

# GPC Professional Training Courses

**2021 / 2022**



## Gas Processing Center Certificates:

All attendees will receive a certificate for attending these training courses if they attend 80% of the course duration.

\* 2022 courses are planned to be in person in a hotel. This plan might differ according to the instructions of the Ministry of Health, thus prices will change accordingly.

\*Course participation should be confirmed 3 weeks before the starting date.



## GPC Professional Development Training Courses

The Gas Processing Center (GPC) at Qatar University was launched in March 2007 as the main applied research and training center in the State of Qatar to address challenges and opportunities in the field of gas processing through industrially-relevant activities. The Center provides teaching and training in topics related to the treatment of gas and water within the Qatar petroleum sector, including enhanced gas and oil recovery, scale removal, drilling fluids, CO<sub>2</sub> capture, gas sweetening, steam reforming and catalytic processes, and the treatment/reuse of wastewater (including produced water). The staff have between 10 and 25 years' experience within their individual fields, which include gas production and processing, process integration and optimization, advanced biological and membrane processes for water treatment and reuse, as well as waste sludge solids consolidation.

The GPC can tailor short courses and training programs according to specific industry needs. Professional development programs are delivered by the GPC and QU faculty in collaboration with a network of international experts.

Course Title	Training Date
Advance Drilling Fluids Technology	15-18 November 2021
ASPEN HYSYS Training	28 November to 1 December 2021
Introduction to Petroleum Engineering	6-9 December 2021
Health Safety Environment and Risk Integrity in Oil and Gas Industry	23-25 January 2022
Natural Gas Reservoir Engineering	7-9 March 2022
Introduction to Process Integration and Optimization	14-16 March 2022



## Prof. Ali Ghalambor

Prof. Ghalambor is an international consultant with 44 years of industrial and academic experience in the petroleum industry. He held engineering and supervisory positions at Tenneco Oil, Amerada Hess, and Occidental Research Corp. He previously served as the American Petroleum Institute (API) Endowed Professor, Head of the Petroleum Engineering Department, and Director of the Energy Institute at the University of Louisiana at Lafayette. Dr. Ghalambor has performed consulting and training services in 45 countries. He has authored or coauthored 16 books and manuals and more than 250 technical papers. His technical contributions on fundamental and applied research on formation damage control, well drilling, well completions, and production operations are internationally recognized. He has received many of the Society of Petroleum Engineers (SPE) and the API prestigious awards, including the Production and Operations Award, the Distinguished Achievement Award for Petroleum Engineering Faculty, the Distinguished Member Award, and the DeGolyer Distinguished Service Award. Furthermore, he is the recipient of the Robert Earl McConnell Award, which is a joint SPE and AIME Award. He served as a commissioner on the Engineering Accreditation commission of ABET and was Director of the Central and Southeastern North America Region on the SPE International Board of Directors and is the founding chairman of the SPE International Conference and Exhibition on Formation Damage Control. Dr. Ghalambor holds PhD from Virginia Polytechnic Institute and State University. He is an elected member of the Russian Academy of Natural Science.

## Advance Drilling Fluids Technology

Date: 15-18 November 2021  
Time: 9:00 AM to 1:30 PM (GMT+3)  
Venue: Online  
Course fees: 5,000 QAR/participant  
(Min. 5 participants – additional: will be charged 3,000 QAR/participant)

### About the course

Drilling fluid is heart of drilling operation. The objective of this course is to provide the drilling engineers with a thorough and advanced understanding of the theory and design of drilling fluids. A review of modern 21st century design of drilling fluids will be provided. The course will include several hands-on examples with field data. Medium to advanced proficiency with excel program is required.

