Pipeline Knowledge & Development,
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Oil and Gas Pipeline Fundamentals		
Energy Pipelines	68 slides	60 to 75 minutes
An overview of gas and oil gathering, transmission and distribution pipelines, as well as storage. This module contains many pictures and examples. Also discussed are industry dimensions, and an introduction to customers, regulations and standards is included. Those new to the industry will find the module a valuable introduction.		
Introduction to Hydraulics	85 slides	90 to 105 minutes
Concepts, not equations are the focus of this module. It covers fluid properties and behavior, demonstrating the practical aspects of pipeline flow. Intended for those without a technical background, even veteran engineers comment they gain a fuller understanding of why pipelines behave the way they do. Students find the water hose, air compressor, and beer bottle examples bring home their understanding. Note: Changing the module to only oil hydraulics or only gas hydraulics shortens the length to 75 minutes.		
Pipeline Field Operations	68 Slides	60 to 75 minutes
Measurement, quality testing, and the other receipt and delivery functions are the topics of this module. Also included is the critical role field operator's play when it comes to landowner relations and working with local land use and emergency response officials. Metering is the pipeline "cash register" and field operators and technicians are the ones who insure accuracy. Note: Changing the module to only oil operations or only gas operations shortens the length to 45 minutes.		
Control Center Operations	69 slides	45 to 60 minutes
Control rooms are the nerve center of the pipeline as control technicians monitor thousands of points; adjusting pressures and directing flow to meet customer needs. From nominations to final delivery, this module covers the control room work flow as it highlights control room tools and challenges. Note: Changing the module to only oil operations or only gas operations shortens the length to 45 minutes.		
Introduction to SCADA and Controls	32 slides	30 to 45 minutes
SCADA, communications, and controls are the pipeline's nerves providing multiple inputs from the pipeline and carrying back control commands. From field instruments, station PLCs or computers, to the control room computers and operator consoles, this module provides a broad overview of the entire control scheme from a practical perspective.		
Introduction to Leak Detection	31 slides	45 to 60 minutes
The two fundamental types of leak detection, internal and external are discussed along with sensitivity, accuracy, reliability, and robustness – the four key criteria. Key challenges of oil leaks and leak detection versus gas are covered during this module which makes extensive use of hydraulic gradients. This module simplifies and explains what to many is the "black art" of leak detection.		

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Equipment and Components	158 slides	120 to 150 minutes
Pipe, coating, meters, valves, pumps, compressors, motor engines, and a myriad of other pieces of equipment comprise pipeline systems. Photographs and drawings allow students to see what components actually look like. Compressor and pump characteristics and how those characteristics impact pressure and rate management are explained with the help of charts and graphs.		
Pipeline Maintenance	205 Slides	150 to 180 minutes
From "fix it when it breaks" to "inspect, diagnose, and prevent", the meaning of maintenance has changed over the years. Starting with what causes failures this module includes a robust description of corrosion, third party damage, risk based integrity, integrity management plans, and internal line inspection before concluding with how to repair failures.		
U. S. Pipeline Regulations	40 slides	45 to 60 minutes
An introductory guide to safety, environmental, economic, and land use legislation and regulations, this module provides a valuable background to the rules and standards affecting this highly regulated industry.		
Introduction to Engineering and Design	63 slides	60 to 75 minutes
Beginning with conceptual design and moving through front end engineering into detailed design and preparation of specifications, this module provides an overview of the engineering and design process. It is a valuable introduction for those working with engineers helping them understand more of the regulations, standards, and constraints. This module is not recommended for experienced engineers.		
Line and Station Construction	90 slides	75 to 90 minutes
Pictures taken at actual construction sites by field engineers form the basis for this class. From staking and clearing the right-of-way, through ditching, welding, testing, lowering, backfilling, final clean up and restoration, this module takes the student through pipeline construction from start to finish.		
Pipeline Economics	46 Slides	45 to 60 minutes
The pipeline business in the US generates less than $30 billion annual revenue, a small number when compared to the overall economy. But, given the large asset base these revenues generate a healthy margin. Revenues, expenses, and asset base, the three largest financial levers are each discussed along with current rate setting mechanisms. The section on project economics covers IRR, NPV and accretion calculations. This module provides a valuable Background and understanding company was well as support personnel, regulators, suppliers, and vendors.		