PEGGOEJ MULTIMEDIA LIBRARY 2020

Petro Ed®

MULTIMEDIA LIBRARY 2020

PetroEd eLearning courses present complex technical processes using the latest in multimedia modeling and instructional design. This results in delivery of engaging content that resonates with the visual learning styles of today's modern workforce. Our innovative XMp deployment interface helps us respond to changing technologies and industry demands of computer-based learning initiatives in a multi-cultural and multi-deployment setting.

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IADC ACCREDITED COURSES

PetroEd offers the following courses **accredited by the International Association of Drilling Contractors** (IADC). The IADC is a global organization representing oil and gas interests for over 70 years. DIT curriculums feature introductions to the oil and gas industry, drilling operations and production operations. These programs will teach the concepts behind working in the petroleum industry, in drilling operations, and in production operations. Other IADC certificates awarded for completing PetroEd courses include Rig Pass and the introductory level of WellCAP. These courses allow drilling companies and contractors to put men on rigs while ensuring safe operations for everyone involved.

INTRODUCTION TO THE PETROLEUM INDUSTRY (DIT)

CEU: 8.4 Credits LANGUAGES: English





COURSE OVERVIEW

The Introduction to the Petroleum Industry Program is accredited by the International Association of Drilling Contractors (IADC) and offers 84 hours of in-depth, online multimedia instruction originally developed by the industry for employee training. This unique eLearning course prepares job seekers around the world for oilfield positions and provides current employees and administrators a convenient way to stay up-to-date with industry developments. Upon successful completion of introduction to the Petroleum Industry, students receive an IADC Accredited Certificate.

INCLUDED COURSES

BASIC OILFIELD MATHEMATICS

Basic Oilfield Mathematics covers general mathematical calculations likely to be encountered in the oilfield. The course takes a practical approach, featuring numerous examples for tubular weights and volumes, tank capacities, API gravity, downhole static pressure, and unit conversion from one unit to another. It covers basic physics concepts such as density and specific gravity. Effects of well deviation on measurement and pressure calculations are explained. Principles of pressure and force are illustrated. Advanced topics include fluid measurement and orifice metering calculations, and a few exercises on oilfield economics.

BASIC PRINCIPLES OF PETROLEUM

This course is designed for students who require a basic understanding of the petroleum industry to perform their jobs. It provides an easy-to-understand introduction to the basics of upstream and downstream activities. Students will learn how hydrocarbon deposits are formed, explored for, and produced. Students also learn how crude oil and gas are converted from a raw material into a finished product and delivered to markets, or traded worldwide as a commodity.

RESERVOIR ENGINEERING PRIMER

The course explains the geologic processes of reservoir formation, then examines the origins of oil and gas. The characteristics of a reservoir and their contributions to reservoir quality are described in detail. The second module presents practical reservoir engineering techniques for calculating the original oil-in-place and gas-in-place in a reservoir. The student will learn methods of determining each of the parameters used in the reservoir volumetric equation: area, net pay, porosity, and water saturation.

PERFORATING FUNDAMENTALS

This course on Perforating Fundamentals explains the basic concepts of perforating, including safety around explosives and the potential consequences of mistakes. It reviews topics related to shaped charges, including their design, completion, and detonation, as well as standoff, interference, and the manufacturing and performance of the shaped charge. The course then introduces perforating guns, including capsule guns, carrier guns, and pivot guns. Debris control and gun size are also discussed, along with tips on how to maximize clearance. The importance of the entrance hole diameter is reviewed. The course describes how perforating guns are run and fired in a well. The course emphasizes safety procedures that must be followed in the field. It concludes with a review of supplemental equipment and perforating accessories.

OIL SPILL VOLUME ESTIMATION

Oil Spill Volume Estimation introduces techniques for estimating the volume of an accidental oil spill. Determining the volume of accidental hydrocarbon discharge is rapidly becoming one of the most important aspects of maintaining an environmentally sound offshore production operation. Reporting the amount of accidentally-released oil in the environment during day-to-day operations (a legal requirement in most countries) has proven to be a major problem due to the non-intuitive manner in which hydrocarbons disperse over a body of water. A systematic method of estimating the size of a spill is presented here in a clear, step-by-step set of procedures that can be used by field operators with no previous experience.

CRANE SAFETY

Crane Safety tackles the broad subject of offshore pedestal cranes and their safe operation. Students will learn to identify the key components of cranes, and to recognize the importance of proper maintenance. The course explains crane capacity charts, and the process of calculating safe working loads. The effective use of a uniform set of hand signals is discussed, and standard hand signals are demonstrated for the student by digital video. Crane Safety is a crucial subject for rig personnel, and useful knowledge for anyone concerned with rig operations.

INTRODUCTION TO THE PETROLEUM INDUSTRY, CONTINUED.

NORM IN THE PETROLEUM INDUSTRY

This course provides a general understanding of Naturally Occurring Radioactive Materials (NORM) in the petroleum industry. The origins of NORM in reservoir formations and the process whereby they are produced at the well site are shown and NORM contamination in oil and gas production facilities is explained. The course also discusses radium contamination of scale and sludge and radon contamination in natural gas facilities. NORM contamination is so widespread in the petroleum industry that all personnel need to be informed of the potential hazards of NORM exposure.

H2S SAFETY IN PRODUCTION OPERATIONS

H2S Safety in Production Operations instructs operations personnel on the characteristics of Hydrogen Sulfide (H2S) and its effects on those exposed to it and its impact on material and equipment. The dangers of sulfur dioxide gas (SO2), a by-product of H2S, are also discussed. Proper use of H2S safety equipment, including various types of H2S monitors, is covered in detail. By using the audio in the module, the student is taught to recognize warning alarms made by standard H2S detection equipment.

HAZWOPER

This safety analysis is for employers, foremen, and supervisors, but employees are encouraged to use the information as well to analyze their own jobs and recognize workplace hazards so they can report them to you. It explains what a job hazard analysis is and offers guidelines to help you conduct your own stepby-step analysis.

KICK DETECTION

Kick Detection trains the student to detect drilling kicks as early as possible. This course illustrates the significance of formation porosity and permeability in the development of a drilling kick. It also shows the role of the mud column in holding back the kick. Several early warning signs are explained such as: mud returns cut with oil, water or gas; drilling break; pit gain; change in rate of mud return; decrease in mud pump discharge pressure; increase in drill string weight; and unaccounted-for fluid gain or loss while tripping. The lesson concludes with the proper actions that must be taken to assure early kick detection. These include noting changes made to pit volumes, maintaining trip sheets, using the trip tank.

OILWELL DRILLING

Oilwell Drilling introduces the techniques and technologies involved in drilling oil wells. The course is intended for personnel new to the oil and gas industry, specifically including those in the administrative and support services as well as those in the field. Oilwell Drilling provides a firm foundation knowledge of oilfield practices and terminology that can prove invaluable in every sector of the industry. This course comprises ten computer-based training modules, each representing two hours of instruction and exercises.

PRIMARY CEMENTING

Primary Cementing reviews the objectives of cementing an open hole. The student learns the characteristics of an ideal cementable wellbore, and how best to achieve them. The course then describes the procedures used to condition the mud prior to cementing the wellbore, including specific additives for different configurations. Furthermore, it explains the key to attaining complete mud displacement during the cementing job and how this positively influences the success of the completion.

UNDERBALANCED DRILLING

The first volume on Underbalanced Drilling (UBD) and Completions provides the student with an overview of the specialized technology and operations used in this critical oilfield discipline. The reasons why UBD techniques are employed are presented in a straightforward manner along with a discussion of advantages and concerns. The student will become familiar with the mechanical equipment used in UBD operations as well as the different types of UBD and their specific field application.

WELL CONTROL FUNDAMENTALS

Well Control Fundamentals introduces drilling professionals to the basic concepts and procedures for maintaining and regaining control of a well during drilling operations. This course begins by describing the various types of fluid pressures in a well and how they relate to depth, density and pipe length. A presentation of how these pressures exist and react at various points in the borehole and formation follows this introduction. Hydrostatic, friction, formation, surface, bottomhole, trapped, fracture/leak off and drill pipe pressures are all covered, as well as pressure gradients and the U-Tube principle. High-end graphics and animations walk the student in step-by-step fashion through the Driller's and Wait-and-Weight Methods of well control.

INTRODUCTION TO WELL CONTROL

The premise of Introduction to Well Control computer based training course is that every member of the rig crew should understand the fundamental principles of well control in order to obtain the highest degree of safety during drilling operations. This self-paced interactive multimedia program takes a rig hand through the basic concepts of well control in an easy to understand, straight-forward manner. 3D animations, graphics and other visual imagery are used to quickly communicate complex subject material to manpower with diverse technical backgrounds and language skills.

DIT: DRILLING OPERATIONS FOCUS

CEU: 6.8 Credits LANGUAGES: English





COURSE OVERVIEW

This unique program will teach you the knowledge and skills you need to be hired as an-entry level worker in Drilling Operations and related oil and gas positions. You will learn about the basic principles underlying all work in the oil and gas industry, with a focus on Drilling Operation practices and processes, and important related concepts. Upon successful completion you will receive a certificate* endorsed by the International Association of Drilling Contractors.

INCLUDED MODULES

BASIC PRINCIPLES OF PETROLEUM

This course is designed for students who require a basic understanding of the petroleum industry to perform their jobs. It provides an easy-to-understand introduction to the basics of upstream and downstream activities. Students will learn how hydrocarbon deposits are formed, explored for, and produced. Students also learn how crude oil and gas are converted from a raw material into a finished product and delivered to markets, or traded worldwide as a commodity.



In the previous module, we explored the process whereby bulk petroleum products and refined finished products are produced. In the module before that, we discussed the production of oil and gas. Each of these products has to be transported, distributed and delivered. On the one hand there is the transportation and distribution of crude oil to either refineries or storage areas, and on the other hand, there is the distribution and delivery of the natural gas from the gas fields and the bulk and finished petroleum products from the refineries to the market place.

KICK DETECTION

Kick Detection trains the student to detect drilling kicks as early as possible. This course illustrates the significance of formation porosity and permeability in the development of a drilling kick. It also shows the role of the mud column in holding back the kick. Several early warning signs are explained such as: mud returns cut with oil, water or gas; drilling break; pit gain; change in rate of mud return; decrease in mud pump discharge pressure; increase in drill string weight; and unaccounted-for fluid gain or loss while tripping. The lesson concludes with the proper actions that must be taken to assure early kick detection. These include noting changes made to pit volumes, maintaining trip sheets, and using the trip tank.

OILWELL DRILLING

Oilwell Drilling introduces techniques and technologies involved in drilling oil wells. The course is intended for personnel new to the oil and gas industry, specifically including those in the administrative and support services as well as those in the field. Oilwell Drilling provides a firm foundation knowledge of oilfield practices and terminology that can prove to be invaluable in every sector of the industry. This course is comprised of ten computer-based training modules, each representing two hours of instruction and exercises.

DIT: DRILLING OPERATIONS FOCUS, CONTINUED.

PRIMARY CEMENTING

Primary Cementing reviews the objectives of cementing an open hole. The student learns the characteristics of an ideal cementable wellbore, and how best to achieve them. The course then describes the procedures used to condition the mud prior to cementing the wellbore, including specific additives for different configurations. Furthermore, it explains the key to attaining complete mud displacement during the cementing job, and how this positively influences the success of the completion.

UNDERBALANCED DRILLING

The first volume on Underbalanced Drilling (UBD) and Completions provides the student with an overview of the specialized technology and operations used in this critical oilfield discipline. The reasons why UBD techniques are employed are presented in a straightforward manner along with a discussion of advantages and concerns. The student will become familiar with the mechanical equipment used in UBD operations as well as the different types of UBD and their specific field application.

WELL CONTROL FUNDAMENTALS

Well Control Fundamentals introduces drilling professionals to the basic concepts and procedures for maintaining and regaining control of a well during drilling operations. This course begins by describing the various types of fluid pressures in a well and how they relate to depth, density and pipe length. Example calculations are provided to illustrate the mathematical inter-relationships between the parameters. A presentation of how these pressures exist and react at various points in the borehole and formation follows this introduction. Hydrostatic, friction, formation, surface, bottomhole, trapped, fracture/leak off and drill pipe pressures are all covered, as well as pressure gradients and the U-Tube principle. Following this overview on basic pressure behavior in the drilling process, procedures for regaining control of a well that has taken a kick are then discussed in detail. High-end graphics and animations walk the student step-by-step through the Driller's and Wait-and-Weight Methods of well control. Interactive worksheets for both methods are provided and explained through the use of easy-to-understand terminology and real-world examples. The two methods are then compared to illustrate their advantages and disadvantages. The use of media-rich material and high-impact visuals throughout the course help to clarify and reinforce complex subject material. Quizzes are introduced at key points in the modules to reinforce the users understanding of the learning objectives.

INTRODUCTION TO WELL CONTROL

The premise of Introduction to Well Control computer based training course is that every member of the rig crew should understand the fundamental principles of well control in order to obtain the highest degree of safety during drilling operations. This self-paced interactive multimedia program takes a rig hand through the basic concepts of well control in an easy to understand, straight-forward manner. 3D animations, graphics and other visual imagery are used to quickly communicate complex subject material to manpower with diverse technical backgrounds and language skills.

BIT HYDRAULICS

Bit Hydraulics explains the interaction of hydraulics with other drilling and mud parameters, for an understanding of overall drilling efficiency. This course includes complete references of graphs, tables, equations, and rules for hydraulic calculations. Example problems walk the student through total hydraulic design, from liner size selection to actual jet sizing. An interactive "what if?" exercise permits the student to observe the effects of individual properties on bit hydraulic horsepower. Although aimed primarily at tri-cone bit hydraulics, a section on PDC and diamond bits is also included.

HORIZONTAL DRILLING

Horizontal Drilling introduces basic concepts and principles of horizontal well drilling. The course provides complete and clear explanations of why horizontal wells are drilled—from their use in connecting vertical fracture systems for increasing productivity to the control of water and gas coning in problem fields. The three basic types of horizontal wells (short, medium, and long radius) are depicted utilizing detailed graphics. These preliminary topics are followed by a unit devoted to the mechanics of drilling and completing a horizontal well. Angle-build and angle-hold assemblies for the different types of horizontal wells are presented, as well as animated depictions of steerable assemblies, conventional directional drilling, and short-radius drilling equipment. Informative discussions cover MWDs, top drives, and mud motors in horizontal well drilling operations.



There are also circumstances when flow from the formation is necessary and desired. Drill stem testing and completion of an oil or gas well are the most common circumstances. During drill stem testing and completion, formation fluids are allowed to flow into the well and surface safety equipment is used to control flow from the formation.

DIT: PRODUCTION OPERATIONS FOCUS

CEU: 5.4 Credits LANGUAGES: English





COURSE OVERVIEW

This unique program will teach you the knowledge and skills you need to be hired as an-entry level worker in Production Operations and related oil and gas positions. You will learn about the basic principles underlying all work in the oil and gas industry, with a focus on the Production Operation practices and processes, and important related concepts. Upon successful completion you will receive a certificate* endorsed by the International Association of Drilling Contractors.

