



**SBT PETROLEUM GEOSCIENCE LIMITED** RC 1405715

30 Oba Yekini Elegushi Road, Ikate-Elegushi, Eti-Osa, Lekki, Lagos. Nigeria

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# **SBT PETROLEUM GEOSCIENCE LIMITED**

## **2023 TRAINING CALENDAR**

- **Geology and Geophysics**
- **Reservoir Engineering and Production Engineering**
- **Drilling**
- **Facility Engineering**
- **Management**
- **Petroleum Industry Safety and Security**
- **Oil And Gas Commercials**

**For Registration/Nomination and Enquiries, Contact:**

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**an oil and gas servicing company of KNOWLEDGE & INTEGRITY**



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## Management's Message

SBT Petroleum Geoscience Limited is a Nigerian technical company comprised of professional petroleum engineers, geologists, and technical support personnel with diversified backgrounds in petroleum industry. The group prides itself in offering the highest level of ethics, state of the art technology, and dedicated service to its clients.

Due to many years of experience that the personnel of SBT Petroleum Geoscience Limited have accumulated, the company is able to use integrated approach to exploration prospect generation, reservoir description, characterization and simulation, production enhancement, field management and production optimization. We take serious manpower development where we give technical trainings, in petroleum engineering, geology and geophysics, to young graduates and experienced professionals in the industry. We also supply manpower to oil companies. SBT Petroleum Geoscience Limited is made up of dedicated professionals who have worked in different capacities in exploration and production, and servicing companies. We are therefore able to give our clients the **best services at reduced cost**.

On training programme, **SBT Petroleum Geoscience Limited organises trainings on weekends and evenings**, at no extra cost, because of the working class who do not have time during the weekdays. The times and dates are agreed on by SBT Petroleum Geoscience Limited and the participant (s). Every mechanism has been put in place in order not to reduce the quality of the trainings but only to uphold it.

Furthermore, SBT Petroleum Geoscience has put in place **Online Training Facility**. This is also known as computer-based training (CBT), distance learning, or e-learning, online training is a form of instruction that takes place completely on the internet. It involves a variety of multimedia elements, including graphics, audio, video, and web-links, which all can be accessed through one's internet browser. These elements are used in lieu of traditional classroom components.

In addition to presenting course material and content, our online training gives trainees the opportunity for live interactions and real-time feedback for such things as quizzes and tests. Interactions between instructor and students are also conducted via an online medium, through such methods as chat, e-mail, or other web-based communication.

SBT Petroleum believes so much in delivering quality jobs at a reduced price to have value for money.

We will be grateful, should this meet your needs, as we look forward to your invitation for discussions or presentation on our services.

**BY MANAGEMENT**

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### **OUR MISSION**

Our mission is to transform SBT Petroleum Geoscience Limited to a world leading organization that provides world-class value-added products and services through building sustainable partnerships that enable our clients to find and produce oil and gas efficiently in a safe way.

### **OUR VISION**

SBT Petroleum Geoscience Limited strives to be the world's leading company of knowledge and integrity that provides solutions to problems in oil and gas industry.

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## PROFESSIONAL MEMBERSHIP CERTIFICATES



**OIL & GAS TRAINERS ASSOCIATION OF NIGERIA**

Membership No. 392/2020

### MEMBERSHIP / GRADING Certificate

This is to confirm that  
**SBT PETROLEUM**

is a Member of the OIL & GAS TRAINERS ASSOCIATION OF NIGERIA  
and

With a current Grading of ..... on the OGTAN ATSP021 Standardisation Protocol

Yet to be Graded on the OGTAN ATSP021 Standardisation Protocol

Please accord all necessary rights and privileges

Valid Until: **31ST DECEMBER 2023**

  
Secretary

  
President

## MEMBERSHIP CERTIFICATE 2022



This certifies that

**SBT PETROLEUM GEOSCIENCE LIMITED  
ETI-OSA, NIGERIA**

Is an associate member of the International Well Control Forum  
for the year 2022.

  
Jamie Wilson  
IWCF Board Chairperson

  
Zdenek Sehnal  
Chief Executive Officer

   The International Well Control Forum is a Scottish Charitable Incorporated Organisation (SCIO) No. SC045842

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## SBT PETROLEUM 2023 TRAINING CALENDAR

S/ N	Course Title	EVENING/WEEKEND Class (Lagos)	VENUES AND DATES			AMOUNT	
			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)
<b><i>Geology and Geophysics Courses</i></b>							
<b>NB: Dates and venue of the courses can be changed if a request is made by clients.</b>							
<b>Discount of 10% is applied if a company nominates up to three participants for a course at a time.</b>							
1	Geosciences for Non-Geoscientists	On Request	Aug. 7-11	June 19-23	On Request	350,000	3,500
2	Petroleum Geology for Non-Geologist	On Request	Aug. 14-18	June 26-30	On Request	350,000	3,500
3	Basic Petroleum Technology	On Request	Aug. 21-25	July 3- 7	On Request	350,000	3,500
4	Geosciences for Petroleum Engineers	On Request	Aug. 28-Sept. 1	July 10-14	On Request	350,000	3,500
5	Introduction to Oil and Gas Industry	On Request	Sept. 4- 8	July 17-21	On Request	400,000	4,000
6	Prospect and Play Assessment	On Request	Sept. 11-15	July 24-28	On Request	400,000	4,000
7	Basic Geophysics	On Request	Sept. 18-22	July 31-Aug 4	On Request	350,000	3,500
8	Basic Petroleum Geology	On Request	Sept. 25-29	Aug. 7-11	On Request	350,000	3,500
9	Development Geology	On Request	Aug. 7-11	Aug. 14-18	On Request	350,000	3,500
10	Petrophysical Evaluation with software	On Request	Aug. 14-18	Aug. 21-25	On Request	400,000	4,000
11	Integrated Reservoir Modelling: Integration and Evaluation	On Request	July 10-14	Aug. 28-Sept. 1	On Request	450,000	4,500
12	Operations and Well Site Geology	On Request	July 17-21	Sept. 4- 8	On Request	400,000	4,000
13	Sedimentology and Depositional Environment of Deep-Water Deposits	On Request	July 24-28	Sept. 11-15	On Request	450,000	4,500
14	Fundamentals of Seismic Interpretation	On Request	July 31-Aug 4	Sept. 18-22	On Request	400,000	4,000
15	Seismic Interpretation with software (Petrel? Or any other)	On Request	July 17-21	Sept. 25-29	On Request	400,000	4,000

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## SBT PETROLEUM 2023 TRAINING CALENDAR (CONTD)

S/ N	Course Title	EVENING/WE EKEND Class (Lagos)	VENUES AND DATES			AMOUNT	
			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)
<b>Geology and Geophysics Courses (CONTD)</b>							
<b>NB: Dates and venue of the courses can be changed if a request is made by clients.</b>							
<b>Discount of 10% is applied if a company nominates up to three participants for a course at a time.</b>							
16	Concept in Integrated Reservoir Modelling: Integration and Evaluation	On Request	Sept. 4-8	July 3- 7	On Request	400,000	4,000
17	Concept in Reservoir Static Modelling	On Request	Sept. 11-15	July 10-14	On Request	400,000	4,000
18	Concept in Geostatistical Reservoir Modelling Using Best Practices	On Request	Sept. 18-22	July 17-21	On Request	450,000	4,500
19	Structural Geology and Plate Tectonics	On Request	Sept. 25-29	July 24-28	On Request	350,000	3,500
20	Production Geology for Other Discipline	On Request	Oct. 2-6	July 31-Aug 4	On Request	350,000	3,500
21	Reservoir Static Modelling with Petrel	On Request	Oct. 9-13	Aug. 7-11	On Request	400,000	4,000
22	Coring and Core Analysis	On Request	July 24-28	Aug. 14-18	On Request	400,000	4,000
23	Well Log Interpretation	On Request	July 31- Aug 4	Aug. 21-25	On Request	400,000	4,000
24	Prospect and Play Assessment	On Request	Aug. 7-11	Aug. 28-Sept. 1	On Request	400,000	4,000
25	Operation Geology	On Request	Aug. 14-18	Sept. 4- 8	On Request	400,000	4,000
26	Sequence Stratigraphy: Principles and Applications.	On Request	Aug. 21-25	Sept. 11-15	On Request	400,000	4,000
27	Become a competent Geoscientist in 3 Months	On Request	March 13-14	Sept. 18-22	On Request	400,000	4,000
28	Sandstone Reservoirs	On Request	Aug. 28-Sept. 1	Sept. 25-29	On Request	350,000	3,500

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S/ N	Course Title	EVENING/WE EKEND Class (Lagos)	VENUES AND DATES			AMOUNT	
			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)
<b>Geology and Geophysics Courses (CONTD)</b>							
<b>NB: Dates and venue of the courses can be changed if a request is made by clients.</b>							
<b>Discount of 10% is applied if a company nominates up to three participants for a course at a time.</b>							
29	Foundation of Petrophysics	On Request	Sept. 4-8	Nov. 6-10	On Request	350,000	3,500
30	Overview of Petroleum Industry	On Request	Sept. 11-15	Nov. 13-17	On Request	400,000	4,000
31	Reservoir Geology	On Request	Sept. 18-22	Nov. 20-24	On Request	350,000	3,500
32	Well Log and Core Data Integration	On Request	Sept. 25-29	Sept. 18-22	On Request	400,000	4,000
33	Reservoir Characterization and Geological Modelling	On Request	Oct. 2-6	Sept. 25-29	On Request	400,000	4,000
34	Petroleum System Analysis	On Request	Oct. 9-13	Oct. 2-6	On Request	400,000	4,000
35	Deep Water Petroleum System	On Request	Oct. 16-20	Oct. 9-13	On Request	400,000	4,000
36	Introduction to Subsurface Mapping	On Request	Oct. 23-27	Oct. 16-20	On Request	400,000	4,000
37	Prospect Evaluation, Risks and Volumes	On Request	October 30- Nov. 03	Oct. 23-27	On Request	400,000	4,000
38	Petroleum Exploration and Production	On Request	Nov. 6-10	October 30- Nov. 03	On Request	400,000	4,000
39	Fundamental Field Development Plan	On Request	March 13-14	June 19-23	On Request	400,000	4,000
40	Application of Basin Analysis to Petroleum Play Assessment	On Request	Nov. 13-17	Nov. 6-10	On Request	400,000	4,000
41	Sedimentology and Sequence Stratigraphy	On Request	Nov. 20-24	Nov. 13-17	On Request	400,000	4,000
42	Structural Geology	On Request	Nov. 27-Dec. 1	Nov. 20-24	On Request	400,000	4,000
43	Clastic Sedimentology for Exploration and Development	On Request	Dec. 4-8	Nov. 27- Dec. 1	On Request	400,000	4,000
44	Gas Exploration	On Request	Dec. 11-15	Dec. 4-8	On Request	400,000	4,000

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## SBT PETROLEUM 2023 TRAINING CALENDAR (CONTD)

S/N	Course Title	EVENING/WE EKEND Class (Lagos)	VENUES AND DATES			AMOUNT	
			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)
<b>Geology and Geophysics Courses (CONTD)</b>							
<b>NB: Dates and venue of the courses can be changed if a request is made by clients.</b>							
<b>Discount of 10% is applied if a company nominates up to three participants for a course at a time.</b>							
45	Introduction to Biostratigraphy	On Request	Aug. 7-11	June 12-16	On Request	400,000	4,000
46	Fluvial and Shallow Marine Reservoirs	On Request	Aug. 14-18	June 19-23	On Request	400,000	4,000
47	Formation Evaluation	On Request	Aug. 21-25	June 26-30	On Request	400,000	4,000
48	Petrophysics for Drilling Engineers	On Request	Aug. 28-Sept. 1	July 3-7	On Request	400,000	4,000
49	Cased Hole Logging and Formation Evaluation	On Request	Sept. 4-8	July 10-14	On Request	400,000	4,000
50	Bio-sequence Stratigraphic Approach in Oil and Gas Industry	On Request	Sept. 11-15	July 17-21	On Request	400,000	4,000
51	Introduction to Deep Water Reservoirs	On Request	Nov. 13-17	July 24-28	On Request	400,000	4,000
52	Seismic Data Acquisition, Processing and Interpretation	On Request	Nov. 20-24	July 31-Aug. 4	On Request	400,000	4,000
53	Practical Reservoir Petrophysical Evaluation and Static Modelling (2 wks)	On Request	Nov. 27-Dec. 1	Aug. 7-11	On Request	700,000	7,000
54	Basic Logging Methods and Formation Evaluation	On Request	June 12-16	Aug. 14-18	On Request	400,000	4,000
55	Fundamentals Of Petroleum Geomechanics	On Request	Aug. 7-11	Aug. 21-25	On Request	400,000	4,000
56	Geological and Geophysical Characterization of Heavy Oil Reservoirs	On Request	Aug. 14-18	Aug. 28-Sept. 1	On Request	450,000	4,500
57	Advanced Petrophysical Evaluation	On Request	Aug. 21-25	June 19-23	On Request	450,000	4,500
58	Advanced Seismic Interpretation	On Request	Aug. 28-Sept. 1	Sept. 4-8	On Request	400,000	4,000

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S/N	Course Title	EVENING/WE EKEND Class (Lagos)	VENUES AND DATES			AMOUNT	
			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)
<b><i>Reservoir/Production Engineering Courses</i></b>							
<b>NB: Dates and venue of the courses can be changed if a request is made by clients</b>							
<b>Discount of 10% is applied if a company nominates up to three participants for a course at a time.</b>							
59	Cost Estimating in Oil and Gas Industry	On Request	Sept. 4-8	Aug. 7-11	On Request	400,000	4,000
60	Enhanced Oil Recovery	On Request	Sept. 11-15	Aug. 14-18	On Request	400,000	4,000
61	Well Test Design and Analysis.	On Request	Nov. 13-17	Aug. 21-25	On Request	400,000	4,000
62	Production System Analysis with Nodal Analysis	On Request	Nov. 20-24	Aug. 28-Sept. 1	On Request	400,000	4,000
63	Well Surveillance: Production Enhancement Procedures	On Request	Nov. 27-Dec. 1	Sept. 4-8	On Request	400,000	4,000
64	Gas Lift Design and Optimization	On Request	June 12-16	Sept. 11-15	On Request	400,000	4,000
65	Reservoir Management and Monitoring	On Request	Oct. 16-20	Nov. 13-17	On Request	400,000	4,000
66	Petroleum Economics & Risk Analysis	On Request	Oct. 23-27	Nov. 20-24	On Request	400,000	4,000
67	Production Operations	On Request	October 30- Nov. 03	Nov. 27-Dec. 1	On Request	400,000	4,000
68	Artificial Lift Systems	On Request	June 12-16	June 12-16	On Request	400,000	4,000

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## SBT PETROLEUM 2023 TRAINING CALENDAR (CONTD)

S/N	Course Title	EVENING/WE EKEND Class (Lagos)	May 15-19			AMOUNT	
			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)

### Reservoir/Production Engineering Courses (CONTD)

**NB: Dates and venue of the courses can be changed if a request is made by clients**

**Discount of 10% is applied if a company nominates up to three participants for a course at a time.**

69	Performance Analysis, Prediction, and Optimization Using Nodal Analysis	On Request	Aug. 21-25	Aug. 7-11	On Request	400,000	4,000
70	Introduction to Reservoir Engineering	On Request	Aug. 28-Sept. 1	Aug. 14-18	On Request	400,000	4,000
71	Material Balance Analysis with MBA and Decline Curve Analysis	On Request	Sept. 4-8	July 3-7	On Request	400,000	4,000
72	Introduction to Production Engineering	On Request	Oct. 9-13	July 10-14	On Request	400,000	4,000
73	Petroleum Engineering for Non-Engineers	On Request	July 17-21	July 17-21	On Request	400,000	4,000
74	Concept in Dynamic Modelling	On Request	July 24-28	July 24-28	On Request	400,000	4,000
75	Dynamic Modelling with Eclipse	On Request	July 31 Aug. 4	July 31 Aug. 4	On Request	400,000	4,000
76	Fundamental of Reservoir Engineering	On Request	Aug. 7-11	Aug. 7-11	On Request	400,000	4,000
77	Integrated Reservoir Study with Software	On Request	Aug. 14-18	Aug. 14-18	On Request	500,000	4,500
78	Integrated Production Modelling with MBA, Prosper and Gap	On Request	Aug. 21-25	Aug. 21-25	On Request	500,000	4,500
79	Overview of Reservoir Management	On Request	Aug. 28-Sept. 1	Aug. 28-Sept. 1	On Request	400,000	4,000
80	Theoretical principles of Crude oil, Natural Gas & Condensate Reserve Estimation	On Request	Sept. 4-8	Sept. 4-8	On Request	400,000	4,000
81	PVT Properties of Reservoir Fluids	On Request	Oct. 9-13	Nov. 6-10	On Request	400,000	4,000

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S/N	Course Title	EVENING/WE EKEND Class (Lagos)	VENUES AND DATES			AMOUNT	
			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)
<b>Reservoir/Production Engineering Courses (CONTD)</b>							
<b>NB: Dates and venue of the courses can be changed if a request is made by clients</b>							
<b>Discount of 10% is applied if a company nominates up to three participants for a course at a time.</b>							
82	Understanding and Optimizing Well Performance	On Request	Nov. 6-10	Dec. 4-8	On Request	400,000	4,000
83	Production Technology for Other Disciplines	On Request	Nov. 13-17	Dec. 11-15	On Request	400,000	4,000
84	Well Productivity and Enhancement	On Request	Nov. 20-24	Oct. 16-20	On Request	400,000	4,000
85	Become a competent Reservoir Engineer in 3 Months	On Request	Nov. 6-10	Dec. 4-8	On Request	400,000	4,000
86	Resources and Reserve Evaluation	On Request	Nov. 27-Dec. 1	Oct. 23-27	On Request	400,000	4,000
<b>Drilling Courses</b>							
<b>NB: Dates and venue of the courses can be changed if a request is made by clients</b>							
<b>Discount of 10% is applied if a company nominates up to three participants for a course at a time.</b>							
87	IWCF Starter Level (Level 1)	NA	NA	NA	NA	1,000 \$	NA
88	IWCF DWC Introductory Level (Level 2)	NA	NA	NA	NA	1,500 \$	NA
89	IWCF DWC Driller/Supervisor Levels (Level 3)	NA	NA	NA	NA	2,200\$	NA
90	IWCF DWC Driller/Supervisor Levels (Level 4)	NA	NA	NA	NA	2,200 \$	NA
91	IWCF DWC Experienced Driller in Well Design Levels (Level 5)	NA	NA	NA	NA	4,000 \$	NA
92	Basic Drilling, Completion and Workover	On Request	Sept. 25-29	Sept. 25-29	On Request	400,000	4,000

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			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)
<b>Drilling Courses (CONTD)</b>							
NB: Dates and venue of the courses can be changed if a request is made by clients							
Discount of 10% is applied if a company nominates up to three participants for a course at a time.							
93	Basic Drilling Technology	On Request	Oct. 2-6	Oct. 2-6	On Request	400,000	4,000
94	Fundamental of Completions and Walkovers	On Request	Oct. 9-13	Oct. 9-13	On Request	400,000	4,000
95	Drilling for Non-Drilling Personnel	On Request	Oct. 16-20	Oct. 16-20	On Request	400,000	4,000
96	Introduction to Onshore Drilling	On Request	Oct. 23-27	Oct. 23-27	On Request	400,000	4,000
97	Introduction to Offshore Drilling	On Request	October 30- Nov. 03	October 30- Nov. 03	On Request	400,000	4,000
98	Fundamental of Directional Drilling	On Request	Nov. 6-10	Nov. 6-10	On Request	400,000	4,000
99	Introduction to Drilling, Completion and Fracturing Fluids	On Request	Nov. 13-17	Nov. 13-17	On Request	400,000	4,000
100	Drilling Project and Risk Management	On Request	Nov. 20-24	Nov. 20-24	On Request	450,000	4,500
101	Drilling Fluid	On Request	Nov. 27-Dec. 1	Nov. 27-Dec. 1	On Request	400,000	4,000
102	Cementing Operations	On Request	Dec. 4-8	Dec. 4-8	On Request	400,000	4,000
103	Basic Petroleum Engineering Practices	On Request	Dec. 11-15	Dec. 11-15	On Request	400,000	4,000
104	Mud Logging Operations	On Request	Nov. 27-Dec. 1	Oct. 9-13	On Request	400,000	4,000
105	Cement Integrity Assurance and Evaluation	On Request	Dec. 4-8	Oct. 16-20	On Request	400,000	4,000
106	Introduction to Drilling	On Request	March 6-10	Sept. 25-29	On Request	400,000	4,000
107	Introduction to Well Completion	On Request	March 13-17	Oct. 2-6	On Request	400,000	4,000

