Oil and Gas Industry Mississippi Curriculum Framework

Oil and Gas Production- CIP: 15.0903 (Petroleum Technology/Technician)

Entry Level Petroleum Trainee- CIP: 15.0903 (Petroleum Technology/Technician)

2021

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The Office of Curriculum and Instruction (OCI) was founded in 2013 under the Division of Workforce, Career, and Technical Education at the Mississippi Community College Board (MCCB). The office is funded through a partnership with The Mississippi Department of Education (MDE), who serves as Mississippi's fiscal agent for state and federal Career and Technical Education (CTE) Funds. The OCI is tasked with developing statewide CTE curriculum, programming, and professional development designed to meet the local and statewide economic demand.

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ADOPTION OF NATIONAL CERTIFICATION STANDARDS

At the time of publication, no national standards were identified for alignment with this curriculum framework. The Office of Curriculum, Instruction, and Assessment will continue to work with college faculty and the industry advisory committee to identify potential national standards and/or national certifications appropriate for this program of study.

International Association of Drilling Contractors (IADC) was founded in 1940 by a group of visionaries who believed that drilling contractors needed a collective voice to advocate for their interests within our industry. From that small but auspicious start, IADC has weathered massive industry changes to become the modern and influential association we are today.

IADC operates on 6 continents, and our members are the global leaders in the drilling industry. IADC is recognized worldwide for our accreditation programs, publications, conferences, and advocacy work. We work to gain global recognition for the industry's vital role in enabling the global economy and its high standards of safety, environmental stewardship and operational efficiency.

J. Schneider and Associates Assessment
Basic Production Training

The Basic Production Technology Training testing will cover the following:

1. The physical principles of a flowing oil and gas well and identifying wellhead components and their function.
2. Function of the flowline choke, flowline, and header.
3. Fundamentals of separation, internal arrangement of two and three phase separators.
4. Staged separation and basics of process instrumentation.
5. Division of produced fluids in oil, gas, and water process trains.
6. Basic operation of heater treaters.
7. Basic operation and differences of positive displacement and centrifugal pumps
8. Basic of pipeline pigging operations
9. Oil & gas measurements.
10. Gas compression
11. Gas dehydration
12. Basic Operation of water polishing vessels
13. Basic test separator operation
14. Artificial lift and secondary recovery.

Production Safety Systems (T-2) Training testing will cover the following:

1. Regulatory Requirements for the oil & gas operations on the Outer Continental Shelf
2. Pollution control requirements for production platforms
3. Terminology associated with production safety systems
4. Abnormal conditions and malfunctions in the oil & gas process
5. Process safety analysis (approved methods of detection, protection and mitigation of abnormal conditions and malfunctions)
6. Application of regulatory documents toward production safety system design, testing, maintenance, and operation.
7. Identification of safety devices and component
8. Surface safety system, modes of safety, levels of protection, according to API RP 14C
9. Emergency support systems
10. Pollution Prevention and control
11. Undesirable Events-detection, understanding and causes

12. Safety analysis tables and checklist
13. Basic flow diagrams and SAFE charts
14. Pipeline regulations and operations
15. Testing frequencies for safety devices
16. Subpart H regulations & requirements
17. Record keeping of safety system operations

In our Oil & Gas Program passing, Basic Production is a prerequisite to taking T-2 Basic

IADC Rigg Pass®
Designed to identify core elements of safety orientation programs, Rigg Pass prepares new employees for most operating environments, onshore or offshore.
Completion of an IADC Rigg Pass or IADC Rigg Pass Course-to-Go accredited program confirms that personnel have met basic requirements defined by safety and training professionals in the drilling industry, irrespective of the rig's location.

IADC WellSharp®
IADC's WellSharp accreditation program provides comprehensive well control training standards for the global drilling industry, emphasizing rigorous training for every person with well control responsibilities. WellSharp provides trainees with in-depth knowledge, well-honed role-specific skills, and greater confidence that they know what to do to prevent and handle well control incidents.

INDUSTRY JOB PROJECTION DATA

Oil and Gas Industries occupations require an education level of a postsecondary career and technical certificate. A summary of occupational data from the Mississippi Occupational Employment Projections is displayed below:

Occupational Employment Projections, Year 2016 Projected to Year 2026
State of Mississippi

Standard Occupational Classification (SOC)		2016 Employment	2026 Projected Employment	Projected Employment Growth 2016-2026		Total Projected Avg. Annual Job Openings
Code	Occupation			Number	Percent	
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	10	20	10	100%	5
51-8031	Plant Power Operators	420	430	10	2.4%	40
51-8092	Gas Plant Operators	150	150	0	0.0%	15
51-8093	Petroleum Pump System Operators, Refinery Operators, Gaugers	790	800	10	1.3%	80
51-9011	Chemical Equipment Operators and Tenders	20	20	0	0.0%	5
47-5071	Roustabouts, Oil and Gas	630	660	30	4.8%	85

ARTICULATION

There is currently no secondary program that articulates in the Oil and Gas Industry framework to articulate to this program.

TECHNICAL SKILLS ASSESSMENT

Colleges should report the following for students who complete the program with a career certificate, technical certificate, or an Associate of Applied Science Degrees for technical skills attainment. To use the approved Alternate Assessment for the following programs of study, colleges should provide a Letter of Notification to the Director of Career Technical Education at the MS Community College Board. Please see the following link for further instructions: http://www.mccb.edu/wkfEdu/CTDefault.aspx.

CIP Code	**Program of Study**
15.0903	**Oil and Gas Production**
Level	**Standard Assessment**
Accelerated Career Pathway	
Level	**Standard Assessment**
Career	J. Schneider and Associates Assessment Basic Production Training
Level	**Standard Assessment**
Technical/AAS	J. Schneider and Associates Assessment Production Safety Systems Training (T-2)

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15.0903	**Entry Level Petroleum Trainee**
Level	**Standard Assessment**
Accelerated Career Pathway	IADC Rigg Pass, **AND** NCCER CORE (to be taken with OGP 1123)
Level	**Standard Assessment**
Career	International Association of Drilling Contractors (IADC) Well Sharp **AND** NCCER CORE (to be taken with OGP 1123)
Level	**Standard Assessment**
Technical/AAS	

Research Abstract

In the spring of 2021, the Office of Curriculum and Instruction (OCI) met with the different industry members who made up the advisory committees for the Oil and Gas Production program. An industry questionnaire was used to gather feedback concerning the trends and needs, both current and future, of their field. Program faculty, administrators, and industry members were consulted regarding industry workforce needs and trends.

Industry advisory team members from the college involved with this program were asked to give input related to changes to be made to the curriculum framework. Specific comments related to soft skills needed in this program include being able to determine pressure and flow backs, understand compressor stations, understand depress stations, have a willingness to learn, and understand basic computer skills.

The name of the curriculum was changed from Oil and Gas Production to Oil and Gas Industries.

Revision History:

2018 Mississippi Community College Board
2021 Mississippi Community College Board

PROGRAM DESCRIPTION

Oil and Gas Production

Graduates from this program will receive an associate of applied science degree and are prepared for internships, apprenticeships, and entry level positions at any operations processing facility. They will have acquired basic technical skills in equipment, instrumentation, and operation of production systems in oil and gas as well as other carbon based processing facilities. Graduates will have a broadened vocabulary along with basic industrial communication and computer skills to make job specific learning less difficult. Graduates will also possess team building, behavior based, safety awareness, and environmental awareness skills that are critical in the workplace of today. In addition, our graduates will have a working knowledge of federal and state regulations on worker safety, safety systems, and the environment.

Entry Level Petroleum Trainee

The Entry Level Petroleum Trainee program is designed to prepare the student for employment and advancement in the oil and gas industry. This program qualifies the student to enter the workforce as an entry level seaman, deck hand, roustabout or floor hand. Upon completion of this course the graduate will be prepared and qualified to secure employment or to further their training into more technical positions of the oil and gas industry. The student will obtain multiple certifications through the program.

SUGGESTED COURSE SEQUENCE

Accelerated Integrated Career Pathway –Oil and Gas Production

			SCH Breakdown				Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Clinical	Total Contact Hours	Certification Name
OGP1113	Safety Health & Environment	3	3	0		45	
OGP 1133	Introduction to Oil and Gas Operations	3	3	0		45	
OGP 1213	Oil and Gas Operations I	3	2	2		60	
OGP 1313	Oil and Gas Equipment I	3	2	2		60	
	Instructor Approved Elective	3					
	Total	**15**					

Career Certificate Required Courses Oil and Gas Production

			SCH Breakdown				Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Clinical	Total Contact Hours	Certification Name
OGP1113	Safety Health & Environment	3	3	0		45	J. Schneider and Associates Assessment Basic Production Training
OGP 1133	Introduction to Oil and Gas Operation	3	3	0		45	
OGP 1213	Oil and Gas Production I	3	2	2		60	
OGP 1313	Oil and Gas Equipment I	3	2	2		60	
OGP 1324	Oil and Gas Equipment II	4	3	2		75	
OGP 1413	Pneumatic Instrumentation	3	2	2		60	
OGP 1614	Oil and Gas Systems	4	3	2		75	
OGP 2214	Oil and Gas Production II	4	3	2		75	
	Instructor Approved Electives	3					
	TOTAL	**30**					

Technical Certificate Required Courses Oil and Gas Production

			SCH Breakdown				Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Clinical	Total Contact Hours	Certification Name
OGP 2113	Production Safety Systems	3	2	2		60	J. Schneider and Associates Assessment Production Safety Systems Training (T-2
OGP 2223	Production Troubleshooting	3	2	2		60	
OGP 2313	Electronic Instrumentation	3	2	2		60	
OGP 2513	Oil and Gas Flow Diagrams	3	3	0		45	
	Instructor Approved Elective	3					
	TOTAL	**15**					

SUGGESTED COURSE SEQUENCE-

Accelerated Integrated Career Pathway Entry Level Petroleum Trainee

			SCH Breakdown				Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Clinical	Total Contact Hours	Certification Name
SSP 1002	Smart Start Pathway	2	1	0		30	
OGP 1123	Fundamentals of Oil and Gas	3	1	4		60	IADC Rigg Pass
	Instructor Approved Elective	10					
	Total	**15**					

Career Certificate Required Courses Entry Level Petroleum Trainee

			SCH Breakdown				Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Clinical	Total Contact Hours	Certification Name
SSP 1002	Smart Start Pathway	2	2	0		30	
OGP 1123	Fundamentals of Oil and Gas	3	1	4		60	NCCER CORE
OGP 1143	Oil and Gas Best Practices	3	1	4		60	International Association of Drilling Contractors (IADC) Well Sharp
OGP 1152	Rigging and Lifting Systems and Techniques	2	1	2		45	
OGP 1163	Practical Experience for Entry Level Petroleum Trainee	3	1	4		60	
OGP 1174	Advanced Safety for the Oil and Gas Industry	4	3	2		75	
	Instructor Approved Electives	13					
	TOTAL	**30**					

Technical Certificate Required Courses Entry Level Petroleum Trainee

			SCH Breakdown				Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Clinical	Total Contact Hours	Certification Name
OGP 1183	Entry Level Offshore Training and Compliance	3	1	4		60	
OGP 2333	Special Project in Oil and Gas Drilling	3	1	4		60	
	Electives per local community college	9					
	TOTAL	**15**					

General Education Core Courses – Oil and Gas Production Technology

To receive the Associate of Applied Science degree, a student must complete all of the required coursework found in the Career Certificate option, Technical certificate option, and a minimum of 15 semester hours of General Education core. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester or provided primarily within the last semester. Each community college will specify the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science degree at their college. The Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) Section 9 Standard 3 of the *Principles of Accreditation: Foundations for Quality Enhancement*[1] describes the general education core.