INCLUDED COURSES

BASIC PRINCIPLES OF PETROLEUM

This course is designed for students who require a basic understanding of the petroleum industry to perform their jobs. It provides an easy-to-understand introduction to the basics of upstream and downstream activities. Students will learn how hydrocarbon deposits are formed, explored for, and produced. Students also learn how crude oil and gas are converted from a raw material into a finished product and delivered to markets, or traded worldwide as a commodity.



The crust, which is made up of various kinds of rock, consists of eight or nine very large plates and many smaller ones that lie on top of the mantle. The plates are in constant motion, drifting at the rate of about $\frac{1}{2}$ an inch per year, driven by the activity of the earth's own hot core. The plates constantly skid over and slide past one another, resulting in volcanoes, earthquakes, tsunamis and other disruptive phenomena. As these plates shift and collide the surface of the earth's crust crumples to form mountains and valleys, both on the continents and along the ocean floor.

ARTIFICIAL LIFT

Artificial Lift introduces the techniques and technologies involved in artificial lift, with specific attention to sucker rod pumping, gas lift, and electric submergible pumps. The course provides a useful knowledge foundation to professionals in every sector of the industry, and of immediate value to field personnel. Each functional component of the sucker-rod pumping system is presented, and the major geometries of pumping units are defined with respect to their specific application and utilization. The operation of three different gas lift configurations is described. Detailed graphics illustrate the basic components and operation of electric submergible pumps. The relative advantages and disadvantages of each artificial lift method are compared and discussed. This course comprises six computer-based training modules, each one representing over an hour and a half of instruction and exercises.

DIT: PRODUCTION OPERATIONS FOCUS, CONTINUED.

OILFIELD METERING PRIMER

This primer on Oilfield Metering reviews the methods used to measure fluid volumes in the oilfield for accurate accounting, process monitoring, and custody transfer. Liquid metering techniques are discussed first, followed by gas metering. The first part of the course concerns methods of liquid metering. Positive displacement, turbine, vane, paddle, orifice, and vortex meters are described. Maintenance, wear, and the effects of gas and solids in the liquid stream are reviewed. The second part of the course concerns methods of gas measurement. The unit describes orifice metering equipment in detail, and emphasizes the importance of maintenance and inspection. Methods of recording accurate measurements are reviewed, and the equations for calculating gas volumes are explained.

PERFORATING FUNDAMENTALS

This course on Perforating Fundamentals explains the basic concepts of perforating, including safety around explosives and the potential consequences of mistakes. It reviews topics related to shaped charges, including their design, completion, and detonation, as well as standoff, interference, and the manufacturing and performance of the shaped charge. The course then introduces perforating guns, including capsule guns, carrier guns, and pivot guns. Debris control and gun size are also discussed, along with tips on how to maximize clearance. The importance of the entrance hole diameter is reviewed. The course describes how perforating guns are run and fired in a well. A full range of firing systems and related equipment are discussed in the context of their field use. The course emphasizes safety procedures that must be followed in the field. It concludes with a review of supplemental equipment and perforating accessories.



SLICKLINE OPERATIONS

Slickline Operations introduces the techniques and technologies involved in working with slickline and braided wire-

line. The course covers wireline jars and jarring operations, surface equipment, basic wireline tools, and applications specific to gas lift operations. Slickline Operations supplies a firm foundation knowledge of the practices and terminology that benefits not only new personnel in the field, but also those in administrative and support roles. This course comprises five computer-based training modules, each representing two hours of instruction and exercises. A reference dictionary of terms and abbreviations common to slickline operations is also included.

SUBSURFACE SAFETY VALVES

This course introduces the purpose, operation, and application of Subsurface Safety Valves. Case studies demonstrate the need for setting the valves at certain depths. Environmental complications encountered in sub-sea installations, arctic conditions, extreme temperatures, and even earthquake-prone regions are covered. Surface and subsurface controlled downhole safety valves are described, accompanied by detailed animations and graphics demonstrating the valves' operation. Students operate a surface control panel and see the effect of each action downhole.

SURFACE FACILITIES PRIMER

The Surface Facilities Primer introduces the equipment typically used to process fluids produced from oil wells, describing the identification, internal configuration, principles of operation, and contribution to the overall system of each of the major pieces of oilfield surface equipment. Emulsion breaking and the separation of oil, gas, and water are discussed. The course also covers the handling, storage, and transportation of hydrocarbons produced from the well.

Two subjects in particular are afforded specific attention in this course: One module covers the function and operation of reciprocating compressors. Another provides detailed procedures for coupling alignment. The Surface Facilities Primer course comprises four computer-based training modules, each one representing over an hour and a half of instruction and exercises.



INTRODUCTORY WELLSHARP

CEU: 1.4 Credits LANGUAGES: English, Arabic





COURSE OVERVIEW

The premise of Introduction to Well Control computer based training course is that every member of the rig crew should understand the fundamental principles of well control in order to obtain the highest degree of safety during drilling operations. This self-paced interactive multimedia program takes a rig hand through the basic concepts of well control in an easy to understand, straight-forward manner. 3D animations, graphics and other visual imagery are used to quickly communicate complex subject material to manpower with diverse technical backgrounds and language skills. This program includes an IADC accredited certificate.

INCLUDED MODULES

WELL CONTROL EQUIPMENT

This module covers why controlling pressure in the well is important, the role of drilling fluid in controlling the well, BOP stacks and how they work, and the function of other equipment used in well control activities. Instrumentation used in well control operations is also discussed.

UNITS OF MEASURE

The second module covers units of measurement used in the oil field, calculating surface area and volume, calculating pressure, and the definition of density and how it is measured.

HYDROSTATIC PRESSURE

Hydrostatic pressure discusses the linear relationship between depth and pressure, how to calculate it, the importance of true vertical depth(TVD), and how the hydrostatic pressures in different sections of a well add to determine bottom hole pressure.

PRESSURE BALANCE

Topics covered in this module are how the drill string and annulus can be represented as a U-tube, differences between normal, abnormal and subnormal formation pressures, and balancing formation pressures with hydrostatic pressure of the drilling fluid.

CAUSES OF KICKS

In this module, you will learn how to identify the different conditions that can cause a kick, describe how a kick develops, describe the warning signs and the indicators of kicks, and describe the effects of a gas kick.

CONTROLLING THE WELL

This module covers the steps involved in shutting in the well when a kick is detected, how closing in the well can be used to increase bottomhole pressure and stop flow, why responding quickly to a kick is important, and how migrating gas in a shut-in well effects surface and downhole pressures.

RESTORING THE WELL

The final module in the IWC series covers the special problems that kicks from shallow formations present, why maintaining constant bottomhole pressure is important when handling a kick, and the steps in two methods used to restore normal circulation.

THE DRILLERS METHOD

The Drillers Well Control Method: This module will begin with an overview of the Driller's Method. Next, will cover the Driller's Method step-by-step. A specific example of an application of the Driller's Method will be presented. Next, you will learn the two Driller's Method rules, and the Driller's Method Worksheet will be introduced. The module concludes by discussing calculations involving shut-in drill pipe pressure (SIDPP) and shut-in casing pressure (SICP), and an explanation of maximum shoe pressure.

WAIT-AND-WEIGHT METHOD

Wait-and-weight Control Method: This module begins with a general description of the Wait-and-Weight Method. Next, it covers the Drill Pipe Pressure Profile. The module then takes a detailed look at the Wait-and-Weight Method and discusses the Wait-and-Weight Method worksheet. The module concludes by comparing the advantages and disadvantages of the Driller's Method and the Wait-and-Weight Method.

WELLSHARP AWARENESS

CEU: 1.4 Credits LANGUAGES: English, Arabic





COURSE OVERVIEW

The Wellsharp Awareness level course is designed to provide a basic understanding of the concepts and importance of well control in the Oil and Gas industry. This course covers the discovery, drilling and development of oil and gas wells, as well as fundamental aspects of well control. Different drilling fluids, their uses, strengths and weaknesses are covered. Well control equipment, such as BOPs, manifolds, choke and kill lines are also discussed in the scope of the course. The importance of monitoring for kicks, how to detect kicks, and steps for shutting in the well is also included in the Awareness level course. Finally, the modules discusses the petroleum refining process . This program includes an IADC accredited certificate.

INCLUDED MODULES

WELL CONTROL EQUIPMENT

This module covers why controlling pressure in the well is important, the role of drilling fluid in controlling the well, BOP stacks and how they work, and the function of other equipment used in well control activities. Instrumentation used in well control operations is also discussed.

UNITS OF MEASURE

The second module covers units of measurement used in the oil field, calculating surface area and volume, calculating pressure, and the definition of density and how it is measured.

HYDROSTATIC PRESSURE

Hydrostatic pressure discusses the linear relationship between depth and pressure, how to calculate it, the importance of true vertical depth(TVD), and how the hydrostatic pressures in different sections of a well add to determine bottom hole pressure.

Now practice using true vertical depth to calculate pressure in this deviated well. The well has a measured depth of 8,000 ft. The true vertical depth is 6,400 ft. Practice calculating hydrostatic pressure in this well filled with a 16.4 ppg mud that has a pressure gradient of 0.853 psi/ ft. Which depth measure do you use? The pressure will be 6,400 ft times 0.853 psi/ ft. This equals 5,459 psi.



PRESSURE BALANCE

Topics covered in this module are how the drill string and annulus can be represented as a U-tube, differences between normal, abnormal and subnormal formation pressures, and balancing formation pressures with hydrostatic pressure of the drilling fluid.

CAUSES OF KICKS

In this module, you will learn how to identify the different conditions that can cause a kick, describe how a kick develops, describe the warning signs and the indicators of kicks, and describe the effects of a gas kick.

CONTROLLING THE WELL

This module covers the steps involved in shutting in the well when a kick is detected, how closing in the well can be used to increase bottomhole pressure and stop flow, why responding quickly to a kick is important, and how migrating gas in a shut-in well effects surface and downhole pressures.

RESTORING THE WELL

The final module in the IWC series covers the special problems that kicks from shallow formations present, why maintaining constant bottomhole pressure is important when handling a kick, and the steps in two methods used to restore normal circulation.

RIGPASS®

CEU: 1.8 Credits LANGUAGES: English, Spanish





COURSE OVERVIEW

IADC offers accreditation for Health, Safety & Environmental (HSE) Orientation Programs that meet the criteria established by the Association's Health, Safety & Environment Committee. The key objective of RIG PASS is to provide new employees with a basic orientation of rig operations and safe work practices. Ideally, this should occur before the employee begins work at the rig. However, due to various logistical conditions in the drilling industry, this will not always be possible. Companies with in-house programs are encouraged to establish policies to ensure that their new employees complete the RIG PASS orientation as soon as it is practical.

INCLUDED MODULES

GENERAL SAFETY COURSE

In this module we cover the general safety principles, alcohol and drug policies, and many items that are prohibited while in the oil and gas production workplace. Personal conduct is also discussed as well as housekeeping and basic principles of land transportation. We also cover manual and power hand tool safety, walking and working surface safety, and how to report accidents and assist in the investigation of workplace accidents.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Here, we cover general personal protection equipment. The types of equipment covered in this module include head protection, face and eye protection, hearing protection, and foot protection. We also include information on hand, respiratory, and fall protection, as well as other personal protective equipment that is less common in the oil and gas production workplace.

HEALTH AND HAZARDS

In this module we cover certain types of hazards that are present in the oil and gas production workplace, as well as the difficulties of transporting hazardous materials. We also cover general health and first aid, and the responsibilities of those in the workplace regarding industrial hygiene, bloodborne pathogens, and planning for emergencies.



RIGPASS[®], CONTINUED.

SPECIALIZED WORK PROCEDURES

In this module we cover types of hazardous energy, lockout and tagout procedures, and different work permits. We also discuss employee's responsibilities when working in confined spaces, at heights, and while hoisting or lifting objects.

PERSONAL SAFETY RESPONSIBILITIES ON THE RIG

In this module we discuss personal fire safety responsibilities and procedures when in the oil and gas production workplace. We also cover crane safety, manual material handling, and water safety and regulations.

PLATFORM ARRIVAL PROCEDURES AND ENVIRONMENT REGULATIONS

Here, we discuss the policies and procedures for entering the rig environment. We also discuss environmental regulations concerning waste management, reporting waste, and marine debris policies while in the oil and gas production workplace.

SHORE BASE ARRIVAL

In this module we go over the aspects of entering the rig environment, such as safe helicopter and boat transportation. We also discuss swing rope procedures and how to safely use personnel baskets.

LAND CERTIFICATION

In this module we cover the role of site workers, their personal protective equipment, and rescue procedures. We also discuss the hazards and safety regulations concerning pits, ponds, trenching, and shoring.



SAFETY AND ENVIRONMENTAL MANAGEMENT SYSTEM (SEMS) AWARENESS

n this module we introduce Safety and Environment Management Systems (SEMS). This module spreads awareness of SEMS regulations, the 13 elements of SEMS, and responsibilities required by SEMS for operators, contractors, and workers.



Since 1940, **THE INTERNATIONAL ASSOCIATION OF DRILLING CONTRACTORS (IADC)** has exclusively represented the worldwide oil and gas drilling industry. IADC's vision is for the

drilling industry to be recognized for its vital role in enabling the global economy and its high standards of safety, environmental stewardship and operational efficiency.

DRILLING FUNDAMENTALS

The Drilling Fundamentals Library details the processes and tools used to drill a well, as well as key concepts like kick detection, underbalanced drilling, primary cementing and well control. Drilling wells is perhaps the most challenging and dangerous process in oil and gas exploration and production, and is the first step in exploration and production. Specialized procedures, tools, and equipment are required during the process of bringing a well to completion, and knowledge of how these pieces work with each other and their specific role in the creation of a well is essential for efficient and safe drilling operations. Maintaining control of the well during drilling operations is crucial to the safety of crew members, and protection of the environment. The last step of drilling a well is completion, in which specialized casing and cementing operations allow production of well fluids.

OILWELL DRILLING

CEU:2 Credits LANGUAGES: English, French, Spanish, Portuguese, Russian, Indonesian, Thai, Vietnamese, Arabic



COURSE OVERVIEW

Oilwell Drilling introduces the techniques and technologies involved in drilling oil wells. The course is intended for personnel new to the oil and gas industry, specifically those in the administrative and support services as well as those in the field. Oilwell Drilling provides a firm foundation of knowledge about oilfield practices and terminology that can prove invaluable in every sector of the industry. This course comprises ten computer-based training modules, each representing two hours of instruction and exercises.

INCLUDED MODULES

INTRODUCTION TO RIG TYPES AND BASIC DRILL STRING COMPONENTS

The first Oilwell Drilling module covers basic oil and gas well drilling principles. Different types of drilling rigs are presented, the difference between a kelly/rotary table and a top drive system is explained, and the components of a drill string are described in detail.

BASIC BLOWOUT PREVENTION EQUIPMENT COMPONENTS

A blowout represents the single most dangerous threat to human life and property during the drilling process. This module explains the causes of a blow-out and covers the tools and methods used to control and prevent drilling kicks.