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## SBT PETROLEUM 2023 TRAINING CALENDAR

S/N	Course Title	EVENING/ WEEKEND Class (Lagos)	VENUES AND DATES			AMOUNT	
			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)
<b>Facility Engineering Courses</b>							
<b>NB: Dates and venue of the courses can be changed if a request is made by clients.</b>							
<b>Discount of 10% is applied if a company nominates up to three participants for a course at a time.</b>							
108	Deepwater Drilling Design and Operations	On Request	July 31- Aug. 4	Oct. 9-13	On Request	400,000	4,000
109	Formation damage: assessment and mitigation	On Request	Aug. 7-11	Oct. 16-20	On Request	400,000	4,000
110	Well Design and Engineering	On Request	Aug. 14-18	Oct. 23-27	On Request	400,000	4,000
111	Mechanical Engineering for Non-Mechanical Engineers	On Request	Aug. 21-25	October 30- Nov. 03	On Request	400,000	4,000
112	Advanced Drilling, Completion and Workover Technology	On Request	Aug. 28-Sept. 1	Nov. 6-10	On Request	400,000	4,000
113	Basic Petroleum Technology	On Request	July 24-28	Nov. 13-17	On Request	500,000	4,500
114	Petroleum Engineering for Non-Engineers	On Request	July 31 Aug. 4	Nov. 20-24	On Request	400,000	4,000
115	Casing and Cementing	On Request	Aug. 7-11	Nov. 27-Dec. 1	On Request	500,000	5,000
116	Introduction to Deep Water Rig Operation	On Request	Aug. 14-18	Dec. 4-8	On Request	500,000	5,000
117	Well Planning and Architecture	On Request	Aug. 21-25	Dec. 11-15	On Request	500,000	5,000
118	Separators in Oil and Gas Industry	On Request	Aug. 28-Sept. 1	June 12-16	On Request	400,000	4,000
119	Corrosion and Corrosion Control	On Request	Sept. 4-8	June 19-23	On Request	400,000	4,000
120	Introduction to Oil and Gas Production Facilities	On Request	Sept. 11-15	June 26-30	On Request	400,000	4,000
121	Concept Selection and Specification of Production Facility in Field Development.	On Request	July 31- Aug. 4	July 3-7	On Request	400,000	4,000
122	Overview of Offshore System.	On Request	Aug. 7-11	July 17-21	On Request	400,000	4,000
123	Fundamental of Pumps and Compressor Systems.	On Request	Aug. 14-18	July 10-14	On Request	400,000	4,000

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			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)
<b>Facility Engineering Courses (CONTD)</b>							
<p><b>NB: Dates and venue of the courses can be changed if a request is made by clients</b>  <b>Discount of 10% is applied if a company nominates up to three participants for a course at a time.</b></p>							
124	Process safety Engineering	On Request	Aug. 14-18	July 24-28	On Request	400,000	4,000
125	Overview of Some Subsea System.	On Request	Aug. 21-25	July 31- Aug. 4	On Request	400,000	4,000
126	Oil Production and Processing Facilities.	On Request	Aug. 28-Sept. 1	Aug. 7-11	On Request	400,000	4,000
127	Separation Equipment-Selection and Sizing.	On Request	Sept. 4-8	Aug. 14-18	On Request	400,000	4,000
128	CO2 Surface facilities	On Request	Sept. 11-15	Aug. 21-25	On Request	400,000	4,000
129	Pumps and Valves Operation and Maintenance	On Request	Aug. 14-18	Aug. 28-Sept. 1	On Request	400,000	4,000
130	Terminals and Storage Facilities	On Request	Aug. 21-25	July 24-28	On Request	400,000	4,000
131	Offshore Pipeline Facilities	On Request	Aug. 28-Sept. 1	July 31 Aug. 4	On Request	400,000	4,000
132	Oil and Gas Production Operation Surface Facility	On Request	June 26-30	Aug. 7-11	On Request	400,000	4,000
133	Gas Conditioning and Processing	On Request	July 3-7	Aug. 14-18	On Request	400,000	4,000
134	Facility Maintenance and Management	On Request	July 10-14	Aug. 21-25	On Request	350,000	3,500
135	Hydrocarbon phase changes in surface facilities/ Basic Production Operations	On Request	July 17-21	Aug. 28-Sept. 1	On Request	350,000	3,500
136	Operations and Maintenance	On Request	July 24-28	Sept. 4-8	On Request	400,000	4,000
137	Onshore Pipeline facility	On Request	July 31 Aug.4	Sept. 11-15	On Request	400,000	4,000

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## SBT PETROLEUM 2023 TRAINING CALENDAR

S/N	Course Title	EVENING/ WEEKEND Class (Lagos)	VENUES AND DATES			AMOUNT	
			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)
<b><i>Management Courses</i></b>							
<b>NB: Dates and venue of the courses can be changed if a request is made by clients.</b>							
<b>Discount of 10% is applied if a company nominates up to three participants for a course at a time.</b>							
138	Essential Leadership for Technical Professionals	On Request	June 26-30	March 6-10	On Request	300,000	3,000
139	Innovation and Creativity at Work	On Request	July 3-7	March 13-17	On Request	300,000	3,000
140	Team Leadership	On Request	July 10-14	March 20-24	On Request	300,000	3,000
141	Effective Communication Skills for Managers	On Request	July 17-21	March 27- 31	On Request	300,000	3,000
142	Effective Technical Report Writing and Presentation Skills	On Request	July 24-28	April 3-7	On Request	400,000	4,000
143	Making Effective Decisions	On Request	July 31 -Aug. 4	April 10-14	On Request	300,000	3,000
144	Leadership and Management Skills	On Request	Aug. 7-11	April 17-21	On Request	300,000	3,000
145	Office Politics for Managers	On Request	Aug. 14-18	April 17-21	On Request	300,000	3,000

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## SBT PETROLEUM 2023 TRAINING CALENDAR

S/N	Course Title	EVENING/ WEEKEND Class (Lagos)	VENUES AND DATES			AMOUNT	
			Lagos		Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)

### *Petroleum Industry Safety and Security Courses*

**NB: Dates and venue of the courses can be changed if a request is made by clients.**

**Discount of 10% is applied if a company nominates up to three participants for a course at a time.**

146	Managing Security Risks in the Oil and Gas Industry	On Request	Sept. 18-22	Nov. 6-10	On Request	450,000	4,500
147	Safety in Process and Design Operation	On Request	Sept. 25-29	Nov. 13-17	On Request	450,000	4,500
148	Security Risk Analysis and Management	On Request	Oct. 2-6	Nov. 20-24	On Request	450,000	4,500
148	Security and safety in Oil and Gas	On Request	Oct. 9-13	Nov. 27- Dec. 1	On Request	450,000	4,500
149	Oil and Gas Industry Security	On Request	Sept. 11-15	May 15-19	On Request	300,000	3,000
150	Project Management Fundamentals	On Request	Aug. 21-25	April 24-28	On Request	300,000	3,000
151	Leadership Skills for Managers and Supervisors: Managing by Influence.	On Request	Aug. 28- Sept. 1	May 1-5	On Request	300,000	3,000
152	Interaction skills for success	On Request	Sept. 4-8	May 8-12	On Request	300,000	3,000
153	Communication and Listening for Success at work	On Request	Sept. 11-15	May 15-19	On Request	300,000	3,000
154	Leadership for Success	On Request	Sept. 4-8	May 22-26	On Request	300,000	3,000
155	Health, Safety and Environment	On Request	Sept. 11-15	May 29- June 2	On Request	300,000	3,000

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## SBT PETROLEUM 2023 TRAINING CALENDAR

S/N	Course Title	EVENING/ WEEKEND Class (Lagos)	VENUES AND DATES			Sept 4-8	
			Lagos	Port Harcourt	Abuja, Ghana, UK, US & Dubai	Abuja, Lagos & PH (N)	Ghana, UK, US & Dubai (\$)
<b><i>Oil and Gas Commercial Courses</i></b>							
<b>NB: Dates and venue of the courses can be changed if a request is made by clients.</b>							
<b>Discount of 10% is applied if a company nominates up to three participants for a course at a time.</b>							
156	International Oil Supply, Transportation, Refining and Trading	On Request	Sept. 18-22	Nov. 6-10	On Request	450,000	4,500
157	Oil Price Risk Management	On Request	Sept. 25-29	Nov. 13-17	On Request	450,000	4,500
158	Crude Oil and Refined Product Sales, Marketing, Trading and Risk Management	On Request	Oct. 2-6	Nov. 20-24	On Request	450,000	4,500
159	International Oil Trading and Pricing	On Request	Oct. 9-13	Nov. 27-Dec. 1	On Request	450,000	4,500
160	Business Analysis	On Request	July 10-14	Aug. 21-25	On Request	350,000	3,500
161	Business Analytics in Oil and Gas Industry	On Request	July 17-21	Aug. 28-Sept. 1	On Request	350,000	3,500
162	Data Analysis	On Request	July 24-28	Sept. 4-8	On Request	400,000	4,000
163	International Gas Business	On Request	July 31 Aug.4	Sept. 11-15	On Request	400,000	4,000
164	Overview of Physical Crude Oil Trading and Operations	On Request	June 26-30	March 6-10	On Request	300,000	3,000
165	Oil and Gas Pricing	On Request	July 3-7	March 13-17	On Request	300,000	3,000
166	Contract and Procurement	On Request	July 10-14	March 20-24	On Request	300,000	3,000
167	Commercial Fundamentals in upstream oil and gas industry	On Request	Oct. 9-13	Nov. 27-Dec. 1	On Request	450,000	4,500
168	Oil Markets and Trading	On Request	Oct. 23-27	Dec. 11-1	On Request	450,000	4,500

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## BECOME A COMPETENT RESERVOIR ENGINEER IN THREE MONTHS

S/N	Course Titles	No of Days
1	Introduction to Petroleum Industry	5
2	Geology for Reservoir Engineers	5
3	Basic Drilling Technology	5
4	Introduction to Reservoir Engineering	5
5	Practical Static Modelling	5
6	Practical Material Balance Study with MBAL & Decline Curve Analysis	5
7	Practical Well test Analysis with Sapphir	5
8	Practical Production System Analysis with PROSPER	5
9	Practical Dynamic Modelling (Reservoir Simulation)	5
10	Practical Theoretical Principles of Reserve Estimation	5
11	Practical Petroleum Economics	5
12	Practical Development Case	10
<b>Total Number of Days</b>		<b>65</b>
<b>Total Number of Months</b>		<b>3</b>
<b>Total Course Fees Per Participant</b>		<b>N1,075,000.00</b>

START DATE: March 06, 2023

## BECOME A COMPETENT GEOSCIENTIST IN THREE MONTHS

S/N	Items	No of Days
1	Introduction to Oil and Gas Industry	5
2	Fundamental of Geology and Geophysics	5
3	Sedimentology and EOD	5
4	Sequence Stratigraphy	5
5	Reservoir Geology	5
6	Practical Petrophysical Evaluation	5
7	Practical Seismic Interpretation (Qualitative and Quantitative)	10
8	Practical Static Modelling	5
9	Hydrocarbon Reserve Estimates and Picking of Well Locations to Drill	5
10	G and G Project	15
<b>Total Number of Days</b>		<b>65</b>
<b>Total Number of Months</b>		<b>3</b>
<b>Total Course Fees Per Participant</b>		<b>N1,075,000.00</b>

START DATE: July 03, 2023

NB: Installmental Payment is allowed two times (In both cases).

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## **COURSE CONTENTS**

***GEOSCIENCES (GEOLOGY/GEOPHYSICS)***

## **COURSES**

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### **Basic Geophysics**

#### **Course Descriptions**

This course is designed to explain what geophysics all is about. To explain what seismic data is, what it is used for and how it is used. The course is supplemented by many case histories that concretely illustrate the principles in the course material. These are updated with every course presentation to keep up with the rapidly developing technology in this field. Classroom exercises are included in this course.

#### **Course Content**

- The nature of seismic data, what is wave propagation.
- What causes seismic reflections and how they relate to rock properties including pore filling material.
- The wavelet in the seismic data and its limit of resolution
- Seismic velocities as they relate to rock properties and the imaging process.
- The relationship between seismic velocities and pore pressure
- Pore pressure prediction Seismic data processing and seismic migration
- Prestack, poststack, time and depth imaging
- Direct hydrocarbon indicators and AVO
- Seismic inversion for rock and fluid properties, Seismic attributes
- Recent developments in seismic acquisition, processing, and interpretation

#### **Who Should Attend?**

Geoscientists, engineers, team leaders, geosciences technicians, asset managers, and anyone involved in using seismic data that needs to understand and use this data at a basic level or to communicate with others that use it.

**5 Days**

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### **Petroleum System Analysis**

#### **About the Course**

This course addresses the fundamentals of the Petroleum System, a holistic view of how it works, which is essential for geoscientists and engineers involved in today's challenging conventional and unconventional exploration and development projects. The elements of the Petroleum System Charge, Trap, and Reservoir are described systematically within the framework of play and prospect evaluation.

The charge element begins with the deposition of the source rock and the establishment of its volumetric potential, or feedstock, for the system. Charge access involves converting this potential to expelled volumes, making, and then moving, the volumes from source bed to trap/reservoir. In the case of some unconventional reservoirs, this is within or adjacent to the source bed itself. A trap receives charge and petroleum columns build along its edges, until the container limit of the critical weak point is reached, or it spills. Reservoir rock storage and deliverability are modified by mechanical and chemical compaction, and fluid properties, fundamentally affecting project economics. Fluid properties further impact economics via the product value itself.

#### **Course Objectives**

- Employ Petroleum System concepts as a holistic approach to risk and volume estimation in play, prospect, and reservoir evaluation.
- Predict and confirm source rock distribution from rock and fluid data and estimate volumetric potential.
- Predict the temperature, timing, volumes, compositions, and phases expelled from kitchens, and the controls exerted by hydrodynamics and capillarity on migration from source bed to trap/reservoir.
- Describe a trap in terms of the critical weak points on its edges.
- Estimate column heights containable by those edges.
- Understand the Petroleum System that controls reservoir rock quality.
- Understand reservoir and reservoir fluid properties that govern deliverability, well recovery, and economics (rate, product value)

#### **Course Content**

- Petroleum Systems in E&P

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- Charge | Source Potential: source rock deposition
- Charge | Source Potential: type and organofacies
- Charge | Access: temperature and thermal stress, thermal stress indicators and maturity
- Charge | Access: petroleum generation, cracking, and expulsion; petroleum product composition and phase.
- Charge | Access: oil and gas geochemistry (biomarkers, isotopes) as a function of organofacies, maturity and biodegradation
- Charge | Access: basin thermics; thermal modeling; volume and timing of expelled products; fluid phase properties
- Charge | Access: capillarity; pressure; primary and secondary migration from source to trap; charge vs. trap timing
- Trap | Container Geometry: understand trap geometries that govern accumulation; container type and number of edges.
- Trap | Column Capacity: fluid phase properties density and interfacial tension; rock capillarity; hydrodynamics; capillary vs. fracture leakage; column capacity prediction methods; tertiary migration/leakage and seepage
- Reservoir | Storage: effective stress and mechanical compaction; thermal stress and chemical compaction; how reservoir filling controls fluid phase saturation; fluid formation volume factor and gas expansion factor; geochemical methods of estimating fluid phase saturation
- Reservoir | Deliverability: P, T and compositional controls on fluid viscosity; segmentation; reservoir pressures and connectivity
- Value: the \$ value of the produced petroleum product itself

### **Who should attend?**

Geologists, geophysicists, and petrophysicists working on a basin, play, prospect or reservoir evaluation, and reservoir engineers seeking a bottom-up understanding of the genesis of their reservoir or field.

**5 Days**

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### **Basic Petroleum Geology**

#### **Course Descriptions**

Primary objectives of the course are to broaden your geological vocabulary, explain selected geological principles and processes, and describe how certain petroleum reservoirs and source rocks are formed.

#### **Course Content**

- Minerals and rocks
- Plate tectonics
- Geological time
- Weathering and erosion
- Deposition
- Diagenesis
- Reservoirs
- Structural geology and petroleum
- Origin, migration, and trapping of petroleum.

#### **Who Should Attend?**

Petroleum industry personnel in need of basic geological training, including engineering, geophysical, technical support, and administrative personnel.

**5 Days**



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### **Well Log Interpretation**

#### **Course Descriptions**

Core-based measurements offer the most tangible and direct means of determining critical reservoir parameters. Core analysis plays vital role in field equity or unitization and is often considered to be the ground truth to which other measurements are compared (e.g. wireline logging). Participants will be taken through the steps necessary to obtain reliable core analysis data and solve formation evaluation problems.

#### **Course Content**

- Coring and core analysis objectives, coring hardware and maximizing core recovery
- Core-handling, wellsite procedures, and preservation methods
- Sidewall coring and analysis, Organizing effective laboratory programs.
- Porosity, permeability, and fluid saturation
- Unconventional Reservoir Analytical Protocol
- Quality control in core analysis, Petrography, and mineralogy
- Special core analysis sample selection and statistical data analysis
- Core-log correlation (includes NMR log calibration, acoustic, nuclear, and electrical properties) an introduction to rock mechanics.
- Wettability, relative permeability, capillary pressure, and reservoir fluid distribution
- Data integration in reservoir simulation

#### **Who Should Attend?**

Petrophysicists, reservoir engineers, exploration and development geologists, core and log analysts, geophysicists, drilling and completion engineers, and oil company research and development staff.

**5 Days**

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## **Geoscience for Petroleum Engineers**

### **Course Description**

This course is intended to expose participants to basic Geology and Geophysics principles. Help participants understand the elements of Petroleum system and the relationship between geosciences and petroleum industry. Geoscience for Petroleum Engineering covers a range of topics in geology, geophysics, and geological statistics to enable someone without a geoscience background to understand how geological information is obtained and worked with in petroleum exploration, appraisal and development.

It focuses on geological and geophysical principles and practices, demonstrates their application to hydrocarbon exploration and production and provides an understanding of the factors and processes involved in the formation of oil and gas fields and their worldwide distribution. It also reviews the recent trends in the global petroleum industry and provides an insight into the operations of the international oil companies.

### **Course Content**

#### **Geological concepts**

- Introduction to Earth materials, processes, basins and petroleum system: Review of the nature and composition of the Earth; Plate tectonics and sedimentary basins; Principles of stratigraphy; Rock types and their identification. Transport, deposition and deformation processes: Reservoir Seal, Source rock and migration path, Trap, Timing; Understand how depositional process affect texture of sedimentary rocks and the relation with petrophysical properties; common depositional structures and their origin; well (log and core) observations and their relation to a 3-D depositional model; general differences between carbonate and clastic depositional process and environments?