Section 9 Standard 3:

3. The institution requires the successful completion of a general education component at the undergraduate level that

   a) is based on a coherent rationale.

   b) is a substantial component of each undergraduate degree program. For degree completion in associate programs, the component constitutes a minimum of 15 semester hours of the equivalent; for baccalaureate programs, a minimum of 30 semester hours or the equivalent.

   c) ensures breadth of knowledge. These credit hours include at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural science/mathematics. These courses do not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession.

General Education Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
	Humanities/Fine Arts	3						
	Social/Behavioral Sciences	3						
	Math/Science	3						
	Academic electives	6						
	TOTAL	**15**						

[1] Southern Association of Colleges and Schools Commission on Colleges. (2017). *The Principles of Accreditation: Foundations for Quality Enhancement*. Retrieved from http://www.sacscoc.org/2017ProposedPrinc/Proposed%20Principles%20Adopted%20by%20BOT.pdf

Electives listing

			SCH Breakdown			
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Externship	Total Contact Hours
WLT 1173	Introduction to Welding and Safety	3	2	2		60
WLT 1313	Cutting Processes	3	2	2		60
OGP 291(1-3)	Special Project I	1-3		2-6		30-90
OGP 293(1-3)	Special Project II	1-3		206		30-90
OGP 292(1-6)	Supervised Work Experience I	1-6			3-18	45-270
OGP 294(1-6)	Supervised Work Experience II	1-6			3-18	45-270
WBL 191,192 193,291 292, 293	Work Based Learning	1-3				60
	All electives per local community college					

OIL AND GAS PRODUCTION COURSES

Course Number and Name: OGP 1113 Safety Health and the Environment

Description: This course covers the development of knowledge and skills required to reinforce attitudes and behaviors required for safe and environmentally work habits in the oil and gas industry. Health, safety and environmental issues are stressed along with regulatory compliance issues.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	3	0	45

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Identify and describe common types of hazards in process technology
   a. Describe hazards related to chemical agents 2, a, I, PSST, BPSSCO all
   b. Describe hazards related to noise, heat, radiation, and electricity 2, a, I, PSST, BPSSCO all
   c. Describe hazards related to fire, explosion, and detonation 2, a, I, PSST, 2, a,iii, BPOT, BPSSCO all
   d. Describe hazards related to biological and ergonomic factors

2. Identify and describe government regulations and agencies that regulate worker and environmental safety
   a. Identify the role that the Occupational Safety and Health Administration (OSHA) plays in regulating and promoting worker safety in industry 2, a, all, PSST, BPSSCO all
   b. Identify the role that the Environmental Protection Agency (EPA) and state agencies play in regulating and promoting environmental safety 2, a,I, PSST, BPSSCO all
   c. Identify the role that other state, federal, and private regulatory agencies play in regulating and promoting safety 2, a, all) PSST, BPSSCO all

3. Describe policies, procedures, and controls that are designed to ensure and promote worker safety
   a. Identify engineering controls including alarms, indications, process containment, and process upset controls 2, a, all) PSST, BPSSCO all
   b. Identify administrative controls, including programs and practices 2, a, all) PSST, BPSSCO all
   c. Identify personal protective equipment (PPE) 2, a, all) PSST, BPSSCO all
   d. Identify monitoring and sensing equipment 2, a, all) PSST, BPSSCO all
   e. Describe the use of permitting systems to protect workers and the environment 2, a, all) PSST,
   f. Describe the use of fire, rescue, and emergency equipment in industry 2, a, all, PSST, BPSSCO all
   g. Explain permitting processes. (i.e. work permits, MS One Call, JSA, MOC) PSST 2, a all

Course Number and Name: OGP 1133 Introduction to Oil and Gas Production

Description: This course introduces students to process operations within the oil and gas industry. Topics include history of the industry, duties and responsibilities of the process technician, basic process and utility systems, and physical and mental requirements of personnel. .

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	3	0	45

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Discuss the history and development of oil and gas operations BPOT, POCO 1 2, a, all, PSST, BPSSCO all
2. Identify and describe the duties, responsibilities, and expectations of an oil and gas production operator BPOT, POCO 9,10,11 2, a, all) PSST, BPSSCO all
3. Identify and describe the function of process equipment BPOT, POCO3,4,5,6,7,8, 2, a, all) PSST, BPSSCO all
4. Identify fundamental process systems BPOT, POCO 3,4,5,6,7,8, 2, a, all) PSST, BPSSCO all
5. Identify Upstream, Midstream, and Downstream process of the oil and gas industry BPOT, POCO 1,2, 2, a, all, PSST,
6. Discuss the history of how a Barrel of oil is measured BPOT, POCO 1,2, 2, a, all) PSST, BPSSCO all

Course Number and Name: OGP 1213 Oil and Gas Operations I

Description: This course is an overview of the different phases of the oil and gas industry from exploration to distribution with a specific emphasis on the production segment.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Identify the typical flow of production fluids through a process system BPOT, POCO 3, 2, a, all) PSST, BPSSCO all
2. Identify the basic safety equipment requirements for the process system BPOT, POCO 3, 2, a, all) PSST, BPSSCO all
3. Demonstrate understanding of simple flow diagrams of an oil and gas processing facility BPOT, POCO2, a. all 2, a, all) PSST, BPSSCO all
4. Identify process equipment and its function with relationship to downstream operations BPOT, POCO 3,9,10,11 2, a, all) PSST, BPSSCO all
5. Identify the relationship between drilling activities and top side operation 2, a, all) PSST, BPSSCO all
6. Demonstrate understanding well down-hole equipment and the importance of records keeping BPOT, POCO 1,2, 2, a, all) PSST, BPSSCO all

Course Number and Name: OGP 1313 Oil and Gas Equipment I

Description: This course is a study of the equipment instrumental in the production of oil and gas in both offshore and onshore facilities. Auxiliary equipment will also be presented.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Describe various types of production equipment commonly found in oil and gas production systems BPOT, POCO 3,4,5,6,7,8, 2, a, all) PSST, BPSSCO all

2. Describe various types of rotating equipment commonly found in oil and gas production operations BPOT, POCO 3,4,5,6,7,8, 2, a, all) PSST, BPSSCO all

3. Describe various types of fixed equipment commonly found in oil and gas production operations BPOT, POCO 3,4,5,6,7,8, 2, a, all) PSST, BPSSCO all

4. Use process and piping diagrams and drawings to explain process flows and identify equipment in a unit/system BPOT, POCO3,4,5,6,7,8, 2, a, all) PSST, BPSSCO all

5. Describe Subsea equipment and Mooring systems 2, a, all) PSST, BPSSCO all

6. Demonstrate in writing Hazards Identification in Oil and Gas Operations, utilization of JSA's, and Behavior Based Safety processes 2, a, all) PSST, BPSSCO all

7. Demonstrate understanding of the relationships between Operations, Mechanical, Electrical, and SCADA Tech. personnel and each disciplines roll in the Operations process 2, a, all) PSST, BPSSCO all

Course Number and Name: OGP 1324 Oil and Gas Equipment II

Description: This course is a continuation of Oil and Gas equipment I, including compressors, turbines, tanks, pressurized vessels and other specialized equipment such as lact and dehydration units. Maintenance, troubleshooting, and record keeping is also covered.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
4	3	2	75

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Identify and explain oil and gas equipment terminology BPOT, POCO3,4,5,6,7,8, 2, a, all, PSST, BPSSCO all
2. Explain basic hydraulic and pneumatic concepts that apply to oil and gas production equipment BPOT, POCO 3,4,5,6,7,8, 2, a, all) PSST, BPSSCO all
3. Demonstrate knowledge related to the use of compressors, turbines, tanks, vessels, and other specialized equipment found in the oil and gas industry BPOT, POCO 3,4,5,6,7,8, 2, a, all, PSST, BPSSCO all
4. Identify rolls and responsibilities of each discipline in a work order maintenance and record keeping system or CMMS 2, a, all) PSST, BPSSCO all
5. Demonstrate knowledge of the roll of a Management of Change (MOC) system and its relationship to the CMMS system and impact to each piece of the process 2, a, all) PSST, BPSSCO all

Course Number and Name: OPG 1413 Pneumatic Instrumentation

Description: This is an introductory course focusing on the concepts of automatic control and instruments used to sense, measure, transmit and control the production process with emphasis on pneumatics. Terminology, control loops and instrumentation drawings are a basic part of this course.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Describe and apply the major elements of process technology BPOT, POCO 3, 2, a, all) PSST, BPSSCO all
   a. Define pressure, and apply related measurements and processes used in the process industry
   b. Define temperature, and apply related measurements and processes used in the process industry
   c. Define level, and apply related measurements and processes used in the process industry
   d. Define flow, and apply related measurements and processes used in the process industry
   e. Define analytical instrumentation, and apply related measurements and processes used in the process industry

