PROFESSIONAL CERTIFICATE OF COMPETENCY IN
ONSHORE AND OFFSHORE
PIPELINE SYSTEMS

12 MODULES OVER 3 MONTHS
For upcoming start dates, please view our program schedule at:
http://www.eit.edu.au/schedule

WHAT YOU WILL LEARN

• Key principles and techniques in pipeline design, construction, installation, operation and maintenance
• Pipeline specifications and standards
• Key requirements that define pipeline routing
• Fluid properties and processes and their importance to pipeline design and construction
• Similarities and differences in onshore and offshore pipelines
• Competencies in assessing pipeline failures and preventing damage
• Safety and environmental regulations in pipeline design
• Key performance indicators to monitor and assess pipeline performance

Presented by
John Brussen
BE(Hons) MIEAust CPEng RPEQ

SECURE YOUR PLACE NOW!
Contact enquiries@eit.edu.au for an enrolment form or more information.
PRESENTED BY

JOHN BRUSSEN
BE(Hons) MIEAust CPEng RPED

John has over 25 years experience as a mechanical engineer with a strong technical background in pressure and pump equipment.

His experience includes major new, brown-field projects for oil/gas and petrochemical plant with engineering companies including Sheddin, Udhie, Fluor, Brown & Root, Kinhill, Orica (formerlyICI). John is a practicing engineer who is regularly involved in material selection for piping class specifications, stress analysis (including high temperature and/or pressure, load sensitive equipment, vibration, seismic design, pipeline design etc), and pump commissioning and performance measurement. He is regularly sought out in troubleshooting and solving more complex piping and pump problems.

As a motivated lead to a team that includes stress analysts, John is accomplished and consistently ensures timely completion of works, while engaging younger team members in on-the-job training. John’s presentation skills will improve course participants' understanding of the fundamentals of pump design, operation and maintenance.

Please note: Lecturers are subject to change.

12 MODULES OVER 3 MONTHS

OVERVIEW:

There are millions of kilometers of onshore and offshore pipelines spread across the world. With the expansion and addition of new staff, there is an increasing need for full appreciation of the engineering design of these pipeline systems. Along with this is a growing need for expanded training, to supply qualified personnel, and hence opportunity for pipeline technicians, technologists and engineers in onshore and offshore installations. Also, many personnel involved in pipeline operations do not receive even basic pipeline engineering training, while some are exposed only to specialized areas. This is where the requirement for a program such as this fits in, with its stated objective of equipping the participant with the core skills in pipeline engineering that will help enhance his/her career, and benefit the organization.

This course examines pipeline design, construction and routing through to pipeline economics and advanced practices in asset management. No matter whether you are a new mechanical or pipeline technician/technologist/engineer or a practicing operations and facilities engineer, you will find this course extremely beneficial. You will gain an in-depth understanding of the applicable standards and specifications related to pipeline design, operation and maintenance, as also grasp the engineering principles involving liquid and gas flow and their importance in relation to pipeline design. The use of key performance indicators will be derived to measure the performance of your valuable asset, the pipeline.

With its relevance to both onshore and offshore pipelines, the program equips you with a multidisciplinary understanding of pipelines and enables you to understand the full cycle of pipeline engineering.

INCLUDES 4 FREE REFERENCE MANUALS

VALUED AT OVER US$400

You will receive 4 of our up-to-date technical eBooks to add to your library.

- Pipeline Systems - Design, Construction, Maintenance and Asset Management
- Fundamentals of Pipe Stress Analysis with Introduction to CAESAR II
- Practical Project Management for Engineers and Technicians
- Practical Mechanical Sealing with Rotary, Pneumatic and Hydraulic Seal Types plus Gaskets

Received upon completion.

Please note: eBooks are available in hard copy at 50% of the recommended retail price. Contact us for pricing details.
**PROGRAM OUTLINE**

**MODULE 1: INTRODUCTION AND OVERVIEW**
- Pipeline basics and factors influencing pipeline design
- Pipeline route selection
- Codes and standards affecting pipeline design, construction, operation and maintenance
- Pipeline design principles - hydraulics, mechanical design, materials of construction
- Pipeline construction fundamentals
- Pipeline protection and maintenance
- Pipeline economics
- Physical quantities and units used in pipeline design

**MODULE 2: PIPELINE DESIGN, OPERATION AND MAINTENANCE STANDARDS**
- Codes and specifications
- Codes and standards governing the design, operation and maintenance of pipeline
- Common features of pipeline codes and standards
- Symbols and units used in pipeline design standards
- Abbreviation used in pipeline design standards
- Information typically contained in piping specifications
- Guidelines for pipeline operation and maintenance