#### **Reservoir architecture**

- Reservoir heterogeneity, architecture, faults seals: Identify the main types of structural features; Identify the characteristics of a structural trap; Main types of faults, and tectonic setting; Fold geometries; Fractures and other localised deformation and the effect on fluid flow characteristics; Fracture patterns associated with folding; Structural features shown in core and on dipmeter/image logs/cross sections and maps; Fault compartmentalisation.

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### **Geophysics**

- Geophysics: Review the basic geophysical concepts as used in the petroleum industry; Applications of seismic data in reservoir description, main geophysical methods; Wave propagation – P and S waves, alteration at interfaces (reflection/refraction); Seismic method (data gathering and interpretation); Use and limits of seismic in reservoir description.

### **Subsurface interpretation**

- Mapping: Spatial data contouring using manual and mechanical methods; Advantages and disadvantages of computer and manual mapping techniques; Characteristics of computer gridding and manipulation; Identification of “good” and “poor” maps from the type and density of the input data. Correlation: Importance in reservoir development; Definition of a subsurface framework to understand geological relationships between wells; Identification of correlation markers and flow units; Principles of flow unit correlation; Role of different data (e.g. seismic, log, biostratigraphic) and models (sequence stratigraphy) on flow unit correlation; Common misinterpretations in flow unit correlation.

### **What size hydrocarbon accumulation?**

- Geostatistics, Property evaluation and Volumetrics: Porosity/permeability variations; Relationships between petrophysical properties and geology; Construction of measures of spatial correlation (variograms); Definition of gross/net sand and gross/net pay; Methods to determine gross rock volume; Reserve parameter distributions; Calculation of volumetric reserves by deterministic and stochastic methods?

### **Who Should Attend?**

Non-geoscientists (engineers, drillers and other technical personnel) who need to work with geoscience concepts concerning the subsurface.

**5 Days**

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### **Geosciences for Non-Geoscientists**

#### **Course Description**

This course is intended to expose participants to basic Geology and Geophysics principles

Help participants understand the elements of Petroleum system and the relationship between geosciences and petroleum industry.

It focuses on geological and geophysical principles and practices, demonstrates their application to hydrocarbon exploration and production and provides an understanding of the factors and processes involved in the formation of oil and gas fields and their worldwide distribution. It also reviews the recent trends in the global petroleum industry and provides an insight into the operations of the international oil companies.

#### **Course Content**

- Objectives, Introduction
- Basic geology principles
- Minerals/Rocks
- Sedimentary Environment/Sedimentary Structures
- Concept of reservoir rocks and Seismic overview
- Identification of geologic features
- Structural analysis
- Hands-on session.

#### **Who Should Attend?**

Non-geoscientists with little or no background in the subject, including petroleum engineers, technical assistants involved in the handling of geological and geophysical data, administrative and finance personnel.

**5 Days.**

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### **Deep Water Reservoirs**

#### **About the Course**

This SBT Petroleum course is an in-depth one that not only provides the background of process sedimentology required to understand deepwater systems but also teaches recognition of sediment gravity flows on sub-surface datasets.

The instructor will bring a teaching collection of seismic lines, well-logs, borehole images, and core images with for participants to work on during exercises.

#### **Course Objectives**

At the end of this course participants should be able to:

- On seismic data: differentiate between Mass Transport Complexes, Sediment Gravity Flows, and Contourites and predict Net: Gross values for each.
- On well-logs: differentiate between channels, lobes, mass transport complexes and contourite deposits.
- In core: identify processes responsible for sedimentary structures, bedforms and lithology and use these to determine environments of deposition and lateral continuity of reservoir.

The deepwater reservoirs course builds on several outcrop analogs.

#### **Course Content**

##### Introduction

- o Basin classification based on substrate
- o Concept of confinement
- o Sequence Stratigraphy

Introduction to deepwater oil and gas exploration, global distribution of prospective deepwater areas, shelf morphology, mobile substrate basins, the concept of confinement, and sequence stratigraphy of deepwater petroleum systems: effects of relative sea-level fall on sediment gravity flows, canyon incision, longshore drift capture, discussion and identification of key surfaces such as the Maximum Flooding Surface

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and Sequence Boundary and their identification in seismic, well-log and core data, autocyclic vs allocyclic changes and their controls on reservoir distribution and architecture, predictive stratigraphic models of Mike Gardner (Build-Cut-Fill and Spill and Adjustment-Initiation-Growth-Retreat).

### Deepwater Processes

- o Sediment Gravity Flows
- o Fluid Gravity Flows
- o Exercise on identification of common deepwater facies in borehole image logs and core

Process sedimentology of deepwater systems: fluid gravity vs sediment gravity flows, hypopycnites, hyperpycnites, debrites, contourites (bottom-current deposits), turbidites, hybrid beds, linked debrites, slurry flows, traction vs suspension bedforms, liquefaction and fluidization, mass transport complexes, slides vs slumps and the effects of processes on reservoir quality. During this session you will learn how to identify deepwater processes by looking at core data and how to use the Kneller-Branney matrix to predict the occurrence of reservoir quality sands in your basin.

### Channels

- o Deepwater channel hierarchy
- o Channel evolution
- o Levees

Deepwater Channel storeys, elements, complexes and complex sets (hierarchy), fill, architecture, evolution, channel-axis vs channel-margin facies, recognition in outcrop, core, well-logs and seismic, assigning risk to drilling deepwater channels, confined vs poorly confined and organized vs disorganized channel belts and the preservation of reservoir quality sands, processes of flow-stripping, elutriation and flow-filtering, differentiating external vs internal levees in deepwater channel levee systems.

### Lobes

- o Lobe hierarchy
- o Facies belts
- o Correlation methods for deepwater sands

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Deepwater lobe beds, lobe elements, lobes, lobe complexes and fans (hierarchy), axis vs fringe facies, architecture, evolution, recognition in outcrop, core, well-logs and seismic. Mud-rich, Sand-rich and Mixed-systems and their characteristics, flow efficiency and its relationship to basin morphology, compensation stacking, changes in reservoir thickness and quality because of lateral and down-dip facies change.

### Exploration and Development

- o Seismic Sequence and Facies Analysis
- o Selection of suitable analogs
- o Geomodelling

How to approach deepwater reservoirs from exploration to development, systematic approach in seismic interpretation of deepwater sedimentary successions, sequence analysis, seismic facies analysis, classification of your deepwater system, selecting modern and ancient analogs, seeking expertise, steps in creating geomodels: creation of facies logs, deriving geometric data such as channel thickness and width, sinuosity, and choosing the best algorithm for modeling deepwater architectural elements.

### Who should attend?

Geoscientists who wish to understand deepwater reservoirs. Geoscientists, petrophysicists and engineers working on deepwater assets

**5 Days**



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## **Introduction to Oil and Gas Industry**

### **Course Description**

This course will show participants a broad overview of the technology and activities in the oil and gas Industry.

At the end of the course, the participants should be able to know the basics of the processes in the petroleum industry which include Geology, Exploration, Drilling, Reservoir, Completion and Workover, Production, Pipelines and Distribution Operations and Economics.

### **Course Outline**

#### **Oil and gas resources; who owns them, who use them?**

- Main producing countries and regions
- Main consumers; established and emergent
- OPEC vs. non-OPEC, NOC vs. IOC
- The exploration and production value chain

#### **The petroleum field life cycle**

- Gaining entry: exploration licence types and agreements
- Exploration and appraisal
- Development and production
- Abandonment

#### **Exploration and Appraisal methods**

- Gravity and magnetic
- Seismic – 2D and 3D
- Drilling, logging and testing

#### **Reserves and resources description**

- Reservoir rock types
- Structures – faults, folds, fractures
- Reservoir fluids and composition
- Drive mechanisms – how does a well flow

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- Volumetric estimates and reserves classification

### **Field development concepts and planning**

- From reservoir to surface – well completions and artificial lift
- Basic processing equipment and flow scheme
- Facilities options and concepts – onshore/offshore
- Evacuation options

### **Oil and gas production**

- Managing the reservoir and wells – workovers / infill wells / EOR
- Managing and maintaining surface facilities
- Managing the export process to refinery

### **Decommissioning and Abandonment**

- Legislation
- Environment
- Decommissioning methods

### **Who Should Attend?**

This Course is good for Scientists and Non-Petroleum Engineers Working in the oil and gas Industry, Technicians, Institutions financing Oil Exploration, and Representatives of Oil Producing Communities etc.

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### **Overview of the Petroleum Industry**

#### **Course Descriptions**

Participants will gain an understanding of Exploration, Appraisal, Development and Production phases with emphasis being placed on actions they can personally take within each phase to support value creation. Through use of lecture, multimedia and class interactive exercises, a breadth of upstream business acumen will be delivered covering economic, business, geoscience and engineering topics. Discussions will include topics related to all types of resource plays including deepwater, shale oil/gas and enhanced oil recovery technologies.

#### **Course Content**

- The Business of E&P
- Hydrocarbon origin
- Exploration - acquisition of exploration/development rights
- Exploration - prospect generation & evaluation
- Appraisal - asset characterization & reserve quantification
- Development - drilling, completion, & facilities
- Produce Asset - recovery optimization strategies.

#### **Who Should Attend?**

Both technical and business-oriented professionals who are either new to the upstream oil and gas industry or experienced in one part but could benefit from a wider point of view. OVP will likewise deliver for non-industry personnel a broad, basic knowledge set of multiple E&P topics. Legal, Financial, Accounting, Management, and Service Company team members will certainly benefit.

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## **Petroleum Geology for Non-Geologists**

### **Course Description**

This course is intended to expose participants to basic Geology and Geophysics principles. Help participants understand the elements of Petroleum system and the relationship between geosciences and petroleum industry.

It focuses on geological and geophysical principles and practices, demonstrates their application to hydrocarbon exploration and production and provides an understanding of the factors and processes involved in the formation of oil and gas fields and their worldwide distribution. It also reviews the recent trends in the global petroleum industry and provides an insight into the operations of the international oil companies.

### **Course Content**

- The Earth: its properties, internal structure and age, Earth sciences: definition and overview, Various types of rocks, their origins and examples, Rocks associated with oil and gas, Sedimentary rocks: their origin, key features and associated terminology, Depositional environments, processes and the concept of facies, Introduction to geological time, principles of stratigraphy and stratigraphic relations, The concepts of relative and absolute time Measurement of geological time, The Uniformitarian Principle, The Law of Superposition, Unconformities, Sequence stratigraphy, Establishing lithostratigraphic and biostratigraphic units, Correlation, Principles of structural geology: various types of geological structures (folds, faults and thrusts) and their relationship to oil and gas occurrence, Definition of oil and gas fields Habitat of oil and gas and factor that control their occurrence, Processes that control the occurrence of oil and gas fields, Geological controls on oil and gas occurrence.
- Sedimentary basins:- Definition, Formation and development, Global distribution, Exploration status, Production status, Association between sedimentary basins and oil and gas occurrence, Overview of plate tectonics Plate tectonics control on the formation, evolution and characteristics of sedimentary, basins, Petroleum substances – chemical composition of oil and gas, Petroleum systems analysis in terms of elements and processes (Source rocks: origin, burial history and maturation, Generation of petroleum, Migration of petroleum, Petroleum reservoir rocks and their properties, Oil and gas traps, Seals), The petroleum play and petroleum events chart.

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- Exploring for oil and gas - sources of data, Acquisition and interpretation of geological and geophysical data, Seismic sequence stratigraphy, Subsurface mapping, Various types of contour maps, Resources and reserves: definitions, classification and quantification, Definition and classification, Reserves estimation (Volumetric (the deterministic and probabilistic methods), Leads and prospects, Risk and risk analysis, Play fairway analysis, Shale oil, shale gas, oil sands, coal bed methane and gas hydrates.
- Acquisition and interpretation of open hole logs, Various types of well logs, Acquisition of well log data, Principles of well log data interpretation, Practical session.
- Some recent trends in the petroleum industry, Importance of oil in modern societies, Overview of prices and politics of oil and gas – historical review of the price of oil over the, The main events of the last decade, Review of the major players in the past 25 years - private oil company rankings in terms, of turnover and market capitalization, State oil company rankings, Biofuels – a panacea? Organisation of Petroleum Exporting Countries (*OPEC*), Definitions of reserves, Global distribution of oil and gas reserves, Sources of information, Giant fields - definition and significance, The world's top 25 oil fields – locations and reserves, Regions of high potential for future discoveries, Global oil and gas production, Oil and gas reserves/production ratios, Future world energy supplies (Concept of '*peak oil and gas*', Review of various '*peak oil and gas*' scenarios, Selected recent publications).

### **Who Should Attend?**

Non-geoscientists with little or no background in the subject, including petroleum engineers, technical assistants involved in the handling of geological and geophysical data, administrative and finance personnel.

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### **Prospect and Play Assessment**

#### **About the Course**

This course offers the industry quantitative, probabilistic play and prospect assessment procedures. In addition, the methods offer measures of the play prospectiveness based on the number and resource size distribution of potential future fields.

#### **Course Content**

- Geological controls of oil and gas occurrence: their impact on exploration risk and success
- Application of volumetric prospect assessments: techniques, comparative data, and graphs to estimate input factors, such as trap volume, porosity, net/gross saturation, hydrocarbon fill fraction, formation volume factors, and recovery.
- Probability methods: the expression of uncertainty for input factors and results including Monte Carlo techniques
- Risk analysis: Principles and practice
- Hydrocarbon charge assessment: procedures for estimating possible amounts of oil and gas generated, migrated, and trapped in prospects
- Prospect assessment workshop: projects supplied either by the instructor or by participants, worked by teams and reported to the entire group
- Play assessment techniques: estimating the possible numbers, sizes, and associated risks for potential fields, with useful data on field densities, field-size distributions, and dependent versus independent risks
- Play recognition and mapping: play classification and subdivision, and play maps that high-grade the most favorable areas with minimal geologic risks
- Play assessment workshop: projects supplied either by the instructor or by participants, worked by teams and reported to the entire group
- Aggregation of assessment results: summing, derisking.
- Limitations, pitfalls, uses, and discovery concepts: the philosophy of judging and using assessment results and the importance of basic geologic concepts

#### **Who Should Attend?**

Geologists, Geophysicists, Exploration Managers, and Asset team members and any other person involved in prospect generation.

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## **Development Geology**

### **About the Course**

Emphasis is placed on rock, log and test data to distinguish reservoir and non-reservoir rock properties. Structural, stratigraphic, deposition and diagenetic concepts are used to locate drill sites and describe reservoirs. The input required to construct a geologic reservoir model is reviewed. Participants will be taken through the importance of modifying development plans as a field becomes more mature.

### **Course Content**

- Characteristics that impact field development
- Determining recoverable hydrocarbons
- Reservoir fluid properties
- Influence of capillarity reservoirs
- Volumetric reserve estimation and calculation
- Stratigraphic influence on production
- Controls on reservoir rock, barriers, and hydrocarbon distribution
- Describing reservoir rock in carbonate and clastic rocks
- Determining recoverable hydrocarbons
- The impact of drive mechanism
- Seismic applications
- Development drilling: optimizing hydrocarbon recovery
- Economic impact on field development
- Subdividing the reservoir into working units
- Reservoir pore space configurations
- Building a static reservoir model using deterministic and stochastic techniques
- Key factors affecting the development of fractured reservoirs
- Impact on barriers on field development
- Secondary and tertiary field development
- Rejuvenating old marginal fields

### **Who Should Attend?**

Designed For Reservoir, development, and exploration geologists; geophysicists; petrophysicists; log analysts; petroleum engineers; and experienced technicians.

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### **Petrophysical Evaluation**

#### **About the course**

Emphasis will be placed on the fact that petrophysics is important in all aspects of the petroleum business. Also, principles, applications, and integration of petrophysical information for reservoir description will be discussed in depth through the combination of class discussion and exercises/workshops. To be learnt also by the participants is how to conduct competent quick-look evaluations. The participants will be taught how to integrate petrophysical information with other data sources and this will improve participants' ability to assess technical risk when examining hydrocarbon opportunities.

#### **Course Content**

- Fundamental concepts of petrophysics
- Depositional systems and petrophysical rock parameters
- Nature of porosity and permeability
- Basic rock properties; theory and quick look techniques
- Mud logging
- Core analysis, acquisition, interpretation, and quality checks
- Theory and basics of resistivity, radioactivity, acoustic tools
- LWD/MWD versus open hole logging
- Determination of rock types using core and logs
- Petrophysical impact on economic uncertainty
- Evolving petrophysical technologies
- Overview of cased hole logging

#### **Who Should Attend**

Geoscientists and engineers with less than twelve months' experience using petrophysical data and other technical staff at all experience levels wanting a fundamental background in the petrophysics discipline.

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### **Sequence Stratigraphy: An Applied Workshop**

#### **About the course**

Sequence stratigraphy, based on its principles and applications, is a powerful tool in exploration and production. Perhaps most importantly, it gives the geoscientist a superior framework for the integration of geologic, geophysical, and engineering data and expertise

#### **Course Objectives**

- Identify unconformities and sequence boundaries.
- Identify parasequences and utilize in correlation
- Identify incised valleys
- Visualize and interpret deep water fans and their geometries
- Recognize seismic signatures of deep-water deposits
- Relate sequence stratigraphy to basin architecture and relative sea levels
- Build predictive stratigraphic models
- Utilize sequence stratigraphy to develop exploration/production strategies

#### **Course Content**

- Seismic geometries
- Unconformities
- Relative sea level
- Eustasy
- Parasequences and their stacking patterns
- Parasequences as a correlation tool
- Relationship of stratigraphic patterns to changes in subsidence rates as driven by regional and earth scale tectonic processes
- Cycle hierarchy
- World-wide cycle chart and its application
- The sequence stratigraphic model
- LST sequence boundaries, incised valleys, slope fans, basin floor fans, and prograding complexes
- TST incised valley fill, source rock and reservoir seal
- HST alluvial, deltaic, shoreline complexes and shelf sands
- Sequence stratigraphy in a mixed clastic/carbonate province
- Exploration and production scaled case histories and strategies

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Geologists, geophysicists, biostratigraphers, and engineers (with some knowledge of geology) needing a fundamental understanding of the principles and applications of sequence stratigraphy.

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## **Integrated Reservoir Modelling: Integration and Evaluation**

### **About the course**

Integration involves using all the available information about the reservoir to develop better understanding of the reservoir. Starting with collecting information and assessing the need for additional data, the course will cover all the topics from structural and geological modeling, estimation of reservoir petrophysical properties using geostatistical tools, upscaling to simulator model and finally, proper history matching and future predictions in the presence of uncertainties. This course is important to reservoir modellers involved in any phase of the description work. This is intended to expose various geoscientists and engineers to the entire process of integrated reservoir description and the geostatistical tools that can be used to achieve the goals. The course will develop improved appreciation of the other disciplines' needs as well as the necessity of the feedback during the integration process.

### **Course Content**

- Basic statistical principles
- Spatial modeling
- Structural modeling
- Estimation of properties at well locations
- Conditional simulation
- Facies/rock type modeling
- Petrophysical properties simulation
- Ranking of realizations
- Construction of simulator input model
- History matching
- Future predictions and quantification of uncertainty

### **Who Should Attend?**

Geologists, geophysicists, engineers, petrophysicists or others involved in reservoir modelling.

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### **Operations and Well Site Geology**

#### **About the course**

After passing through this course, the participants will be able to contribute to the preparation of planned wells and their concurrent operations during the exploration, appraisal, and development phases. As geoscientists, petroleum engineers, well engineers, and production technologists are increasingly assembled in asset, project, or operational teams, they must not only understand each other in technical matters, but should also contribute to each other's efforts in these aspects.