2. Describe and explain the functions and components of process control. 2, a, all) PSST, BPSSCO all
   a. Identify and describe the various pieces of equipment used in instrumentation (transmitters; transducers; differential pressure cells; analog, pneumatic, and digital instruments; etc.)
   b. Describe valves used in instrumentation (globe, three-way, butterfly, etc.)
   c. Explain the functions and components of a control loop, and contrast the differences between open and closed controls
   d. Describe the relationship between measurement instruments and their role in the overall control loop process

3. Describe the role and function of advanced controls and controllers in process operations.
   a. Identify the different advanced controls and controllers and their primary function2, a, all) PSST, BPSSCO all

4. Demonstrate testing and proper operation of pneumatic level, temperature, pressure, and flow instruments in a hands on lab setting 2, a, all) PSST, BPSSCO all

Course Number and Name: OGP 1614 Oil and Gas Systems

Description: A detailed breakdown of each system that makes up an entire offshore and onshore oil and Gas process facility and the relationship and impact to the systems. Emphasis is placed on the cascade effect, along with fluid dynamics, and oil and gas measurement. Also, the relationships and similarities between different industries. The concept of a process is a process no matter the industry.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
4	3	2	75

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Demonstrate understanding of the emergency notification and life-saving systems [2, a, all PSST, BPSSCO all]
2. Describe understanding of the Mooring systems and the difference fixed structures and floating processing facilities [2, a, all, PSST,]
3. Describe rolls and responsibilities of a (CRO) Control Room Operator are discussed with emphasis on (FBM) Flag Bypass Monitor of safety systems [2, a, all, PSST]
4. Demonstrate understanding of various utility systems on a major production processing facility like Power Generation, Hypochlorite system, Cranes and Hoisting systems, Equipment Storage and Preservation processes, Warehousing and Transportation systems are discussed [BPOT, 2a, all, POCO 3,4,5,6,7,8, 2, a, all) PSST, BPSSCO all]
5. Discuss proper utilization of the different communication systems along with basic understanding of the customer and supplier relationships within the industry are also discussed [2, a, all, PSST, BPSSCO all]

Course Number and Name: OGP 2113 Production Safety Systems

Description: This course is a study of the installation, operation, undesirable events, inspection, testing and maintenance of the safety devices and production equipment used on offshore platforms. Topics include flow, pressure, temperature and level sensors, gas and fire detection devices, surface and subsurface safety valves. Special emphasis will be on developing an understanding of Title 30 CFR parts 250 O &H and API Rp14-C as they relate to process safety.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Monitor and maintain equipment according to manufacturer/company operational parameters, safety standards and government regulations 2, a, all, PSST, BPSSCO all
2. Monitor and maintain equipment maintenance coordination according to mechanical requirements, maintenance schedule or equipment malfunction 2, a, all, PSST, BPSSCO all
3. Demonstrate equipment preparation for mechanical work including shut down and Lockout/Tagout according to company policy 2, a, all), PSST, BPSSCO all
4. Demonstrate equipment being returned to service following mechanical work including verifying work, completing Lockout/Tagout, completing paperwork and start-up according to company policy 2, a, all, PSST, BPSSCO all
5. Verify Process variables meet product and equipment parameters 2, a, all, PSST, BPSSCO all

Course Number and Name: OGP 2214 Oil and Gas Production II

Description: This course is a continuation of OGP 1114 oil and gas Production II. It is also designed as a lead in to OGP 1614 Oil and Gas systems.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
4	3	2	75

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Discuss the processes of gas treatment, dehydration, and compression [2, a, all) PSST, BPSSCO all]
   a. Discuss the composition and physical properties of natural gas
   b. Describe treatments of natural gas including separation, dehydration, and conditioning
   c. Compare and contrast liquid and solid dehydration processes, including equipment and procedures
   d. Describe the process, equipment, and procedures used in natural gas compression
2. Describe the processes, equipment, and procedures used in produced water treatment and handling [2, a, all) PSST, BPSSCO all]
   a. Describe techniques used to treat and/or dispose of produced water in an onshore and offshore facility
   b. Identify and describe the functions of major components of the produced water treatment system
   c. Describe activities associated with monitoring and maintaining produced water treatment systems
   d. Describe safety, and environmental concerns associated with working with the produced water treatment process
3. Describe the purpose and operation of auxiliary systems [2, a, all) PSST, BPSSCO all]
   a. Discuss how auxiliary systems support a production facility, including instrument air systems, flare and relief systems, fuel gas systems, electrical distribution systems, and so forth
   b. Discuss pigging operations including different types of pigs, launching and recovery, and safety
   c. Discuss the process technician's role in operation and maintenance of auxiliary systems
4. Describe the purpose and operation of artificial lift and enhanced recovery techniques [BPOT, 2) a) all 2, a, all) PSST, BPSSCO all]
   a. Explain the different artificial methods available for lifting hydrocarbons [BPOT, 2) a) all 2, a, all) PSST, BPSSCO all]
   b. Describe the equipment used for each type of lift [2, a, all) PSST, BPSSCO all]
   c. Describe processes and equipment involved in different artificial and enhanced recovery processes including beam pumping, subsurface hydraulic pumping, electric submersible pumping, water flooding, and so forth [BPOT, 2)a) all 2,a,all) PSST, BPSSCO all]
5. Describe the purpose and operation of pumping and transportation systems used in oil and gas production.
   a. Identify methods used to transport oil and gas products, including barges, railway, motor transportation, pipelines.
   b. Discuss pipeline construction procedures for onshore and offshore operations.
   c. Discuss economic and safety issues associated with the transportation of oil and gas products.

6. Identify and describe safety, health, and environmental considerations associated with oil and gas production
   a. Discuss governmental agencies and regulations associated with oil and gas production, including Coast Guard, Minerals Management Service, American Petroleum Institute, Department of Transportation, OSHA, 30 CFR, and EPA
   b. Discuss safety issues related to oil and gas production including rigging and hoisting, helicopter and boat safety, and hazardous and nonhazardous waste disposal

7. Discuss refining and processing operations
   a. Outline the process and products from refining
   b. Outline the processes and products from natural gas production
   c. Identify major petrochemicals that can be derived from petroleum
   d. Explain the relationship of efficient oil and gas production to efficient crude oil refining, natural gas processing, and petrochemical processing

Course Number and Name: OGP 2223 Production Troubleshooting

Description: This is a course designed to apply knowledge of process variables, indicators and controllers, troubleshooting tools, and troubleshooting steps to solve problems in a simple process system.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Identify digital control systems [2, a, all) PSST, BPSSCO all]
2. Explain PLC distributed Control Systems [2, a, all, PSST, BPSSCO all]
3. Demonstrate understanding of Emergency Shut Down (ESD) System Operation, Process to understand Troubleshooting [2, a, all, PSST, BPSSCO all]
4. Apply operation of pneumatic, and hydraulic power and control systems [BPOT, 2) a) all POCO 3 2, a, all, PSST, BPSSCO all]
5. Apply computation methods to more complex control loop applications [BPOT, 2) a) all POCO 3 2, a, all, PSST, BPSSCO all]
6. Discuss basic mechanical troubleshooting
7. Demonstrate the thought processes and critical thinking skills needed for troubleshooting

Course Number and Name: OGP 2313 Electronic Instrumentation

Description: This course places emphasis on control schemes, switches, annunciators, signal conversion and transmission, digital control systems, programmable logic control systems, and distributed control systems.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Identify digital control systems 2, a, all, PSST, BPSSCO all
2. Explain PLC distributed Control System 2, a, all, PSST, BPSSCO all
3. Explain Emergency shutdown procedures as they relate to electronic instrumentation 2, a, all, PSST, BPSSCO all
4. Apply operation of pneumatic and hydraulic power and control systems 2, a, all, PSST, BPSSCO all
5. Apply computation methods to more complex control loop applications 2, a, all) PSST, BPSSCO all
6. Demonstrate testing and proper operation of electronic level, temperature, pressure, and flow instruments in a hands on lab setting 2, a, all, PSST, BPSSCO all
7. Demonstrate proper procedure while using the Simtronics Simulator in a hands on lab setting to remotely operate and control a processing facility to; 2, a, all, PSST, BPSSCO all
   a. Start up
   b. Shut down
   c. Place devices in test
   d. Utilize historian feature, for decision making and possible control changes.

Course Number and Name: OGP 2513 Oil and Gas Flow Diagrams

Description: Course topics include identification and application of electrical, piping, instrumentation mechanical and process drawings used in job planning. Identification of lines, symbols, lean symbols; interpretation of view, dimensions, and tolerances. Includes PFD, P&ID, Safe Charts, PE &I, electrical and electrical one- line drawings. Study instruments symbols, terminology, controllers, regulators, control loops and other instrument drawings.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	3	0	45

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Recognize, interpret, and follow flow systems based on process drawings [2, a, all, PSST, BPSSCO all]

2. Describe typical process technician responsibilities for the following: [2, a, all, PSST, BPSSCO all]
   a. Operating systems
   b. Monitoring systems
   c. Troubleshooting systems
   d. Completing rounds
   e. Communication between inside and outside operators
   f. Communication between process technician and other departments

3. Describe typical process technician responsibilities for the following: [2, a, all, PSST, BPSSCO all]
   a. Implementing established procedures and specifications
   b. Completing maintenance tasks as assigned
   c. Monitoring and maintaining auxiliary equipment
   d. Completing related sampling and analysis tasks and responding appropriately to results
   e. Communicating problems to appropriate personnel
   f. Communicating relevant information to other units
   g. Identifying system problems
   h. Comparing and contrasting control systems used in utility, auxiliary, and process systems
   i. Listing factors that can affect plant economics

Course Number and Name: OGP 2913 Special Project in Oil and Gas Production I

Description: This course is designed to provide the student with practical application of skills and knowledge gained in other vocational –technical courses. The instructor works closely with the student to ensure that the selection of a project will enhance the student's learning experience.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	3	0	45

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Apply technical skills needed to be a viable member of the workforce [2, a, all, PSST, BPSSCO all]
   a. Prepare a description of technical skills to be developed in the supervised work experience [BPOT, 2) a) all 2, a, all) PSST, BPSSCO all]
   b. Develop technical skills needed to be a viable member of the workforce [BPOT, 2) a) all 2, a, all) PSST, BPSSCO all]