**MODULE 3: PIPELINE ROUTING**
- Introduction to pipeline routing
- Factors influencing pipeline routing
- Pipeline routing “rules of thumb”
- Tools and data used in pipeline routing
- Consideration of alternate routes

**MODULE 4: LIQUID AND GAS FLOW**
- Liquid and gas flow fundamentals
- Basic hydraulics
- Multiphase flow
- Coping with fluctuations in pipeline operating conditions
- Optimization of line size, pressure drop and location of pumping stations
- Hydrate formation/prevention
- Wax formation/prevention
- Design optimization of gas pipelines

**MODULE 5: GENERAL PIPELINE DESIGN CONSIDERATIONS**
- Forces and stresses in pipelines
- Criteria for mechanical design including code criteria
- Specified minimum yield strength of pipeline materials
- Mechanical design equations: calculations of Maximum Allowable Pressure (MAP) and minimum required wall thickness of pipelines
- Sustained loads in pipelines and stresses due to thermal expansion/contraction
- Estimating the maximum span of unsupported pipe
- Offshore spanning, spanning control and spanning correction
- Design of pipeline riser for offshore pipelines
- Pipeline shore approaches

**MODULE 6: PIPELINE MATERIALS**
- Common pipeline materials
- Metallurgy and manufacture of low-alloy carbon-manganese steel pipes
- Effect of treatment of pipeline steels
- Flexible and composite pipelines
- High pressure and high temperature pipelines

**MODULE 7: ONSHORE PIPELINE CONSTRUCTION**
- Sequence of construction activities
- Construction equipment
- Preparing of the Right of Way (ROW) for the pipeline
- Stringing the pipeline
- Bending
- Welding and post-weld qualification
- Lowering
- Tie-in and assembly
- Testing and inspection
- Back filling of trench
- Construction techniques used in water crossing
- Commissioning the pipeline

**MODULE 8: OFFSHORE PIPELINE CONSTRUCTION**
- Construction methods (lay barges, reel barges, pull and tow)
- Pipeline trenching methods
- Pipeline bundles
- Pipe in pipe method
- Flexible pipelines and umbilical
- Cross country and offshore system welding

**MODULE 9: PIPELINE INSTALLATION**
- Pipeline installation methods
- Pipeline bending stress control
- Pipeline on-bottom stability control
- S-lay, J-lay, deep water installation
- Allowable installation stresses/fatigue
- Burial methods and depths

**MODULE 10: PIPELINE COMMISSIONING, OPERATION, MAINTENANCE AND FAILURES**
- Pipeline pressure testing and pre-commissioning
- Flow assurance
- Piggging operations
- Pipeline integrity management
- Pipeline monitoring and inspection
- Leak detection and emergency planning
- Defect assessment
- Intervention, repair and modification
- Failure modes
- Risks, reliability, and safety
- Environmental and regulatory requirements.

**MODULE 11: PIPELINE PROTECTION**
- Possible causes and consequences of pipeline damage
- Prevention of pipeline damage
- Corrosion fundamentals
- Characteristics and properties of pipeline coatings
- Cathodic protection
- Internal corrosion
- Stress Corrosion Cracking (SCC)
- Pipeline integrity programs
- Thermal coating and pipeline insulation
- Weight coating for stability on seabed

**MODULE 12: PIPELINE ECONOMICS AND ASSET MANAGEMENT**
- Introduction to pipeline economics
- Terminology used in pipeline economics
- Pipeline performance: Key Performance Indicators (KPIs) for monitoring and assessing pipeline performance

**HARDWARE AND SOFTWARE REQUIREMENTS**
All you need to participate is an adequate Internet connection, PC, speakers and a microphone. The software package and setup details will be sent to on the program start date.

**ENTRANCE REQUIREMENTS**
Some practical work experience in some of these topics would obviously be advantageous.

**PRACTICAL EXERCISES**
Where possible, you will participate in hands-on exercises using simulation software or remote labs, which will help you put theory to practice immediately!

**CERTIFICATION**
Participants completing and achieving at least 50% or more in each assignment, as well as attending 65% of the live webinars, will receive the Engineering Institute of Technology Professional Certificate of Competency in Onshore and Offshore Pipeline Systems.

**ON-SITE TRAINING**
We can provide our training at the venue of your choice. On-site training can be customised and by bringing the trainer to site the dates can be set to suit you!

“The Customer is Always Right” – so tell us what you need and we will design a training solution at your own site.

For a FREE detailed proposal please contact Kevin Baker via email: training@idc-online.com