### Course content

#### Module 1

- Basic Function of Drilling Fluids
- 21st Century Drilling Fluids
- Advanced Rheological Models
- Filtration and Models
- Liquid and Solid Content
- Clay Chemistry Related to Mud Design
- Drilling Fluids Classification and Characteristics
- Mud Program Development
- Well Design and Mud Considerations
- Reservoir Engineering Concepts and Forecasting
- Conventional and Advanced Water Based Muds
- Chemical Analysis of Water Based Muds

#### Module 2

- Polymer Technology in Drilling Fluids
- Water Based Muds Additives
- Pressure and Temperature Considerations
- Hole Stability Problems related to Muds
- Design Consideration for Water Based Muds
- Oil and Synthetic Based Muds
- Design and Testing Requirements of Oil and Synthetic Based Muds
- Oil and Synthetic Based Muds Additives
- Application of Oil and Synthetic Based Muds in Deviated and Horizontal Wells
- Aniline Point Determination
- Salinity Considerations

#### Module 3

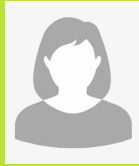
- Oil and Synthetic Based Muds
- Design and Testing Requirements of Oil and Synthetic Based Muds
- Oil and Synthetic Based Muds Additives
- Application of Oil and Synthetic Based Muds in Deviated and Horizontal Wells
- Aniline Point Determination
- Salinity Considerations
- Drilling Fluids Hydraulics
- Fluid System Guidelines
- Corrosion Consideration
- Hydrate Considerations
- Health, Safety and Environment Considerations
- Solid Control Design
- Solid Control Equipment
- Engineering Calculations of Muds
- Well Control Considerations Related to Muds
- Mud Contamination
- Mud Related Hole Problems
- Inhibitive Mud Design
- Advanced Testing and Procedures
- Wellbore Strengthening Technology

### Eligibility criteria

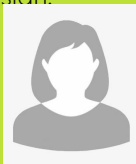
This course is designed for engineers, geologists, geophysicists, young petroleum engineers and technical staff.



## Dr. Sabla Alnouri



is an Assistant Research Professor at the Gas Processing Centre at Qatar University. She received her B.Sc. and M.Sc. degrees from Texas A&M University at Qatar in Chemical Engineering, and her Ph.D. from Texas A&M University in Chemical Engineering. Before joining Qatar University, she worked as an Assistant Professor at the Baha and Walid Bassatne Department of Chemical Engineering and Advanced energy at the American University of Beirut, Lebanon. Moreover, she worked as a Visiting Assistant Professor at the Chemical Engineering Department between 2017-2018, at the American University of Sharjah, UAE. Between 2009-2011, she took part in a number of research projects in collaboration with the Qatar Science and Technology Park (QSTP), the Qatar Shell Research Technology Centre (QSRTC), and the Qatar National Food Security Programme (QNFSP). Her research interests involve process modeling, design, and optimization. In particular, her research involves the sustainable design of chemical process systems with an emphasis on resource conservation, integrated water systems, network synthesis, planning and design.



## Dr. Dana Abdeen

Dr. Dana received her Ph.D. in Sustainable Energy from Hamad Bin Khalifa University in 2019. She had her MSc. from Texas A&M University in Chemical Engineering in 2014. She works currently in Qatar University as a teaching assistant in the chemical engineering department. She had almost ten years of experience in academic teaching, where she assisted in teaching core courses including senior design project course. She teaches core labs and deliver course's projects that inquire HYSYS, ASPEN PLUS and HTRI software implementation. She had also over five years of industrial experience, where she worked with HEBL Inc. (VA, USA) as a lab technician in the quality control lab and as a chemical engineer in the purchasing department. Her research interests include corrosion testing, 3D printing manufacturing and nanomaterials' synthesis and characterization.

## ASPEN HYSYS Training

Date:	28 November – 1 December 2021
Time:	8:00 AM to 2:00 PM
Venue:	Online
Cost:	QAR 5,000 /participant (Min. 5 participants – additional: will be charged 3,000 QAR/participant)

### About the Course:

The overall objective of this course is to give the attendees the ability to perform various engineering analyses that are usually required in the design and operation of any process facility. The course is planned to guide the attendees to construct, navigate and optimize steady state simulation models using Aspen HYSYS. Moreover, this course will demonstrate how to utilize rigorous column design features in HYSYS, in order to conduct effective process design assessments. Additionally, this course will familiarize the trainees with vital aspen spreadsheet features, and how to utilize case study tools for performing complex calculations. The course is designed to cover different modules that are of interest to the Oil and Gas industry in Qatar.