2. Apply skills developed in other program area courses
   a. Perform skills developed in other program area courses [2, a, all, PSST, BPSSCO all]

3. Apply human relationship skills [2, a, all, PSST, BPSSCO all]
   a. Use proactive human relationship skills in the supervised work experience

4. Apply and practice positive work habits and responsibilities. a. Perform assignments to develop work habits and responsibilities [2, a, all PSST, BPSSCO all]

5. Work with the instructor and employer to develop written occupational objectives to be accomplished
   a. Perform written occupational objectives in the supervised work experience [2, a, all) PSST, BPSSCO all]

6. Assess accomplishment of objectives [2, a, all PSST, BPSSCO all]
   a. Prepare daily written assessment of accomplishment of objectives
   b. Present weekly written reports of activities performed and objectives accomplished to the instructor

7. Utilize a set of written guidelines for the supervised work experience
   a. Develop and follow a set of written guidelines for the supervised work experience

Course Number and Name: OGP 2933 Special Project in Oil and Gas Production II

Description: A course which is a cooperative program between industry and education designed to integrate the student's technical studies with industrial experience.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Apply technical skills needed to be a viable member of the workforce BPOT, 2) a) all, POCO 3,4,5,6,7,8,9,10,11 2, a, all) PSST, BPSSCO all
   1. Prepare a description of technical skills to be developed in the supervised work experience
   2. Develop technical skills needed to be a viable member of the workforce

2. Apply skills developed in other program area courses 2, a, all) PSST, BPSSCO all
   a. Perform skills developed in other program area courses

3. Apply human relationship skills 2, a, all) PSST, BPSSCO all
   a. Use proactive human relationship skills in the supervised work experience

4. Apply and practice positive work habits and responsibilities. a. Perform assignments to develop work habits and responsibilities

5. Work with the instructor and employer to develop written occupational objectives to be accomplished
   a. Perform written occupational objectives in the supervised work experience BPOT, 2) a) all, POCO 3 2, a, all) PSST, BPSSCO all

6. Assess accomplishment of objectives 2, a, all) PSST, BPSSCO all
   1. Prepare daily written assessment of accomplishment of objectives
   2. Present weekly written reports of activities performed and objectives accomplished to the instructor

7. Utilize a set of written guidelines for the supervised work experience 2, a, all) PSST, BPSSCO all
   a. Develop and follow a set of written guidelines for the supervised work experience

Course Number and Name: OGP 292(1-6) Supervised Work Experience for Oil and Gas Operations

Description: This cooperative program between industry and education is designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of 1 semester hour per 45 industrial contact hours.

Hour Breakdown:

Semester Credit Hours	Lecture	Externship	Contact Hours
1		3	45
2		6	90
3		9	135
4		12	180
5		15	225
6		18	270

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Apply technical skills needed to be a viable member of the workforce.
    a. Prepare a description of technical skills to be developed in the supervised work experience program.
    b. Develop technical skills needed to be a viable member of the workforce.

2. Apply skills developed in other program area courses.
    a. Perform skills developed in other program area courses in the supervised work experience program.

3. Apply human relationship skills.
    a. Practice human relationship skills in the supervised work experience program.

4. Apply and practice positive work habits and responsibilities.
    a. Perform assignments to develop positive work habits and responsibilities.

5. Work with the instructor and employer to develop written occupational objectives to be accomplished.
    a. Perform written occupational objectives in the supervised occupational experience program.

6. Assess accomplishment of objectives.
    a. Prepare daily written assessment of accomplishment of objectives.
    b. Present weekly written reports of activities performed and objectives accomplished to the instructor.

7. Utilize a set of written guidelines for the supervised work experience.
    a. Develop and follow a set of written guidelines for the supervised work experience.

Course Number and Name: OGP 294(1-6) Supervised Work Experience for Oil and Gas Operations

Description: This cooperative program between industry and education is designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of 1 semester hour per 45 industrial contact

Hour Breakdown:

Semester Credit Hours	Lecture	Externship	Contact Hours
1		3	45
2		6	90
3		9	135
4		12	180
5		15	225
6		18	270

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Apply technical skills needed to be a viable member of the workforce.
    a. Prepare a description of technical skills to be developed in the supervised work experience program.
    b. Develop technical skills needed to be a viable member of the workforce.

2. Apply skills developed in other program area courses.
    a. Perform skills developed in other program area courses in the supervised work experience program.

3. Apply human relationship skills.
    a. Practice human relationship skills in the supervised work experience program.

4. Apply and practice positive work habits and responsibilities.
    a. Perform assignments to develop positive work habits and responsibilities.

5. Work with the instructor and employer to develop written occupational objectives to be accomplished.
    a. Perform written occupational objectives in the supervised occupational experience program.

6. Assess accomplishment of objectives.
    a. Prepare daily written assessment of accomplishment of objectives.
    b. Present weekly written reports of activities performed and objectives accomplished to the instructor.

7. Utilize a set of written guidelines for the supervised work experience.

a. Develop and follow a set of written guidelines for the supervised work experience.

Entry Level Petroleum Trainee COURSES

Course Number and Name: OGP 1123 Oil and Gas Best Practices

Description: This course introduces the Entry Level Petroleum Trainee (ELPT) to Oil and Gas exploration and production processes. It contains instruction that provides the student a fundamental orientation to the petroleum production industry, safety, drilling, ecology, professionalism, teamwork, vocabulary, and mathematics as used by the industry.

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Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Describe the importance of safety, the causes of workplace incidents, and the process of hazard recognition and control. NCCER Core 00101,1
   a. Define incidents and the significant costs associated with them. NCCER Core 00101,1a
   b. Identify the common causes of incidents and their related consequences NCCER Core 00101,1b
   c. Describe the process related to hazard recognition and control, including the Hazard Communication (HAZCOM) Standard and the provisions of a safety data sheet (SDS). NCCER Core 00101,1c

2. Describe the safe work requirements for elevated work, including fall protection guidelines. NCCER Core 00101,2
   a. Identify and describe various fall hazards. NCCER Core 00101,2a
   b. Identify and describe equipment and methods used in fall prevention and fall arrest. NCCER Core 00101,2b
   c. Identify and describe the safe use of ladders and stairs. NCCER Core 00101,2c
   d. Identify and describe the safe use of scaffolds. NCCER Core 00101,2d

3. Identify and explain how to avoid struck-by hazards. NCCER Core 00101,3
   a. Identify and explain how to avoid struck-by and caught-in-between hazards. NCCER Core 00101,3a
   b. Identify and explain how to avoid caught-in and caught-between hazards. NCCER Core 00101,3b

4. Identify common energy-related hazards and explain how to avoid them. NCCER Core 00101,4
   a. Describe basic job-site electrical safety guidelines NCCER Core 00101,4a
   b. Explain the importance of lockout/tagout and describe basic procedures. NCCER Core 00101,4b

5. Identify and describe the proper use of personal protective equipment (PPE). NCCER Core 00101,5
   a. Identify and describe the basic use of PPE used to protect workers from bodily injury. NCCER Core 00101,5a
   b. Identify potential respiratory hazards and the basic respirators used to protect workers against those hazards. NCCER Core 00101,5b

6. Identify and describe other specific job-site safety hazards. NCCER Core 00101,6
   a. Identify various exposure hazards commonly found on job sites. NCCER Core 00101,6a
   b. Identify hazards associated with environmental extremes. NCCER Core 00101,6b
   c. Identify hazards associated with hot work. NCCER Core 00101,6c
   d. Identify fire hazards and describe basic firefighting procedures. NCCER Core 00101,6d

e. Identify confined spaces and describe the related safety considerations. NCCER Core 00101,6e

7. Identify whole numbers and demonstrate how to work with them mathematically. NCCER Core 00102, 1
   a. Identify different whole numbers and their place values. NCCER Core 00102, 1a
   b. Demonstrate the ability to add and subtract whole numbers. NCCER Core 00102, 1a
   c. Demonstrate the ability to multiply and divide whole numbers. NCCER Core 00102, 1c

8. Explain how to work with fractions. NCCER Core 00102, 2
   a. Define equivalent fractions and show how to find lowest common denominators. NCCER Core 00102,2a
   b. Demonstrate the ability to add and subtract fractions. NCCER Core 00102,2c

9. Identify and convert units of length, weight, volume and temperature between Imperial and metric systems of measurement. NCCER Core 00102, 5

10. Identify and explain how to use various types of hand tools. NCCER Core 00103, 1

11. Identify and explain how to use various types of measurement and layout tools. NCCER Core 00103, 2

12. Identify and explain how to use various types of power drills and impact wrenches. NCCER Core 00104, 1

13. Identify and explain how to use various grinders and grinder attachments. NCCER Core 00104, 3

14. Identify and describe various types of construction drawings, including their fundamental components and features. NCCER Core 00105, 1
   a. Identify various types of construction drawings. NCCER Core 00105, 1a
   b. Identify and describe the purpose of the five basic construction drawing components. NCCER Core 00105, 1b
   c. Identify and explain the use of dimensions and various drawing scales. NCCER Core 00105, 1d
   d. Identify and describe how to use an engineer's and architect's scales. NCCER Core 00105, 1e

15. Describe the communication, listening, and speaking processes and their relationship to job performance. NCCER Core 00107, 1
   a. Describe the communication process and importance of listening and speaking skills. NCCER Core 00107, 1a
   b. Describe the listening process and identify good listening skills. NCCER Core 00107, 1b
   c. Describe the speaking process and identify good speaking skills. NCCER Core 00107, 1c

16. Identify the basic concepts of material handling and common safety precautions. NCCER Core 00109, 1
   a. Describe the basic concepts of material handling and manual lifting. NCCER Core 00109, 1a
   b. Identify common material handling safety precautions. NCCER Core 00109, 1b
   c. Identify and describe how to tie knots commonly used in material handling. NCCER Core 00109, 1c

17. Describe the activities of the basic drilling processes.
   a. Identify several companies that contribute to these activities.
   b. Identify several job positions that contribute to these activities.
   c. List two primary means of producing crude oil and natural gas.

18. The student will describe Career Paths with in the oil and gas industry.
   a. Explain the duties of each job listed and the skills required for the job.
   b. Describe methods that could be used to advance from entry level to advanced employment in the exploration and production sectors.
   c. List several career pathways.

