation in oral and written communication.

Petroleum Services Associate Graduates will demonstrate the knowledge, skill and abilities to perform the following competencies directly related to the oil and gas industry and beyond:

I. Research federal and state regulations, consensus standards and industry best practices pertaining to the oil and gas business or operation using appropriate tools and references (e.g., world wide web; industry software; and API references) to obtain data.

II. Understand the common terminology used in all phases of the petroleum industry and the business segments that make-up the petroleum industry including the physical and historical geologic origins of petroleum, exploration methods, legal mineral lease arrangements, drilling and completion, production, transportation, refining and marketing.

III. Describe the various methods used in locating possible petroleum deposits through the use of maps, well logs, and seismic techniques.
IV. Explain the various types of Mobil Offshore Drilling Units, (MODU), their advantages and limitations, common tools, components and various methods to affect the rate of penetration as related to rotary drilling equipment.

V. Identify and explain the composition and physical properties of natural gas and oil and the different types of well producing and conditioning equipment used in processing hydrocarbons which include the glycol dehydration system, natural gas compression equipment, and various measurement and correction factors.

VI. Describe the components and processes required for safe production, storage and transportation of hydrocarbons taking into consideration the chemical and physical variables which include pressure, temperature, volume and flow of hydrocarbons.

VII. Assess procedures used in drilling activities related to lost circulation, high pressure zones, fishing operations, coring operations, drill-stem testing, and directional drilling.

VIII. Conduct technical calculations using a scientific calculator to determine computations in reservoir studies, oil production, gas production and drilling operations performed by petroleum industry personnel.

IX. Demonstrate an understanding of common drilling and completion reporting systems and documentation.

X. Describe various well stimulation treatments (i.e., acidizing, water flooding and fracturing) and interventions used to maintain and improve production rates in existing oil and gas wells.

XI. Understand the organizational roles and responsibilities for the petroleum industry within managerial, supervisory and technical levels.

XII. Effectively work in a team setting, groups and be able to communicate technical information through oral and written means.

**Bachelor of Science in Petroleum Services**

The Bachelor Degree program offers upper-level courses in oil production, drilling practices, human resources and safety in addition to the technical and supervisory courses on the oil and gas industry's equipment, practices, problems and computations that are required for the associate degree.

Petroleum Services Bachelor Graduates will demonstrate the knowledge, skill and abilities to perform the following competencies directly related to the oil and gas industry and beyond:

I. Interpret and apply federal and state regulations, industry consensus standards and best practices pertaining to the oil and gas industry or operation using appropriate references (e.g., world wide web; industry software; and API references) to acquire necessary data.
II. Explain the three main business segments that include upstream, midstream and downstream operations in the energy industry.

III. Formulate plans and strategies to locate petroleum deposits through the use of contemporary geophysical reservoir techniques.

IV. Design well bore plans, drilling methods that include drilling fluid specifications to control bottom hole pressures and maintain well integrity.

V. Select well completion techniques that includes cementing and other down hole methods to produce at targeted pay zones.

VI. Troubleshoot and solve problems relating to lost circulation, high pressure zones, fishing operations, and coring operations used during well drilling and completion.

VII. Design methods of secondary recovery using artificial lift and water flood application for enhanced oil recovery.

VIII. Complete technical reports and government compliance records relating to production and drilling operations.

IX. Design and evaluate well intervention techniques using industry simulation software to control flow, pressure, temperature and other variables involved in safe and environmentally complaint practices.

X. Design and conduct audits of safety management systems pertaining to the petroleum industry.

XI. Demonstrate leadership ability to be able to effectively work in interact in a team environment involving company initiatives.

XII. Design and conduct industry required operations, along with health, safety and environmental training using effective adult learning techniques.