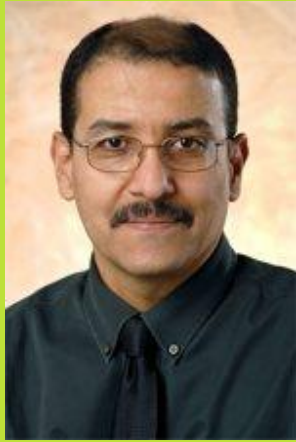
### Course Contents

- Overview of Phase Behavior and Gas Conditioning Processes.
- Aspen HYSYS Process Simulation Overview.
- Getting Started with ASPEN HYSYS.
- Module 1: Production of Cyclohexane.
- Module 2: NGL Fractionation Train.
- Module 3: Sour Water Stripping
- Rigorous Column and Exchanger design features using Aspen HYSYS
- Using spreadsheet and case study tools to perform complex calculations and analysis.

Attendees receive guided instruction on all essential simulation topics. Instructors provide live demonstrations of Aspen HYSYS features. Detailed course notes and workshop solutions are provided to attendees.

### Eligibility Criteria:

The course is designed for engineers, chemists, operators and technologists dealing with oil and gas operations.



## Ezeddin Shirif, P.Eng., Ph.D.

Dr. Ezeddin Shirif is a Professor of Petroleum Engineering at the Faculty of Engineering and Applied Science at the University of Regina (Canada). Dr. Shirif holds a B.A.Sc. and M.Sc. in Petroleum Engineering from the University of Southern California (USA) and a Ph.D. in Petroleum Engineering from the University of Alberta (Edmonton, Canada).

Dr. Shirif has more than 35 years of Canadian and International teaching and research experience. His teaching and research areas of expertise include: conventional and unconventional hydrocarbon reservoirs, reservoir engineering, enhanced oil recovery, natural gas reservoirs engineering, fluid flow through porous media, real time pressure/rate data analysis, production optimization, numerical methods, reservoir characterization and reservoir simulation. During Dr. Shirif's teaching career, he has taught over forty undergraduate and graduate courses related to Petroleum Engineering. Dr. Shirif has published more than 82 journal publications and conference proceedings. He has graduated more than 45 graduate students. Dr. Shirif's current research interests include: application of ionic liquids (ILs) and liquid catalyst (LCs) in heavy oil recovery processes, design/optimization/utilization of vertical wells, steam assisted gravity drainage for thermal oil recovery, reservoir performance optimization, low saline water (smart water) flooding, optimization of EOR processes in bottom water reservoirs, cleaning up produced water from oil reservoirs, application of function approximations to reservoir engineering, modeling flow in linear composite reservoirs and modeling the performance of complex multi-fractured horizontal wells in unconventional reservoirs and field scale compositional reservoir simulation.

## Introduction to Petroleum Engineering

Date: 6 - 9 December 2021  
Time: 8:00 AM to 1:00 PM  
Venue: Online  
Cost: 5,000 QAR/participant  
(Min. 5 participants – additional: will be charged 3,000 QAR/participant)

### About the course

This 4 day course is designed as an introductory course discussing many aspects of the petroleum engineering profession. Detailed discussions will be provided regarding petroleum geology, petroleum exploration, reservoir engineering, drilling engineering, petroleum production engineering, well logging, well completion, enhanced oil recovery, and reservoir simulation.

### Course content

1. **The Nature of Petroleum**
  - What does the word petroleum mean?
  - What is petroleum made of?
  - How is it formed in earth?
  - Liquid and gas petroleum phases
  - Liquid and gas properties
  - Other associated fluids with petroleum
2. **Petroleum Geology and Exploration**
  - Different petroleum reservoirs
  - Petroleum reservoir structures
  - Porosity and permeability of petroleum rocks
  - Requirements for commercial accumulations
  - Methods of reserve estimations
  - Methods of petroleum explorations
  - Reserve definitions
3. **Oil and Gas Drilling**
  - Components of drilling rig
  - Drilling fluids
  - Drilling vertical and horizontal wells
  - Drilling hydraulics
  - Offshore Structures
4. **Well Logging and Well Completion**
  - Well logging tools and methods
  - Well completion tools and methods
5. **Petroleum Production**
  - Flow wells, pumped wells
  - Primary, secondary and tertiary methods
  - Surface facilities in petroleum production
  - Enhanced oil recovery methods
6. **Well Test Analysis**
  - Draw down and Build up tests
7. **Reservoir Simulation**

### Eligibility criteria

This course is designed for non-petroleum engineers and other technical staff that are interested to learn more about different aspects of the petroleum profession.