INTRODUCTION TO DRILLING FLUIDS

Volume 3 concerns the function of drilling fluids in drilling operations. The module covers the physical properties of drilling mud, the advantages of mud additives, and the importance of mud testing. Procedures for drilling with air and foam are also discussed.

MUD CIRCULATION AND TREATING EQUIPMENT

Volume 4 presents a comprehensive overview of the mud circulation and conditioning systems on a drilling rig. It follows the flow of mud step-by-step through the system and explains the function of all circulation components.

HOISTING EQUIPMENT

The purpose and operation of a rig's hoisting system are covered in the fifth Oilwell Drilling module. All important elements are described in detail, from the drawworks to the traveling block.

ROTATING EQUIPMENT, MAST, AND SUBSTRUCTURE

Volume 6 addresses both the kelly/rotary table and top drive systems, and discusses the advantages of each in various drilling operations. The module also explains the function and characteristics of masts and derricks, and the components of the substructure.

PIPE HANDLING

This module describes the process of tripping pipe and making connections with kelly and top drive rotary systems. It also explains the use of slips and elevators, describes the features of a driller's console, and introduces innovations such as the iron roughneck.

CASING AND CEMENTING

Casing and primary cementing operations are covered in the eighth volume of Oilwell Drilling. The module examines the purpose and qualities of basic casing strings and liners, describes casing accessories, and explains the cementing procedure from start to finish.

WELL LOGGING, MUD LOGGING, AND DRILL STEM TESTING

Volume 9 explains the need for careful testing to determine the commercial potential of a well prior to completion. Methods and tools for mud logging, well logging, and drill stem testing are described in detail.

POWER SYSTEMS AND INSTRUMENTATION

The various types of power systems found on the rig are presented in this module: AC to DC, DC to DC, mechanical, hydraulic, and pneumatic drive systems. The module emphasizes the importance of prime movers and concludes with a review of rig instrumentation.

WELL CONTROL FUNDAMENTALS

CEU: 0.8 LANGUAGES: English, Spanish, Portuguese, Russian, Indonesian, Arabic



COURSE OVERVIEW

Well Control Fundamentals introduces drilling professionals to the basic concepts and procedures for maintaining and regaining control of a well during drilling operations. This course begins by describing the various types of fluid pressures in a well and how they relate to depth, density and pipe length. Example calculations are provided to illustrate the mathematical inter-relationships between the parameters. A presentation of how these pressures exist and react at various points in the borehole and formation follows this introduction. Hydrostatic, friction, formation, surface, bottomhole, trapped, fracture/leak off and drill pipe pressures are all covered, as well as pressure gradients and the U-Tube principle. High-end animations walk the student in step-by-step fashion through the Driller's and Wait-and-Weight Methods of well control.

INCLUDED MODULES

BASIC CONCEPTS OF PRESSURE

Module 1 discusses the various pressures that are important in a course on well control. The module details the origins of these pressures and helps in understanding how these different pressures affect and interact with one another. This module also instructs on how to calculate and interpret pressure data.

PRESSURES IN A WELL

Module 2 demonstrates how to calculate each type of pressure and to understand its significance in well control. The types of pressures covered are formation pressure, surface pressure, bottomhole pressure, trapped pressure, drill pipe pressure, fracture/leak-off pressure, and surge and swab pressure.

THE DRILLERS WELL CONTROL METHOD

This module will begin with an overview of the Driller's Method. Next, we'll cover the Driller's Method step-by-step. A specific example of an application of the Driller's Method will be presented. Next, you will learn the two Driller's Method rules, and the Driller's Method Worksheet will be introduced. The module concludes by discussing calculations involving shut-in drill pipe pressure (SIDPP) and shut-in casing pressure (SICP), and an explanation of maximum shoe pressure.

WAIT-AND-WEIGHT CONTROL METHOD

This module begins with a general description of the Wait-and-Weight Method. Next, it covers the Drill Pipe Pressure Profile. The module then takes a detailed look at the Wait-and-Weight Method and discusses the Wait-and-Weight Method worksheet. The module concludes by comparing the advantages and disadvantages of the Driller's Method and the Wait-and-Weight Method.



HORIZONTAL DRILLING

CEU:0.4 Credits LANGUAGES: English, Portuguese



COURSE OVERVIEW

Horizontal Drilling introduces the basic concepts and principles of horizontal well drilling. The course provides complete and clear explanations of why horizontal wells are drilled-from their use in connecting vertical fracture systems for increasing productivity to the control of water and gas coning in problem fields. The three basic types of horizontal wells (short, medium, and long radius) are depicted utilizing detailed graphics. These preliminary topics are followed by a unit devoted to the mechanics of drilling and completing a horizontal well. Anglebuild and angle-hold assemblies for the different types of horizontal wells are presented, as well as animated depictions of steerable assemblies, conventional directional drilling, and short-radius drilling equipment.

INCLUDED MODULES

INTRODUCTION TO HORIZONTAL DRILLING, VOLUME 1

The first horizontal drilling module covers basic history, technologies, and reasons for drilling horizontal wells. Also covered in this module are topics relating to production rate, economics of horizontal drilling, types of horizontal wells, completion options, equipment, and the steps leading up to production

HORIZONTAL DRILLING, VOLUME 2

This module continues where the introduction left off, covering build curves, kick-off points, build radii, and curve information. The module continues with drilling processes and examples specifically related to horizontal drilling.



INTRODUCTION TO WELL CONTROL

CEU: 1.4 Credits LANGUAGES: English, French, Spanish, Portuguese, Indonesian, Arabic



COURSE OVERVIEW

The premise of Introduction to Well Control computer based training course is that every member of the rig crew should understand the fundamental principles of well control in order to obtain the highest degree of safety during drilling operations. This self-paced interactive multimedia program takes a rig hand through the basic concepts of well control in an easy to understand, straight-forward manner. 3D animations, graphics and other visual imagery are used to quickly communicate complex subject material to manpower with diverse technical backgrounds and language skills.

INCLUDED MODULES

WELL CONTROL EQUIPMENT

This module covers why controlling pressure in the well is important, the role of drilling fluid in controlling the well, BOP stacks and how they work, and the function of other equipment used in well control activities. Instrumentation used in well control operations is also discussed.

UNITS OF MEASURE

The second module covers units of measurement used in the oil field, calculating surface area and volume, calculating pressure, and the definition of density and how it is measured.

HYDROSTATIC PRESSURE

Hydrostatic pressure discusses the linear relationship between depth and pressure, how to calculate it, the importance of true vertical depth(TVD), and how the hydrostatic pressures in different sections of a well add to determine bottom hole pressure.

PRESSURE BALANCE

Topics covered in this module are how the drill string and annulus can be represented as a U-tube, differences between normal, abnormal and subnormal formation pressures, and balancing formation pressures with hydrostatic pressure of the drilling fluid.

CAUSES OF KICKS

In this module, you will learn how to identify the different conditions that can cause a kick, describe how a kick develops, describe the warning signs and the indicators of kicks, and describe the effects of a gas kick.

CONTROLLING THE WELL

This module covers the steps involved in shutting in the well when a kick is detected, how closing in the well can be used to increase bottomhole pressure and stop flow, why responding quickly to a kick is important, and how migrating gas in a shut-in well effects surface and downhole pressures.

RESTORING THE WELL

The final module in the IWC series covers the special problems that kicks from shallow formations present, why maintaining constant bottomhole pressure is important when handling a kick, and the steps in two methods used to restore normal circulation.



BIT HYDRAULICS

CEU: 0.2 Credits LANGUAGES: English, Portuguese



COURSE OVERVIEW

Bit Hydraulics explains the interaction of hydraulics with other drilling and mud parameters, for an understanding of overall drilling efficiency. This course include complete references of graphs, tables, equations, and rules for hydraulic calculations. Example problems walk the student through total hydraulic design, from liner size selection to actual jet sizing. An interactive "what if?" exercise permits the student to observe the effects of individual properties on bit hydraulic horsepower. Although aimed primarily at tri-cone bit hydraulics, a section on PDC and diamond bits is also included.

COURSE OBJECTIVES

- Explain terms and equations used in hydraulics.
- Describe the effect of hydraulics on rate of penetration.
- Explain optimum hydraulic horsepower and impact force.
- Calculate optimum jet sizes (based on both theoretical and actual field data).

UNDERBALANCED DRILLING

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

The first volume on Underbalanced Drilling (UBD) and Completions provides the student with an overview of the specialized technology and operations used in this critical oilfield discipline. The reasons why UBD techniques are employed are presented in a straightforward manner along with a discussion of advantages and concerns. The student will become familiar with the mechanical equipment used in UBD operations as well as the different types of UBD and their specific field application.

COURSE OBJECTIVES

- Basic Concept and History
- Mechanical Equipment used in UBD
- Advantages of UBD Operations
- Concerns of UBD Operations
- Gasified Liquid Drilling
- Foam Drilling
- Underbalanced Completions

KICK DETECTION

CEU:0.2 Credits LANGUAGES: English, Portuguese



COURSE OVERVIEW

Kick Detection trains the student to detect drilling kicks as early as possible. This course illustrates the significance of formation porosity and permeability in the development of a drilling kick. It also shows the role of the mud column in holding back the kick. Several early warning signs are explained such as: mud returns cut with oil, water or gas; drilling break; pit gain; change in rate of mud return; decrease in mud pump discharge pressure; increase in drill string weight; and unaccounted-for fluid gain or loss while tripping. The lesson concludes with the proper actions that must be taken to assure early kick detection. These include noting changes made to pit volumes, maintaining trip sheets, using the trip tank, investigating signs of a possible kick, responding to alarms, and proper maintenance of PVT equipment.

COURSE OBJECTIVES

- Explain the significance of formation porosity and permeability in the development of kicks.
- Explain the role of the mud column in preventing drilling kicks.
- Identify early warning signals of kick development which be observed on the rig floor.
- List actions the rig crew can take to help assure that kicks are detected early.

PRIMARY CEMENTING

CEU:0.2 Credits LANGUAGES: English, Portuguese



COURSE OVERVIEW

Primary Cementing reviews the objectives of cementing an open hole. The student learns the characteristics of an ideal cementable wellbore, and how best to achieve them. The course then describes the procedures used to condition the mud prior to cementing the wellbore, including specific additives for different configurations. Furthermore, it explains the key to attaining complete mud displacement during the cementing job, and how this positively influences the success of the completion.

COURSE OBJECTIVES

- · State the objectives of primary cementing.
- · Describe the operational sequence for primary cementing.
- · List the requirements of an ideal cementable well bore.
- · Describe the procedures used to condition the mud prior to primary cementing.
- · Reference hydraulics tables, graphs, and equations.

GENERAL PETROLEUM

THE GENERAL PETROLEUM LIBRARY presents students with a clear picture of the most fundamental concepts in the oil and gas industry. Every day millions of barrels of oil are consumed across the world to fuel vehicles and produce many useful products. It is the petroleum industry that brings oil and natural gas out of the ground, turns it into useful products, and distributes these products. To accomplish this, reservoirs are evaluated on the characteristics of a formation and volumetric calculations must be made. On the rig, knowledge of relevant equations and math skills will be required of workers, as they must be comfortable making frequent calculations involving weights, volumes and pressures to work effectively.

BASIC PRINCIPLES OF PETROLEUM

CEU: 1.4 Credits LANGUAGES: English



COURSE OVERVIEW

This course is designed for students who require a basic understanding of the petroleum industry to perform their jobs. It provides an easy-to-understand introduction to the basics of upstream and downstream activities. Students will learn how hydrocarbon deposits are formed, explored for, and produced. Next, students will learn how crude oil and gas are converted from a raw material to a finished product and delivered to markets or traded worldwide as a commodity.

INCLUDED MODULES

GEOLOGY OF PETROLEUM

Module 1 discusses how the physical structure of the earth was formed, what the earth's crust is composed of, how the history of the earth is mapped, which processes are involved in the formation of mountains, why sedimentation occurs, what organic matter is and how oil and gas are formed.

EXPLORATION FOR OIL AND GAS

Module 2 discusses the differences between reserves of oil, gas and petroleum as a resource, how a reservoir is formed, what the characteristics of a viable reservoir are, the techniques used to identify potential reservoir formations, the role seismic surveys play in locating potential reservoirs and why exploratory drilling is only used when the potential for a viable reservoir is high.

DRILLING OPERATIONS BASICS

Module 3 discusses the nature of drilling operations, the importance of subsurface conditions, why well bores change size, the three stages of drilling, why different drilling methods are used and the significance of well bore control.

PRODUCTION OF OIL AND GAS

Module 4 discusses the steps involved in preparing a well for production, what natural lift is and the types of natural lift, the principal types of artificial lift, the types of well completions, what is involved in well servicing and how oil and gas are treated on emerging from the well.

PETROLEUM REFINING PROCESS

Module 5 discusses which molecules make up the different types of hydrocarbons, how contaminants in the oil are dealt with, why boiling points are important to the refining process, where refineries are located, what the two basic areas of a refinery are, what happens during the two main stages of refining, why each upgrading procedure is important and what happens before and after the refining process.

TRANSPORTATION, DISTRIBUTION AND DELIVERY OF OIL AND GAS

Module 6 discusses why two basic transportation streams are used, how natural gas is transported, distributed and delivered, how crude oil is also transported, distributed and delivered, where refineries are located, how bulk and finished refined products reach their consumers and how using oil and gas affects the environment as well as the industry.

MARKETING PETROLEUM PRODUCTS

Module 7 discusses what the three marketing sectors of petroleum are, which forces control the nature of the petroleum market, where the major producers and major consumers are located, how crude oil is traded, how the supply and demand of petroleum is stabilized and how refined petroleum products are marketed.

WIRELINE OPERATIONS

CEU: 1.4 Credits LANGUAGES: English



COURSE OVERVIEW

This introductory course addresses many of the most complex techniques used in oilfield drilling and explains the purpose and value of these techniques. This course will show how Wireline Logging developed and discusses the tools and technologies that are used by engineers worldwide. This course includes a discussion of proper tool handling techniques to help promote safety awareness among the students and others working around them, leading to a more productive and profitable work place.

INCLUDED MODULES

GEOLOGY AND FORMATION EVALUATION

The first Wireline course module provides insight into the basics of reservoir geology: defining a formation and how they are evaluated. The basics of surface reflection seismic testing and how it can be used to evaluate a potential reservoir is described. Finally, the role of wireline logging tools in the evaluation of hydrocarbon traps and in helping operating companies decide their next move is discussed.

WHAT IS WIRELINE LOGGING

This second Wireline module introduces well logging, what it is used for, and summarizes the history of wireline logging, including the development of significant tool and wellsite operational and recording technologies. The primary applications of wireline logging are described and wireline operational modes, i.e., electric line and slickline, are discussed. Formation evaluation is defined, and how formations can be examined to help determine their commercial potential is explained.

OPENHOLE TOOLS AND FORMATION EVALUATION

In this module, the importance of formation evaluation is examined. The module explores the different critical rock properties provided by different wireline tools, e.g., resistivity and porosity, along with a brief description of the tool principles used to make the measurements. In addition to conventional resistivity, acoustic and nuclear porosity, and gamma-ray logging tools, NMR and borehole imaging tools are covered. The importance of data obtained by wireline core and fluid sampling tools is also emphasized.