#### **Course Content**

- Petroleum geology and its systems
- Operations geology: prospect to well planning, provision of geological services
- Wellsite geology: geological sampling, sample analysis, and well stratigraphy, cutting, and core description
- Structural geology: fractures, faults, borehole geology
- Drilling Operations: bits, fluids, casing and cement, drilling problems and well control, directional drilling, geosteering
- Logging operations: acquisition, tools, quick look interpretation, MWD/LWD, geosteering
- Well testing & fluids: reservoir properties, rock and fluid interaction, permeability, averaging, data gathering and interpretation
- Impact on FDP: case histories
- Tendering and contracting
- Reporting: geological data, petrophysical data, pressure data
- Exercises: cores, cuttings, quick look, pressures, daily drilling report

#### **Who Should Attend?**

All geoscientists, petroleum engineers, well engineers, and technical personnel, who in the course of their career will attend or direct subsurface and wellsite operations.

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### **Deepwater Petroleum Systems - Fundamentals and Applications**

#### **About the Course**

This course teaches the fundamentals of Petroleum System Analysis (PSA) with an emphasis on deepwater applications. PSA is a relatively new specialization in the field of Petroleum Geology: it investigates the generation of hydrocarbons in the subsurface and tries to reconstruct the filling history of existing oil and gas accumulations with the aim to quantify the charge risk of undrilled prospects. Deepwater environments present the petroleum system analyst with several specific challenges, as source rocks are typically beyond the reach of the drill bit and oil-to-source rock correlations are complicated by oil transformation processes such as remigration and biodegradation.

#### **Course Objectives**

- Define the sequence stratigraphic framework for deepwater settings
- Recognize and distinguish between the four kinds of depositional elements and reservoirs in deepwater on seismic profiles, wireline logs, and their distribution in an overall depositional setting
- Recognize different trap styles in deepwater in different tectonic settings
- Integrate the six elements of the petroleum systems in deepwater to evaluate their relative significance and contribution to the successful exploration in deepwater settings

#### **Course Contents**

- Source Rocks
- Burial, Temperature, Maturity
- Petroleum Geochemistry
- Deepwater Well Evaluations
- Lectures: Deepwater Oil Transformations, Operational Geochemistry
- Applications

#### **Who Should Attend?**

This course is designed for geoscientists working in (deepwater) exploration and their direct supervisors. The course is also very instructive for staff from other disciplines working closely with exploration staff, such as reservoir engineers, petrophysicists and prospect portfolio analysts.

**5 Days**

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### **Prospect Evaluation, Risks and Volumes**

#### **About the Course**

This course deals with how prospect is arrived at and the risk associated with it. A decision to drill an exploration well with the objective to find a new oil or gas field must be based on a sound assessment of the prospect's risks and of the volumes: what is the chance that a well will find hydrocarbons, and how much could it be? Risk and volume assessments form the basis for decisions to drill a well or not, and as such form the link between subsurface evaluation and the business aspects of the petroleum industry. This course explains how risks and volumes can be assessed in a realistic manner, based on a sound understanding of the geological details of the prospect as well as of its regional geological setting and current play understanding.

#### **Course Objectives**

At the end of the course the participants will have a good understanding of the essentials for realistic risk and volume assessments of exploration prospects. The course should allow participants to produce well-considered and realistic assessments for prospects they may be working on, and to understand and constructively challenge risk and volume assessments of colleagues and/or partners/competitors.

#### **Course Contents**

##### Welcome and Introduction

- Risks, Volumes and Uncertainty
- The difference between risk and uncertainty
- Prospects and Plays
- Play maps and demonstration of how understanding of the regional geology, petroleum systems and hydrocarbon plays is an essential element in the assessment of risks & volumes for individual prospects, exercises on the use of play maps for risk assessment
- Prospects and Portfolios
- Prospect maturation workflow, risk profiles and ranking of prospects, risk mitigation, scenarios in prospect assessment: when to use them and when not

##### Traps and Reservoirs

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- Traps
- Risks and uncertainties associated with hydrocarbon traps
- Traps in important hydrocarbon settings
- Trap types in rifts
- Reservoirs
- Risks and uncertainties associated with reservoir rocks
- Reservoirs in important hydrocarbon settings
- Reservoirs in rifts, passive margins, deltas, carbonate provinces and deep-water settings, and their typical characteristics and risks

### Seals, Pressures and Charge

- Seals and pressures
- Mechanisms of seal failure
- Seals and pressures in important hydrocarbon settings
- Seals and pressures in rifts
- Impact of source rock types and timing issues for charge assessment
- Charge in important hydrocarbon settings
- Source rocks and charge in rifts

### Risks and Volumes

- Risk assessment
- Practical exercise in small groups on prospect risk assessment
- Risk assessment continued
- Continuation of exercise
- Volume assessment
- Practical back-of-the-envelope volume calculation exercise
- Volumes an portfolios
- The impact of dependencies between prospects in a portfolio, risking and volume assessment of prospects with stacked reservoir-seal pairs, adding probabilistic prospect volumes statistically correct

### Bringing it all Together

- Exploration economics
- Basics of assessing the economic value of prospects
- Exploration economics Continued
- Geophysical evidence

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- The impact on prospect POS (probability of success) of direct hydrocarbon indicators (DHIs) and/or positive (or negative) evidence from controlled source electromagnetics (CSEM) – consistent with Bayes' theorem, exercises
- Local examples
- An opportunity to discuss examples that participants bring in the context of what was learned during the course

### **Who Should Attend?**

This course is designed in the first place for geoscientists working in exploration, for prospect portfolio analysts and for their direct supervisors. It is also a very instructive course for staff from disciplines working closely with exploration staff, such as reservoir engineers, petrophysicists and geophysicists

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### **Sedimentology and Depositional Environments of Deepwater Deposits**

By the end of this course, the participants will be able to identify the key implications of the inferred characteristics of a clastic or carbonate mass-flow deposit, to communicate effectively about these technical issues with the other disciplines involved in the project and to contribute effectively to managing and mitigating risks to exploration.

#### Deepwater petroleum systems

- Course Intro & refresher on why soft rock geology matters to the Oil Industry
- Deepwater petroleum systems overview, Deepwater source rock systems

#### Deepwater depositional systems

- Participants' learning points from the previous day
- Deepwater mass-flow sediment transport mechanisms
- Deepwater contourite sediment transport mechanisms,
- Deepwater clastic depositional systems

#### Clastic case studies

- Participants' learning points from the previous day
- Gulf of Mexico, Nigeria, Participants' learning points from the previous day
- Refresher on carbonate systems, Carbonate case studies
- Optional workshop module based on Client data [by prior arrangement]
- Sea level and eustasy & Sequence stratigraphy fundamentals

#### Course summary and review of key technical aspects

- Participants' learning points from the previous day
- Course overview and summary, Course test by participants, Close-out

#### **Who Should Attend?**

Everybody that is involved in the order, in deep water exploration and production.

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### **Geostatistical Reservoir Modelling: Standard Approach and Best Practices**

#### **About the Course**

This course shows the importance of geostatistics in static reservoir and dynamic modelling. Participants will learn how to use deterministic and stochastic modelling methodologies to quantitatively integrate diverse data types, model reservoir heterogeneity, assess model uncertainty, and prepare the reservoir model as input to a flow simulator. Emphasis is placed on the best modelling practices and data integration methodologies available. The main tool for the practical session is PETREL.

#### **Course Objectives**

The objective of the course is to provide participants who have experience in building reservoir models, with the solid understanding of the underlying geostatistical methodologies used in Applied Reservoir Modeling.

The course provides discussion of the heart of geostatistics that includes data stationarity, spatial relationship (variogram), estimation (kriging and cokriging), and conditional simulation (SIS, TGS, SGS). Additionally, best practices on the workflow for building reservoir model will be presented. To enhance the understanding of the participants about these topics, the exercise for detail analysis and sensitivity, based on actual field data, is provided.

#### **Course Contents**

- Introduction
  - o From Core to Simulation: An Integrated Reservoir Modelling Workflow
  - o Role of Heterogeneity in Reservoir Modelling, Fundamentals of Geostatistics
- Basic Statistics for Reservoir Modelling
  - o Descriptive Statistics: Univariate and Bi-variate Analysis (Linear Regression)
  - o Inferential Statistics: Random Experiment, Probability and Probability Distribution Function
- Practical Session 1
  - o Advantage and Disadvantage of Linear Regression, Gaussian Transform

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- Data Stationarity
  - o Background Theory: Outlier, Log, Trend (1D, 2D and 3D) and Normal Transforms
  - o Practical Session 2: Performing Data Analysis of Continuous and Discrete Variables
- Spatial Analysis:
  - o Covariance and Variogram in Spatial Space
  - o Variogram Analysis: Definition, Variogram in Practice, Modelling, Anisotropy, and Uncertainty, Practical Session 3: Building Variogram Model
- Deterministic Modelling: Estimation Process (Kriging)
  - o Kriging vs. Conventional Linear Interpolation
  - o Kriging Fundamental: Simple and Ordinary Kriging, Kriging for Geological Facies
  - o Role of Secondary Variable (Seismic and/or Concept):
    - Preparing Secondary Variable, Reconciling Data Resolution
    - Universal Kriging (Trend Method), Co-Kriging and Collocated Cokriging
    - Practical Session 4: Sensitivity of Various Kriging Techniques
- Stochastic Modelling: Stochastic Simulation
  - o Preserving Heterogeneity: Estimation vs. Simulation
  - o Continuous Variable Simulation using Sequential Gaussian Technique
  - o Discrete Variable Simulation using Sequential Indicator and Truncated Gaussian Technique, Co-Simulation Process for Data Integration
  - o Practical Session 4: Sensitivity of Simulation Techniques
- Practical Integrated Reservoir Modelling Process
  - o Structure Modelling, Facies Modelling (Geological Facies and Rock Type)
  - o Property Modelling (Porosity, Permeability, and Saturation)
  - o Volume Calculation and Uncertainty Analysis

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o Moving to Dynamic Model Dynamic Ranking, Upscaling)

### **Who Should Attend?**

This course is important for reservoir modelers or for any geoscientist/engineer involved in an integrated reservoir study.

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### **Basin Analysis Workshop: An Integrated Approach**

#### **About the course**

Basin analysis demands an integrated approach from explorations. It can be both inappropriate and misleading to suggest that the tectonic-thermal-sedimentologic evolution of any one basin is an established fact, or even that all basins submit to the same simple and equivocal models. The participants will be provided with theory, methods, and practice to develop and optimize their own individual basin evaluation and modelling. Incorporated as practical problems for workshop analysis and significant group discussion are case histories from throughout the world utilizing geologic, geophysical, and geochemical data.

#### **Course Objectives**

- Systematically assess the evolution of a basin's conventional and unconventional petroleum system criticals through space and time through a practical application of geology, geophysics, and geochemistry
- Deconstruct a basin through space and time and build predictive basin models useful in exploration
- Evaluate the geomechanical fundamentals controlling a basin's burial history through tectonic subsidence analysis
- Determine the thermal history of a basin and its importance upon source maturity dynamics
- Relate organic source quantity and quality to sedimentary processes and environments
- Delineate migration pathways through space and time
- Characterize clastic, carbonate, and unconventional reservoir criticals
- Evaluate seal/trap quality
- Construct and analyze petroleum events chart
- Geov validate the kinetic model
- Rank and quantify petroleum system risk both deterministically and stochastically using Monte Carlo methods
- Construct and analyze a decision tree with both geologic and economic risk factors
- Classify basins for exploration and development
- Determine within a basin the optimal stratigraphic and spatial location for exploring conventional and unconventional resources

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### **Course Content**

- Introduction to the Petroleum System and Petroleum System Criticals
- Geomechanical fundamentals of basin formation
- Burial history curve
- Tectonic subsidence analysis
- Geothermics: steady state and rifting
- Organic geochemistry: quantity, quality, and maturity
- Migration pathways
- Reservoir-traps-seals and analogs
- Critical points
- Basin classification
- Quantifying uncertainty, minimizing risk, and making decisions
- Synthesis

### **Who Should Attend?**

Geoscientists who require a practical familiarity with the application of a variety of state-of-the-art conventional and unconventional tools of hydrocarbon evaluation to sedimentary basins

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### **Petrophysical Evaluation with Software**

#### **About the course**

Emphasis will be placed on the fact that petrophysics is important in all aspects of the petroleum business. Also, principles, applications, and integration of petrophysical information for reservoir description will be discussed in depth through the combination of class discussion and exercises/workshops. To be learnt also by the participants is how to conduct competent quick-look evaluations. The participants will be taught how to integrate petrophysical information with other data sources and this will improve participants' ability to assess technical risk when examining hydrocarbon opportunities.

#### **Course Objectives**

The course gives insights into the role of borehole measurements in the search for and evaluation of hydrocarbon reservoirs. The course covers several measurement methods, and how these are used to determine important rock parameters such as porosity, permeability, water saturation and the rock types along the borehole.

#### **Course Content**

- Fundamental concepts of petrophysics
- Depositional systems and petrophysical rock parameters
- Nature of porosity and permeability
- Basic rock properties; theory and quick look techniques
- Mud logging
- Core analysis, acquisition, interpretation, and quality checks
- Theory and basics of resistivity, radioactivity, acoustic tools
- LWD/MWD versus open hole logging
- Determination of rock types using core and logs
- Petrophysical impact on economic uncertainty
- Evolving petrophysical technologies
- Overview of cased hole logging

#### **Who Should Attend?**

Geoscientists and engineers with less than twelve months' experience using petrophysical data and other technical staff at all experience levels wanting a fundamental background in the petrophysics discipline. **5 Days**

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### **Operations and Well Site Geology**

#### **About the course**

After passing through this course, the participants will be able to contribute to the preparation of planned wells and their concurrent operations during the exploration, appraisal, and development phases. As geoscientists, petroleum engineers, well engineers, and production technologists are increasingly assembled in asset, project, or operational teams, they must not only understand each other in technical matters, but should also contribute to each other's efforts in these aspects.

#### **Course Objectives**

Participants will learn the techniques used by wellsite geologists in formation evaluation through a combination of lectures and exercises that can typically be done at the wellsite. At the end of the course, the participants should have a good understanding and knowledge of the requirements of both Operations and Wellsite Geology.

#### **Course Content**

- Petroleum geology and its systems
- Operations geology: prospect to well planning, provision of geological services
- Wellsite geology: geological sampling, sample analysis, and well stratigraphy, cutting, and core description
- Structural geology: fractures, faults, borehole geology
- Drilling Operations: bits, fluids, casing and cement, drilling problems and well control, directional drilling, geosteering
- Logging operations: acquisition, tools, quick look interpretation, MWD/LWD, geosteering
- Well testing & fluids: reservoir properties, rock and fluid interaction, permeability, averaging, data gathering and interpretation
- Impact on FDP: case histories
- Tendering and contracting
- Reporting: geological data, petrophysical data, pressure data
- Exercises: cores, cuttings, quick look, pressures, daily drilling report

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### **Who Should Attend?**

All geoscientists, petroleum engineers, well engineers, and technical personnel, who in the course of their career will attend or direct subsurface and wellsite operations.

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### **Clastic Sedimentology for Exploration and Development**

#### **About the Course**

The course covers the basics of clastic sedimentology at scales that are appropriate for both regional exploration and detailed reservoir characterisation. The main types of sedimentary basin are briefly reviewed in the context of crystal dynamics and plate tectonics and the production and transport of clastic material in different tectonic, topographic and climatic settings are described.

The course discusses processes of erosion, transport and deposition of sediments by water and wind. Sedimentary fluid dynamics are related to sedimentary bed forms which, in turn, are related to the lamination and bedding styles that characterise most sandstone. The processes of sediment gravity flows are related to the textures of their products and to the forms of their depositional units. These principles are applied to different depositional settings, focussing on the nature of sediment supply, the distribution of processes in space and time and the resultant organisation of depositional facies. Alluvial, deltaic, coastal, shallow-marine, slope, deep-marine and aeolian settings are all discussed in terms of processes, facies and facies organisation.

#### **Course Objectives**

- Interpret clastic depositional environments using data from cores images, cutting images and wireline logs.
- Apply new sequence stratigraphic concepts to clastic reservoirs.
- Correlate wells using knowledge of depositional environment.
- Predict reservoir size, shape, trend and quality.

#### **Course Content**

As shown in the outline below, for each environment:

- Processes
- Facies and facies distribution
- Base-level, topographic and tectonic controls on sediment distribution
- Sedimentary geometries, source rocks and reservoir sand bodies
- Main constraints on correlation and reservoir modelling
- Types of sedimentary basin in different tectonic contexts

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- The large-scale tectonic setting of the main types of sedimentary basin and the relationship between structural style and patterns of sedimentary fill
- The effects of base-level changes and syn-depositional tectonics on patterns of sediment distribution
- The varying approaches to correlation in different sedimentary settings
- The role of analogues in building reservoir models in different depositional settings

Sediment generation and supply in different settings. Fluid dynamics and rheology of erosion, transport, and deposition. The basic mechanics of sediment erosion, transport, and deposition and resultant bedforms and sedimentary structures. Post-depositional processes and products

- Alluvial, Deltaic

Sediment generation and supply in different settings. Fluid dynamics and rheology of erosion, transport, and deposition. The basic mechanics of sediment erosion, transport, and deposition and resultant bedforms and sedimentary structures. Post-depositional processes and products

- Coastal, Shallow marine

Review of sedimentary environments

Sediment generation and supply in different settings. Fluid dynamics and rheology of erosion, transport and deposition. The basic mechanics of sediment erosion, transport and deposition and resultant bed forms and sedimentary structures. Post-depositional processes and products

- Slope, Deep marine

Sediment generation and supply in different settings. Fluid dynamics and rheology of erosion, transport, and deposition. The basic mechanics of sediment erosion, transport, and deposition and resultant bedforms and sedimentary structures. Post-depositional processes and products

- Aeolian, Lacustrine

**Who Should Attend?**

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Geologist, Geophycists, Petrophycists and Engineers who are involved in exploration in one or the other.

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## **Seismic & Sequence Stratigraphy for Oil & Gas Exploration**

### **About the Course**

This 10-day course is designed to show the participants one of the best ways to reduce uncertainties in oil and gas exploration. The application of seismic and sequence stratigraphy for oil and gas exploration will be highly demonstrated.

### **Course Objectives**

Upon completion of the course, participants will be able to:

- understand the use of sequence stratigraphy as a tool in basin exploration, and describe related workflow structure,
- ensure accurate stratigraphic breakdown of well data,
- manipulate and use a full dataset in an integrated project: well logs, biostrat information, and 2D lines.

### **Course Content**

#### **Sequence Stratigraphy Concepts & Method**

- Shelfal accommodation space. Tectonic, eustasy and sediment control on the stratal and facies stacking pattern of depositional sequences.
- Practical paleontology: Establishment of a chronostratigraphic framework to support well and seismic correlation.
- Precise definitions of paleo-environments and water depths in order to predict reservoir facies.

#### **Well Log & Seismic Responses of Lowstand Systems Tracts**

- LST sequence boundaries, slope fans, basin floor fans and prograding complexes.
- TST & HST basin starvation, source rock and reservoir seal.
- Biostratigraphic signature of lowstand versus transgressive/highstand systems tracts.
- Hierarchy of stratigraphic cycles.

#### **Well Log/Seismic Responses Of Neritic Systems Tracts**

- LST sequence boundaries, incised valley and lowstand prograding complex.
- TST & HST stratal and facies stacking pattern.
- HST alluvial, deltaic, shoreline complexes and shelf sands.

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- Biostratigraphic signature of transgressive and highstand systems tracts.
- Relationship of stratigraphic patterns to changes in subsidence rates as driven by regional and earth scale tectonic processes.

### **Log/Seismic Responses of Neritic Systems Tracts (Alluvial Plain To Delta Front)**

- LST sequence boundaries, incised valleys, major unconformities and prograding complexes.
- TST incised valley fill, shelfal aggradation.
- HST alluvial, deltaic, shoreline complexes.
- Stratal and facies stacking pattern in the alluvial plain.
- Forestepping sequences and major unconformities as driven by regional and earth scale tectonic processes.