Course Number and Name: OGP 1143 Oil and Gas Best Practices

Description: This course teaches the Entry Level Petroleum Trainee daily activities necessary to work in the oil and gas drilling industry. This course contains instructions in safety, orientation to work practices, and introduction to well control.

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Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Demonstrate general safety principles for working in the oil and gas industry. IADC Rigpass, General Safety
   a. Discuss Stop Work Authority. IADC Rigpass, General Safety
   b. Discuss risk assessment and worksite safety. IADC Rigpass, General Safety
   c. Explain the significance of workplace housekeeping. IADC Rigpass, General Safety
   d. Explain the importance of reporting and investigating incidents. IADC Rigpass, General Safety
   e. Explain the importance of worksite policies. IADC Rigpass, General Safety
   f. Explain the hazards and control of manual material handling. IADC Rigpass, General Safety

2. Demonstrate the appropriate use of Personal Protective Equipment (PPE). IADC Rigpass, PPE
   a. Identify the importance the following PPEIADC Rigpass, PPE
   b. Demonstrate the use of the following PPEIADC Rigpass, PPE
   c. Practice selecting, inspecting, and donning appropriate PPEIADC Rigpass, PPE
   d. Explain the importance of PPE in defense of perceived and unrecognized risk. IADC Rigpass, PPE

3. Respond appropriately to Hazard Communications. IADC Rigpass, HAZCOM
   a. Identify safety signs utilized in the oil and gas industry. IADC Rigpass, HAZCOM
   b. Explain the meaning of safety signs utilized in the oil and gas industry. IADC Rigpass, HAZCOM
   c. Explain the importance of Safety Data Sheets (SDS). IADC Rigpass, HAZCOM
   d. Explain how to use SDS to identify types of hazardous chemicals.
   e. Identify the location of SDS at the worksite.
   f. Explain the need for procedures regarding the transportation of hazardous materials. IADC Rigpass, HAZCOM
   g. Explain the importance of reporting a release of hazardous materials. IADC Rigpass, HAZCOM
   h. Explain the importance of appropriate materials handling to avoid incident. IADC Rigpass, HAZCOM

4. Identify specialized work procedures in the oil and gas industry. IADC Rigpass, Specialized Work
   a. Explain hazardous energy in the workplace. IADC Rigpass, Specialized Work
   b. Explain the importance of Lockout/Tagout procedures. IADC Rigpass, Specialized Work
   c. Identify hazards associated with confined space entry. IADC Rigpass, Specialized Work
   d. Explain the precautions taken when working at heights. IADC Rigpass, Specialized Work
   e. Explain the dangers associated with hoisting and lifting. IADC Rigpass, Specialized Work
   f. Demonstrate how to complete and route Work permits. IADC Rigpass, Specialized Work

5. Demonstrate appropriate Fire safe in the oil and gas industry. IADC Rigpass, Fire Safety
   a. Determine if a fire extinguisher is ready for use. IADC Rigpass, Fire Safety
   b. Explain how to use a fire extinguisher. IADC Rigpass, Fire Safety
   c. Match the various types of fire extinguishers to the appropriate type of fire. IADC Rigpass, Fire Safety

6. Conduct a Job safety analysis. IADC Rigpass, JSA
    a. Define Job safety analysis. IADC Rigpass, JSA
    b. Identify Job safety analysis. IADC Rigpass, JSA
    c. Demonstrate Job safety analysis. IADC Rigpass, JSA

7. Explain the components of Emergency Response related to oil and gas industry. IADC Rigpass, Emergency Response.
    a. Explain the importance of planning for emergencies. IADC Rigpass, Emergency Response.
    b. Explain the potential risks that the oilfield employee could encounter from bloodborne pathogens, adverse weather, wildlife, etc. IADC Rigpass, Emergency Response.
    c. Explain your role/responsibility in Industrial hygiene. IADC Rigpass, Emergency Response.
    d. Explain the various alarms. IADC Rigpass, Emergency Response.
    e. Identify muster stations. IADC Rigpass, Emergency Response.
    f. Explain how your physical capacity might influence your ability to respond to an emergency. IADC Rigpass, Emergency Response.

8. Identify the necessity of Well Site Environmental Protection. IADC Rigpass, Wellsite Environmental Protection
    a. Explain your role in wellsite environmental protection. IADC Rigpass, Wellsite Environmental Protection
    b. Explain the methods of protecting the environment in the oil and gas industry.

9. Identify regulations and compliance as related to the oil and gas industry. IADC Rigpass, Regulations
    a. Explain how regulations affect operations. IADC Rigpass, Regulations
    b. Explain compliance in managing Marine debris, Waste management, Leaks, spills, and releases. IADC Rigpass, Regulations

Course Number and Name: OGP 1152 Rigging and Lifting Systems and Techniques

Description: This course informs the Entry Level Petroleum Trainee (ELPT) of rigging and lifting systems and techniques. The student will take part in safe rigging and lifting practices involved in the Oil and Gas Industry.

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Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
2	1	2	45

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Define rigging safety and vocabulary terms. NCCER Core 00106
   a. Explain the importance of designating a signal man. NCCER Core 00106
   b. Identify personal protective equipment for rigging and lifting operations. NCCER Core 00106
   c. Explain Stop Work Authority. NCCER Core 00106
   d. Define common rigging and lifting terminology. NCCER Core 00106
   e. Explain environmental hazards associated and how to mitigate. NCCER Core 00106

2. Explain the crane emergency procedures. NCCER Core 00106
   a. Explain the importance of closing out hazardous work. NCCER Core 00106
   b. Demonstrate the ability to secure the current work area. NCCER Core 00106

3. Describe rigging hardware in the Oil and Gas Industry. NCCER Core 00106
   a. Describe the storage requirements for all rigging. NCCER Core 00106
   b. Explain how the sling capacity changes. NCCER Core 00106
   c. Locate the manufacturer's guidelines on rigging. NCCER Core 00106
   d. Explain how to interpret manufacturer's guidelines. NCCER Core 00106
   e. Explain sling manufacturers' recommendations for use. NCCER Core 00106
   f. Describe all permanent and temporary lifting points. NCCER Core 00106
   g. Describe the use of tag lines. NCCER Core 00106
   h. Demonstrate use of tag lines. NCCER Core 00106

4. Perform the application, inspection, and maintenance of rigging and equipment. NCCER Core 00106

5. Identify hoist and cranes commonly used in the Oil and Gas Industry. NCCER Core 00106

Course Number and Name: OGP 1163 Practical Experience for Entry Level Petroleum Trainee

Description: This course provides an opportunity for the Entry Level Petroleum Trainee (ELPT) to practice Oil and Gas industry skills learned in OGP 1123, OGP 1143, and OGP 1152

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Preform the following occupational activities associated with employment as an Entry Level Petroleum Trainee at a level above minimum standards:

    a. Practice Professional conduct such as refraining from horseplay, compliance with chain of command, dress code, housekeeping, personal hygiene, safety standards, program policies & procedures, leadership, teamwork, ethics, accountability, responsibility, and curtesy to others.
    b. Develop strategies to cope with living in an occupational environment, working through holidays/family events, and separation from friends and family.
    c. Prioritize *off tour* time for job training, rest, recreation, and socialization.
    d. Practice occupational skills such as:
        i. Safety compliance
        ii. Emergency response
        iii. Dropped object awareness
        iv. Written job planning
        v. Rigging inspection and use
        vi. Crane operations
        vii. Drilling processes
        viii. Equipment identification
        ix. Chemical management
        x. Fire watch
        xi. Space audits
        xii. Environmental maintenance
        xiii. Needle gunning
        xiv. Painting
        xv. Tool management of pneumatic, electric, and manual tools

Course Number and Name: OGP 1174 Advanced Safety for Oil and Gas Industry

Description: This course provides instruction in advanced safety for the entry level petroleum trainee. This course contains instruction on safety and orientation for the workplace.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
4	3	2	75

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Perform basic firefighting in onshore environments. IADC Rigpass, Fire Safety
   a. Explain how to use a fire extinguisher. IADC Rigpass, Fire Safety
   b. Identify the various types of fire extinguishers. IADC Rigpass, Fire Safety
   c. Determine if a fire extinguisher is ready for use. IADC Rigpass, Fire Safety

2. Demonstrate safe operation of an Aerial Lift.
   a. Inspect the Aerial lift for safe operation.
   b. Demonstrate safe operation of an Aerial Lift.

3. The student will explain excavation safety. IADC Rigpass, Excavation
   a. Explain basic trenching and shoring. IADC Rigpass, Excavation
   b. Explain safety when working around pits and ponds. IADC Rigpass, Excavation
   c. Explain the importance of “One Call” - Call before you dig. IADC Rigpass, Excavation

4. Perform confined space entrant and entry supervisor activities associated with onshore work.

5. Demonstrate safe procedures and equipment for working from Heights/Fall Protection.

6. Conduct simulated rescues.

7. Demonstrate their knowledge of Hazardous Materials, Materials Handling, Machine Guarding, Industrial Hygiene, Bloodborne Pathogens, Ergonomics, and Fall Protection. NCCER Core 00101

Course Number and Name: OGP 1183 Entry Level Offshore Training and Compliance

Description: This course provides an opportunity for the Entry Level Petroleum Trainee (ELPT) to practice Oil and Gas industry skills learned in OGP 1123, OGP 1143, and OGP 1174. This Course provides students with the opportunity to experience what it is like to live and work on an offshore installation.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. The student will perform basic firefighting in offshore environments. US Coast Guard, Basic Firefighting
   a. Discuss the responsibilities of the Vessel Personnel in fire hazard control. US Coast Guard, Basic Firefighting
   b. Discuss the preparation for emergencies. US Coast Guard, Basic Firefighting
   c. Discuss the use of Reparatory Protection Devices US Coast Guard, Basic Firefighting
   d. Define the chemistry of fire. US Coast Guard, Basic Firefighting
   e. Define Fire. US Coast Guard, Basic Firefighting
   f. Define the Fire Triangle. US Coast Guard, Basic Firefighting

2. The student will demonstrate Helicopter Underwater Egression (Helicopter Underwater Egression Training [HUET]). OPITO, HUET
   a. Discuss survival factors and equipment. OPITO, HUET
   b. List types of Emergencies OPITO, HUET
   c. Discuss specific problems in emergencies. OPITO, HUET
   d. Discuss decision making in emergencies. OPITO, HUET
   e. Practice emergency drills. OPITO, HUET
   f. Describe seven steps to survival OPITO, HUET

3. The student will perform confined space entrant and entry supervisor activities associated with offshore work.

4. The student will demonstrate safe procedures and equipment for Working from Heights/Fall Protection.

5. The student will conduct simulated offshore rescues. US Coast Guard, Basic Firefighting

Course Number and Name: OGP 2323 Internship for Entry Level Petroleum Trainee

Description: This course provides an opportunity for the seaman, roustabout, rigger, deck hand to enhance industry skills learned in the first semester of the ELPT program. The student experience is two-seven day hitches of supervised living and working on a retired submersible drilling rig

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Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Utilize a written plan that details the activities to be completed.
    a. Perform written occupational objectives.