CASED HOLE

The fourth module describes casing a well and the roles of different cased-hole wireline logging tools, such as, cement and casing integrity and production monitoring, and the principles behind the tool measurements. These measurements are essential for avoiding costly production problems. Specialized cased-hole logging tools used for formation evaluation are discussed. Some of the sophisticated software tools needed to interpret the data acquired by many cased-hole logging tools explained. These software tools can create interpretative models and also help develop intervention programs that address production issues.

WIRELINE EQUIPMENT AND WELL INTERVENTION

The fifth wireline module teaches operational procedures for running wireline logging devices, including how to attach and check that logging tools are properly attached to the wireline, and operating the winch. Maintaining proper wellhead pressure control, via use of a "Christmas Tree" and a BOP stack, and the importance of maintaining proper grease pressure during wireline intervention are also explained.

TOOL SAFETY

The sixth module covers basic wireline tool safety—Nothing is more important when working on a rig than safety. Awareness is the key to avoiding incident or injury. This module stresses the importance of good communication and double checking procedures. The reasons behind the separate sets of stringent rules governing radioactive and explosive tools are explained. Common rigsite risks and dangers that can accompany wireline logging operations, such as static electricity, high pressures associated with fluid and pressure testing tools, and the extreme danger of H2S gas are explained, and how following simple safety steps can save lives.

COLLABORATIVE DATA AND OILFIELD MODELING

This last module in the Wireline Operations course is a culmination of what has been learned so far. This includes a description of how computer models representing the geology of an entire field can be developed from the combination of surface seismic data and wireline data from just a few boreholes. Also, how computer reservoir simulations using predictive applications are run to predict reservoir performance for the entire field. These simulations substantially increase overall savings, while reducing the time needed to develop the field and eliminating unnecessary equipment and injuries to personnel.

RESERVOIR ENGINEERING PRIMER

CEU: 0.4 Credits LANGUAGES: English



COURSE OVERVIEW

This Reservoir Engineering Primer is divided into two computer-based training modules. The first part of the course aims to provide a general understanding of oil and gas reservoirs. The course explains the geologic processes of reservoir formation, then examines the origins of oil and gas. The characteristics of a reservoir and their contributions to reservoir quality described in detail. The second module presents practical reservoir engineering techniques for calculating the original oil-in-place and gas-in-place in a reservoir. The student learns methods of determining each of the parameters used in the reservoir volumetric equation: area, net pay, porosity, and water saturation.

INCLUDED MODULES

RESERVOIR ENGINEERING PRIMER

Module 1, Reservoir Engineering Primer, covers variables in volumetric equations, calculating original oil in place and calculating original gas in place.

OIL AND GAS RESERVOIRS

Module 2 of the Reservoir Engineering Primer Series, Oil and Gas Reservoirs, explains how oil and gas reservoirs are created and where they are likely to be found, and, reservoir characteristics and how they affect production operations.



Compressive forces on the earth's crust fold sedimentary formations and generate opportunities for anticlinal trapping. An anticline is an upward bulging fold in the rock beds.

BASIC OILFIELD MATHEMATICS

CEU: 0.4 Credits LANGUAGES: English



INCLUDED MODULES

INTRODUCTION TO GENERAL MATHEMATICAL CALCULATIONS 1

Volume 1 of Basic Oilfield Calculations covers topics such as: how to perform unit conversions, calculate the volumes of geometric shapes, including tubular shapes such as pipe and casing, and interpret data presented on a graph.

INTRODUCTION TO GENERAL MATHEMATICAL CALCULATIONS 2

Volume 2 of Basic Oilfield Calculations covers topics such as: fluid measurements, calculating density and specific gravity of a liquid or solid, differentiating between specific gravity and API gravity, the effects of downhole static pressure on wireline operations, using tables during acidizing treatments, and calculating the lifting costs, economic limit, and payout.

COURSE OVERVIEW

Basic Oilfield Mathematics covers general mathematical calculations likely to be encountered in the oilfield. The course takes a practical approach, featuring numerous examples for tubular weights and volumes, tank capacities, API gravity, downhole static pressure, and unit conversion from one unit to another. It covers basic physics concepts such as density and specific gravity. Effects of well deviation on measurement and pressure calculations is explained. Principles of pressure and force are illustrated. Advanced topics include fluid measurement and orifice metering calculations, and a few exercises in oilfield economics.



The term 'tubing' refers to the smaller pipe string run inside the casing to conduct reservoir fluids from the reservoir to the surface. A packer may be used to seal the annular space between the casing and the tubing. To calculate the volumes needed for acid jobs and other well treatments, it is often necessary to calculate the internal volume of the tubing string. Note that as the tubing gets heavier, the 3-1/2 inch outer diameter remains constant while the inner diameter reduces because of the thicker pipe walls.



Pressure is defined as force per unit area. The most commonly used unit of pressure is pounds per square inch, abbreviated as PSI. Pressure gradient is a convenient term to express the contribution of hydrostatic pressure made by each segment of a fluid column. For example, fresh water has a pressure gradient of 0.433 psi per foot. That is, each foot of a column of fresh water contributes 0.433 psi to the hydrostatic pressure. The pressure gradient for any fluid can be calculated by multiplying its specific gravity times the pressure gradient for fresh water, which is 0.433.

PRODUCTION OPERATIONS

The Production Operations Library covers common techniques used in the production phase of oil and natural gas wells in surface and sub-surface systems. Gas lift, sucker rod pumping and electric submergible electric pumping systems for artificial lift allow low pressure reservoirs to be produced, as well as increasing flow rates in naturally-flowing wells. Measuring fluid volumes liquid and gas - on an oil field is necessary for accounting, process monitoring and custody transfer. Perforating liners allows fluids to travel from a formation into the production tubing, and can be accomplished with a variety of different systems. Downhole tools and equipment performing a wide variety of functions are commonly lowered into the wellbore using slicklines. Knowledge of the techniques and technologies used in slickline operations is valuable for new, administrative and support personnel. Learning the functions and controls of subsurface safety valves allows rig workers to minimize the negative effects of environmental complications. Identifying surface facilities and their configuration, operating principles, and function provides personnel unfamiliar with surface operations a working knowledge of these systems.

ARTIFICIAL LIFT

CEU: 1.2 Credits LANGUAGES: English



COURSE OVERVIEW

Artificial Lift introduces the techniques and technologies involved in artificial lift, with specific attention to sucker rod pumping, gas lift, and electric submergible pumps. The course provides a useful knowledge foundation to professionals in every sector of the industry, and of immediate value to field personnel. Each functional component of the sucker-rod pumping system is presented, and the major geometries of pumping units are defined with respect to their specific application and utilization. The operation of three different gas lift configurations is described. Detailed graphics illustrate the basic components and operation of electric submergible pumps. The relative advantages and disadvantages of each artificial lift method are compared and discussed. This course comprises six computer-based training modules, each one representing over an hour and a half of instruction and exercises.

INCLUDED MODULES

SUCKER ROD PUMPING, VOLUME 1

Volume 1 introduces pumping unit and sucker-rod pumping systems. It describes the functional surface components of a sucker-rod pumping system, and their various geometries and configurations.

SUCKER ROD PUMPING, VOLUME 2

Volume 2 describes pumping unit and sucker-rod pumping systems with specific attention to the sub-surface components. It describes how static, dynamic, and cyclic loading lead to rod stress, fatigue, and failure. Sub-surface pumps, tubing, and gas anchors are also covered.

GAS LIFT, VOLUME 1

The first Gas Lift module introduces the components, equipment, and applications of gas lift systems. Compressors, separators, control and metering equipment are described in detail. It also explains the principles of artificial lift, and the advantages and limitations of gas lift.

GAS LIFT, VOLUME 2

The second Gas Lift volume discusses the operational and design aspects of gas lift systems. It describes the sequence of events in unloading and operating the well, explains continuous and intermittent lift, and compares different gas injection rates, tubing sizes, and choke settings.

ELECTRIC SUBMERGIBLE PUMPS, VOLUME 1

This module introduces the components, theory, and operations of electric submersible pumping systems. It explains the principles behind a centrifugal pump, and describes the components of an ESP in detail. Pump performance characteristics and optimum ranges are also discussed.

ELECTRIC SUBMERGIBLE PUMPS, VOLUME 2

This module covers electric submersible pump components and performance. Pump intakes and protectors are described, along with the effects of gas lock. Electric motors and cables are also described. The module concludes by discussing associated surface systems.



The surface equipment associated with an ESP includes the wellhead, the vent box, the motor controller and switchboard, and the power transformer. The wellhead controls the flow of reservoir fluids out of the hole. An electrical feed-through is required for the ESP cable. These photos show a typical wellhead for the ESP cable. Note the special design which allows the cable to feed through. This graphic shows a cut-away view of the cable going through the wellhead.

OILFIELD METERING PRIMER

CEU: 0.6 Credits LANGUAGES: English



COURSE OVERVIEW

This primer on Oilfield Metering reviews the methods used to measure fluid volumes in the oilfield for accurate accounting, process monitoring, and custody transfer. Liquid metering techniques are discussed first, followed by gas metering. The first part of the course concerns methods of liquid metering. Positive displacement, turbine, vane, paddle, orifice, and vortex meters are described. Maintenance, wear, and the effects of gas and solids in the liguid stream are reviewed. The second part of the course concerns methods of gas measurement. The unit describes orifice metering equipment in detail, and emphasizes the importance of maintenance and inspection. Methods of recording accurate measurements are reviewed, and the equations for calculating gas volumes are explained. This Oilfield Metering Primer comprises three computer-based training modules, each representing two hours of instruction and exercises.

INCLUDED MODULES

LIQUID METERING

Oilfield applications of liquid metering are covered in this module, and various liquid metering systems are described in detail. Maintenance concerns are also explained, with attention to the effects of gas, solids, turbulence, and normal wear on metering equipment.

AN INTRODUCTION TO GAS METERING

The first Gas Metering module covers the basic theory of gas measurement through an orifice. It describes metering equipment, measurement and recording devices, and gas flow calculations. The module explains how to read chart data and concludes with two gas flow simulations.

AN INTRODUCTION TO GAS METERING TECHNIQUES AND COMPONENTS

Equipment specifications and the importance of proper installation, inspection, and maintenance are reviewed in the second volume of Gas Metering. Causes and solutions for common problems are discussed. The module also covers the operation and advantages of gas flow computers.



For orifice meters to provide accurate measurement, it is essential that the gas flow be stabilized by adequate lengths of straight pipe upstream and downstream of the meter. It is therefore important that later field modifications to the original meter run installation not interfere with proper measurement. Depending on the type of pipe fittings and routing upstream of the meter, and on the diameter of the orifice and the meter run, from 10 to 45 diameters of straight pipe are required upstream of the meter. 5 to 10 diameters are required downstream.

PERFORATING FUNDAMENTALS

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

This course on Perforating Fundamentals explains the basic concepts of perforating, including safety around explosives and the potential consequences of mistakes. It reviews topics related to shaped charges, including their design, completion, and detonation, as well as standoff, interference, and the manufacturing and performance of the shaped charge. The course then introduces perforating guns, including capsule guns, carrier guns, and pivot guns. Debris control and gun size are also discussed, along with tips on how to maximize clearance. The importance of the entrance hole diameter is reviewed. The course describes how perforating guns are run and fired in a well. A full range of firing systems and related equipment are discussed in the context of their field use. The course emphasizes safety procedures that must be followed in the field. It concludes with a review of supplemental equipment and perforating accessories.

COURSE OBJECTIVES

- Basic perforating components, equipment, operations, and design considerations.
- Explain the safety measures taken in perforating operations.
- Explain the principles behind a shaped charge.
- Describe different deployment options and equipment for perforating guns.
- Differentiate between wireline-deployed and tubing-deployed depth correlation methods.
- Describe the operation of the basic firing mechanism for perforating guns.
- List the three types of firing actuation.
- Describe the operation of mechanical-based and pressure-based firing actuators.



SLICKLINE OPERATIONS

CEU: 1 Credits LANGUAGES: English



COURSE OVERVIEW

Slickline Operations introduces the techniques and technologies involved in working with slickline and braided wireline. The course covers wireline jars and jarring operations, surface equipment, basic wireline tools, and applications specific to gas lift operations. Slickline Operations supplies a firm foundation knowledge of the practices and terminology that benefits not only new personnel in the field, but also those in administrative and support roles. This course consists of five computer-based training modules, each representing two hours of instruction and exercises. A reference dictionary of terms and abbreviations common to slickline operations is also included.

INCLUDED MODULES

AN INTRODUCTION TO THE TYPES AND APPLICATIONS OF WIRELINE AND SLICKLINE

The first Slickline Operations module demonstrates the types and applications of wireline and slickline. Measuring techniques, spooling, and hydraulic circuits are explained. Important safety procedures are also covered.

AN INTRODUCTION TO THE MAJOR COMPONENTS OF THE WIRELINE TOOLSTRING

The second module details the major components of the wireline toolstring and explains jarring operations. Physical forces of wireline jarring are illustrated through interactive simulation.

AN INTRODUCTION TO THE SAFE DEPLOYMENT AND OPERATION OF EQUIPMENT

The safe deployment and operation of wireline surface equipment is covered in the third volume of Slickline Operations. It explains methods of controlling well pressure, and breaks down the rigging-up sequence step by step.

AN INTRODUCTION TO THE BASIC WIRELINE TOOLS

This module describes basic wireline tools in detail, covering shape and critical dimension. The practical field applications of each tool are demonstrated, along with associated safety practices. Additional relevant information on fluid by-pass and shear pin strength is also included.



Before looking at basic service tools, it is important to understand the concept of fluid bypass. When a tool is run into a well containing fluid, the fluid creates resistance. This resistance needs to be accounted for when selecting a tool. The magnitude of this resistance depends on the fluid viscosity, and the amount of clearance available to allow this fluid to move around the tool. The clearance between the tool's outside diameter (OD) and the tubing's inside diameter (ID) is called the fluid bypass.

AN INTRODUCTION TO GAS LIFT

The fifth and final Slickline Operations module concerns gas lift. It describes the specialized equipment used to run and retrieve gas lift valves from a well. The design and application of latches, side pocket mandrels, and kickover tools are also discussed.

AN INTRODUCTION TO ABBREVIATIONS FOR SLICKLINE OPERATIONS

This module serves as a terminology primer for field personnel new to slickline operations, and as an electronic reference for more experienced field hands. Definitions generally concern slickline operations, but also include common terms found in field procedures and reports.

SUBSURFACE SAFETY VALVES

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

This course introduces the purpose, operation, and application of Subsurface Safety Valves. Case studies demonstrate the need for setting the valves at certain depths. Environmental complications encountered in sub-sea installations, arctic conditions, extreme temperatures, and even earthquake-prone regions are covered. Surface and subsurface controlled downhole safety valves are described, accompanied by detailed animations and graphics demonstrating the valves' operation.

COURSE OBJECTIVES

- Describe surface and subsurface safety valve systems.
- Identify the various types of safety valves.
- Differentiate between subsurface and surface-controlled subsurface safety valves.
- Describe how various safety valves operate.
- Identify and describe the functions of the various components of a safety valve.