### **Log/Seismic Responses Of Neritic Systems Tracts (Siliciclastic Shelf)**

- LST sequence boundaries, incised valleys, major unconformities and prograding complexes.
- TST in shelfal environment (log-to-core scale).
- HST in shelfal environment (log-to-core scale).
- Stratal and facies stacking pattern in a siliciclastic shelfal system.
- Biostratigraphic signature.
- Hierarchy of stratigraphic cycles.
- Exploration & Production consequences and related strategies.

### **Data Integration**

- Interpretation of a set of wireline logs covering the Mesozoic-Cenozoic succession to tie.
- Transgressive/regressive facies cycles and unconformity surfaces. A quantitative paleontological dataset is used to aid in determining maximum flooding surfaces, peak transgression, and unconformities.
- Interpretation of a regional basin-scale seismic line tied to the wells. Mapping of various potential reservoir intervals.
- Data integration: Exploration & Production consequences and related strategies.

### **Who should attend?**

Geologists, geophysicists, production managers and engineers involved in exploration or reservoir characterization.

**10 Days**

### **Fundamental of Formation Evaluation**

### **About the Course**

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This training course provides the participant with an intensive training on the concepts of the petrophysical interpretation and well logging; in-depth understanding of the physical principles of the tools used in the logging operation and will cover the complete interpretation workflow for formation evaluation.

This program is designed in a way to understand the rock and fluid properties; be able to read and interpret well logs; analyze the measurements and run the environmental corrections for the logging tools. The course will include an extensive training for the log analysis starting with lithology identification, shale volume, porosity and water saturation.

The participants will be able to determine the reservoir fluid contacts and free water level; the basic Core analysis studies required for reducing the uncertainty in the log interpretation outputs such as porosity, permeability, and fluid saturation.

### **Course Objectives**

- Understanding the physical principles of main logging tools
- Application of different quality control techniques to validate logging data.
- Perform full log analysis in clastics and carbonate reservoirs.
- Detecting the different reservoir fluid contacts and running pressure analysis
- Calibration of the log analysis using different core measurements.

### **Course Content**

#### **Introduction to Logging Tools and Logging Conveyance**

- GR logging tool
- Resistivity tools
- Density and Neutron logging tools
- Borehole fluid systems and pressure control
- Invasion profile understanding
- Acoustics logging tools
- Advanced logging tools
- Difference between openhole and cased hole logging

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- LWD versus wireline data

### **Log Interpretation Workflow – Shale Volume and Porosity**

- Basic Logs QC/QA, Depth matching, Logs splicing
- Porosity compatible scales
- Crossplots applications in formation evaluation
- Shale volume calculation
- Shale distribution in a reservoir rock
- Porosity evaluation through the different porosity tools
- Gas effect on well logs
- Matrix correction for clastics and dolostone rocks
- Independent porosity tools/core measurements

### **Log Interpretation Workflow - Saturation Determination**

- Water resistivity calculation methods
- Hingle and Pickett Plots
- True resistivity determination
- Clean reservoir versus shaly reservoirs
- Archie equation and Archie parameters
- Saturation in shaly reservoirs – Shaly sand saturation equations
- Effect of cementation factor and saturation exponent on the reservoir saturation
- Independent saturation tools/core measurements

### **Field Life Cycle – The Role of Log Analysis Through the Field Life**

- Exploration versus development petrophysics
- Development of clastics and carbonate reservoirs
- Reservoir Stresses

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- Rock mechanical properties
- Pressure plots
- Determination of the fluid contacts
- Cutoff concepts
- How to determine the reservoir potential
- Permeability Modeling
- Petrophysical inputs for static and dynamic modeling

### **Formation Evaluation Workflows**

- Deterministic analysis
- Clay versus Shale – Difference between the two workflows
- Mineralogical interpretation
- Calibration of the shale volume, porosity and water saturation
- Practical examples/exercises using different well log data in clastic and carbonate reservoirs.
- Analysis using petrophysics Software packages – Concepts and applications.

### **Who should attend?**

Geologists, Reservoir engineers, Geophysicists, Petrophysicists/Log analysts, Geomodellers, Young subsurface professionals

**5 Days**

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## **Integrated Methods for Deep-Water Reservoir Characterization**

### **About the Course**

This course is designed to show what deep-water systems are all about. Deep-water depositional systems form some of the largest petroleum reservoirs on Earth and represent the frontier of oil and gas exploration. However, deep-water depositional systems remain the least well understood because sediment gravity flows, including turbidity currents and hybrid and debris flows, are both infrequent and difficult to predict and monitor, setting them apart from sediment transport processes occurring on mountain tops and shallow marine settings. Therefore, modern seismic data and deep-water outcrops provide prime sources of stratigraphic data used to risk drilling targets and build reservoir models at every phase in the upstream exploration and production process. This course focuses on sub-bed-scale and field-scale architectural elements in deep-water depositional systems and how they affect the main risks in deep-water E&P across the value chain: reservoir presence, deliverability, seal and trap.

### **Course Objectives**

- Describe transport and depositional processes of deep-water strata including turbidites, debrites, and transitional to hybrid flow type deposits.
- Understand the different types of marine depositional environments (deltaic and outer shelf environments and those of submarine fans — canyon, channel, levee, splay, overbank) and their implications to petroleum reservoir architecture and reservoir quality.
- Understand and interpret modern and ancient marine depositional systems.
- Characterize marine stratigraphy and build relationships with depositional environments using outcrop, core, and other oil and gas industry data
- Use lithofacies and stratigraphic architecture to understand variations in deep-water reservoir properties pertaining to petroleum reservoir presence, quality, and seal presence.
- Conceptualize and apply source-to-sink transport and sequence stratigraphic methods to marine and deep-water sediment delivery
- Apply skills in seismic interpretation, reservoir characterization, core analysis, geophysical log interpretation, sequence stratigraphy, play fairway mapping, risk

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and uncertainty analysis, gross depositional environment mapping, and oil and gas exploration methods.

### **Course Content**

#### 1. Introduction to marine depositional systems with a focus on deep-water depositional systems

- Significance of deep-water petroleum reservoirs to the global oil and gas industry
- Scientific and economic drivers for understanding sediment gravity flows and their deposits.
- Sediment gravity flows in action - historic sediment gravity flows from Canada, France, Norway, and United States

#### 2. Reservoir prediction: Transport and sedimentation processes of sediment gravity flows

- Types of mass movement and deep-water deposits
- Physics of sediment gravity flows and rheology, and steady vs uniform flows
- Predictive attributes of deep-water sedimentation to reservoir and seal presence, and reservoir quality

#### 3. Basic building blocks of clastic petroleum reservoirs: The range and variability of deep-water sedimentation units

- High- and low-density turbidity currents and their impacts on petroleum reservoir development
- Bouma and Lowe turbidite models and their application to reservoir characterization
- Debris flows and their impact on submarine fan sedimentation.
- Transitional flows, slurry flows, and hybrid events and their classifications - M & H divisions and their impact on reservoir quality
- Mass-transport deposits (MTD) and review of other sediment remobilization processes, including contour currents and contourite deposits.

#### 4. Source-to-sink concepts and impact on reservoir quality

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- Source-to-sink method application to oil and gas exploration and production
- Paralic and shallow-marine processes of sedimentation
- Facies models and reservoir characterization for shallow-marine environments
- River-, tide-, and wave-dominated deltas, and fan deltas
- What are the different types of clinoforms observed in seismic data, and what is their role in sediment delivery to deep-water basins?
- Incised valleys as prospective oil and gas targets
- Ichnofacies of terrigenous, shallow-marine, and deep-marine depositional environments

5. The five main deep-water depositional environments according to 2D and 3D seismic, outcrop, core, and log data

- Canyons
- Channels
- Levees
- Lobes (splays), with an introduction to deep-water braided channel and lobe systems
- Overbank

6. Scales of petroleum reservoir heterogeneity: Architectural elements

- What are the various methods of stratigraphic interpretation and genetic element classification in reservoir characterization?
- Sub-bed scale architecture and Turbidite Ratios

7. Active margins vs. passive margins: Deep-water sedimentary basins and their facies models

- What are the effects of tectonic setting, shelf geometry, climate, and other critical factors on deep-water sedimentation?
- Rifts
- Range and variability in passive margin facies models

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- Salt and its effects on sediment transport and deposition
- What are typical facies models for active margins? Discuss strike-slip and convergent margins, and hybrid basins associated with active margins.
- Intracratonic basins
- Foreland basins
- Forearc and hybrid basins

### 8. Large-scale drivers of continental margin sedimentation and application of sequence stratigraphic methods to exploration and appraisal

- How was sequence stratigraphy developed by Grabau, Sloss, Mitchum, Vail, Thompson, Hubbard, Van Wagoner, and others? How is it applied? What are the strengths and limitations of a sequence stratigraphic approach?
- AIGR model
- Provenance and source-to-sink methods to understand sediment transfer and application to reservoir presence and reservoir quality.
- How do you know you're in a deep-water depositional system? A review of key similarities and differences with deep-water systems and other systems including fluvial and shallow-marine environments.
- Conclusions and recent advancements in deep-water petroleum reservoirs

### **Who should attend?**

The course is designed for employees of natural resource companies in technical and management positions. Industry professionals will receive an understanding of deep-water sedimentary transport processes and depositional products, as well as knowledgeable insight into the scale and architecture of the wide range of deep-water reservoirs.

**5 Days**



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## **Application of Basin Analysis to Petroleum Play Assessment**

### **About the Course**

*The participants will learn the overview of the essential processes of the formation and evolution of sedimentary basins, and their implications for the development of hydrocarbon resources. The understanding of basin formation and evolution is essential to better detecting the potential areas within a petroleum basin.*

### **COURSE CONTENT**

- **Introduction**
  - Definitions, Concepts and Objectives
- **Basin mapping techniques**
  - Review of exploration concepts
  - Use of geochemistry in regional evaluation & basin analysis.
- **Basin Classification**
  - Lithospheric Stretching, Lithospheric Flexure, Strike-Slip deformation
  - Intracratonic
- **Basin Infill**
  - Sediment Routing & Weathering
- **Basin Stratigraphy**
  - Basin and Associated Stratigraphy
  - Stratigraphic Patterns
  - System Tracts 7 Depositional system
- **Subsidence and Thermal History**
  - Geohistory Analysis
  - Problems Encountered in Geohistory analysis
  - Thermal History
  - Applications
- **Application to Play Assessment**
  - Petroleum systems
  - Petroleum habitat and Niger Delta Case Study

### **Who should attend?**

Geologists and Geophysicists involved in Exploration and Appraisal.

**5 Days**

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### **Structural Geology**

#### **About the Course**

This course focuses on the form, geometry, symmetry, elegance and artistic components of the earth's crust in all scales.

Rifting and extension of the oceanic or continental crust forming deep depressions and concentrated volcano activity. Continuous ascents of hot magma through rocks from great depths towards the earth surface.

#### **Course Content**

- Introduction
- Earth's Interior
- Tectonism
- Geologic Principles
- Classification of Sedimentary Structures
- Identification of Sedimentary Environment Using Sedimentary Structures
- Stress and Strain
- Brittle – Ductile Behaviour of Rocks
- Faults and Fractures - Impact on Hydrocarbon Entrapment and Fluid Flow. Fault Sealing Mechanism. Fracture Mechanics. Analysis of Fault and Fracture Systems
- Folds
- Unconformities
- Structural Analytical Techniques

#### **Who should attend?**

Geologists, geophysicists, structural geologists, and petroleum engineers

**5 Days**

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### **Sedimentology and Sequence Stratigraphy**

#### **About the Course**

Sequence Stratigraphy gives the geoscientist a superior framework for the integration of geologic, geophysical, and engineering data and expertise. Sequence stratigraphy has tremendous potential to decipher the Earth's geological record of local to global changes, and to improve the predictive aspect of economic exploration and production.

The aim of sedimentology, studying sediments, is to derive information on the depositional conditions which acted to deposit the rock unit, and the relation of the individual rock units in a basin into a coherent understanding of the evolution of the sedimentary sequences and basins, and thus, the Earth's geological history as a whole.

#### **Course Content**

- Introduction / Historical Framework
- Methods of Sequence Stratigraphic Analysis
- Accommodation and Shoreline Shifts
- Stratigraphic Surfaces
- Systems Tracts: HST, TST, LST.
- Sequence Models
- Time Attributes of Stratigraphic
- Hierarchy of Sequence and sequence Boundaries
- Relevance of Sequence Stratigraphy on Reservoir Geology.
- Definition and concept of sedimentology
- Nature, origin, internal organization, & structures of sedimentary rocks
- Texture of sediments, volcano-sediments, limestones and dolomites
- Geometry of sedimentary bodies
- Provenance, paleocurrents and paleogeography
- Environmental analysis, Tectonics

#### **Who should attend?**

Geologists, Geophysicists, reservoir and production engineers, Supervisors and managers in exploration and development departments, and research personnel

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### **Concept in Reservoir Static Modelling/Reservoir Static Modelling with Petrel**

#### **About the Course**

The participants will learn the process and procedures of 3D static reservoir modeling. The general principles will be discussed irrespective of the software to be used. However, the practical session will be demonstrated with PETREL. The best way to manager oil and gas reservoir well is to understand the reservoir. To understand the reservoirs, it must be modelled. The importance of environment of deposition will be emphasised.

#### **Course Content**

- Introduction
- Data input, 3D visualization and quality control
- Well correlation
- Structural modeling, Depth conversion
- Data analysis
- Geostatistical Approach
  - Principles of statistics
  - Measuring uncertainty
  - Spatial relationships: estimation and modelling
  - Conventional estimation techniques
  - Conditional simulation techniques
  - Grid based simulation techniques
  - Kriging and Co-Kriging
  - What is stochastic/deterministic modeling.
  - What is stochastic/deterministic modeling
  - Markov chain analysis
  - Monte Carlo simulations
  - Genetic algorithms
- Petrophysical property modeling
- Volumetrics and Upscaling
- Data export

#### **Who should attend?**

Geologists, Geophysicists, Reservoir Engineers

**5 Days**

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### **Operation Geology**

#### **About the Course**

This course is designed in a way that at the end of this integrated course, participants will be able to contribute effectively to the preparation of planned wells and their concurrent operations during the exploration, appraisal, and development phases. As geoscientists, petroleum engineers, well engineers, and production technologists are increasingly assembled in asset, project, or operational teams they must not only understand each other in technical matters, but should also contribute to each other's efforts in these aspects: a driller should know why it is important to cut a core or log a particular interval despite potential drilling problems, and geoscientists should understand drilling operations and their inherent hazards and problems. All should be able to understand and prepare daily drilling reports with a full appreciation of the various subjects. Cuttings, cores, logs, and well tests should be analysed, cross-correlated, and compiled to mesh with prognoses and existing data to effectively manage the impact on the field development plan. Correct procedures in tendering and contracting should be followed to minimize the duration of the operations and to maximize the quality of the operations services provided.

#### **Course Objectives**

- Plan and prepare for a drilling location and for geological services.
- Identify drilling operations and geological drilling hazards.
- Understand and apply logging services.
- Understand well testing services.
- Evaluate drilling reports.
- Describe drilling cuttings and cores.
- Evaluate the impact on the field development plan.
- Prepare and compile operations reports.

#### **Course Content**

- Petroleum geology and its systems

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- Operations geology: prospect to well planning, provision of geological services
- Wellsite geology: geological sampling, sample analysis, and well stratigraphy, cutting, and core description.
- Structural geology: fractures, faults, borehole geology
- Drilling Operations: bits, fluids, casing, and cement, drilling problems and well control, directional drilling, geosteering
- Logging operations: acquisition, tools, quick look interpretation, MWD/LWD, geosteering
- Well testing & fluids: reservoir properties, rock and fluid interaction, permeability, averaging, data gathering and interpretation.
- Impact on FDP: case histories
- Tendering and contracting
- Reporting: geological data, petrophysical data, pressure data
- Exercises: cores, cuttings, quick look, pressures, daily drilling report

### **Who should attend?**

All geoscientists, petroleum engineers, well engineers, and technical personnel, who in the course of their career will attend or direct subsurface and wellsite operations.

**5 Days**

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### **Sequence Stratigraphy: Principles and Applications.**

#### **About the course**

Sequence stratigraphy, based on its principles and applications, is a powerful tool in exploration and production. Perhaps most importantly, it gives the geoscientist a superior framework for the integration of geologic, geophysical, and engineering data and expertise.

#### **Course Objectives**

The following will be the main objectives of this course:

- Identify unconformities and sequence boundaries.
- Identify parasequences and utilize in correlation.
- Identify incised valleys.
- Visualize and interpret deep water fans and their geometries.
- Recognize seismic signatures of deep-water deposits.
- Relate sequence stratigraphy to basin architecture and relative sea levels.
- Build predictive stratigraphic models.
- Utilize sequence stratigraphy to develop exploration/production strategies.

#### **Course Content**

- Seismic geometries
- Unconformities
- Relative sea level
- Eustasy
- Parasequences and their stacking patterns
- Parasequences as a correlation tool
- Relationship of stratigraphic patterns to changes in subsidence rates as driven by regional and earth scale tectonic processes.
- Cycle hierarchy
- World-wide cycle chart and its application
- The sequence stratigraphic model
- LST sequence boundaries, incised valleys, slope fans, basin floor fans, and prograding complexes
- TST incised valley fill, source rock and reservoir seal
- HST alluvial, deltaic, shoreline complexes and shelf sands
- Sequence stratigraphy in a mixed clastic/carbonate province

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- Exploration and production scaled case histories and strategies

### **Who Should Attend?**

Geologists, geophysicists, biostratigraphers, and engineers (with some knowledge of geology) needing a fundamental understanding of the principles and applications of sequence stratigraphy.

**5 Days**



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### **Seismic Data Acquisition, Processing, and Interpretation**

#### **About the Course:**

This course is designed to provide a rigorous and applied training in the methods and techniques used to investigate sedimentary basins in terms of their hydrocarbon potential. It takes participants through seismic data acquisition, processing and interpretation. It also provides the participants with a rigorous and applied training in the concepts of 3D seismic interpretation and practical workstation-based seismic interpretation and visualization techniques.

#### **COURSE CONTENT**

- ❑ Acquisition of, and standard processing involved in, land and marine 2D and 3D reflection seismic.
- ❑ Advanced seismic techniques (pre-stack depth migration, synthetic seismograms, VSPs, AVO, etc).
- ❑ 2D and 3D seismic interpretation.
- ❑ Direct Hydrocarbon Indicators (DHI's).
- ❑ Seismic time to depth conversion and map contouring.
- ❑ Integration of aeromagnetic, gravity and remotely sensed data.
- ❑ Overview of the seismic signal (amplitude, frequency, phase etc) and their geological significance / resolution.
- ❑ Computer-based interpretation I: standard horizon and fault mapping.
- ❑ Computer-based interpretation III: seismic attributes.
- ❑ 3D visualization of seismic data and interpretations.

#### **Who should attend?**

Geologists, Geophysicists, Reservoir Engineers, Technical Support Personnel and Managers

**5 Days**

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## **Seismic Interpretation Fundamentals**

### **About the Course**

It is a critical step in evaluating the subsurface. Interpretation turns the large investments in seismic data acquisition and processing into value. This gives rise to a geological subsurface model that can be used for making well considered E&P decisions with major investment consequences. Seismic interpretation therefore plays a pivotal role in the E&P workflow, and it is essential that staffs involved are well educated in the principles of seismic interpretation.

### **Course content**

- Basics: geological controls on the propagation, reflection, and refraction of seismic waves
- Data acquisition and processing with emphasis on its potential impact on interpretation
- 2D and 3D interpretation techniques
- Seismic interpretation of different structural styles: extensional, compressional, strike-slip, inverted, salt, and gravity dominated basins
- Seismic velocities
- Sequence stratigraphy and seismic facies analysis
- Acoustic impedance
- DHI's
- AVO

### **Who should attend?**

Geologists, geophysicists and petroleum engineers involved in the interpretation of 2D and 3D seismic data.