2. Assess accomplishment of objectives.
    a. Prepare weekly written assessment of accomplishment of objectives.
    b. Present/mail weekly written reports of activities performed, and objectives accomplished to the instructor.
    c. Submit final Safety Procedure Checklist to the instructor (Company Supervisor).

Course Number and Name: OGP 2333 Special Project in Oil and Gas Drilling

Description: This course is designed to provide the student with practical application of skills and knowledge gained in other vocational-technical courses. The instructor works closely with the student to ensure that the selection of a project will enhance the student's learning experience.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Develop a written plan of projects to be completed that address:
   a. describes contemporary issues in the oil and gas industry related to drilling
   b. present learning, knowledge, skill gaps that the learning needs to be remediated

Course Number and Name: OGP 2343 Supervised Work Experience in Oil and Gas Drilling

Description: This course is a cooperative program between industry and education designed to integrate the student's technical studies with industrial experience.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Follow a set of instructor guidelines for the supervised work experience program.

2. Apply skills needed to be a viable member of the workforce.
   a. Prepare a description of skills to be developed in the supervised work experience program.
   b. Practice skills needed to be a viable member of the workforce.

3. Practice human relationship skills in the supervised work experience program

4. Practice positive work habits, responsibilities, and ethics.

5. Develop written occupational objectives in the supervised work experience program

6. Assess performance of occupational skills
   a. Prepare daily written assessments of work performance as specified in the occupational objectives.
   b. Present weekly written reports to the instructor of activities performed objectives accomplished.

Course Number and Name: OGP 2413 Well Control

Description: This course informs the Entry Level Petroleum Trainee (ELPT) of Offshore Compliance. The student will learn how to maintain offshore compliance in the Oil and Gas Industry.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Investigate pressure concepts and calculations. [IADC Wellsharp, 2.1]
   a. Discuss u-tube concept and hydrostatic column. [IADC Wellsharp, 2.1]
   b. Discuss of hydrostatic pressure. [IADC Wellsharp, 2.1]
   c. Discuss bottom hole pressure. [IADC Wellsharp, 2.1]
   d. Discuss surface pressure. [IADC Wellsharp, 2.1]
   e. Discuss its effect on downhole pressures. [IADC Wellsharp, 2.1]

2. Explain the concept of kicks (well pressure spikes). [IADC Wellsharp, 2.5]
   a. Identify causes of unintentional flow or "kicks." [IADC Wellsharp, 2.5]
   b. Identify causes of intentional flow from formation. [IADC Wellsharp, 2.5]
   c. Identify kick indicators. [IADC Wellsharp, 2.5]
   d. Identify warning signs of kicks. [IADC Wellsharp, 2.5]
   e. Identify the importance of early detection. [IADC Wellsharp,2.5]
   f. Identify consequences of not responding to a kick in a timely manner. [IADC Wellsharp,2.5]
   g. Describe the procedure (such as a pit drill) to perform a flow check in the situations listed at left. [IADC Wellsharp,2.10]
   h. Demonstrate well shut-in to minimize influx based on observing positive flow indicators. [IADC Wellsharp,2.7]
   i. Verify well closure by demonstrating flow path closure for any shut-in. [IADC Wellsharp,2.8]
   j. Demonstrate recordkeeping parameters for well shut-in. [IADC Wellsharp,2.9]

3. Explain gas characteristics and behaviors
   a. Identify types of gases and hazards of each.
   b. Describe the relatively low density of gas and its effect on the hydrostatic column.
   c. Explain the consequences of gas migration.

4. Identify fluids [IADC Wellsharp, 2.3]
   a. Identify types of drilling fluids. [IADC Wellsharp,2.3]

5. Identify constant bottom hole pressure well control methods
   a. Identify objectives of constant bottom hole pressure methods.
   b. Read, record and report drill pipe and annulus pressures.
   c. List the phases of at least one constant bottom hole pressure well control method.
   d. Describe the difference between diverting and well kills
   e. that use constant bottom hole pressure methods.

6. Describe equipment [IADC Wellsharp, 2.13]
   a. Describe the purpose and use of the mud pump/stroke counter (e.g., stroke rate, flow rate, and displaced volume).
   b. Describe the importance of the mud balance.
   c. Demonstrate basic understanding of the use of ram and Annular preventers.

a. Identify flow path for normal drilling operations. IADC Wellsharp,2.13
b. Identify flow path for well control operations. IADC Wellsharp,2.13
c. Identify and assist as directed to line-up for equipment pressure testing, shut-in, and pumping operations. IADC Wellsharp,2.13
d. Distinguish the function of the choke from that of other valve types. IADC Wellsharp,2.13
e. Define function, operating principles, flow paths, and components of mud-gas separators. IADC Wellsharp,2.13
f. Explain pit alignment during well control operations. IADC Wellsharp,2.13
g. Describe the procedures for handling of gas in return fluids.
h. Demonstrate understanding of the function of the accumulator system, including an explanation of the consequences of losing nitrogen pre-charge pressure. IADC Wellsharp,2.13
i. Identify how to obtain information on relevant regulations and/or company-specific policies.

Appendix A: Recommended Tools and Equipment

CAPITALIZED ITEMS

1. Dynamic Simulator Oil & Gas
2. Simulations Modules
3. Computers
4. Level Process Control Trainer
5. File cabinet with lock
6. Printer
7. Projector
8. Digital Camera
9. Walk & Talk Whiteboard
10. Dehydrator
11. Pressure Process Control Learning System
12. Temperature Process Control Learning System
13. Level Process Control Learning System.
14. LEL Meter
15. Line Locator

NON-CAPITALIZED ITEMS

1. Hand Tools
2. Thread lubricants
3. Rags
4. Spray Penetrate
5. O-Rings
6. Gasket Material
7. Filters
8. Hand Pumps
9. Small flow safety valves
10. Donated Lab equipment
11. Probing Rod
12. Hydrometer
13. Thermometer
14. Voltmeter
15. Snoop Kit

RECOMMENDED INSTRUCTIONAL AIDS

1. Smart TV
2. Printer
3. Digital camera with movie capability
4. Access to E-learning and E-books program (Amatol through Siviad)
5. Equipment cut-a-ways
6. Donated Oil and Gas processing equipment
7. Other learning aids provided by vendors and manufactures.

Other equipment items can be added when deemed appropriate by the community college industry craft committee or by industry/business training requirements

Appendix B: Curriculum Definitions and Terms

- Course Name – A common name that will be used by all community colleges in reporting students

- Course Abbreviation – A common abbreviation that will be used by all community and junior colleges in reporting students

- Classification – Courses may be classified as the following:
    - Career Certificate Required Course – A required course for all students completing a career certificate.
    - Technical Certificate Required Course – A required course for all students completing a technical certificate.
    - Technical Elective – Elective courses that are available for colleges to offer to students.

- Description – A short narrative that includes the major purpose(s) of the course

- Prerequisites – A listing of any courses that must be taken prior to or on enrollment in the course

- Corequisites – A listing of courses that may be taken while enrolled in the course

- Student Learning Outcomes – A listing of the student outcomes (major concepts and performances) that will enable students to demonstrate mastery of these competencies

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75% of the time allocated to each course. The remaining 25% of each course should be developed at the local district level and may reflect the following:
    - Additional competencies and objectives within the course related to topics not found in the state framework, including activities related to specific needs of industries in the community college district
    - Activities that develop a higher level of mastery on the existing competencies and suggested objectives
    - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed or revised
    - Activities that include integration of academic and career–technical skills and course work, school- to-work transition activities, and articulation of secondary and postsecondary career–technical programs
    - Individualized learning activities, including work-site learning activities, to better prepare individuals in the courses for their chosen occupational areas

- Sequencing of the course within a program is left to the discretion of the local college. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors. Programs that offer an Associate of Applied Science Degree must include all of the required Career Certificate courses, Technical Certificate courses **AND** a minimum of 15

semester hours of General Education Core Courses. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester. Each community college specifies the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science Degree at their college.

- In order to provide flexibility within the districts, individual courses within a framework may be customized by doing the following:

    - Adding new student learning outcomes to complement the existing competencies and suggested objectives in the program framework
    - Revising or extending the student learning outcomes
    - Adjusting the semester credit hours of a course to be up 1 hour or down 1 hour (after informing the Mississippi Community College Board [MCCB] of the change)

Appendix C: Course Crosswalk

Course Crosswalk
Oil and Gas Production

CIP 15.0903 Oil and Gas Production- CIP: 15.0903 (Petroleum Technology/Technician)

Entry Level Petroleum Training Program

Note: Courses that have been added or changed in the 2021curriculum are highlighted.