### Dr. Mohammad Al Beldawi

Dr. Mohammad Albeldawi have completed his Civil Engineering degree from Mosul University/Iraq (1976), completed his Master degree in Sanitary Engineering from Baghdad University/Iraq (1978), He holds a Ph.D. in Environmental Management System (McMaster University-Canada-1994). He has over 30 years of experience in teaching, research & development and environmental engineering services in oil and gas industries. He worked with the Canadian Center for Inland Water/Water Technology International (Canada) at different capacities. Dr. Albeldawi worked for Qatargas Company Limited (Qatar) at the capacity of Senior Environmental Engineer (1998-2005). Among other activities he was responsible for preparing the bench mark study related to Qatargas Environmental performance, participated in LNG major projects studies and development and acted as environmental focal point for all Qatargas major and non-major shutdown activities. Dr. Albeldawi worked with Qatar Petroleum in Ras Laffan Industrial City (RLC) at the capacity of Head of Environment for over 15 years. He acted as Health, Safety, Security and Environment (HSSE) Manager for over 2 years. He was a member of the Greenhouse Gas Working Group, and Global Gas Flaring Reduction Committee. Dr. Albeldawi served as environmental focal point and members of RLC Master Plan development (2005-2006), RLC Focal point with Qatar Foundation (National Priority Research Program review member and panelist), MME-Qatar National Food Security Program (QNFSP) and Kahramaa QNFSP. Liaised the Implementation of RLC zero discharge policy for treated industrial waste water (TIW & TSE) study project. Managed studies on air emissions and ambient air quality and RLC Environmental focal point for both the Shell Al-Karaana and Al-Sejeel (Petrochemical) projects.

## Health Safety Environment and Risk Integrity in Oil and Gas Industry

Date: 23-25 January 2022  
Time: 8:00 AM to 2:00 PM  
Venue: TBA  
Cost: 5,000 QAR/participant  
(Min. 5 participants - additional: will be charged 3,000 QAR/participant)

### About the Course:

This course generally addresses the health, safety, environment (HSE) and the risks issues facing the oil and gas industry and its management activities. Participants will gain an insight of the HSE and risk criticality in particular those associated with unit operation and processes in the upstream, midstream and downstream. Participants will be exposed to the HSE and risk related to utilities, flare system, cooling water system, thermal pollution, industrial and domestic wastewater treatment, gas hydrate and dehydration, acid gas incineration/injection, hydrocarbon storage tanks, sulphur storage, port and shipping facilities, VOC's detection and repair program, and hazardous waste management. Participants will eventually recognize why risk and safety is important topics for industry today. The course will conclude with participant working in team on selected subjects including Acid Gas Injection system identifying hazard sources to safety and health and hazard sources to the environment, flare system assessment and general approach to HSE, safety and risk of Hydrocarbon system.

### Course Content:

<ol style="list-style-type: none"> <li>1. Introduction to Oil and Gas HSE</li> <li>• The HSE legal compliance requirements</li> <li>2. Selected Schematic of Oil and Gas Plants</li> <li>• Liquefied Natural Gas</li> <li>• Petroleum Refinery</li> <li>3. ESHIA Study Project Requirements</li> <li>4. Introduction to Risk Assessment and Risk Criteria</li> <li>5. Safety and Risk of Operation, Process, Materials, Emissions, and Services Activities</li> <li>6. Cooling Water system</li> <li>• Types of cooling water system</li> <li>• Pros and Cons of cooling systems</li> <li>• Legal compliance requirements</li> <li>• Impact of cooling water return discharge</li> <li>7. Flaring System</li> <li>• Sources for flaring</li> <li>• Flaring visible from space</li> <li>• Thermal Radiation</li> <li>• Traditional flaring system safety</li> <li>• Consequences for the environment and the economy</li> <li>• Closed flare system with gas recovery</li> <li>• Zero flare technology</li> </ol>	<ol style="list-style-type: none"> <li>8. Acid gas incineration/injection</li> <li>• Hazard identification (hazard sources to safety, health and environment)</li> <li>• Injection specification requirements</li> <li>9. Smart leak detection and repair (LDAR)</li> <li>• LDAR definition</li> <li>• Legal requirement of LDAR</li> <li>• LDAR monitoring methods</li> <li>10. Specific Topics</li> <li>• Sea Water desalination</li> <li>• Industrial and Domestic Wastewater Treatment and Discharges</li> <li>• Hazardous Material and Waste Management</li> </ol>
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### Eligibility criteria