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### **Practical Seismic Interpretation with Petrel**

#### **About the Course**

The main tool for this practical course is PETREL. The course will cover the essential Geological and Geophysical information necessary to visualize and interpret seismic data. The participants will gain a solid understanding of the applications and role of the seismic interpreter in studies that involve post-stack seismic attributes, AVO, seismic sequence stratigraphy, seismic geomorphology, 4D time-lapse seismic, and multidisciplinary integration.

A significant percentage of the course is dedicated to reinforcement and advancement of interpretation techniques using practical exercises. This will guide the participants in the understanding that the integration of all available data into the seismic model will add value in the needed coherent and successful seismic predictions that result from an interpretation.

#### **Course Objectives**

The main objective of this course is to provide E&P professionals with the opportunity to develop hands-on experience of various Seismic Interpretation techniques using the PETREL software package. The course will cover the essential Geological and Geophysical information necessary to visualize and interpret seismic data. The participants will gain a solid understanding of the applications and role of the seismic interpreter in studies that involve post-stack seismic attributes, AVO, seismic sequence stratigraphy, seismic geomorphology, 4D time-lapse seismic, and multidisciplinary integration.

### **COURSE CONTENTS**

#### **Introduction to Seismic Interpretation**

- Basics: geological controls on the propagation, reflection, and refraction of seismic waves
- Data acquisition and processing with emphasis on its potential impact on interpretation
- Difference between 2D and 3D data

#### **3D Seismic Interpretation**

- Data Importation and its challenges
- Automated Fault Mapping and Fault Attributes
- Fault Interpretation

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- Synthetic Seismogram Generation, Seismic to Well Tie
- Horizon Interpretation
- Time Map Generation
- Velocity Modelling
- Depth Conversion Overview
- Hydrocarbon Volumetric Estimations

### **Attributes**

- Seismic Attributes – Spectral Attributes Relative Acoustic Impedance
- Spectral Decomposition – Reservoir Thickness Estimate and Spectral Attributes
- Direct Hydrocarbon Indicators (DHI)

### **Who Should Attend?**

Geologists and Geophysicists who are aspiring to be seismic interpreters.

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### **Integrated Reservoir Modelling**

#### **About the Course**

Understanding reservoirs is as important as anything in managing the reservoirs. Participants will be shown the importance of a proper development of reservoir description which is helpful in managing daily operations of the asset, as well as long-term planning. Integration involves using all the available information about the reservoir to develop better understanding of the reservoir. This process is inherently interdisciplinary and requires understanding of all the disciplines. Starting with collecting information and assessing the need for additional data, the course will cover all the topics from structural and geological modeling, estimation of reservoir petrophysical properties using geostatistical tools, upscaling to simulator model and finally, proper history matching and future predictions in the presence of uncertainties. This course is important to reservoir modellers involved in any phase of the description work.

#### **Course Content**

- Basic statistical principles
- Spatial modeling
- Structural modeling
- Estimation of properties at well locations
- Conditional simulation
- Facies/rock type modeling
- Petrophysical properties simulation
- Ranking of realizations
- Construction of simulator input model
- History matching
- Future predictions and quantification of uncertainty

#### **Who Should Attend?**

Geologists, geophysicists, engineers, petrophysicists or others involved in reservoir modelling.

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## **Geostatistical Reservoir Modelling: Standard Approach and Best Practices**

### **About the Course**

This course shows the importance of geostatistics in static reservoir and dynamic modelling. Participants will learn how to use deterministic and stochastic modelling methodologies to quantitatively integrate diverse data types, model reservoir heterogeneity, assess model uncertainty, and prepare the reservoir model as input to a flow simulator. Emphasis is placed on the best modelling practices and data integration methodologies available. The main tool for the practical session is PETREL.

The objective of this 5-day course is to provide participants who have experience in building reservoir models, with the solid understanding of the underlying geostatistical methodologies used in Applied Reservoir Modeling.

### **Course Contents**

- Introduction
  - o From Core to Simulation: An Integrated Reservoir Modelling Workflow
  - o Role of Heterogeneity in Reservoir Modelling, Fundamentals of Geostatistics
- Basic Statistics for Reservoir Modelling
  - o Descriptive Statistics: Univariate and Bi-variate Analysis (Linear Regression)
  - o Inferential Statistics: Random Experiment, Probability and Probability Distribution Function
- Practical Session 1
  - o Advantage and Disadvantage of Linear Regression, Gaussian Transform
- Data Stationarity
  - o Background Theory: Outlier, Log, Trend (1D, 2D and 3D) and Normal Transforms
  - o Practical Session 2: Performing Data Analysis of Continuous and Discrete Variables
- Spatial Analysis:
  - o Covariance and Variogram in Spatial Space

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o Variogram Analysis: Definition, Variogram in Practice, Modeling, Anisotropy, and Uncertainty, Practical Session 3: Building Variogram Model

- Deterministic Modelling: Estimation Process (Kriging)

- o Kriging vs. Conventional Linear Interpolation

- o Kriging Fundamental: Simple and Ordinary Kriging, Kriging for Geological Facies

- o Role of Secondary Variable (Seismic and/or Concept):

- Preparing Secondary Variable, Reconciling Data Resolution

- Universal Kriging (Trend Method), Co-Kriging and Collocated Cokriging

- Practical Session 4: Sensitivity of Various Kriging Techniques

- Stochastic Modelling: Stochastic Simulation

- o Preserving Heterogeneity: Estimation vs. Simulation

- o Continuous Variable Simulation using Sequential Gaussian Technique

- o Discrete Variable Simulation using Sequential Indicator and Truncated Gaussian Technique, Co-Simulation Process for Data Integration

- o Practical Session 4: Sensitivity of Simulation Techniques**

- Practical Integrated Reservoir Modelling Process

- o Structure Modelling, Facies Modelling (Geological Facies and Rock Type)

- o Property Modelling (Porosity, Permeability, and Saturation)

- o Volume Calculation and Uncertainty Analysis

- o Moving to Dynamic Model Dynamic Ranking, Upscaling)

### **Who Should Attend?**

This course is important for reservoir modelers or for any geoscientist/engineer involved in an integrated reservoir study.

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### **Integrated Reservoir Study**

#### **About the Course**

The purpose of this course is to acquaint petroleum geologists and engineers with techniques used to characterize hydrocarbon reservoirs, with specific focus on the construction of static and dynamic reservoir models. The overall objectives will be to improve production rates, ultimate recovery, and field economics by identifying potential for infill drilling, recognizing bypassed hydrocarbons, and increasing recovery efficiency.

#### **Course Objectives**

Participants will learn about the data required and the processes that should be followed when conducting an integrated reservoir study. The goal of this will be to optimize the reservoir depletion, and plan or institute enhanced recovery operations. Instructors will outline and describe the procedures for integrated reservoir evaluation and use case histories and exercises to illustrate the key points.

#### **Course content**

##### Introduction

- Course Introduction
- Static Modeling
- Structural Framework
- Stratigraphic Framework

##### Facies Modeling

- Depositional Systems
- Pore Systems
- Petrophysics
- Geophysics

##### Property Modeling

- Property modeling methods
- PVT Properties

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- Capillary Pressure and Relative Permeability
- Reservoir Drive Mechanisms

### Dynamic Reservoir Model

- Upscaling
- Dynamic Model Initialization
- Building the dynamic reservoir model

### Performance Forecasting and Economic Modeling

- Performance forecasting
- Reservoir optimization
- Economic modeling

### **Who should attend?**

Geoscientists and petroleum engineers responsible for conducting comprehensive reservoir studies.

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### **Production Geology for Other Discipline**

#### **About the course**

There are a lot of confusions between engineers and geoscientists most of the time. Have you ever wondered why it seems like Geologists rarely give you a straight answer? Do they appear to be constantly avoiding direct answers to apparently simple questions? Are there never-ending qualifiers tacked to the answers they provide? "Usually, for the most part, chances are, often, almost all the time, maybe, could be, should be, can be, it depends..." What do you do with the ranges of the interpretations offered? This course will clear these questions... you will understand what makes the production geosciences tick; you will be able to phrase the appropriate questions, and then you will be able to deal with the answers. Geological factors bear directly on and usually control engineering activities such as drilling, logging, testing, completion, development, and production.

#### **Course Content**

- Correlation and stratigraphy
- Structural interpretation/Seismology
- Clastic/carbonate deposition including an introduction to Unconventional Reservoirs
- Reservoir geology, Reservoir characterization and modeling
- Volumetrics
- Well planning, Reservoir appraisal.
- Field development and Uncertainty analysis

#### **Who Should Attend?**

Production/completion/reservoir engineers, financial staff, professional staff from disciplines other than geology, and managers involved with reservoir management, and development/production, who might require an understanding of geological data, its variability, and the effects of the data, and its interpretation, on their projects and jobs. This course is also appropriate for geologists early in their career development that are slated for production or development positions.

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### **Well Log Interpretation**

#### **About the Course**

The physics of logging measurements is related to everyday tools and applications. Participants develop an appreciation for the constraints and limitations of operating in the borehole environment. A number of actual log examples are related to basic principles in the description of reservoir properties such as porosity, mineralogy, formation factor, saturation, and hydrocarbon type for essentially clean reservoirs.

#### **Course Content**

- Logging objectives, Invasion profile
- Challenge of borehole geophysics
- Passive electrical properties of earth materials
- Resistivity measuring tools, normal, induction, laterolog
- Reservoir/non-reservoir discrimination
- Matrix-sensitivity logs, GR, SGR, Pe, Depth measurements and control
- Borehole callipers, Porosity-mineralogy logs, density, neutron, sonic
- Porosity determination in clean formations, Formation resistivity factor
- Conductivity of shales
- Porosity log crossplots and mineralogy identification
- Partially saturated rock properties and Archie Equation
- Linear movable oil plot,
- Reconnaissance techniques, Rwa, FR/FP, logarithmic scaler
- Porosity-resistivity crossplots, Permeability relationships
- Nuclear magnetic resonance, Use of pressure measurements
- Computerized log evaluation, Sidewall coring
- Recommended logging programs

#### **Who Should Attend?**

Petrophysicists, geologists, geophysicists, engineers, technicians, or anyone interested in a solid understanding of the principles of borehole geophysics.

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## **Sequence Stratigraphy: Principles and Applications.**

### **About the course**

Sequence stratigraphy, based on its principles and applications, is a powerful tool in exploration and production. Perhaps most importantly, it gives the geoscientist a superior framework for the integration of geologic, geophysical, and engineering data and expertise.

### **Course Content**

- Seismic geometries
- Unconformities
- Relative sea level
- Eustasy
- Parasequences and their stacking patterns
- Parasequences as a correlation tool
- Relationship of stratigraphic patterns to changes in subsidence rates as driven by regional and earth scale tectonic processes
- Cycle hierarchy
- World-wide cycle chart and its application
- The sequence stratigraphic model
- LST sequence boundaries, incised valleys, slope fans, basin floor fans, and prograding complexes
- TST incised valley fill, source rock and reservoir seal
- HST alluvial, deltaic, shoreline complexes and shelf sands
- Sequence stratigraphy in a mixed clastic/carbonate province
- Exploration and production scaled case histories and strategies

### **Who Should Attend?**

Geologists, geophysicists, biostratigraphers, and engineers (with some knowledge of geology) needing a fundamental understanding of the principles and applications of sequence stratigraphy.

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### **Sandstone Reservoirs**

#### **About the course**

This course focuses on methods that can be used to improve the prediction of reservoir size, shape, trend, and quality through detailed analysis of depositional environments. The sedimentary characteristics of each of the principal clastic depositional systems are presented in detail, using examples from recent environments, outcrops, cores, wireline logs, and test/production data from oil and gas fields in various parts of the world

#### **Course Content**

- Genetic stratigraphic analysis
- Depositional architecture, Basins and units
- Wireline logs and conventional cores
- Seismic and sequence stratigraphy, Recognition of depositional systems
- Process-response facies models, Integrated genetic stratigraphy
- Analysis of clastic depositional systems
- Alluvial fan, Fluvial, Eolian, Deltaic, Shoreline, Shelf
- Deepwater systems, Incised sequences
- Shelf margins and linked downslope systems
- Characteristic log patterns, Flow units
- Prediction of reservoir size, shape, trend, quality
- How to select optimum well locations
- Lateral continuity and quality of seals
- Sedimentary controls on porosity, permeability, saturation
- Reservoir exploration and production case histories
- Exploration and production scaled case histories

#### **Who Should Attend?**

Geologists, geophysicists, petrophysicists, reservoir and production engineers, exploration-production managers, all team members involved in reservoir characterization, and technicians working with clastic reservoirs.

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### **Foundation of Petrophysics**

#### **About the course**

Emphasis will be placed on the fact that petrophysics is important in all aspects of the petroleum business. Also, principles, applications, and integration of petrophysical information for reservoir description will be discussed in depth through the combination of class discussion and exercises/workshops. To be learnt also by the participants is how to conduct competent quick-look evaluations. The participants will be taught how to integrate petrophysical information with other data sources and this will improve participants' ability to assess technical risk when examining hydrocarbon opportunities.

#### **Course Content**

- Fundamental concepts of petrophysics
- Depositional systems and petrophysical rock parameters
- Nature of porosity and permeability
- Basic rock properties; theory and quick look techniques
- Mudlogging
- Core analysis, acquisition, interpretation, and quality checks
- Theory and basics of resistivity, radioactivity, acoustic tools
- LWD/MWD versus open hole logging
- Determination of rock types using core and logs
- Petrophysical impact on economic uncertainty
- Evolving petrophysical technologies
- Overview of cased hole logging

#### **Who Should Attend?**

Geoscientists and engineers who are interested in knowing what petrophysics all about is.

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## **Petrophysical Properties: Core, Log & Test Data Integration for Reservoir Modelling**

### **About the Course**

This course is designed to integrate all the petrophysical data and make sure that they agree with one another before using them for reservoir modelling. The course will also show the areas where there may likely be disagreement and how to handle such situation. Since all the petrophysical data are coming from the same reservoir, it is expected that they will all agree with one another and this should be the case before we can go ahead and use such data as input for reservoir modelling. This course will show the participants how to use one data set to QC the other and at the end of the day they will give a better picture about the reservoir.

### **Course Objectives**

Upon completion of the course, participants will be able to:

- deduce reservoir properties from log interpretation and compare results to core measurements,
- define rock-types, determine electro-facies and derive K-Phi relationship,
- integrate cores, logs and well tests data for reservoir modeling.

### **Course Content**

#### **Reservoir Properties from Conventional & Special Core Analysis**

- Core studies.
- Structure and properties of porous materials: porosity, permeability, grain density.
- Saturation, wettability, relative permeability and capillary pressure.
- Electrical properties (m and n exponents).
- *Real case study: petrophysical synthesis.*

#### **Reservoir Properties from Log Evaluation**

- Seals, reservoirs, and fluid characteristics.
- Wireline logging operations and logs.
- Open hole log interpretation methodology.
- Determination of reservoir properties from log interpretation: lithology, porosity and water saturation (case study).
- Quantitative log analysis.
- Core - Log correlation and comparison of petrophysical results to core data.

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- Permeability estimation from logs and core data.
- *Real case study.*

### **Rock-Typing**

- Introduction to rock-typing and bases of electro-facies analysis.
- Electrofacies identification techniques: non-supervised and supervised approach.
- Connection with both geological and reservoir models building process.
- *Real case study: correlate, combine and integrate consistent information from logs, core description and petrophysics.*

### **Well Testing**

- Well test introduction and generalities.
- Well test interpretation methods.
- Examples and type curves.
- *Real case study: well test interpretation and integration with petrophysics.*

### **Data Integration for Reservoir Modelling**

- Introduction to integration for reservoir modeling.
- Geological model review: structural model, stratigraphic model and petrophysical model.
- Reservoir, geological and petrophysical synthesis.
- Gridding and upscaling.

### **Who Should Attend?**

This course provides a deep understanding of the methods used to measure reservoir petrophysical properties from cores, logs and well tests data and, ultimately, correlate and integrate results for reservoir characterization and modelling.

**5 Days**

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### **Reservoir Geology**

#### **Reservoir geology**

An understanding of the geology of the reservoir is essential to its development, production, and management. This includes both the external geology of the reservoir — what created the hydrocarbon trap — and the internal geology of the reservoir — the nature of the rocks in which the hydrocarbons exist. This course focuses on what an engineer needs to know about the external and internal geology to understand the reservoir from which he or she is planning to produce hydrocarbons.

#### **Course Content**

- Concept of reservoir rock study
- Properties of reservoir rocks
- Identification and characterization of reservoir rocks
- Trapping mechanisms
- Hydrostatics
- Reserve Estimation
  - Recovery techniques: geological consideration
- Review of seismic techniques
- Introduction to Sequence stratigraphy

#### **Who Should Attend?**

Geologists and Engineers who aspire to know about the geology of reservoirs.

**5 Days**



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## **Introduction to Subsurface Mapping**

### **ABOUT THE COURSE**

Construction of maps and sections of the subsurface, including integration of seismic and well data, forms an important part of the evaluation. The result should also provide illustration material on which management should be able to make decisions.

Computers are frequently used to construct subsurface models and calculate reserves. A check for consistency with structural models, and against a quick manual evaluation should always be done. This course provides the tools for this.

At the end of the course participants will be able to apply geological concepts, construct maps and sections and validate computer-generated interpretations. They will be able to calculate subsurface volumes and assess their uncertainties. They will develop knowledge on faults dimensions and properties and learn how to perform fault seal analysis. They will acquire practical experience by working on actual field studies in teams.

### **COURSE OBJECTIVES**

At the end of the course participants will be able to apply geological concepts, construct maps and sections and validate computer-generated interpretations. They will be able to calculate subsurface volumes and assess their uncertainties. They will develop knowledge on faults dimensions and properties and learn how to perform fault seal analysis. They will acquire practical experience by working on actual field studies in teams.

### **COURSE CONTENT**

The role of subsurface maps and models in E&P projects

Concepts of petroleum geology, structural regimes

- Hydrocarbon basins/plays
- Plate tectonics, structural regimes
- Sedimentary cycles and sequences
- Sedimentary environments overview

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- Origin of hydrocarbons, source-rocks and maturity
- Hydrocarbon traps, spill-points
- Hydrocarbon basins, basin analysis

### Seismic and reservoir property data

- Seismic data gathering, processing and interpretation
- Exercise: Interpretation seismic line France
- Robin Field Exercise: Field reserves and appraisal
- Reservoir properties, data gathering and mapping
- Exercises: porosity and thickness maps

### Structural styles, maps, and sections

- Robin Field Exercise: Correlation
- Structural styles, stresses, and pressures
- Three exercises: structural interpretation of seismic, Nigeria, France and the North Sea
- Robin Field Exercise: Structural map and section

### Volumetric calculations

- Robin Field Exercise: Integration of pressure data
- Volumetric calculations, subsurface uncertainties
- Tulip Field Exercise: Net sand map and volumetric
- Robin Field Exercise: Field volumetric calculations

### Faults, fault seals and rift basins

- Faults, fault constructions and fault sealing
- Exercise: Dipmeter interpretation.
- Robin Field Exercise: Subsurface development

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- Lacustrine basins, field examples.
- Course review and round-up

### **WHO SHOULD?**

All the geologists, geophysicists and engineers who are involved in exploration and production.

**5 Days**



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## **Reservoir Characterization and Geological Modelling**

### **About the Course**

This course shows the importance of characterization in static reservoir and dynamic modelling. Participants will learn how to use deterministic and stochastic modelling methodologies to quantitatively integrate diverse data types, model reservoir heterogeneity, assess model uncertainty, and prepare the reservoir model as input to a flow simulator. Emphasis is placed on the best modelling practices and data integration methodologies available. The main tool for the practical session is PETREL.