Existing			Revised		
2018 MS Curriculum Framework			2021 MS Curriculum Framework		
Course Number	**Course Title**	**Hours**	**Course Number**	**Course Title**	**Hours**
OGP1113	Safety Health & Environment	3	OGP1113	Safety Health & Environment	3
OGP 1133	Introduction to Oil and Gas Operation	3	OGP 1133	Introduction to Oil and Gas Operation	3
			OGP 1183	Entry Level Offshore Training and Compliance	3
OGP 1213	Oil and Gas Production I	3	OGP 1213	Oil and Gas Production I	3
OGP 1313	Oil and Gas Equipment I	3	OGP 1313	Oil and Gas Equipment I	3
OGP 1324	Oil and Gas Equipment II	4	OGP 1324	Oil and Gas Equipment II	4
OGP 1413	Pneumatic Instrumentation	3	OGP 1413	Pneumatic Instrumentation	3
OGP 1614	Oil and Gas Systems	4	OGP 1614	Oil and Gas Systems	4
OGP 2214	Oil and Gas Production II	4	OGP 2214	Oil and Gas Production II	4
OGP 2113	Production Safety Systems	3	OGP 2113	Production Safety Systems	3
OGP 2223	Production Troubleshooting	3	OGP 2223	Production Troubleshooting	3
OGP 2313	Electronic Instrumentation	3	OGP 2313	Electronic Instrumentation	3
OGP 2513	Oil and Gas Flow Diagrams	3	OGP 2513	Oil and Gas Flow Diagrams	3

Course Crosswalk
Entry Level Petroleum Trainee

CIP 15

CIP 15.0903 – Entry Level Petroleum Training Program

Note: Courses that have been added or changed in the 2021curriculum are highlighted.

2021 MS Curriculum Framework

Course Number	Course Title	Hours
SSP 1002	Smart Start Pathway	3
OGP 1123	Fundamentals of Oil and Gas	3
OGP 1143	Oil and Gas Best Practices	3
OGP 1152	Rigging and Lifting Systems and Techniques	3
OGP 1163	Practical Experience for Entry Level Petroleum Trainee	3
OGP 1174	Advanced Safety for the Oil and Gas Industry	4
WLT 1173	Introduction to Welding and Safety	3
WLT 1313	Cutting Processes	3
OGP 1183	Entry Level Offshore Training and Compliance	3
OGP 2333	Special Project in Oil and Gas Drilling	3

Appendix D: Recommended Textbook List

RECOMMENDED OIL AND GAS PRODUCTION TEXTBOOK LISTS CIP: 15.0903 Oil and Gas Production- CIP: 15.0903 (Petroleum Technology/Technician)		
Title	**Author**	**ISBN**
Introduction to Process Technology	Charles E. Thompson	978-1-305-25147-2
Process Technology Safety, Health, and Environment	Charles E. Thompson	978-1-1110-3635-5
Process Technology Equipment & Systems	Charles E. Thompson	978-1-285-4458-1
Process Technology Plant Operations	Michael Speegle	978-1-133-95015-8
Process Technology Troubleshooting	Charles E. Thompson	978-1-4283-1100-8
Process Technology Systems	Michael Speegle	978-1-4018-1107-5
Production Safety Systems T2 Basic	J. Schneider & Associates, LTD	Copy Write: TT2_APIB_MA110912
D.O.E. Basic Production	J. Schneider & Associates, LTD	Copy write: DOE_BPO_MA071411
Fundamental Principles of Gas Turbines	University of Texas at Austin	Copy write: UTA
Web-based: Symtronics, MAXIMO (or-equal), Amatrol E-Library	Web based learning tools, Symtronics, Amatrol, MAXIMO	See each company website

RECOMMENDED OIL AND GAS PRODUCTION TEXTBOOK LIST CIP: 15.0903 Oil and Gas Production- CIP: 15.0903 (Petroleum Technology/Technician) Entry Level Petroleum Training Program		
Title	**Author**	**ISBN**
NCCER CORE	Pearson	ISBN-13: 978-0-13-413098-9
IADC RigPass-to-Go	International Association of Drilling Contractors.	

Appendix E: Assessment Standards

Information from J. Schneider and Associates LTD. Department of Education Oil and Gas Programs Production Safety Systems Training

Details of Proposed Training Program

1) Title: Production Operations Course
2) Brief Introduction & Objectives of Course:
    a) Course Objectives - After completing this course the student should be able to:
        i) Demonstrate familiarity with the oil and gas production process and associated equipment
        ii) Demonstrate basic knowledge of wells, wellheads, rate control, flowlines, headers, and processequipment
        iii) Understand flow streams associated equipment and controls
        iv) Demonstrate an understanding of basic industry vocabulary
        v) Understand the fundamentals of separation of produced fluids
        vi) Understand separator designs and application
        vii) Understand oil, gas, and water process trains
3) To accomplish the stated objectives, the course will be presented by using:
    a) An instructor's lecture
    b) A student manual
    c) Course notes
    d) Student worksheets
    e) Power point programs
4) Target Audience: High School Juniors, Seniors, and Post Secondary Students
5) Location: Secondary and Post-Secondary Training Facilities

PRODUCTION OPERATIONS CURRICULUM OUTLINE

1) Origins of Oil and Gas
2) Economic Drivers
3) Operating Fundamentals
    a) Definitions
    b) Separation Requirements
    c) Internal Construction
    d) Separators by Other Names
    e) Instrumentation & Control
        i) Process Indication
        ii) Process Control
        iii) Safety Controls

iv) Stage Separation
v) Make Up Gas
vi) Blanket Gas

4) Separator Operation
   a) Two Phase Separators
      i) Two Phase Vertical Separator
      ii) Horizontal Separator (2 Phase)
   b) Three Phase Separators
      i) Vertical Separators (3 Phase)
      ii) Horizontal Separator (3 Phase)
5) Crude Oil Process
   a) Production Separator / Bulk Separator
   b) Free Water Knockout (FWKO)
   c) Emulsion Treating
      i) Vertical Heater Treater
      ii) Horizontal Electrostatic Treater
6) Storage Tanks
   a) Stock Tanks
   b) Run Surge Tank
7) Gas Processing
   a) Gas Production and Flowline Heaters
   b) High Pressure Production Separator
   c) Gas Compression
   d) Glycol Dehydration System
8) Produced Water
   a) Coalescer
   b) Precipitator
   c) Sump (Skimmer)
   d) The Sump Pile
   e) Hydrocyclone Separators
9) Well Testing
10) Drawing Color Code
11) Definitions

Details of Proposed Training Program

1) Title: Production Safety Systems Course (T-2)
2) Brief Introduction & Objectives of Course:
   a) Course Objectives - After completing this course the student should be able to:
      i) Understand that the safety system should be designed to protect personnel, the environment, andthe facility from threats to safety caused by the production process
      ii) Understand that the safety system should be able to prevent the release of hydrocarbons from theprocess and minimize the effects is they occur
      iii) Understand the symbols and equipment identification codes used in the Oil and Gas Industry
      iv) Understand the protection concepts and safety analysis
      v) Understand the premises for basic analysis and design of the safety system
      vi) Understand the need for the emergency support system
      vii) Identify and understand how to protect the process from the eight major undesirable events
      viii) Interpret and understand how to use the Safety Analysis Tables (SAT), the Safety Analysis Checklist(SAC) and the Safety Analysis Function Evaluation Chart (SAFE Chart)
      ix) Understand the importance of pollution prevention and control
      x) Understand that production safety equipment shall be designed, installed, maintained, and tested ina manner to assure the safe protection of the human, marine, and costal environments
      xi) Understand the basic concepts of installation, maintaining, and testing surface safety devices
      xii) Thoroughly understand that safety devices shall not be placed in bypass or blocked out of serviceunless they are temporarily out of service for STARTUP, MAINTENANCE, OR TESTING
      xiii) Understand the testing requirements of all subsurface and surface safety devices
3) To accomplish the stated objectives, the course will be presented by using:
   a) An instructor's lecture
   b) A student manual
   c) Course notes
   d) Student worksheets
   e) Power point programs
4) Target Audience: High School Juniors, Seniors, and Post Secondary Students
5) Location: Secondary and Post-Secondary Training Facilities

BASIC PRODUCTION SAFETY SYSTEMS CURRICULUM OUTLINE

1) Introduction
2) Definitions
3) Safety Device Symbols and I.D.
    a) Introduction
    b) Function Device Identification
    c) Symbols
    d) Component Identification
4) Introduction to Safety System Design
    a) Purpose and Objective
    b) Modes of Safety System Operation
    c) Premises for Basic Analysis and Design
5) Emergency Support Systems (ESS)
    a) Emergency Shutdown System (ESD)
        i) Purpose
        ii) Shutdown Stations
    b) Fire Loop System
        i) Purpose
        ii) Installation
    c) Other Fire Detection System
        i) Purpose
        ii) Installation
    d) Combustible Gas Detection System
        i) Purpose
        ii) Installation and Operation
        iii) Adequate Ventilation
    e) Containment System
    f) Subsurface Safety Valves (SSSV's)
6) Protection Concepts
    a) Undesirable Events
        i) Overpressure
            (1) Cause
            (2) Effect and Detectable Abnormal Conditions
            (3) Primary Protection
            (4) Secondary Protection
            (5) Location of Safety Devices

ii) Leak
   (1) Cause
   (2) Effect and Detectable Abnormal Conditions
   (3) Primary Protection
   (4) Secondary Protection
   (5) Location of Safety Device

iii) Liquid Overflow
   (1) Cause
   (2) Effect and Detectable Abnormal Conditions
   (3) Primary Protection
   (4) Secondary Protection
   (5) Location of Safety Devices

iv) Gas Blowby
   (1) Cause
   (2) Effect and Detectable Abnormal Conditions
   (3) Primary Protection
   (4) Secondary Protection
   (5) Location of Safety Devices

v) Underpressure
   (1) Cause
   (2) Effect and Detectable Abnormal Conditions
   (3) Primary Protection
   (4) Secondary Protection
   (5) Location of Safety Devices

vi) Excess Temperatures
   (1) Cause
   (2) Effect and Detectable Abnormal Conditions
   (3) Primary Protection
   (4) Secondary Protection
   (5) Location of Safety Devices

vii) Direct Ignition Source
   (1) Cause
   (2) Effect and Detectable Abnormal Conditions
   (3) Primary Protection
   (4) Secondary Protection
   (5) Location of Safety Devices

viii) Excess Combustible Vapors in the Firing Chamber
   (1) Cause
   (2) Effect and Detectable Abnormal Conditions
   (3) Primary Protection
   (4) Secondary Protection

(5) Location of Safety Devices

b) Protective Shut-In Action

c) Safety Analysis
   i) Safety Analysis Table (SAT)
   ii) Safety Analysis Checklist (SAC)
   iii) Safety Analysis Function Evaluation Chart (SAFE Chart)

7) Process Component Analysis
   a) Wellhead and Flowlines
   b) Headers
   c) Pressure Vessels
   d) Atmospheric Vessels
   e) Fired and Exhausted Heated Components
   f) Pumps
   g) Compressor Unit
   h) Pipelines

8) Flow Sheets and S.A.F.E. Chart

9) Pollution Prevention and Control
   a) Pollution Prevention
   b) Inspection and Reports

10) Pipelines
   a) Incoming Pipelines
   b) Departing Pipelines
   c) Crossing Pipelines

11) Production Safety Systems
   a) General Requirements
   b) Subsurface Safety Devices
      i) Surface Controlled SSSV's
      ii) Subsurface Controlled SSSV's
      iii) Design, Installation, and Operation of SSSV's
      iv) Subsurface Safety Devices in Shut-In Wells
      v) Subsurface Safety Devices in Injection Wells
      vi) Temporary Removal for Routine Operation
      vii) Addition Safety Equipment
      viii) Emergency Action

   c) Design, Installation and Operation of Surface Safety Valves

   d) Additional Production System Requirements
      i) Pressure and Fires Vessels
         (1) PSV's
         (2) PSHL's

ii) Safety Sensors
ESD

NCCER Core Learning Objectives

1. Describe the importance of safety, the causes of workplace incidents, and the process of hazard recognition and control
   - Define incidents and the significant costs associated with them.
   - Identify the common causes of incidents and their related consequences
   - Describe the process related to hazard recognition and control, including the Hazard Communication (HAZCOM) Standard and the provisions of a safety data sheet (SDS).