Anyone requiring an introduction to Petroleum Economics. Non-financial professionals of all levels from technical and non-technical backgrounds.



## Ezeddin Shirif, P.Eng., Ph.D.

Dr. Ezeddin Shirif is a Professor of Petroleum Engineering at the Faculty of Engineering and Applied Science at the University of Regina (Canada). Dr. Shirif holds a B.A.Sc. and M.Sc. in Petroleum Engineering from the University of Southern California (USA) and a Ph.D. in Petroleum Engineering from the University of Alberta (Edmonton, Canada).

Dr. Shirif has more than 35 years of Canadian and International teaching and research experience. His teaching and research areas of expertise include: conventional and unconventional hydrocarbon reservoirs, reservoir engineering, enhanced oil recovery, natural gas reservoirs engineering, fluid flow through porous media, real time pressure/rate data analysis, production optimization, numerical methods, reservoir characterization and reservoir simulation. During Dr. Shirif's teaching career, he has taught over forty undergraduate and graduate courses related to Petroleum Engineering. Dr. Shirif has published more than 82 journal publications and conference proceedings. He has graduated more than 45 graduate students. Dr. Shirif's current research interests include: application of ionic liquids (ILs) and liquid catalyst (LCs) in heavy oil recovery processes, design/optimization/utilization of vertical wells, steam assisted gravity drainage for thermal oil recovery, reservoir performance optimization, low saline water (smart water) flooding, optimization of EOR processes in bottom water reservoirs, cleaning up produced water from oil reservoirs, application of function approximations to reservoir engineering, modeling flow in linear composite reservoirs and modeling the performance of complex multi-fractured horizontal wells in unconventional reservoirs and field scale compositional reservoir simulation.

## Natural Gas Reservoir Engineering

**Date:** 7 – 9 March 2022  
**Time:** 8:00 AM to 12:00 PM  
**Venue:** TBA  
**Cost:** 8,000 QAR/participant  
(Min. 5 participants – additional: will be charged 3,000 QAR/participant)

### About the course:

This 4 day course is designed as an advance course discussing many aspects of the gas reservoir engineering profession. Detailed discussions will be provided regarding flow of natural gas in reservoirs and in wellbores and gathering systems; deliverability testing; production forecasting and decline curves; flow measurement and well test analysis.

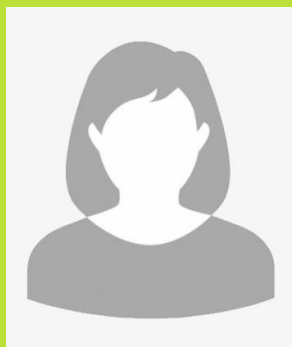
### Course Content:

1. **Introduction to Natural Gas Reservoir Engineering**
  - Reservoir performance behavior (introduction)
  - Properties of reservoir fluids
2. **Gas Material Balance and Boundary Dominated Flow Behavior**
  - Fundamentals of fluid flow in porous media
  - Gas material balance (simple, "abnormal" pressure and water influx case)
  - *IPR* concepts for gas wells
  - Semi-analytical performance equation ( $q(t)$  vs.  $t$ ) for gas wells
3. **Wellbore Phenomena and Near-Well Reservoir Behavior**
  - Wellbore phenomena: Calculation of static/flowing bottomhole pressures
  - Wellbore phenomena: Wellbore storage/phase redistribution
  - Near-well impediments to flow – the skin factor and condensate banking
4. **Well Test Analysis**
  - Deliverability testing of gas wells
  - Well test analysis: Fundamentals (solutions, plots, simple analysis, etc.)
  - Well test analysis: Unfractured wells and Fractured Wells
  - Well test analysis: Well test design
5. **Analysis and Modelling of Production Data**
  - Analysis of production data: Conventional decline curve analysis
  - Analysis of production data: *EUR* analysis
6. **Special Topics in Gas Reservoir Engineering**
  - Performance of gas condensate reservoir systems
  - Low permeability/unconventional gas reservoirs (characterization)
  - Low pressure gas reservoir systems
  - Underground storage of natural gas