### **Course Objectives**

- understand the analysis methods and techniques applied to reservoir modeling with related challenges,
- analyze and interpret a dataset and integrate it in order to elaborate a reliable static model,
- build a consistent geological static model with heterogeneities affecting fluid flow and production,
- assess the uncertainty and risks to reduce them and thus optimize investments.

### **Course Content**

- Reservoir Characterization Tools
  - Introduction to reservoir characterization.
  - Well logging & qualitative log interpretation.
  - Stratigraphy and sedimentology of siliciclastic reservoirs.
  - Fundamentals of facies analysis & rock-typing.
- Reservoir Modeling & Volumetric
  - Petroleum geostatistics.
  - Geological modeling workshop for integrated reservoir studies.

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- Hydrocarbons accumulations, reserves estimation, risk analysis and uncertainties.
- Petrophysical properties: core, log and test data integration for reservoir modeling.

### **Who should attend?**

Geoscientists, engineers, experienced technicians involved in multidisciplinary teams, willing to widen their knowledge and acquire practical know-how in geological modelling.

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### **Petroleum Exploration and Production**

This course is designed to show what petroleum exploration and production are all about. The course content is designed to expose the participants to the full life cycle of the oil and gas industry. Participants will understand the functions of companies involved throughout the cycle and their roles and responsibilities.

The course will provide an overview of technologies, workflows and processes that enable the oil and gas industry to explore, appraise, develop and produce hydrocarbons. Throughout the course, participants will learn the risks and rewards associated with the industry along with their social, environmental and financial impacts.

#### **Course Content**

##### **Industry Overview, Geology, and Exploration**

In day one, an overview of the upstream oil and gas industry is presented, including extensive discussion of the upstream lifecycle. The participants are exposed to the definition of hydrocarbon deposits and the key phases of the reservoir life cycle. The principles of Exploration Geology and Geophysics are covered, as well as exploration business processes and risk assessment. The day will end with a workshop using an interactive challenge.

##### **Drilling, Appraisal, and Understanding the Reservoir**

In day two, an overview of well design, drilling, and the various types of drilling rigs and contracts are discussed. The purpose, tools and techniques of appraisal are presented and personnel who would evaluate the reservoir including testing and gathering of information are also explored. The origins of petroleum reservoirs, how these reservoirs are found and how the properties are evaluated is presented as part of understanding the reservoir. The day will end with a workshop using an interactive challenge.

##### **Completions, FDP, and Facilities**

In day three, the process of completion and the technology used is presented. The many technologies and processes that are utilized in the field development planning process are also discussed, including economic justification of development. The basic types of facilities configurations and equipment included are explored and the day ends with a workshop using an interactive challenge.

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### **Production, Case Studies, and Conclusion**

In day four, the course will review personnel and companies involved in production. Consequently, participants will be exposed to technologies and processes required to prepare and produce well fluids; process the recovered fluid to separate oil, gas and water and sell oil and gas and dispose or reinject water. Furthermore, the course will cover how to minimize operating expenses; monitor and maximize production; and eventually abandon a well. The participants will then be involved in a workshop using an interactive challenge.

### **Who Should Attend?**

It is for everybody who wants to be aware of what oil and gas exploration and production are all about.

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## **Basin Analysis Workshop: An Integrated Approach**

### **About the course**

Basin analysis demands an integrated approach from explorations. It can be both inappropriate and misleading to suggest that the tectonic-thermal-sedimentologic evolution of any one basin is an established fact, or even that all basins submit to the same simple and equivocal models. The participants will be provided with theory, methods, and practice to develop and optimize their own individual basin evaluation and modeling. Incorporated as practical problems for workshop analysis and significant group discussion are case histories from throughout the world utilizing geologic, geophysical, and geochemical data.

### **Course Content**

- Introduction to the Petroleum System and Petroleum System Criticals
- Geomechanical fundamentals of basin formation
- Burial history curve
- Tectonic subsidence analysis
- Geothermics: steady state and rifting
- Organic geochemistry: quantity, quality, and maturity
- Migration pathways
- Reservoir-traps-seals and analogs
- Critical points
- Basin classification
- Quantifying uncertainty, minimizing risk, and making decisions
- Synthesis

### **Who Should Attend?**

Geoscientists who require a practical familiarity with the application of a variety of state-of-the-art conventional and unconventional tools of hydrocarbon evaluation to sedimentary basins

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### **Sequence Stratigraphy: An Applied Workshop**

#### **About the course**

Sequence stratigraphy, based on its principles and applications, is a powerful tool in exploration and production. Perhaps most importantly, it gives the geoscientist a superior framework for the integration of geologic, geophysical, and engineering data and expertise

#### **Course Content**

- Seismic geometries
- Unconformities
- Relative sea level
- Eustasy
- Parasequences and their stacking patterns
- Parasequences as a correlation tool
- Relationship of stratigraphic patterns to changes in subsidence rates as driven by regional and earth scale tectonic processes
- Cycle hierarchy
- World-wide cycle chart and its application
- The sequence stratigraphic model
- LST sequence boundaries, incised valleys, slope fans, basin floor fans, and prograding complexes
- TST incised valley fill, source rock and reservoir seal
- HST alluvial, deltaic, shoreline complexes and shelf sands
- Sequence stratigraphy in a mixed clastic/carbonate province
- Exploration and production scaled case histories and strategies

#### **Who Should Attend?**

Geologists, geophysicists, biostratigraphers, and engineers (with some knowledge of geology) needing a fundamental understanding of the principles and applications of sequence stratigraphy.

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### **Clastic Sedimentology for Exploration and Development**

The course covers the basics of clastic sedimentology at scales that are appropriate for both regional exploration and detailed reservoir characterisation. The main types of sedimentary basin are briefly reviewed in the context of crystal dynamics and plate tectonics and the production and transport of clastic material in different tectonic, topographic and climatic settings are described.

The course discusses processes of erosion, transport and deposition of sediments by water and wind. Sedimentary fluid dynamics are related to sedimentary bed forms which, in turn, are related to the lamination and bedding styles that characterise most sandstone. The processes of sediment gravity flows are related to the textures of their products and to the forms of their depositional units. These principles are applied to different depositional settings, focussing on the nature of sediment supply, the distribution of processes in space and time and the resultant organisation of depositional facies. Alluvial, deltaic, coastal, shallow-marine, slope, deep-marine and aeolian settings are all discussed in terms of processes, facies and facies organisation. As shown in the outline below, for each environment:

- Processes
- Facies and facies distribution
- Base-level, topographic and tectonic controls on sediment distribution
- Sedimentary geometries, source rocks and reservoir sandbodies
- Main constraints on correlation and reservoir modelling
- Types of sedimentary basin in different tectonic contexts
- The large-scale tectonic setting of the main types of sedimentary basin and the relationship between structural style and patterns of sedimentary fill
- The effects of base-level changes and syn-depositional tectonics on patterns of sediment distribution
- The varying approaches to correlation in different sedimentary settings
- The role of analogues in building reservoir models in different depositional settings

Sediment generation and supply in different settings. Fluid dynamics and rheology of erosion, transport and deposition. The basic mechanics of sediment erosion, transport and deposition and resultant bedforms and sedimentary structures. Post-depositional processes and products

- Alluvial, Deltaic

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Sediment generation and supply in different settings. Fluid dynamics and rheology of erosion, transport and deposition. The basic mechanics of sediment erosion, transport and deposition and resultant bedforms and sedimentary structures. Post-depositional processes and products

- Coastal, Shallow marine

Review of sedimentary environments

Sediment generation and supply in different settings. Fluid dynamics and rheology of erosion, transport and deposition. The basic mechanics of sediment erosion, transport and deposition and resultant bed forms and sedimentary structures. Post-depositional processes and products

- Slope, Deep-marine

Sediment generation and supply in different settings. Fluid dynamics and rheology of erosion, transport and deposition. The basic mechanics of sediment erosion, transport and deposition and resultant bedforms and sedimentary structures. Post-depositional processes and products

- Aeolian, Lacustrin

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### **Introduction to Biostratigraphy**

To familiarize the participant with the biostratigraphy, its application as an operational tool, allowing participants to optimize its use at the exploration and oil production operations.

To provide basic but practical knowledge to professionals in biostratigraphy, including the major fossil groups used in geological operations, processing techniques of the samples, markers identification, use of biostratigraphic charts and their application in the geological interpretation of drilling sections

Biostratigraphic information is one of the tools routinely used in operations, so professionals at the drilling site need to understand the basics and methods, the type of information it can provide, its applications but also the limitations it has and the common pitfalls.

This knowledge is important to correctly assess the stratigraphic level during drilling. It will help the professional in the interpretation of the paleontological associations that are encountered during the progress of the drilling.

It will create awareness on how to avoid falling into the most common mistakes that can occur while studying the samples and interpreting the meaning of the fossil assemblages found, to avoid erroneous conclusions about the level reached.

During the development of the course it will be possible to delve into the various aspects of the biostratigraphic operational studies, always depending on the areas of interest of the participants.

- Biostratigraphy, definitions, and principles
- Main groups of microfossils use in the oil industry: Foraminifera.
- Calcareous nanoplankton
- Palynomorphs
- Biostratigraphical studies while drilling.
- Sample processing according to fossil group
- Sample picking and major fossil groups identification.
- Types of biostratigraphic studies and fossil groups according to the geological section to be drilled.
- Designing a sampling strategy for different levels of age and paleoenvironmental control while drilling
- Elaboration of the Biostratigraphic Chart
- Biostratigraphic zones
- Biomakers: Index and facies fossils

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- Exercise
- Paleoenvironment assemblages and biofacies
- Exercise
- Principles of absolute and relative datation.
- Time scale and biostratigraphic zonations.
- Age interpretation based on fossils.
- Exercise.
- Issues regarding the use and understanding of Lithostratigraphy, Biostratigraphy, Chronostratigraphy and Discontinuity bounded Stratigraphical Units
- Key biostratigraphic Events on Earth History
- Cycles and Sequences
- T-R cycles interpretation
- Key Sequence Stratigraphy Surfaces
- Exercise
- High Resolution Biostratigraphy

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## **Fluvial and Shallow Marine Reservoirs**

Whether your task involves a simple well-correlation across tidal systems, or the input of fluvial channel dimensions into a geomodel this course will benefit you in several ways.

This course systematically introduces participants in a landwards to basinwards transect through all environments of deposition where reservoir quality sands are deposited. For each environment of deposition, they are shown modern examples, outcrop analogs, core photos, well-log signatures and seismic expression.

Besides presenting standard facies models, quantitative modelling equations are presented in exercises.

### *Introduction*

- *Introduction to the course and sedimentary structures in fluvial to shallow marine successions.*
- *Sequence stratigraphy of shallow marine siliciclastic systems. Exercise on description and interpretation of core facies.*
- *Fluvial systems: classification of rivers, architectural elements, prolific global fluvial reservoirs, exercise on calculating channel dimensions and geometry using core or borehole image log data.*

### *Deltaic Systems*

- *Classification of deltaic lobes based on processes and grain size*
- *Environments of deposition and potential source and reservoirs rocks in a deltaic succession*

### *Exercise on the seismic facies of deltas*

### *Incised Valleys and Tidal Settings*

- *Estuaries and incised valleys*
- *Tidal creeks, channels and inlets*

### *Tidal flats, Tidal bars and Sand-waves*

### *Wave-dominated linear coastlines*



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- *Transect through a wave dominated clastic shelf: offshore, transition, shoreface, foreshore and backshore environments of deposition*
- *Sandplains, barrier islands and spit bars*
- *Exercise on log correlation*

### *Log interpretation of clastic depositional environments*

- *Using log motifs and scale to deduct facies associations*
- *Creating facies logs*
- *Integrating logs with core data*

### **Who Should Attend?**

The course is designed for geoscientists and reservoir engineers who primarily focus on 'shallow marine' successions.

**5 Days**



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### **Basic Logging Methods and Formation Evaluation**

The participants will cover all the basics of log data acquisition and interpretation. Upon successful completion of this course, participants should have a good understanding of log data acquisition, interpretation techniques, how to apply log quality control practices, types of high-technology tools, and the appropriate applications of that technology in formation evaluation.

#### **Reservoirs and Logging**

- Reservoir rock and basic logging, Life of a well
- Spontaneous Potential (SP)
- Natural Gamma Rays (GR) and the six basics of resistivity

#### **Types of Measurements**

- Acoustic measurements, Neutron porosity measurement
- Density measurements, Deep reading resistivity (Rt)

#### **Rxo, Archie's Equation, and Vsh**

- Shallow reading resistivity (Rxo)
- Archie's Equation and determining saturation
- Computing the value of Vsh
- Interpretations for reservoir characterization

#### **Carbonate Challenge and Wireline Formation Testing**

- Computing Sw in the presence of Shale
- The carbonates challenge
- Wireline Formation Testing (WFT)

#### **NMR, MWD, LWD, and Borehole Imaging**

- Magnetic Resonance Imaging (NMR)
- Borehole imaging
- Measurement while drilling (MWD) and Logging While Drilling (LWD)

**5 Days**

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### **Petrophysics for Drilling Engineers**

Participants will cover wireline logging, MWD-LWD and their specific applications for wellbore stability.

- Reservoir Rock and Life of a well, Tool Conveyance, Depth Control
- Well bore stability and filtrate diameter of invasion
- The mud log and its applications, Basics of Logging, Log Quality Control
- GR Spectroscopy and its application to determine clay type
- The Spontaneous Potential and its applications to estimate water salinity and volume of shale
- Acoustic Log: secondary porosity, rock mechanical properties and wellbore stability
- The density and photoelectric cross section
- The Neutron Log, neutron spectroscopy and sigma neutron capture cross-section
- Density-Neutron applications for lithology, shale volume and effective and total porosities
- Density-Neutron applications for lithology, shale volume and effective and total porosities
- Basics of Resistivity and the Archie Equation
- The concept and applications of the Formation Factor (FF) as a variable – m emulator
- Resistivity measurements in the invaded zone ( $R_{xo}$ )
- Resistivity measurements in the uninvaded zone using Induction and Laterolog
- The concept and applications of array resistivity measurements
- Wireline Formation Testing
- Measurement While Drilling (MWD) and Logging While Drilling (LWD)
- Data acquisition of porosity, lithology, Pulsed Neutron Sigma and resistivities
- Formation Pressure, Geosteering basics, Seismic, Acoustic
- Shale Volume ( $V_{sh}$ ,  $V_{cl}$ ) evaluation and clay type- Dispersed or laminated shales
- Estimating the parameters of “m” and “n” in the Archie Equation,
- Quick look techniques to estimate the oil / water, gas/water and oil/gas contacts,
- Salinity estimations of formation water and filtrate water,
- Estimation of porosity, lithology and water saturations in clean and in shaly-sands

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+234 – 09092358932

### **Who Should Attend?**

This course will be suitable for all drilling engineers, directional drillers and other geoscientists associated with drilling.

**5 Days**

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### **Cased Hole Logging and Formation Evaluation**

Participants will be taken through all the aspects of the fundamentals of cased hole formation and production evaluation. The course will introduce the cased hole logging techniques and technology development.

- Introduction to the reservoir, with basic concepts of reservoir engineering and the dynamics of flow in wells
- Review of the major problems associated with well production.
- Introduction to Cement Evaluation methods and tools
- Introduction to Corrosion Monitoring methods and tools
- Monitoring saturation through casing, basic ideas and methods including Pulsed Neutron Capture and C/O Logging
- The analysis of the data and comparison with open hole
- Basic production logging sensors and their uses
- The analysis of single-phase flow in wells, using basic flowmeter logs. Classroom exercises will be used to show classic techniques.
- The analysis of multi-phase flow using fluid density and hold-up measurements in the classical manner.
- The use of the latest measurements to analyse multi-phase flow.
- Introduction to computer-based analysis and evaluation models
- The use of production logging techniques in horizontal wells
- The analysis of reservoir problems and basic survey planning to maximize useful information.
- A review of perforation techniques including the choice of the methods.

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## **Gas Exploration**

### **Course Content**

#### Introduction - Exploration Geology

- Introduction: specific roles and objectives of exploration, in the petroleum industry.
- Geological context of hydrocarbon prospecting; reservoir characterization tools & techniques in E&P.
- Workshop: introduction to geoscientific exploration methods.

#### Exploration Geophysics

- Seismic reflection (fundamentals, data acquisition, processing & interpretation).
- Workshop: seismic interpretation, survey planning, commitment and permitting.

#### Hydrocarbon Traps - Operations Geology

- Hydrocarbon genesis, migration, entrapment, and timing; play assessment (concept and preservation).
- Workshop: wellsite geology (mud logging, wireline logging) and well monitoring; well data interpretation.

#### Reserve Evaluation - Introduction to Reservoir Modeling

- Understand the reservoir (sedimentological and structural modeling).
- Workshop: accumulation evaluation (mapping and volumetric calculation - OOIP); production monitoring.
- A series of hands-on activities and exercises (maps, seismic sections, logs, fluid contacts, volumetric, etc.) is proposed through sequential workshops to highlight key phases and illustrate lectures.

### **Learning Objectives**

Upon completion of the course, participants will be able to acquire a global vision of the upstream petroleum industry, evaluate reservoir characteristics and potential using adequate geophysical and geological information, understand how uncertainties inherent to data influence the capability to interpret them, draw field development plans by balancing development costs versus production rates.

### **Who Should Attend?**

Geologists, geophysicists and reservoir engineers, who need to acquire a full view of gas exploration workflow, those who will join in multidisciplinary or asset teams. Also petroleum engineers, support staff, and non-technical staff, high potentials in the Oil & Gas upstream industry whose activity (either commercial, legal, financial or marketing) is calling for interaction with NOCs or International Operators, including executive managers and government officials.

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## **Practical Reservoir Petrophysical Evaluation and Static Modelling with Software**

### **About the Course**

The first part of this course deals with petrophysical analysis of reservoirs, well by well. The outputs of this first part will serve as inputs for the second part of the course. Also, the first part will involve some elements of theory and then followed by practical with Techlog. Here, the emphasis is placed on the fact that petrophysics is important in all aspects of the petroleum business. Also, principles, applications, and integration of petrophysical information for reservoir description will be discussed in depth through the combination of class discussion and exercises/workshops. To be learnt also by the participants is how to conduct competent quick-look evaluations. The participants will be taught how to integrate petrophysical information with other data sources and this will improve participants' ability to assess technical risk when examining hydrocarbon opportunities.

The second part of the course will involve reservoir 3D static modelling. Part of the inputs will be coming from first part of the course which is the petrophysical evaluations. The tool will be petrel. In this part, the participants will learn the process and procedures of 3D static reservoir modelling. The general principles will be discussed irrespective of the software to be used. However, the practical session will be demonstrated with PETREL. The best way to manage oil and gas reservoir well is to understand the reservoir. To understand the reservoirs, it must be modelled. The importance of environment of deposition will be emphasised.

### **Course Content**

#### **Part 1 (Petrophysical Evaluation)**

- Fundamental concepts of petrophysics
- Depositional systems and petrophysical rock parameters
- Nature of porosity and permeability
- Basic rock properties; theory and quick look techniques
- Mud logging
- Core analysis, acquisition, interpretation, and quality checks
- Theory and basics of resistivity, radioactivity, acoustic tools
- LWD/MWD versus open hole logging
- Determination of rock types using core and logs

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- Petrophysical impact on economic uncertainty
- Evolving petrophysical technologies
- Overview of cased hole logging

### **Part 2 (Reservoir 3D Static Modelling)**

- Introduction
- Data input, 3D visualization and quality control
- Well correlation
- Structural modelling, Depth conversion
- Data analysis
- Geostatistical Approach
  - Principles of statistics
  - Measuring uncertainty
  - Spatial relationships: estimation and modelling
  - Conventional estimation techniques
  - Conditional simulation techniques
  - Grid based simulation techniques
  - Kriging and Co-Kriging
    - What is stochastic/deterministic modelling.
    - What is stochastic/deterministic modelling
    - Monte Carlo simulations
- Petrophysical property modelling
- Volumetrics and Upscaling
- Data export

### **Who should attend?**

Geologists, Geophysicists, Reservoir Engineers, and others who are using petrophysical data. Also, professionals who specialises in 3D static modelling and those that take decision with it.