2. Describe the safe work requirements for elevated work, including fall protection guidelines.
   e. Identify and describe various fall hazards
   f. Identify and describe equipment and methods used in fall prevention and fall arrest
   g. Identify and describe the safe use of ladders and stairs.
   h. Identify and describe the safe use of scaffolds.

3. Identify and explain how to avoid struck-by hazards.
   - Identify and explain how to avoid struck-by and caught-in-between hazards.
   - Identify and explain how to avoid caught-in and caught-between hazards.

4. Identify common energy-related hazards and explain how to avoid them
   - Describe basic job-site electrical safety guidelines
   - Explain the importance of lockout/tagout and describe basic procedures.

5. Identify and describe the proper use of personal protective equipment (PPE).
   - Identify and describe the basic use of PPE used to protect workers from bodily injury.
   - Identify potential respiratory hazards and the basic respirators used to protect workers against those hazards.

6. Identify and describe other specific job-site safety hazards.
   - Identify various exposure hazards commonly found on job sites.
   - Identify hazards associated with environmental extremes.
   - Identify hazards associated with hot work.
   - Identify fire hazards and describe basic firefighting procedures.
   - Identify confined spaces and describe the related safety considerations.

7. Identify whole numbers and demonstrate how to work with them mathematically.
   - Identify different whole numbers and their place values.
   - Demonstrate the ability to add and subtract whole numbers.
   - Demonstrate the ability to multiply and divide whole numbers.

8. Explain how to work with fractions.
   - Define equivalent fractions and show how to find lowest common denominators.
   - Demonstrate the ability to add and subtract fractions.

9. Identify and convert units of length, weight, volume and temperature between Imperial and metric systems of measurement.

10. Identify and explain how to use various types of hand tools.

11. Identify and explain how to use various types of measurement and layout tools.

12. Identify and explain how to use various types of power drills and impact wrenches.

13. Identify and explain how to use various grinders and grinder attachments.

14. Identify and describe various types of construction drawings, including their fundamental components and features.

- Identify various types of construction drawings.
- Identify and describe the purpose of the five basic construction drawing components.
- Identify and explain the use of dimensions and various drawing scales.
- Identify and describe how to use an engineer's and architect's scales.

15. Describe the communication, listening, and speaking processes and their relationship to job performance.

- Describe the communication process and importance of listening and speaking skills.
- Describe the listening process and identify good listening skills.
- Describe the speaking process and identify good speaking skills.

16. Identify the basic concepts of material handling and common safety precautions.

- Describe the basic concepts of material handling and manual lifting.
- Identify common material handling safety precautions.
- Identify and describe how to tie knots commonly used in material handling.

17. Define rigging safety and vocabulary terms.

- Explain the importance of designating a signal man.
- Identify personal protective equipment for rigging and lifting operations.
- Explain Stop Work Authority.
- Define common rigging and lifting terminology.
- Explain environmental hazards associated and how to mitigate.

18. Explain the crane emergency procedures.

- Explain the importance of closing out hazardous work.
- Demonstrate the ability to secure the current work area.

19. Describe rigging hardware in the Oil and Gas Industry.

- Describe the storage requirements for all rigging.
- Explain how the sling capacity changes.
- Locate the manufacturer's guidelines on rigging.
- Explain how to interpret manufacturer's guidelines.
- Explain sling manufacturers' recommendations for use.
- Describe all permanent and temporary lifting points.
- Describe the use of tag lines.
- Demonstrate use of tag lines.

20. Perform the application, inspection, and maintenance of rigging and equipment.

21. Identify hoist and cranes commonly used in the Oil and Gas Industry.

IADC Rigpass Learning Objectives

1. Demonstrate general safety principles for working in the oil and gas industry.
   - Discuss Stop Work Authority
   - Discuss risk assessment and worksite safety.
   - Explain the significance of workplace housekeeping
   - Explain the importance of reporting and investigating incidents.
   - Explain the importance of worksite policies
   - Explain the hazards and control of manual material handling.

2. Demonstrate the appropriate use of Personal Protective Equipment (PPE).
   - Identify the importance the following
   - Demonstrate the use of the following
   - Practice selecting, inspecting, and donning appropriate
   - Explain the importance of PPE in defense of perceived and unrecognized risk.

3. Respond appropriately to Hazard Communications.
   - Identify safety signs utilized in the oil and gas industry.
   - Explain the meaning of safety signs utilized in the oil and gas industry.
   - Explain the importance of Safety Data Sheets (SDS).
   - Explain how to use SDS to identify types of hazardous chemicals.
   - Explain the need for procedures regarding the transportation of hazardous materials.
   - Explain the importance of reporting a release of hazardous materials.
   - Explain the importance of appropriate materials handling to avoid incident.

4. Identify specialized work procedures in the oil and gas industry.
   - Explain hazardous energy in the workplace.
   - Explain the importance of Lockout/Tagout procedures.
   - Identify hazards associated with confined space entry.
   - Explain the precautions taken when working at heights.
   - Explain the dangers associated with hoisting and lifting.
   - Demonstrate how to complete and route Work permits.

5. Demonstrate appropriate Fire safe in the oil and gas industry.
   - Determine if a fire extinguisher is ready for use.
   - Explain how to use a fire extinguisher.
   - Match the various types of fire extinguishers to the appropriate type of fire.

6. Conduct a Job safety analysis.
   - Define Job safety analysis.
   - Identify Job safety analysis.
   - Demonstrate Job safety analysis.

7. Explain the components of Emergency Response related to oil and gas industry.
   - Explain the importance of planning for emergencies.
   - Explain the potential risks that the oilfield employee could encounter from bloodborne pathogens, adverse weather, wildlife, etc.
   - Explain your role/responsibility in Industrial hygiene.
   - Explain the various alarms.
   - Identify muster stations.

- Explain how your physical capacity might influence your ability to respond to an emergency.

8. Identify the necessity of Well Site Environmental Protection.
   - Explain your role in wellsite environmental protection.
   - Explain the methods of protecting the environment in the oil and gas industry.

9. Identify regulations and compliance as related to the oil and gas industry.
   - Explain how regulations affect operations. IADC Rigpass, Regulations
   - Explain compliance in managing Marine debris, Waste management, Leaks, spills, and releases. IADC Rigpass, Regulations

10. Perform basic firefighting in onshore environments.
   - Explain how to use a fire extinguisher.
   - Identify the various types of fire extinguishers.
   - Determine if a fire extinguisher is ready for use.

11. The student will explain excavation safety.
   - Explain basic trenching and shoring.
   - Explain safety when working around pits and ponds.
   - Explain the importance of "One Call" - Call before you dig.

IADC Wellsharp Learning Objectives

1. Investigate pressure concepts and calculations.
   - Discuss u-tube concept and hydrostatic column.
   - Discuss of hydrostatic pressure.
   - Discuss bottom hole pressure
   - Discuss surface pressure.
   - Discuss its effect on downhole pressures.

2. Explain the concept of kicks (well pressure spikes).
   - Identify causes of unintentional flow or "kicks."
   - Identify causes of intentional flow from formation.
   - Identify kick indicators.
   - Identify warning signs of kicks.
   - Identify the importance of early detection.
   - Identify consequences of not responding to a kick in a timely manner.
   - Describe the procedure (such as a pit drill) to perform a flow check in the situations listed at left.
   - Demonstrate well shut-in to minimize influx based on observing positive flow indicators.
   - Verify well closure by demonstrating flow path closure for any shut-in.
   - Demonstrate recordkeeping parameters for well shut-in.

3. Explain gas characteristics and behaviors
   - Identify types of gases and hazards of each.
   - Describe the relatively low density of gas and its effect on the hydrostatic column.
   - Explain the consequences of gas migration.

4. Identify fluids
   - Identify types of drilling fluids.

5. Identify constant bottom hole pressure well control methods

- Identify objectives of constant bottom hole pressure methods.
- Read, record and report drill pipe and annulus pressures.
- List the phases of at least one constant bottom hole pressure well control method.
- Describe the difference between diverting and well kills
- that use constant bottom hole pressure methods.

6. Describe equipment
    - Describe the purpose and use of the mud pump/stroke counter (e.g., stroke rate, flow rate, and displaced volume).
    - Describe the importance of the mud balance.
    - Demonstrate basic understanding of the use of ram and Annular preventers.
    - Identify flow path for normal drilling operations.
    - Identify flow path for well control operations.
    - Identify and assist as directed to line-up for equipment pressure testing, shut-in, and pumping operations.
    - Distinguish the function of the choke from that of other valve types.
    - Define function, operating principles, flow paths, and components of mud-gas separators.
    - Explain pit alignment during well control operations.
    - Describe the procedures for handling of gas in return fluids.
    - Demonstrate understanding of the function of the accumulator system, including an explanation of the consequences of losing nitrogen pre-charge pressure.