### Eligibility criteria

The course is suitable for engineers, chemists, technologists and lab specialists working in the area of water treatment and purification for industrial effluents.





## Dr. Sabla Alnouri

is an Assistant Research Professor at the Gas Processing Centre at Qatar University. She received her B.Sc. and M.Sc. degrees from Texas A&M University at Qatar in Chemical Engineering, and her Ph.D. from Texas A&M University in Chemical Engineering. Before joining Qatar University, she worked as an Assistant Professor at the Baha and Walid Bassatne Department of Chemical Engineering and Advanced energy at the American University of Beirut, Lebanon. Moreover, she worked as a Visiting Assistant Professor at the Chemical Engineering Department between 2017-2018, at the American University of Sharjah, UAE. Between 2009-2011, she took part in a number of research projects in collaboration with the Qatar Science and Technology Park (QSTP), the Qatar Shell Research Technology Centre (QSRTC), and the Qatar National Food Security Programme (QNFSP). Her research interests involve process modeling, design, and optimization. In particular, her research involves the sustainable design of chemical process systems with an emphasis on resource conservation, integrated water systems, network synthesis, planning and design.

## Introduction to Process Integration and Optimization

Date: 14 – 16 March 2022  
 Time: 8:00 AM to 2:00 PM  
 Venue: TBA  
 Cost: QAR 8,000 /participant  
 (Min. 5 participants – additional: will be charged 3,000 QAR/participant)

### About the Course:

Making chemical processes more sustainable is a vital aspect for many industries. This means using raw materials and energy as efficiently as possible. Process integration and optimization techniques may be applied on a wide range of applications in various chemical processes, and other related industries, to improve the overall performance in this regard. For instance, the efficient energy unitization within a process not only reduces the overall process costs, but also helps in preventing the carbon dioxide build-up in the atmosphere as a result of continued fuel combustion. This also helps preserve natural fossil fuel reserves. Similarly, water should be consumed in sustainable quantities that ultimately do not cause any deterioration in the quality/quantity of naturally existing water sources, in the long-term. As a result, engineers must plan and design chemical processes in a way that does not cause any harmful environmental deterioration, while being cost-effective at the same time. Process integration helps identify and utilize synergies within a process, by minimizing the consumption of energy, raw materials, and other natural resources, while reducing waste production as much as possible. Process optimization also helps improve the design and operation of chemical processes, and ultimately would also result in improved process performance. This course will cover many of the topics that are key to process integration, including benchmarking process performance, identifying root causes of inefficiencies, and establishing opportunities for process improvement in the form of integrated solutions. Such tools will be demonstrated with applications that involve heat integration, mass integration and direct recycling techniques. From an industrial perspective, this could involve waste prevention and raw material preservation. If understood properly, process interactions can be exploited to maximize the performance of the process as a whole. Even further, the individual processes on a site can exchange materials in such a way that raw material utilization may be maximized, while waste production is minimized at the same time. Several industrial case studies will be given to illustrate the different process integration concepts outlined in this course, and will showcase how those tools play an important role in chemical process design.

### Course Contents

- Benchmarking
- Pinch Analysis
- Construction of composite curves
- Temperature Interval diagrams
- Load Interval Diagrams
- Problem Table Algorithms
- Source-sink mapping
- Other basic optimization tools

### Eligibility Criteria:

Engineers that require practical training in process integration and optimization techniques.



## Gas Processing Center Certificate:

A certificate of attendance will be awarded to participants who fulfill at least 80% attendance of the course time.



### Contact Information:

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