Subsurface safety valves are the last line of defense for shutting in a well in which production cannot be controlled from the surface. As such, they must be highly reliable and properly positioned in the wellbore. The most important characteristic of a subsurface safety valve is that it closes when it is required to do so. The valves must be rugged and highly reliable. Safety valves with working features that are over-complicated or which have mechanisms historically prone to malfunction have no place in the producer's well. In this module, we will cover subsurface safety valve systems.

SURFACE FACILITIES PRIMER

CEU: 0.8 Credits LANGUAGES: English



COURSE OVERVIEW

The Surface Facilities Primer introduces the equipment typically used to process fluids produced from oil wells, describing the identification, internal configuration, principles of operation, and contribution to the overall system of each of the major pieces of oilfield surface equipment. Emulsion breaking and the separation of oil, gas, and water are discussed. The course also covers the handling, storage, and transportation of hydrocarbons produced from the well.

INCLUDED MODULES

SURFACE FACILITIES, VOLUME 1

The two main functions of surface facilities are explained in this module: separating oil, water, and gas; and testing production capability. The module describes surface system components, processes for separating fluids and breaking emulsions, and well testing facilities.

SURFACE FACILITIES, VOLUME 2

The second Surface Facilities module details the handling of crude oil, natural gas, and water produced from a well. Metering systems, storage facilities, and transportation options for oil and gas are described, along with treatment and disposal alternatives for waste water.

RECIPROCATING COMPRESSORS

This module explains the operating principles and field applications of reciprocating gas compressors. It compares natural gas drivers with electrical drivers, and describes the function of aerial coolers. The module concludes with a discussion of gas flow control systems.



As the gas's volume decreases, The pressure and the temperature of the gas increase. The temperature of the gas increases when it is compressed. This heat must be removed to prolong equipment life and to cool gas for pipeline transmission and for processing in downstream facilities. Removing the heat also allows for routine equipment maintenance, such as checking the oil level, adding oil, and cleaning small spills and leaks. The compressor cooling system removes heat at the compressor cylinder, and a cooler is used to cool the gas after it leaves the compressor cylinder.

COUPLING ALIGNMENT

This module explains the importance and function of coupling alignments. Tools and equipment used in alignment procedures are described, together with various alignment conditions. Preliminary checks and alignment techniques are presented step by step.

HEALTH, SAFETY AND ENVIRONMENT

THE HEALTH, Safety and Environment Library addresses safe work practices on a rig or platform. Cranes are used everyday on offshore platforms, which makes working safely with and around cranes important for crane operators and rig personnel. H2S is commonly associated with decaying organic matter, and can be produced during rig operations. It is important for all rig workers to be familiar with characteristics, safety equipment, and treatment in the event of a H2S leak. Radioactive materials are another concern for petroleum industry personnel, as production operations can easily become contaminated with NORM, posing health risks for workers. In the event of an accidental oil spill, accurately estimating the volume of oil spilled is vital to reporting and management of accidental release.

CRANE SAFETY

CEU: 0.4 Credits LANGUAGES: English, French, Spanish, Portuguese, Indonesian, Arabic



COURSE OVERVIEW

Crane Safety tackles the broad subject of offshore pedestal cranes and their safe operation. Students learn to identify the key components of cranes, and to recognize the importance of proper maintenance. The course explains crane capacity charts, and the process of calculating safe working loads. The effective use of a uniform set of hand signals is discussed, and standard hand signals are demonstrated for the student by digital video.

INCLUDED MODULES

AN INTRODUCTION TO OFFSHORE PEDESTAL CRANES AND THEIR SAFE OPERATION 1

Module 1 explains how to identify the components of a crane, distinguish between lattice, box, and telescoping booms, review of basic crane maintenance requirements, and the qualifications and duties required of a crane operator.

AN INTRODUCTION TO OFFSHORE PEDESTAL CRANES AND THEIR SAFE OPERATION 2

The second module discusses communication using standard hand signals, standard procedures to be followed before, during, and after a lifting operation, and calculating a safe working load using capacity charts.

OILSPILL VOLUME ESTIMATION

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

Oil Spill Volume Estimation introduces techniques for estimating the volume of an accidental oil spill. Determining the volume of accidental hydrocarbon discharge is rapidly becoming one of the most important aspects of maintaining an environmentally sound offshore production operation. Reporting the amount of accidentally-released oil in the environment during day-to-day operations (a legal requirement in most countries) has proven to be a major problem due to the non-intuitive manner in which hydrocarbons disperse over a body of water. A systematic method of estimating the size of a spill is presented here in a clear, step-by-step set of procedures that can be used by field operators with no previous experience. A working knowledge of these techniques is also valuable for personnel in administrative and support roles, who may have to deal indirectly with the consequences of an accidental oil spill.

COURSE OBJECTIVES

- Approximate the spill volume per unit area by the color of the oil in the water.
- Estimate the elliptical surface area of an oil spill with reference to a fixed structure, moving vessel, or helicopter fly over.
- · Calculate the total volume of an oil spill.

H2S SAFETY IN PRODUCTION OPERATIONS

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

H2S Safety in Production Operations instructs operations personnel in the characteristics of Hydrogen Sulfide (H2S) and its effects on those exposed to it and its impact on material and equipment. The dangers of sulfur dioxide gas (SO2), a by-product of H2S, are also discussed. Proper use of H2S safety equipment, including various types of H2S monitors, is covered in detail. By using the audio in the module, the student is taught to recognize warning alarms made by standard H2S detection equipment. Proper escape and rescue procedures in the event of an H2S leak are discussed and a step-by-step discussion of emergency treatment.

COURSE OBJECTIVES

- Describe the characteristics and effects of hydrogen sulfide.
- List hydrogen sulfide safety practices and emergency procedures.

NORM IN THE PETROLEUM INDUSTRY

CEU: 0.2 Credits LANGUAGES: English, Arabic



COURSE OVERVIEW

This course provides a general understanding of Naturally Occurring Radioactive Materials (NORM) in the petroleum industry. Because NORM contamination is so widespread in the petroleum industry, all personnel should be informed of the potential hazards associated with NORM exposure. The course examines the origins of NORM in reservoir formations and the processes whereby these materials are produced at the wellsite. The course explains NORM contamination in oil and gas production facilities as well as radon contamination in natural gas facilities. Animated graphics of the depositional processes help students visualize the sequence of events.

COURSE OBJECTIVES

- Define radiation and radioactivity.
- · Describe the occurrence and characteristics of NORM in the petroleum industry.
- · Identify radium and radon hazard areas in petroleum facilities.
- List NORM safety procedures.
- · Explain the proper handling and disposal of NORM waste.

GENERAL SAFETY COURSE

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

In this module we cover the general safety principles, alcohol and drug policies, and many items that are prohibited while in the oil and gas production workplace. Personal conduct is also discussed as well as housekeeping and basic principles of land transportation. We also cover manual and power hand tool safety, walking and working surface safety, and how to report accidents and assist in the investigation of workplace accidents.

INCLUDED MODULES

GENERAL SAFETY: PRINCIPLES

The Principles module covers the basic tenets of safety both on and off the job as well as the importance of adhering to these principles. Topics include common workplace injuries, their impact on employers and workers, and methods of prevention. Compliance with all levels of safety regulations and the benefits of adopting a safety-conscious attitude are also discussed in this module.

GENERAL SAFETY: ALCOHOL AND DRUG POLICIES

Both government regulations and corporate policy impose restrictions on the use of drugs and alcohol. These rules, as well as supervisory responsibilities, employee awareness, and the consequences of alcohol and drug use are covered in this module.

GENERAL SAFETY: FIREARMS WEAPONS AND OTHER PROHIBITED ITEMS

Certain items are prohibited from an Oil or Gas rig, although they may be perfectly legal to possess elsewhere. In this module, items that should never be brought to the rig are described, along with some of the consequences of having these dangerous items in your workplace.

GENERAL SAFETY: PERSONAL CONDUCT

Respect for ones coworkers is essential to a safe and productive workplace, this module discusses how one should act in the workplace. Avoiding offensive humor, profanity, and horseplay allows everyone to work with peace of mind in a healthy enviorment. Recognizing and reporting violence in the workplace as well as proper hygiene are also critical elements of personal conduct addressed in the module.



Be sure to maintain a proactive and preventative attitude while working. When at work, it is important that you remain aware of the risks involved in your position. Remaining mindful of your work and environemnt protects yourself and others.

GENERAL SAFETY COURSE, CONTINUED.

GENERAL SAFETY: GENERAL WORKSITE SAFETY

Recognizing and avoiding the most common hazards is crucial to keeping personnel safe and injury-free. General Worksite Safety covers electrical, mechanical and falling hazards, as well as behavior-based safety. Accident prevention through pre-job planning and work stoppages, along with workers' responsibilities in these situations is included in this module. Site orientations, simultaneous operations, and signs and tags are also covered.

GENERAL SAFETY: MANUAL HAND TOOL AND POWER HAND TOOL SAFETY

In this module the use of powered and manual tools is discussed. Topics covered include tool safety, equipment inspection, and proper use of tools. Explanations of why not to use a broken, damaged, or the inappropriate tool on any job is also included in the instruction.

GENERAL SAFETY: HOUSEKEEPING

An orderly jobsite benefits all workers involved. This module demonstrates just how important housekeeping procedure and practice is on the rig. Walkway and aisle maintenance combined with storage practices can reduce the amount of slip and trip hazards as well as create a safer rig for everyone. Using warning signs, banners, and physical barriers also helps to prevent injury and is detailed in this module.

GENERAL SAFETY: WALKING WORKING SURFACES

More time is spent using walking and working surfaces than any other part of a rig, and these areas present their own safety hazards. Openings in the floor and walls, ladders and scaffolding, and stairways and handrails all have guidelines governing their use that allow workers to keep themselves safe while walking or working.

GENERAL SAFETY: ACCIDENT REPORTING AND INVESTIGATING

Even with the appropriate safety precautions taken, accidents are still possible on the worksite. The Accident Reporting and Investigation unit informs students of the best practices and response procedures to be followed in the aftermath of an accident on the jobsite. Unauthorized or uncontrolled releases as well as related property damage are all covered, as are the purpose and responsibilities associated with accident investigation.

GENERAL SAFETY: LAND TRANSPORTATION

Many jobs require employees to travel via car or truck, and there are a number of risks to personnel and material associated with land transportation of this sort. This unit emphasizes the importance of observing local traffic laws and regulations and details best practices for traveling on roads. Students will also become familiar with how to address hazardous conditions, parking, and dangerous behaviors behind the wheel.



When you witness and injury, it is important to respond, but only to the extent that you are trained and qualified to do so. Jumping into an incident without proper training can endanger both the victim and yourself.

PERSONAL PROTECTIVE EQUIPMENT

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

The types of equipment covered in this module include head protection, face and eye protection, hearing protection, and foot protection. Also included are hand, respiratory, and fall protection, as well as other personal protective equipment that is less common in the oil and gas production workplace.

INCLUDED MODULES

PERSONAL PROTECTIVE EQUIPMENT: OVERVIEW

Personal Protective Equipment (PPE) is a necessity on an oil or gas rig. To familiarize workers with how and when PPE should be used, this module addresses employee and job-planning orientation concerning PPE. The policies, preferences, and how to ask for guidance in the use of PPE are also discussed in this module.

PERSONAL PROTECTIVE EQUIPMENT: HEAD PROTECTION

Head protection in a rig environment is vital. Hard hats can save lives; thus the different types, the proper inspection process, and care-taking procedures should be second nature to anyone who is planning on working on a rig.

PERSONAL PROTECTIVE EQUIPMENT: FACE AND EYE PROTECTION

Dust, splashes, flying objects, and radiation are all hazards encountered on a rig and are most devastating when they come into contact with one's face. To prevent these kinds of accidents, it is important for workers to understand the different types of face and eye protection, limitations of PPE, and the proper care and use of their face and eye protection.

PERSONAL PROTECTIVE EQUIPMENT: HEARING PROTECTION

Noise, often at excessive levels, is a constant presence in industrial jobs. In order to prevent hearing loss, workers in industrial settings need to be well-versed in the types of hearing protection and the limitations of each type. How to inspect, use, and properly combine different types of hearing protection in order to best protect and preserve auditory function are all crucial skills taught in this module.

PERSONAL PROTECTIVE EQUIPMENT: FOOT PROTECTION

Many factors pose a threat to a workers feet, making their protection a significant concern. As with most PPE, the key to effective use of foot protection lies in the knowledge of the types of foot protection available, inspection of footwear, and its proper care and use.

PERSONAL PROTECTIVE EQUIPMENT: HAND PROTECTION

Virtually all industrial jobs involve the use of ones hands, therefore protecting ones hands should be a paramount concern for every worker. To effectively protect the hands, a worker should understand the types of hand protection, how to inspect it for excessive wear or weaknesses, and how to use and care for their PPE appropriately.

PERSONAL PROTECTIVE EQUIPMENT: RESPIRATORY PROTECTION

In industrial settings, toxic substances frequently exist as particles in the air. Keeping these dangerous chemicals out of ones body requires respiratory protection, and every worker should be aware of the different types of respirators and canisters available to them. The inspection and proper care of this equipment in order to maintain the working order of the PPE is also detailed in this module.

PERSONAL PROTECTIVE EQUIPMENT: FALL PROTECTION

The Fall Protection module will introduce types of personal protective equipment (PPE) used for fall protection, proper equipment inspection, and also the use and care of the equipment. By the end of the module students will understand how to mitigate dangers with fall protection while working at heights.

PERSONAL PROTECTIVE EQUIPMENT: OTHER PPE

The Specialty Protective clothing module will focus on specialty protective clothing and its proper care and use. By the end of this module, students will understand distinctions between several types of specialty PPE including full-body suits, fire-retardant clothing, and chemical protective clothing.

SPECIALIZED WORK PROCEDURES

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

In this module we cover types of hazardous energy, lockout and tagout procedures, and different work permits. We also discuss employee's responsibilities when working in confined spaces, at heights, and while hoisting or lifting objects.

INCLUDED MODULES

SPECIALIZED PROCEDURES: HAZARDOUS ENERGY

The Hazardous Energy module will cover different types of energy and how to control for hazardous energy. Students will be able to clearly define an energized versus a de-energized situation and how to proceed safely in these circumstances.

SPECIALIZED PROCEDURES: LOCKOUT TAGOUT

The Lockout/Tagout module provides an overview of definitions associated with energy isolation as well as an employee's roles and responsibilities. Students will become familiar with how to properly place a lock or a tag in a lockout/tagout situation and also how to institute a group lockout with multiple workers for multiple situations.



Prepare for shutdown. Before an authorized or affected employee turns off a machine or piece of equipment, the authorized employee must have knowledge of the type as well as the magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control energy.

SPECIALIZED PROCEDURES: WORK PERMITS

The Work Permit module will offer an overview of the different types of permits such as, confined space, hot work, critical lifts, and other types of permits for work on the rig. Students will also become familiar with their roles and responsibilities involved in there permit process.

SPECIALIZED PROCEDURES: CONFINED SPACE

In this module students will be exposed to what constitutes a confined space and the hazards associated with working in these spaces. While working in a confined space there are particular responsibilities associated with various roles; this unit will illustrate correct procedures and proper training for employees based on industry standards.

SPECIALIZED PROCEDURES: HEIGHTS

The Working at Heights module will introduce students to the importance of working at their level of training under these conditions as well as an overview of tasks and jobs completed at heights. The responsibility for preventing dropped objects and falls will be covered as well as the appropriate equipment necessary for safe practice.

SPECIALIZED PROCEDURES: HOISTING AND LIFTING

The Hoisting and Lifting module will provide an overview of correct procedures and safe practices for hoisting equipment and materials so as to avoid personal injury.

HEALTH AND HAZARDS

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

This module covers certain types of hazards that are present in the oil and gas production workplace, as well as the difficulties of transporting hazardous materials. We also cover general health and first aid, and the responsibilities of those in the workplace regarding industrial hygiene, bloodborne pathogens, and planning for emergencies.

INCLUDED MODULES

HAZARD COMMUNICATION: TYPES

In the Types of Hazards module students will become aware of effective hazard communication practices and the importance of the written plan. By the end of the module, students will become familiar with the necessity of keeping the chemical inventory up-to-date as well as keeping containers labeled properly. The module will also define the material safety data sheet, proper locations for the sheet, safety equipment, employee responsibilities, and training requirements.

HAZARD COMMUNICATION: TRANSPORTATION

The Transportation of Hazardous Materials module will introduce students to information that must accompany the transpiration of hazardous materials. By the end of the module students will become familiar with proper container markings, labels, or placards required for transport as well as how to complete shipping papers.

HAZARD COMMUNICATION: SPILL AND RELEASE

In the Spill and Release module students will learn how to properly report uncontrolled, or the unauthorized release of hazardous materials. By the end of the module students will become familiar with the proper response to these threats and to mitigate user carelessness, inadequate container storage, and damaged or failing containers.

OCCUPATIONAL HEALTH: OVERVIEW AND EMPLOYEE RESPONSIBILITY

The Occupational Health module will give an overview of health and industrial hygiene risks associated with work on a rig. Students will become familiar with the roles and responsibilities of the crew in maintaining health and safety standards and will learn about the training and certification requirements associated with each of these roles. By the end of the module, students will understand when to report suspicions concerning health hazards, will become familiar with the different types of exposure, and will learn how to monitor and mitigate hazards around the jobsite.

OCCUPATIONAL HEALTH: HAZARDS AT THE WORK SITE

The Potential Hazards at the Work Site module identifies H2S risks and detection as well as risks from solvents and chemicals such as: benzene, lead, CO2, NORM, mercury, hexavalent chromium, methanol, welding fumes, N2, and several others. Students will familiarize themselves with other risks ranging from dangers from noise exposure and diesel misting from an oil based mud.

HEALTH AND FIRST AID COURSE: GENERAL

By the end of this module, students will know how to locate emergency phone numbers, will understand the importance of responding to emergencies in a manner appropriate with their training, and will know what classifies a worker as being fit for duty.

HEALTH AND FIRST AID COURSE: PATHOGENS

The Bloodborne Pathogens module covers the importance of avoiding contact with blood and other bodily fluids, proper precautions to take when dealing with these substances, and how to use protective barriers to avoid infection. Students will become familiar with appropriate handling of razor blades, needles, and will learn what qualifies as contaminated material.

HEALTH AND FIRST AID COURSE: STAPH

The Staphylococcus module will cover one of the most dangerous diseases on the rig known as Staph (Staphylococcus Aureus). Staph is a type of bacteria that can be spread in a variety of ways and must be properly treated and avoided with competence.

HEALTH AND HAZARDS, CONTINUED.

HEALTH AND FIRST AID COURSE: ADVERSE WEATHER

In the Health and Adverse Weather module, students will learn about the hazards of lightning, windstorms, tropical storms, tornados and how to deal with these situations appropriately. Hazards of UV exposure, snow and ice, as well as flooding and thermal stress will also be explained along with methods of prevention and mitigation.

HEALTH AND FIRST AID COURSE: WILDLIFE SAFETY

The Health and Wildlife, Insects and Snakes module will inform students about animal life near the rig and will teach students how wildlife should be treated safely and handled correctly. The module will present an overview of possible wildlife encounters around the jobsite, including those that may occur when on an offshore installation, and will go on to describe how one should deal with these encounters in a safe and responsible way. Furthermore, the module describes safety precautions for working in environments with insects and snakes.

EMERGENCY RESPONSE: PLANNING FOR EMERGENCIES

The Emergency Planning module will cover the importance of emergency planning and short-service employee roles. Emergency situations can arise quickly and sometimes without warning; thus it is important for workers to already have plans in place to avoid hesitation in responding to dangerous situations.

EMERGENCY RESPONSE: ALARMS



One of the biggest areas of concern when it comes to windy conditions on the rig is in the use of cranes and cherry pickers. The Occupational Safety and Health Administration (OSHA) has a number of very specific standards when it comes to the operating in wind. While every crane is different, we can note some trends in policy regulation.

In the Emergency Situations and Overview module, students will become familiar with various types of alarms, why they are necessary, and the proper response. It is important to understand the locations of emergency equipment and muster areas as well as the location of related information pertaining to emergency procedure.

PERSONAL SAFETY RESPONSIBILITIES ON THE RIG

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

In this module we discuss personal fire safety responsibilities and procedures when in the oil and gas production workplace. We also cover crane safety, manual material handling, and water safety and regulations.

INCLUDED MODULES

FIRE SAFETY: OVERVIEW

The Fire Safety module will provide an overview of fire protection, prevention, and detection. The unit will detail the fire triangle, proper storage of flammable and combustible materials, as well as ignition sources. Students will become familiar with different classes of fires as well as proper extinguishing methods and types of extinguishers.

FIRE SAFETY: EMPLOYEE RESPONSIBILITIES

The Employee Responsibility module will familiarize students with correct procedures for reporting fires and fire hazards, onsite fire protection requirements, as well as location-specific escape routes. Students will also be made aware of the restrictions against tampering with fire extinguishers, will review the best practices for using fire extinguishers, and will learn how to safely participate in a fire drill. The module will also detail the emergency evacuation plan posted on a rig's station bill (muster list).

MATERIALS HANDLING: MECHANICAL EQUIPMENT

The Mechanical Equipment module will detail how an employee should conduct themselves safely while working near cranes, cherry-pickers, and forklifts. Students will understand the importance of never walking under a suspended load as well as never positioning themselves under an immovable object. The module will also cover proper communication between those on the deck and the operator as well as keeping an awareness of the best escape route in case of a dangerous circumstance.

MATERIALS HANDLING: MANUAL MATERIAL HANDLING

The Manual Materials handling module will cover proper lifting techniques to ensure back protection as well as the reasons for common injuries when lifting. At the end of this module, students will be familiar with appropriate lifting procedures and adequate alternatives to manual lifting.

WATER SAFETY: WATER SAFETY

The Water Safety module will help students become familiar with personal flotation devices, survival crafts, and standby rescue vessels.

PLATFORM ARRIVAL PROCEDURES AND ENVIRONMENT REGULATIONS

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

Here, we discuss the policies and procedures for entering the rig environment and environmental regulations concerning waste management, reporting waste, and marine debris policies while in the oil and gas production workplace.

INCLUDED MODULES

RIG PLATFORM ENVIRONMENT COURSE: PLATFORM OR LOCATION ARRIVAL

In the Platform/Location Arrival Procedures module students will become familiar with correct procedures and important information when gathering to board the rig. The unit will cover the proper use of rig walkways, handrails, baggage handling, and sign-in procedures. Students will also learn the importance of treating the rig as their home by being exposed to preparation for extended stay and appropriate personal items to bring aboard. The module will also cover site-specific orientation and necessary precautions.

WELLSITE ENVIRONMENTAL PROTECTION: OVERVIEW

The Environmental Compliance Overview module serves as a general rubric for measuring compliance with environmental protection regulations. By the end of the module, students will better understand how to evaluate compliance with regulations and will be familiarized with many of the regulations themselves.

WELLSITE ENVIRONMENTAL PROTECTION: WASTE MANAGEMENT

The Waste Management module will cover how to properly store and minimize waste. To ensure that the wellsite environment is protected, employees on an instillation must be aware of their responsibilities to correctly handle waste created on the rig.

WELLSITE ENVIRONMENTAL PROTECTION: SPILL REPORTING

In this unit students will learn the proper methods for responding to and reporting on events or situations that could compromise the wellsite environment. While no one plans for there to be a wellsite accident such as a leak or spill, it is nonetheless important to understand the procedures for handling these types of situations if they occur. Each rig has specific policies in place for responding to disasters, and this module is not meant to replace these. Rather, it serves to emphasize the importance of general attentiveness when on the jobsite and to introduce response procedures common to all wellsites.

MARINE DEBRIS: MARINE DEBRIS

In the Marine Debris module students will become familiar with both the identification and correct procedures for reporting debris offshore. Despite both domestic and international efforts for minimization, marine debris has increased in the form of common domestic materials to discarded fishing gear and even abandoned industrial equipment. This unit will allow students to become familiar with regulatory policy and also help establish general awareness for a problem requiring adequate attention for any offshore instillation.

SHORE BASE ARRIVAL

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

In this module we go over the aspects of entering the rig environment, such as safe helicopter and boat transportation. We also discuss swing rope procedures and how to safely use personnel baskets.

INCLUDED MODULES

TRANSPORTATION: HELICOPTER

The Helicopter Transportation module will cover the responsibility of passengers and the need for respecting the authority of the pilot. Students will also be informed on the proper procedure for boarding and disembarking the helicopter, avoiding hazardous components, and securing baggage and loose items. Smoking restorations, emergency devices, and orientation procedures will also be covered in the module.

TRANSPORTATION: BOAT

In the Boat Transportation module students will be exposed to the necessary PPE required when boarding or exiting a vessel, responsibilities of passengers as well as respecting the authority of the captain, and what to do in case of an emergency.

TRANSPORTATION: SWING ROPES

In this unit students will learn the typical locations for swing ropes on the rig as well as guidelines for safe usage. On a typical rig, there are various types of swing ropes available for use, however this method is becoming less common to the Personnel Basket.

TRANSPORTATION: PERSONNEL BASKETS

The Personnel Basket module describes and shows the common types of personnel baskets and their associated components. Seen as a much safer alternative to swing ropes, the personnel basket, sometimes referred to as a personnel net, nonetheless requires careful attention to safety procedures if injury is to be avoided. After completing this module, students will understand the necessary precautions to be observed when riding in the basket and the limitations associated with this method of transferring personnel to and from the rig.



The helicopter is an easy and safe way to get workers to and from the rig, but it is not without its hazards. Therefore, it is important to know the safety rules that govern safe helicopter flight. Perhaps the most important rule is a simple one, while boarding and disembarking from a helicopter, and throughout the helicopter ride, the pilot is in command and has complete authority.

LAND CERTIFICATION

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

In this module we cover the role of site workers, their personal protective equipment, and rescue procedures. We also discuss the hazards and safety regulations concerning pits, ponds, trenching, and shoring.

INCLUDED MODULES

LAND CERTIFICATION: PITS AND PONDS

The Pits and Ponds Safety module will explain the types of pits and ponds as well as their particular purpose. The unit will review necessary precautions to mitigate hazardous factors while working near both pits and ponds. Students will become familiar with various types of fluid storage and waste disposal in order to enhance safety awareness on location.

LAND CERTIFICATION: TRENCHING AND SHORING

In the Trenching and Shoring module students will learn how to ensure safety within regulatory requirements as well as safe work practices. The role of the Site Worker or "Competent Person" will be clearly defined for students to understand the functionality and responsibilities of this position. Hazards relating to excavation/trenching and methods of prevention will be detailed along with the use of personal protective equipment PPE. Appropriate procedures related to hazardous atmospheres and emergency situations will also be covered.

SEMS AWARENESS

CEU: 0.2 Credits LANGUAGES: English



COURSE OVERVIEW

In this module we introduce Safety and Environment Management Systems (SEMS). In November, 2011, SEMS regulations became required for all Outer Continental Shelf (OCS) operations under the jurisdiction of Bureau of Safety and Environmental Enforcement (BSEE). This module spreads awareness of SEMS regulations, the 13 elements of SEMS, and responsibilities required by SEMS for operators, contractors, and workers.

COURSE OBJECTIVES

- · Learn what SEMS is.
- · Learn the requirements of SEMS.
- Learn how SEMS affects employees.

ELECTRICAL SKILLS LIBRARY

The Electrical Library covers in detail the various tools, documents and equipment used by the petroleum industry from ammeters to AC/DC motors. Electricity is vital to the operations on a rig, platform or any other oil and gas facility. AC/DC motor theory and maintenance courses teach electricians, mechanics and technicians the necessary skills to operate and maintain motors used by oil and gas companies. Wiring a facility requires a complete knowledge of conduit systems, including installation, bending, conduit types and components. Once installed, the maintenance and proper use of these systems depends on the ability of site electricians and electronics technicians to read electrical prints, use a wide range of tools and meters, and troubleshoot problems. As always, safety training for personnel working with and around powerful electric systems increases awareness and helps prevent accidents.

AMMETERS, MEGGERS AND WHEATSTONE BRIDGE

CEU: 1 Credits LANGUAGES: English



COURSE OVERVIEW

This library consists of five lessons. This library is designed for participants familiar with AC/DC theory, electrical safety, and electrical print reading. A basic understanding of electronic devices and circuits is recommended. The library describes megohmmeters, Wheatstone bridges, and clamp-on ammeters. It gives examples of the use of these instruments, identifies their components, and defines their functions. The lessons also describe safety and selection considerations for their use, how to set up the instruments, how to connect them to the systems under test, and how to take and read measurements.

INCLUDED MODULES

INTRODUCTION TO MEGOHMMETERS

The first lesson explains Ohm's Law and how it is used when analyzing test results. The basic components, uses, and functions of a megohumeter are described. Insulation and causes of insulation damage are also covered.

USING THE MEGOHMMETER

The second lesson describes safety issues to consider when using a megohmmeter, how to select the correct megger for the job, setup, and the steps necessary to take a megger reading.

WHEATSTONE BRIDGE

The third lesson explains what a bridge circuit is, the purpose and components of a Wheatstone bridge, and its function.

USING A WHEATSTONE BRIDGE

The fourth lesson explains how to balance a Wheatstone bridge and the process used to set mechanical and electrical zero. How to interpret the readings of a Wheatstone bridge is also explained.

CLAMP-ON AMMETERS

The final lesson presents the components and features and functions of clamp-on ammeters. The lesson also describes safety considerations that should be noted when selecting a clamp-on ammeter. Instruction in the procedures for setting up, taking readings, and modifying the range of a clamp-on ammeter are also covered.



When using a clamp-on ammeter, remember that the circuit is live and energized. Follow your facility safety procedures, including wearing personal protective equipment.

AC/DC MOTOR MAINTENANCE

CEU: 2.4 Credits LANGUAGES: English



COURSE OVERVIEW

This lesson was designed to provide training for electricians, mechanics, and others, wanting to know more about AC and DC motor maintenance. This library consists of 12 interactive, on-line lessons that addresses AC and DC motor maintenance.

INCLUDED MODULES

INTRODUCTION TO AC MOTOR MAINTENANCE

The first lesson explains the purpose of AC motor maintenance programs and the types of motor maintenance. The lesson also identifies safety procedures that should be used during motor maintenance.

RECORDS, TOOLS, AND INSTRUMENTS

The second lesson explains the purpose of keeping complete and accurate records using various record keeping formats. The lesson also identifies tools and instruments used for given tasks in motor maintenance.

PREVENTIVE AC MOTOR MAINTENANCE

The third lesson explains aspects of preventive motor maintenance, the steps in inspecting a motor for general maintenance and for identifying problems, and cleaning and lubricating a motor as part of a preventive motor maintenance program.

MEASUREMENT IN PREVENTIVE AC MOTOR MAINTENANCE

The fourth lesson demonstrates the need for taking measurements, and the importance of comparing measurements. Causes and effects of current variations, temperature extremes, and vibration measurements are described.

PREPARING FOR PERIODIC AC MOTOR MAINTENANCE

The fifth lesson identifies the characteristics of periodic motor maintenance and the major components of an AC motor. Instruction in testing winding resistance, and winding insulation resistance, as part of pre maintenance testing is given.

MOTOR DISASSEMBLY AND REASSEMBLY IN PERIODIC AC MOTOR MAINTENANCE

The sixth lesson teaches the procedures for proper disassembly, cleaning, inspection, and reassembly of an AC motor.

CORRECTIVE MAINTENANCE FOR AC MOTORS

The seventh lesson discusses causes and corrective actions for various motor malfunctions.

INTRODUCTION TO DC MOTOR MAINTENANCE

The eighth lesson introduces participants to DC motors and compares them to AC motors.

COMMUTATOR INSPECTION

The ninth lesson shows participants how to identify some problems that affect the commutator.

COMMUTATOR WEAR

The tenth lesson trains participants to recognize friction damage, streaking, threading, and grooving, the cause of these problems, and corrective actions.

COMMUTATOR MAINTENANCE

The eleventh lesson demonstrates the process of preparing a commutator for reconditioning, how to properly cut mica, how to check the commutator after maintenance, and explains the purpose of performing a commutator run-in procedure.

BRUSH MAINTENANCE

The final lesson describes how to select and inspect brushes and the procedures for cleaning, inspecting, and setting the height of a brush holder. How to seat brushes and adjust spring pressure is demonstrated.

AC/DC MOTOR THEORY

CEU: Credits LANGUAGES: English



COURSE OVERVIEW

The AC/DC Motor Theory library was specifically developed for electricians and electronic technicians as well as for the multi-craft training needs of process and manufacturing facilities. This library consists of 11 interactive, on-line lessons that address AC and DC motor theory.

INCLUDED MODULES

INTRODUCTION TO AC COMPONENTS AND MOTORS

The first lesson identifies the components of an AC motor and explains their functions. Basic magnetic principles, sine waves, methods of increasing magnetic flux in a conductor, and how a rotating field is created in an AC Motor are presented.

ADVANCED AC MOTOR PRINCIPLES

The second lesson explains synchronous speed and how to calculate it. The lesson demonstrates the relationship between phased current and rotor spin and induction and its effect on a rotor. Slip and how to calculate slip using its formula are also covered.

THREE-PHASE MOTORS - PART 1

The third lesson defines and explains the components and functions of various three-phase motors. The lesson also defines torque and explains its role in motor operation.

THREE-PHASE MOTORS - PART 2

The fourth lesson defines and explains the components and functions of externally excited motors, starters, and variable speed drives. There is also a review topic to reinforce the information covered in the lesson, Three-Phase Motors – Part 1.

SINGLE-PHASE MOTORS

The fifth lesson trains the participants to distinguish single-phase motors from three-phase motors. Splitphase motors and capacitance start motors are discussed.

INTRODUCTION TO DC MOTORS

The sixth lesson introduces the learner to DC Motors and their basic components.

INTRODUCTION TO DC MOTOR THEORY

The seventh lesson introduces participants to DC motor theory.

ARMATURE REACTION, COMPENSATION, AND INDUCED VOLTAGE

The eighth lesson demonstrates armature reaction, compensation, and induced voltage.

SERIES, SHUNT, AND COMPOUND DC MOTORS

The ninth lesson instructs the participant in the design of series wound, shunt wound, and compound DC motors and how they work.

PERMANENT MAGNET, UNIVERSAL, AND BRUSHLESS DC MOTORS

The tenth lesson instructs the student in the design of permanent magnet, universal, and brushless DC motors and how they work.

DC MOTOR CONTROLS

The final lesson trains participants in starters, rotation direction, speed control, and drive controls of DC motors.

CONDUIT INSTALLATION

CEU: 0.6 LANGUAGES: English



COURSE OVERVIEW

This library consists of three lessons designed for the training of electricians as well as for the multi-craft training needs of process and manufacturing facilities. This library provides instructions and interactions concerning general conduit bending and installation, in accordance with the National Electrical Code (NEC). This lesson defines a conduit system, lists general specifications for use of types of conduit, and introduces the major components or materials of a basic conduit system. This lesson also demonstrates and provides instruction on general methods and practices for cutting, cleaning, bending and installing conduit.

INCLUDED MODULES

CONDUIT SYSTEM MATERIALS

The first lesson introduces the learner to conduit systems and components, and instructs in the use of trade size and fill charts.

CONDUIT BENDING

The second lesson instructs the learner in the proper methods of cutting, cleaning, and bending conduit. The lesson also demonstrates how to make various bends and when different bends are used.

CONDUIT LAYOUT AND INSTALLATION

This final lesson explains the procedure used to plan, measure, and install a conduit system.



Rigid metal conduit may be used in most locations subject to restrictions and conditions. Rigid metal conduit has generally the least amount of restrictions.



Liquidtight flexible metal conduit and liquidtight flexible nonmetallic conduit are suitable for uses requiring flexibility and protection from liquids, vapors, or solids.

ELECTRICAL PRINT READING

CEU: 1.6 Credits LANGUAGES: English



COURSE OVERVIEW

This lesson was designed to provide training for electricians, mechanics, and others, wanting to know more about electrical print reading. The eight lessons in this library present general information about electrical schematics and electrical diagrams showing and explaining how to read and interpret the symbols on electrical schematics and electrical diagrams.

INCLUDED MODULES

INTRODUCTION TO ELECTRICAL SCHEMATICS

The first lesson teaches about input, logic, and output devices, and the state in which symbols are drawn on electrical schematics.

ELECTRICAL SCHEMATIC SYMBOLS - INPUT DEVICES

The second lesson presents the symbols for various manually and process actuated input devices and how they are represented on an electrical schematic.

ELECTRICAL SCHEMATIC SYMBOLS -LOGIC AND OUTPUT DEVICES

The third lesson defines the function of logic and ouput elements of a control circuit and presents the symbols for various logic and output devices.

INTERPRETING ELECTRICAL SCHEMATICS

The fourth lesson describes the steps for interpreting the relationships among the input, logic, and output components of an electrical schematic.

INTRODUCTION TO ELECTRICAL DIAGRAMS

The fifth lesson in the Electrical Print Reading Library, and the first lesson covering electrical diagrams presents information about the purpose of various types of electrical diagrams and how to interpret the information in the title block. It also explains how to make electrical drawing revisions.

BUILDING ELECTRICAL DIAGRAMS

The sixth lesson presents the different views used in electrical diagrams as well as how to identify components, cables, and conduits. The cable chart is also presented.

SINGLE-LINE ELECTRICAL DIAGRAMS

The seventh lesson presents information regarding how to identify loads, equipment, and isolation breakers on a single-line electrical diagram.

WIRING DIAGRAMS

The final lesson presents information how to identify components, equipment, wires and cables on a wiring diagram. It also explains how to relate a wiring diagram to the installed hardware and how to use diagrams for maintenance and troubleshooting problems.

ELECTRICAL SAFETY

CEU: 1.6 Credits LANGUAGES: English



COURSE OVERVIEW

This library consists of eight lessons. The lessons in this library were designed to provide training for electricians, mechanics, and others working with or around electricity. The lessons in this library provide an understanding of electricity focused on increased awareness and prevention of industrial accidents.

INCLUDED MODULES

WORKING SAFELY WITH ELECTRICITY

The first lesson forms the foundation for the other lessons in Electrical Safety Library. The lesson explains safe work habits and basic safety rules that should be used when working around electricity. The importance of safely using circuits, the dangers of static electricity and the methods used to control it, is discussed. The use of fire extinguishers and how to identify the correct type of fire extinguisher to use on an electrical fire is also presented.

ELECTRICAL CIRCUITS AND SUPPLIES

The second lesson explains the relationship between voltage, current and resistance. It also demonstrates the correct method for selecting, inspecting, and handling extension cords and portable electric hand tools, and the purpose of ground fault interrupters is explained.

ELECTRICAL SHOCK

The third lesson describes the effects electrical current has on the human body. Proper methods of removing a victim from an energized circuit are discussed. Who is "qualified" to perform a particular task and alerting techniques are introduced.

ELECTRICAL PERSON PROTECTIVE

The fourth lesson defines personal protective equipment. The need for various alerting techniques, barriers, and attendants, and their roles is discussed, as well as the importance of following safe work habits. In addition, the lesson reinforces the requirements for being "qualified" for a particular task introduced in lesson 3, Electrical Shock.

PROTECTIVE GLOVES AND SLEEVES

The fifth lesson discusses the types and classes of protective gloves and sleeves used when working around electricity. The lesson identifies the proper practices for inspecting, repairing, wearing, and maintaining gloves and sleeves.

EYE AND FACE PROTECTION

The sixth lesson explains the importance of eye and face protection, as well as the proper practices for its inspections, care, and wear.

PROTECTIVE HELMETS

The seventh lesson explains the protection provided by helmets, and the proper methods of inspection, wearing, and maintaining a helmet.

GENERAL PROTECTIVE EQUIPMENT

The eighth lesson presents information about safeguards, other than Personal Protective Equipment worn on the body, used when working with or around electricity. Inspection, repair, and care of general protective equipment, and proper use of this equipment are presented.

ELECTRICAL THEORY FOR TROUBLESHOOTERS

CEU: 2.4 Credits LANGUAGES: English



COURSE OVERVIEW

This library consists of 12 interactive, on-line lessons. These lessons are excellent for the training of electricians and electronic technicians as well as for the multi-craft training needs of process and manufacturing facilities. The first four lessons in this library cover basic electrical concepts including Ohm's Law and Kirchhoff's Law, as well as the use of these laws to determine voltage, current, and resistance in series and parallel circuits.

INCLUDED MODULES

INTRODUCTION TO ELECTRICITY

The first lesson uses animation to demonstrate atomic structure, electricity, and how a simple circuit operates. The lesson also explains the characteristics of good conductors and insulators.

BASIC ELECTRICAL PROPERTIES

The second lesson covers Ohm's Law, as well as the use of Ohm's Law to calculate an unknown value. The lesson also defines voltage, current, resistance, and power.

SERIES CIRCUITS

The third lesson covers the identification of simple schematic symbols used to represent components in a series circuit. The behavior of current, resistance, and the use of Kirchhoff's Voltage Law are also covered.

PARALLEL CIRCUITS

The fourth lesson describes the behavior of voltage, current, and resistance in a parallel circuit. The learner is also instructed in the identification of the series and parallel portions of a series-parallel circuit.

ALTERNATING CURRENT

This is the fifth lesson teaches the basic AC characteristics of voltage, including how voltage changes over time. The participant is also instructed in using sine waves to interpret the frequency of AC voltage.

ELECTROMAGNETISM

This sixth lesson uses animations and demonstrations to explain the principles of magnetism, including flux density and electromagnetic induction. The lesson also shows how to plot a sine wave using a graph.

INDUCTANCE

The seventh lesson lesson builds on the information presented in the lesson, Electromagnetism. Types of induction, phase, and the effect of induction in AC circuits are covered.

CAPACITANCE

The eighth lesson explains capacitors, their function, and how capacitance affects AC circuits.

THREE-PHASE CIRCUITS

The ninth lesson lesson defines 3-phase AC, describes the components and operating principle of 3-phase generators, and using the formula for frequency, shows how rotor speed and the number of poles is related to frequency.

WYE AND DELTA CONNECTIONS

The tenth lesson discusses Wye and Delta configurations and explains the relationship between phase and line voltages in various connections, and demonstrates the application of the formula that shows this relationship.

INTRODUCTION TO TRANSFORMERS

The eleventh lesson presents the basic parts of a transformer and their function. The lesson explains turns ratio and its relationship to a transformer's input and output voltages.

TRANSFORMERS

The final lesson builds on the information presented in the lesson, Introduction to Transformers. How to determine primary current and voltage, secondary current and voltage, and load is taught.

LIMIT SWITCHES

CEU: 0.8 Credits LANGUAGES: English



COURSE OVERVIEW

This library consists of four lessons designed to provide training for the multicraft training needs of process and manufacturing facilities. Topics include purpose and function, types of limit switches, safety considerations, and replacement compatibility. Additional topics include possible malfunctions, maintenance and troubleshooting, solid state, torque and geared, and lever-actuated switches.

INCLUDED MODULES

OVERVIEW

The first lesson describes limit switches, how they work, how to recognize them, and typical applications in which they are used.

LEVER-ACTUATED

The second lesson describes limit switches, how they work, how to recognize them, and typical applications they are used in.

SOLID STATE

The third lesson describes solid state limit switches, how they work, how to recognize them, and typical applications in which they are used.

TORQUE AND GEARED

The final lesson describes geared limit switches and torque switches. This lesson also discusses maintenance, troubleshooting, and adjustment requirements for these switches.



In this example, we find that the open rotor is correctly positioned and that the contacts appear closed. But the high voltage drop indicates that they are not passing current. Cleaning or replacing them should fix the problem.



To adjust a torque switch, first partially open the valve so the torque switch is not in operation. Loosen the set screw, move the actuating lug to the correct setting, and then retighten the screw.

MULTIMETERS

CEU: 1.0 Credits LANGUAGES: English



COURSE OVERVIEW

This library consists of five designed to provide training for persons working with electrical or electronic test equipment. These lessons demonstrate and explain how to use both a digital and an analog multimeter. During these lessons, voltage, resistance, current, capacitance, and frequency are measured. The final lesson also describes some of the more common features of a digital multimeter.

INCLUDED MODULES

DIGITAL MULTIMETERS

The first lesson presents the types of multimeters. The lesson describes the display area, function switch, and leads and jacks on a digital multimeter.

ANALOG MULTIMETERS

The second lesson demonstrates various aspects of an analog multimeter, including how to adjust mechanical zero, how to interpret a reading on the voltage and resistance scales, and how to set the function and range switches.

MULTIMETER SELECTION AND INSPECTION

The third lesson trains the learner in the inspection of a multimeter, the steps that should be taken before using a multimeter, and how to perform a continuity check.

USING MULTIMETERS

The fourth lesson trains the learner to use a multimeter to measure resistance, AC voltage, DC voltage, current, frequency, and capacitance.

ADVANCED FEATURES OF DIGITAL MULTIMETERS

The final lesson instructs the participant in the use of the advanced features of digital multimeters.

OSCILLOSCOPES

CEU: 1.8 Credits LANGUAGES: English



COURSE OVERVIEW

This library contains nine lessons designed for the training of electricians and electronic technicians as well as for the multi-craft training needs of process and manufacturing facilities. These lessons are designed for participants familiar with AC and DC theory, electrical safety, and electrical print reading. A basic understanding of electronic devices and circuits is recommended. The lessons in this library explain and demonstrate the use of both analog and digital oscilloscopes. Participants will learn the controls on each type of oscilloscope, how to use a probe with an oscilloscope, how to set up an oscilloscope, and how to determine various measurements taken with an oscilloscope.

INCLUDED MODULES

INTRODUCTION TO OSCILLOSCOPES

The first lesson explains the purpose of oscilloscopes, introduces waveforms, and presents analog and digital oscilloscope systems using a flowchart.

THE DISPLAY

The second lesson explains the functions of the display and display controls on an analog and digital oscilloscope. The lesson also explains how divisions are used.

VERTICAL SYSTEM CONTROLS

The third lesson explains the vertical system controls on analog and digital oscilloscopes.

HORIZONTAL SYSTEM CONTROLS

The fourth lesson explains the horizontal system controls on analog and digital oscilloscopes.

THE TRIGGER SYSTEM

The fifth lesson explains the functions and controls of the trigger system on analog and digital oscilloscopes.

PROBES

The sixth lesson explains the purpose and use of probes, and trains the participant to match the probe/ scope combination to the application.

SETUP

The seventh trains the participant to safely setup an oscilloscope for use, how to adjust the controls, and compensate the probe.

WAVEFORMS

The eighth lesson teaches participants to recognize the various waveform types and how to analyze waveforms.

MEASUREMENT

The final lesson teaches how to determine various measurements taken with an oscilloscope. Topics include voltage, Period and Frequency, Rise time, Pulse Width, and Phase Shift.

MECHANICAL SKILLS LIBRARY

The Mechanical Skills Library, a series of nine courses, comprises a diverse array of mechanical equipment and components found on oilrigs, offshore platforms or other industrial settings. To keep an industrial facility running requires mechanics and maintenance personnel with a wide range of tools and skills at their disposal. Using hand tools, reading mechanical prints, taking precise measurements and proper operation of industrial hydraulic power systems are skills necessary in many commercial settings. Knowing how to analyze or repair bearings, pumps, seals and valves keeps operations moving in any heavy industry.

BEARINGS CEU: 0.6 Credits LANGUAGES: English



COURSE OVERVIEW

This library consists of three lessons designed for the training of bearings. Topics covered include the importance of bearings in machinery operation, concept of load and how it affects bearings, and housings.

INCLUDED MODULES

INTRODUCTION TO BEARINGS (1BRG)

This lesson was designed for employees in all disciplines as well as for the multi-craft training needs of process and manufacturing facilities. The lesson describes the purpose and the basic components of bearings. The lesson also introduces the identification and proper usage of bearing types.

ANALYZING BEARING FAILURE (2BRG)

This lesson explains the purpose of bearings and demonstrates how bearings reduce friction and maintain the alignment of operating equipment. The basic operation of anti-friction bearings and plain journal bearings is demonstrated as well as the importance of full fluid film lubrication and proper lubrication clearance. Additionally, indications of various premature bearing failures are discussed.

MAINTAINING BEARINGS: REDUCING FAILURE RATE (3BRG)

This lesson explains and demonstrates how to clean and disassemble bearing housings and how to dismount, inspect, and mount common types of bearings. The importance of cleanliness and following manufacturers' instructions are stressed throughout each demonstrated procedure.

HAND TOOLS

CEU: 0.8 Credits LANGUAGES: English



COURSE OVERVIEW

This library consists of four lessons. This library is designed for employees in all disciplines as well as for the multicraft training needs of process and manufacturing facilities.

INCLUDED MODULES

CLAMPS, VISES, AND PLIERS

The first lesson introduces and demonstrates the proper use of tools used for holding.

SCREWDRIVERS

The second lesson introduces and demonstrates the proper use of screwdrivers.

WRENCHES

Thethird lesson introduces and demonstrates the proper use of wrenches.

HAMMERS, MALLETS, AND SLEDGES

This is the final lesson in the Hand Tools Library. This lesson introduces and demonstrates the proper use of tools used for striking.

MECHANICAL PRINT READING

CEU: 0.8 Credits LANGUAGES: English



COURSE OVERVIEW

This library is designed to provide training for maintenance technicians, mechanics, electricians, and others requiring knowledge of mechanical print reading.

INCLUDED MODULES

INTRODUCTION TO MECHANICAL PRINT READING

This is the first lesson in the Mechanical Print Reading Library. This introductory lesson trains the learner to identify the various parts of mechanical drawings and their components.

LINES USED IN MECHANICAL PRINT READING

The second lesson explains the types of lines used in mechanical print reading and what they represent.

DIMENSIONS IN MECHANICAL PRINT READING

The third lesson explains the use of dimension and extension lines in mechanical print reading, and how to calculate dimensions, tolerance, and limits. The use of surface finish designations is also discussed.

ORTHOGRAPHIC PROJECTION

This is the final lesson in the Mechanical Print Reading Library. This lesson trains participants in the use of orthographic projections in mechanical print reading. Pictorial drawings and various views used in mechanical print reading are demonstrated.

MECHANICAL SEALS LIBRARY

CEU: 0.8 Credits LANGUAGES: English



COURSE OVERVIEW

This library is designed for persons with a basic understanding of the operation and maintenance of pumps, agitators, and rotating equipment. This library trains participants to work effectively with mechanical seals.

INCLUDED MODULES

INTRODUCTION TO MECHANICAL SEALS

This is the first lesson in the Mechanical Seals Library. The lesson explains the purpose and basic components of mechanical seals. The participant is instructed in the identification and characteristics of materials commonly used to make seal faces and seal hardware, and to understand the limitations of seals. Characteristics, limitations, and application of packing are also discussed.

MECHANICAL SEAL DESIGNS

The second lesson describes various seal designs and their application. The lesson also describes conditions that may affect mechanical seal performance.

FAILURE ANALYSIS

The third lesson demonstrates the steps necessary to prepare to remove, and to remove, a failed mechanical seal. The lesson trains the participant in failure analysis to determine the cause of seal failure and identify the means to correct the problem or condition that caused the failure.

MECHANICAL SEAL MAINTENANCE

The final lesson in the Mechanical Seals Library, trains the learner in seal disassembly and reassembly, 0-ring installation, and seal installation.

INDUSTRIAL HYDRAULIC POWER

CEU: 2.6 Credits LANGUAGES: English



COURSE OVERVIEW

This library consists of thirteen lessons. These lessons were designed for beginning hydraulic technicians as well as mechanics, electricians, operators, and for those individuals who need to learn more about industrial hydraulic power. The lessons in this library train participants to identify system components, read schematics, and understand the conditions necessary for proper operation of a hydraulic system.

INCLUDED MODULES

INTRODUCTION TO HYDRAULIC SYSTEMS

The first lesson identifies the basic components of an industrial hydraulic system and explains their functions. Formulas, including Pascal's Law, are presented and their use in determining values in a hydraulic system is explained.

HYDRAULIC SCHEMATICS

This lesson introduces the schematic symbols that represent the basic components of a hydraulic system. It explains the use of color-coding used to identify pressure and how to identify the flow path through the system using schematics.

HYDRAULIC FLUIDS

This lesson discusses the types, properties, and functions of hydraulic fluids and the components in which they are used.

HYDRAULIC PUMP APPLICATIONS

This lesson discusses the various hydraulic pumps and their applications. It also describes symptoms of pump malfunction.

POSITIVE DISPLACEMENT PUMPS

This lesson describes various positive displacement pumps and their components. The lesson explains some of the causes of system inefficiencies associated with fixed volume pumps and describes applications in which variable volume pumps are used.

HYDRAULIC ACCUMULATORS

The sixth lesson describes the common accumulators and their schematic symbols. It also describes the application and operation of an accumulator in a hydraulic system. Safety considerations for depressurizing and pre-charging an accumulator are discussed.

PRESSURE CONTROL PRINCIPLES

The seventh lesson describes the functions of a pressure relief valve in a hydraulic system and the conditions necessary for normal operation of a pressure relief valve. Pressure characteristics, the relationship of pressure and flow, and depressurization are also discussed.

PRESSURE CONTROL OPERATION

The eighth lesson presents various pressure control valves, their operation, and components.

PRESSURE CONTROL VALVE APPLICATIONS

The ninth lesson describes the proper operation of pressure control valves used in various applications.

DIRECTIONAL CONTROL PRINCIPLES

The tenth lesson describes various directional control valves. The lesson explains the function of the ports on a directional control valve and instructs the process of tracing the various flow paths through the valve. The lesson also describes the centering conditions and piloting arrangements commonly used with directional control valves.

FLOW CONTROL VALVES (FCV)

The eleventh lesson demonstrates how to determine speed and flow rates and differential pressure. It describes various valves, their components, and their uses.

INDUSTRIAL HYDRAULIC POWER, CONTINUED.

ACTUATOR CYLINDERS (ACY)

The twelfth lesson describes the various cylinders used in hydraulic actuators. It also describes the operation of a cylinder controlled by regulating flow or pressure, and the purpose of a cylinder leak test.

HYDRAULIC MOTORS (HYM)

This is the final lesson in the Industrial Hydraulic Power Library. General knowledge of hydraulic schematics is required. Review of the lesson, Hydraulic Schematics, is recommended. This lesson describes various hydraulic motors and their functions. It also describes the operation of various hydrostatic drive circuits and the function of components and flowpath in a braking circuit.

PRECISION MEASURING INSTRUMENTS

CEU: 0.8 Credits LANGUAGES: English



COURSE OVERVIEW

This library consists of four lessons. The lessons in this library were designed for employees in all disciplines as well as for the multi-craft training needs of process and manufacturing facilities. In order to successfully complete these lessons participants should be familiar with whole number operations and decimals. This library describes the purpose and the basic components of some common precision measuring instruments. The library also provides procedures for properly using each of these instruments to measure the dimensions of an object.

INCLUDED MODULES

DIAL CALIPERS

This is the first lesson in the Precision Measuring Instruments Library. This lesson describes the purpose and the basic components of dial calipers. The lesson also provides procedures for properly using a dial caliper to measure the dimensions of an object.

MICROMETERS

The second lesson in the Precision Measuring Instruments Library. This lesson describes the purpose and the basic components of outside micrometers, inside micrometers, and depth micrometers.

TELESCOPING AND THICKNESS GAUGES

This is the third lesson in the Precision Measuring Instruments Library. This lesson describes the purpose and the basic components of telescoping gauges and thickness gauges.

DIAL INDICATORS

This lesson describes the purpose and the basic components of dial indicators.

VALVE REPAIR

General Description: This library consists of two Lessons, Gate Valve Repair and Globe Valve Repair. Topics include identifying valve parts and functions, valve inspection, valve assembly and disassembly, and valve positions.

GATE VALVE REPAIR

This lesson is designed for participants familiar with the operation of gate valves and the proper use of hand tools and precision measuring instruments.

GLOBE VALVE REPAIR

This lesson is designed for participants familiar with the basic operation of globe and control valves and the proper use of hand tools and precision measuring instruments.

CENTRIFUGAL PUMP REPAIR

CEU: 1.2 Credits LANGUAGES: English



COURSE OVERVIEW

This library is designed for all levels of maintenance personnel as well as for the multicraft training needs of process and manufacturing facilities. Participants should be familiar with the basic operation of centrifugal pumps. This library consists of six modules covering excessive leakage, temperature, loss of capacity, disassembly, inspection, and reassembly.

INCLUDED MODULES

TROUBLESHOOTING EXCESSIVE LEAKAGE (1CP)

This is the first lesson in the Centrifugal Pump Repair Library. This lesson introduces the components and operating principles of a typical centrifugal pump. Normal operating conditions for the pump are described and guidelines for troubleshooting excessive leakage are provided.

TROUBLESHOOTING EXCESSIVE TEMPERATURE (2CP)

This is the second lesson in the Centrifugal Pump Repair Library. This lesson introduces the components and operating principles of a typical centrifugal pump. Normal operating conditions for the pump are described and guidelines for troubleshooting excessive temperature are provided.

TROUBLESHOOTING LOSS OF CAPACITY (3CP)

This is the third lesson in the Centrifugal Pump Repair Library. This lesson introduces the components and operating principles of a typical centrifugal pump. Normal operating conditions for the pump are described and guidelines for troubleshooting loss of capacity/loss of head are provided.

DISASSEMBLY (4CP)

This is the fourth lesson in the Centrifugal Pump Repair Library. This lesson demonstrates how to disassemble a typical end-suction pump. The locations and functions of pump components are described as well.

INSPECTION (5CP)

This is the fifth lesson in the Centrifugal Pump Repair Library. This lesson demonstrates how to inspect a typical end-suction pump. The procedures for measuring and inspecting pump parts, and the steps for checking impeller clearance are described.

REASSEMBLY (6CP)

This is the final lesson in the Centrifugal Pump Repair Library. This lesson demonstrates how to reassemble a typical end-suction pump. General guidelines for installing a mechanical seal are also provided.

INDUSTRIAL LUBRICATION

CEU: 0.8 Credits LANGUAGES: English



COURSE OVERVIEW

This library consists of four lessons. This library is designed for training oilers, mechanics, and millwrights as well as for the multicraft needs of process and manufacturing facilities. Participants are trained to recognize various types of lubrication systems and their maintenance requirements, including ring, bath, splash, constant level, and forced feed lubrication systems, as well as understand how they operate. Participants also learn the importance of following lubrication schedules, how to change common types of oil filters, and how to properly handle and store lubricants to prevent lubricant contamination.

INCLUDED MODULES

INTRODUCTION TO INDUSTRIAL LUBRICATION

This is the first lesson in the Industrial Lubrication Library. This lesson explains the concept of lubrication and friction, and demonstrates the benefits of a proper lubrication program.

LUBRICANTS

The second lesson explains viscosity as well as the properties of common solid, semi-solid, and liquid lubricants are described as well as the benefits associated with synthetic lubricants and the functions of additives and inhibitors. Common types and causes of lubricant contamination are described and proper methods of lubricant storage are demonstrated.

LUBRICATION SYSTEMS

The third lesson T trains participants to recognize various types of lubrication systems and their maintenance requirements, including ring, bath, splash, constant level, and forced feed lubrication systems, as well as understand how they operate.

FILTERS AND LUBRICATION MAINTENANCE

This is the final lesson in the Industrial Lubrication Library. Participants also learn the importance of following lubrication schedules, how to change common types of oil filters. This lesson explains the purpose of filters and the importance of filter maintenance in lubrication systems. Additionally, the lesson indicates the benefits of oil sampling and analysis and identifies several factors, which can cause lubrication failure.