**10 Days**

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### **Prospect and Play Assessment**

#### **About the Course**

This course offers the industry quantitative, probabilistic play and prospect assessment procedures. In addition, the methods offer measures of the play prospectiveness based on the number and resource size distribution of potential future fields.

#### **Course Objectives**

The importance of geological control on petroleum occurrences will be seriously discussed. All the elements of petroleum systems will also be stressed to the participants. At the end of the course, the participants will know the importance of every element of petroleum system to exploration and production. The participants will also be exposed to the kind of uncertainties in the subsurface and how it affects petroleum exploration.

#### **Course Content**

- Geological controls of oil and gas occurrence: their impact on exploration risk and success
- Application of volumetric prospect assessments: techniques, comparative data, and graphs to estimate input factors, such as trap volume, porosity, net/gross saturation, hydrocarbon fill fraction, formation volume factors, and recovery.
- Probability methods: the expression of uncertainty for input factors and results including Monte Carlo techniques
- Risk analysis: Principles and practice
- Hydrocarbon charge assessment: procedures for estimating possible amounts of oil and gas generated, migrated, and trapped in prospects.
- Prospect assessment workshop: projects supplied either by the instructor or by participants, worked by teams and reported to the entire group.
- Play assessment techniques: estimating the possible numbers, sizes, and associated risks for potential fields, with useful data on field densities, field-size distributions, and dependent versus independent risks.
- Play recognition and mapping: play classification and subdivision and play maps that high-grade the most favourable areas with minimal geologic risks.
- Play assessment workshop: projects supplied either by the instructor or by participants, worked by teams and reported to the entire group
- Aggregation of assessment results: summing, derisking.

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- Limitations, pitfalls, uses, and discovery concepts: the philosophy of judging and using assessment results and the importance of basic geologic concepts.

### **Who Should Attend?**

Geologists, Geophysicists, Exploration Managers, and Asset team members and any other person involved in prospect generation.

**5 Days**



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### **Business Analysis**

#### **About the Course**

The Business Analysis course has been designed for those aspiring to start a career as a Business Analyst. The course will help participants build Business Analysis skills needed for the profession.

In this introductory course, you'll delve into the role and responsibilities of the business analyst (BA) - the communication link between all business areas and a critical player in project success. Learn techniques for ensuring project success every step of the way- from identifying and analyzing potential projects to making sure that the final project product meets the requirements you identified. You'll consider the unique needs of customers, stakeholders, and the IT department as you work toward building, documenting, communicating, and managing requirements.

#### **What You'll Learn**

- Role and importance of the BA
- Plan Business requirements activities
- Elicit requirements from stakeholders, with an emphasis on interviews
- Analyze stated requirements, with an overview of modeling techniques
- Document requirements for different types of projects
- Verify and validate requirements
- Elements of requirements management and communication and the BA's role in them
- Elements of solution verification and validation and possible BA roles
- Enterprise analysis: choosing appropriate projects
- Necessary competencies and best practices of BAs
- Waterfall, incremental, and agile lifecycles and how they change BA practices

#### **Course Contents**

##### **Introduction to Business Analysis**

- Purpose of BABOK Guide

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- What is Business Analysis?
- Who is a Business Analyst?
- Structure of the BABOK

### **Business Analysis Key Concept**

- The Business Analysis Core Concepts Model
- Key Terms
- Requirement Classification Schema
- Stakeholders
- Requirements and Designs

### **Business Analysis Planning and Monitoring**

- Plan Business Analysis Approach
- Plan Stakeholder Engagement
- Plan business Analysis Governance
- Plan Business Analysis Information Management
- Identify Business Analysis Performance Improvements

### **Elicitation and Collaboration**

- Prepare for Elicitation
- Conduct Elicitation
- Confirm Elicitation Results
- Communicate Business Analysis Information
- Manage Stakeholder Collaboration

### **Requirements Life Cycle Management**

- Trace Requirement
- Maintain Requirement
- Prioritize Requirements
- Assess Requirement Changes

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- Approve Requirement

### **Strategy Analysis**

- Analyze Current State
- Define Future State
- Assess Risks
- Define Change Strategy

### **Requirements Analysis and Design Definition**

- Specify and Model Requirements
- Verify Requirements
- Validate Requirements
- Define Requirements Architecture
- Define Design options
- Analyze Potential Value and Recommend Solution

### **Solution Evaluation**

- Measure Solution Performance
- Analyze Performance Measures
- Assess Solution Limitations
- Assess Enterprise Limitations
- Recommend Actions to Increase Solution Value

### **Underlying Competencies**

- Analytical Thinking and Problem Solving
- Behavioral Characteristics
- Business Knowledge
- Communication Skills
- Interaction Skills
- Tools and Technology

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### **Who Should Attend?**

- Experienced individuals who manage business analysis activities in diverse fields
- Working professionals seeking to change career, job, or industry to business analysis related field
- Mid to senior-level executives in any sector

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### **Data Analysis**

#### **About the Course**

Data analysis and analytics are evolving disciplines. Big data, predictive analytics, data science, AI, and modelling techniques.

Whether one is charting your overall business intelligence strategy or performing analysis yourself, these basic tools and techniques rapidly inform effective decision-making. In this fast-paced introductory workshop, we'll examine the history of business intelligence, its relationship to data analysis, and why the two are needed to help businesses deliver a complete assembly of the 'data puzzle'. We'll also address hurdles teams face when dealing with data overload and suggests some possible solutions.

#### **Course Objectives**

- Measure business performance.
- Identify improvement opportunities for business processes.
- Describe the need for tracking and identifying the root causes of deviation or failure.
- Use the principles, properties, and application of Probability Theory.
- Discuss data distribution including central tendency, variance, normal distribution, and non-normal distributions.
- Draw conclusions about a data population using statistical inference.
- Forecast trends using simple linear regression analysis.
- Perform accurate analysis after learning about sample sizes and confidence intervals and limits, and how they influence the accuracy of your analysis.
- Explore different methods and easy algorithms for forecasting future results and to reduce current and future risk.

#### **Course Contents**

##### **Data and Information**

1. Data in the Real World
2. Data vs. Information
3. The Many “Vs” of Data

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4. Structured Data and Unstructured Data
5. Types of Data

### **Data Analysis Defined**

1. Why do we analyze data?
2. Data Analysis Mindset
3. Data Analysis Steps
4. Data Analysis Defined
5. Descriptive Statistics vs Inferential Statistics

### **Types of Variables**

1. Categorical vs Numerical
2. Nominal Variables
3. Ordinal Variables
4. Interval Variables
5. Ratio Variables

### **Central Tendency of Data**

1. (Arithmetic) Mean
2. Median
3. Mode

### **Basic Probability**

1. Probability Uses In Business
2. Ways We Can Calculate Probability
3. Probability Terms
4. Calculating Probability
5. Calculating Probability from a Contingency Table
6. Conditional Probability
7. Frequency Distribution

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### **Distributions, Variance, and Standard Deviation**

1. Discrete Distributions
2. Continuous Distributions
3. Range
4. Quartiles
5. Variance
6. Standard Deviation
7. Population vs. Sample
8. Application of the Standard Deviation (Standard Deviation and the Normal Distribution, Sigma ( $\sigma$ ) Values (Standard Deviations))
9. Bimodal distribution
10. Skew and Summary
11. Other Distributions (Poisson Distribution, Exponential, Pareto Distribution and Log Normal Distribution)
12. Distributions in Excel

### **Fitting Data**

1. Bivariate Data (Two Variables)
2. Covariance and Correlation
3. Simple Linear Regression
4. Multiple Linear Regression
5. Fitting Functions (Linear Fit, Polynomial Fit, Logistic Regression and Power-Law Fit)

### **Predictive Analytics Overview**

1. Monte Carlo Method

### **Who Should Attend?**

Anyone involved in operations, project management, business analysis, or management who needs an introduction to data analysis, would benefit from this class.

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## **Fundamentals of Petroleum Geomechanics**

### **About the Course**

The main idea of the course is to treat necessary fundamentals of geomechanics for wellbore applications; the origin of stresses in the subsurface and how in situ stresses can be understood from wellbore data; mechanical properties such as rock strength, and the origins of pore pressure and how it is measured and estimated.

### **Objectives**

At the end of the training, the following objectives must be achieved:

- Fundamental understanding of the petroleum geomechanics.
- Data requirements for geomechanical studies.
- Application of geomechanics to wellbore applications.
- The use of the Mechanical Earth Model in geomechanical studies.

### **Course Content**

Fundamentals and experimental rock mechanics

- The stress tensor, units, principal stresses, strain, resolving stresses on a plane, construct Mohr's Circle and analyse stress, elasticity and elastic properties, effective stress, internal friction, cohesion, modes of rock deformation, unconfined compressive strength, Mohr-Coulomb failure
- Experimental rock mechanics, uniaxial and triaxial testing, thick wall cylinder tests, scratch testing, true triaxial tests, tensile tests, analyze results.

Stress, Pore pressure and the Mechanical Earth Model

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- Principal earth stresses, regional and local stresses, World Stress Map, Andersonian classification of faults, overburden stress, horizontal stress orientation, borehole breakouts, drilling-induced tensile fractures, image logs, horizontal stress magnitudes, leak-off tests, fracture gradients
- Origins of pore pressure, methods for measurement, methods for estimation, vertical and horizontal methods, Eaton's method, real-time approach
- Concept and construction of the Mechanical Earth Model, data requirements and types of input data.

### Wellbore geomechanics and wellbore stability

- Wellbore geomechanics, state of stress in the wellbore
- Modes of rock deformation in the wellbore, the effect of well azimuth and inclination, simple calculations
- Wellbore deformation in fractured rock masses and non-classical rock failures

### Applications

- An introduction to planning for wellbore stability and real time operations.
- Sand production and management causes of sand failure, experimental evidence, an introduction to screenless completion design for sand prevention.
- Hydraulic fracturing, process of hydraulic fracturing, geomechanical factors effecting fracture development and simple calculations.
- Reservoir behaviour, an introduction to compaction and subsidence, well integrity and the effects of injection (pressure maintenance, waste disposal and gas storage).

### Case study practical

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- Working in teams, an opportunity to put into practice the geomechanics learnt during the week to design a wellbore stability plan for a proposed high angle well.

### **Who Should Attend?**

Geologists, geophysicists, drilling engineers, production engineers, completion engineers, reservoir engineers, exploration supervisors and managers concerned with wellbore stability, sand production, screenless completions, fracture stimulation, overpressures, or image log interpretation.

**5 Days**





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### **Fundamentals of Field Development Plan**

#### **About the Course**

The fundamental of Field Development Planning course provides participants with an opportunity to learn the fundamental approach for working and writing a Field Development Plan. The plan is a document that is an output of a sequence of decision and discipline-based tasks designed to come up with a development plan. It is, also, a basis for coming up with a robust way of developing, producing, and maintaining hydrocarbon resources. A Field Development Plan forms an input for designing associated surface facilities. The Combined documents, both subsurface and surface, form the basis for the financial decision.

The participants will be introduced to all these concepts as they are applied to the process of coming up with a development plan in relation to the reservoir life cycle.

#### **Course Objectives**

At the end of the training the attendee will be able to identify the practices related to field development plan projects. Participants will learn and understand how to have an integrated view of the hydrocarbon production system, identifying its uncertainties and opportunities. The participant will learn how to use the basic techniques required.

#### **Course Contents**

##### **Project Management**

- The Project Plan
- Organization
- Project Control Schedules
- Project Control Budget
- Project Procedure Manual
- Responsibility and Role of the Team Coordinator

##### **Geosciences**

- EOD and Sequence Stratigraphy Interpretation
- Petrophysical Evaluation
- Seismic Interpretation (Qualitative and Quantitative)
- Structural Framework
- EOD/Facies Modelling - Depositional Systems

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- Property Modelling – Petrophysics
- In Place Volume Estimates

### **Reservoir Engineering**

- Production System Analysis
- Material Balance
- Dynamic Model – Upscaling and Initialization
- Dynamic Model – History Marching
- Predicting Future Performance
- Estimating Remaining Reserves
- Reservoir Development Strategy
- Waterflooding

### **Well Engineering and Drilling**

- Prospect Selection
- Well Planning Procedures
- Different Types of Drilling
- Well Architectures
- Drilling Costs

### **Completion**

- Well Completion Strategy
- Different Types of Completions

### **Consolidation of Reservoir Development Scenario**

- Case with or without Production History

### **Economic Evaluation**

- Input Data for Project Economic Evaluation
- Economic Evaluation Criteria

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- Key Economic Parameters
- Selection of Business Cases Based on Economic Analysis

### **Uncertainty Analysis**

- Uncertainty VS Risks
- Types of Uncertainty Analysis in Upstream Oil Industry

### **Risk Analysis**

- Project Risk Management
- Risk Register

### **Risk Mitigation**

- Risk Mitigation Strategies
- Strategy for Positive Risks or Opportunities

### **Uncertainty Analysis**

- HSE Considerations
- Safety Performance Standard

### **Final Selection of Preferred FDP**

- Feasibility Study
- Identification of the Most Cost-Effective UR

### **Project Approval**

- Management Project Approval

### **Who Should Attend?**

This course is designed for multi-disciplinary asset teams comprising of engineers, geoscientists, and managers who are involved in developing hydrocarbon resources.

**5 Days (Monday-Friday)**

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### **Advanced Seismic Interpretation**

#### **About the Course**

Recent advances in seismic technology now provide seismic interpreters with advanced tools for risk and resource assessment, and for characterizing reservoirs. The materials covered in this class are designed to help practicing interpreters construct interpretation workflows to extract the information necessary to make good business decisions and to convey their ideas to management.

#### **You Will Learn**

By the end of this training course, the participants will:

- Have working knowledge of the full range of representative special interpretative methods
- Have experience on hands-on real data sets and real workflow in the oil industry, which he may carry out himself and/or supervise
- Be capable to account for the geophysical input in multi-disciplinary teams

#### **Course Outline**

##### **PART 1:**

- Introduction and general overview
- Visual perception, understanding and impact on interpretation
- Fundamental of signal theory, wavelet, resolution, and scaling
- Geological concepts, sedimentary models, and structural styles
- Central frequency, wedge modeling and tuning analysis exercises
- Mapping exercise
- Introduction to the PETREL software - seismic interpretation module

##### **PART 2:**

- Interpretation overall procedure, 2D and 3D techniques
- Sequence stratigraphy and seismic facies analysis
- Seismic geomorphology, stratal slicing, and volume flattening
- Automated fault interpretation
- Structural validation exercise

##### **PART 3:**

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- Automated fault mapping exercise
- Post stack attributes, reflective attributes, and transmissive attributes
- Geometrical attributes, trace similarity and stratigraphic volume attributes, texture, curvature etc.
- Multi-attributes analysis, calibration, applications, pitfalls, and limitations
- Attributes classification, FA, PCA, statistical, neural networks, unsupervised, and supervised classification
- Reservoir Thickness analysis from seismic attributes exercise

### **PART 4:**

- Spectral decomposition
- Basics of rock physics and seismic inversion
- AVO theory and pre-stack attributes
- Overview of depth conversion methods and uncertainty
- Multi-attribute reservoir characterization exercise
- Depth conversion exercise
- AVO gradient-intercept exercise
- Multicomponent seismic interpretation

### **PART 5:**

- 4D time lapse seismic and reservoir monitoring
- Gas hydrates interpretation
- Overview on naturally fractured reservoir characterization from seismic
- 4D interpretation exercise
- Fractured reservoir characterization with attributes exercise

### **Who Should Attend?**

- Geologists
- Geophysicists
- Production Engineers
- Petrophysical Engineers
- Seismic Interpreters

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### **Advanced Petrophysical Analysis**

#### **About the course**

Emphasis will be placed on the fact that petrophysics is important in all aspects of the petroleum business. Also, principles, applications, and integration of petrophysical information for reservoir description will be discussed in depth through the combination of class discussion and exercises/workshops. To be learnt also by the participants is how to conduct competent quick-look evaluations. The participants will be taught how to integrate petrophysical information with other data sources and this will improve participants' ability to assess technical risk when examining hydrocarbon opportunities. All these will be at advanced stage.

#### **Course Content**

- Fundamental concepts of petrophysics
- Well operations, propose and provision of technical advice on data acquisition, coring, and testing operations.
- Depositional systems and petrophysical rock parameters
- Multiple shale-sand analyses.
- Petrophysical facies modelling, determining environments of deposition and different poro-perm relationships per facies to support reservoir modeling activities
- Nature of porosity and permeability
- Petrophysical analyses of clastic reservoirs and heavy reservoirs, in addition to uncertainty analyses on derived results i.e. systemic, random, and instrumental.
- Determination of petrophysical parameters such as net pay, porosity, saturation, permeability etc.
- Introduction to Well Site Geology
- Mud logging
- Advanced well log data interpretation
- Evaluate and integrate core, log, sampling, and test data
- Theory and basics of resistivity, radioactivity, acoustic tools
- LWD/MWD versus open hole logging
- Determination of rock types using core and logs
- Perform core-log integration for detailed reservoir description and modeling vis-à-vis sequence stratigraphy.
- Model Permeability from Poro-perm relationships per facies type and Saturation Height functions.
- Interpret RST and RFT data to determine bypassed oil and pressure-depth plots for fluid typing and over-pressured zones.
- Fluid distribution studies and determination of contacts for proven, probable, and possible cases
- Drafting of logging program towards successful drilling campaign

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- Produced water management studies.
- Selection of perforation interval decision before completion
- Petrophysical impact on economic uncertainty
- Evolving petrophysical technologies
- Overview of cased hole logging

### **Who Should Attend**

Geoscientists and Engineers who wants to advance their knowledge in petrophysical evaluation.





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***PRODUCTION/RESERVOIR ENGINEERING COURSES***

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### **Production System Analysis**

#### **About the Course**

Understanding the principles of fluid flow through the production system is important in estimating the performance of individual wells and optimizing well and reservoir productivity. In the most general sense, the production system is the system that transports reservoir fluids from the subsurface reservoir to the surface, processes and treats the fluids, and prepares the fluids for storage and transfer to a purchaser. The reservoir is the source of fluids for the production system. It is the porous, permeable media in which the reservoir fluids are stored and through which the fluids will flow to the wellbore. It also furnishes the primary energy for the production system. The wellbore serves as the conduit for access to the reservoir from the surface. It is composed of the drilled wellbore, which normally has been cemented and cased. The cased wellbore houses the tubing and associated subsurface production equipment, such as packers. The tubing serves as the primary conduit for fluid flow from the reservoir to the surface, although fluids also may be transported through the tubing-casing annulus.

Nodal analysis is the total producing system as a group of components potentially encompassing reservoir rock/irregularities, completions (gravel pack, open/closed perforations, open hole), vertical flow strings, restrictions, multi-lateral branches, horizontal/hilly terrain flow lines/risers, integrated gathering networks, compressors, pump stations, metering locations, and market/system rate/pressure constraints. An improper design of any one component, or a mismatch of components, adversely affects the performance of the entire system. The chief function of a system-wide analysis is to increase well rates. It identifies bottlenecks and serves as a framework for the design of efficient field wide flow systems, including wells, artificial lift, gathering lines and manifolds. Together with reservoir simulation and analytical tools, nodal analysis is used in planning new field development. Software is used extensively during the class and the participant is encouraged to bring their own laptop.

#### **Course Content**

- Introduction/Course Objectives.
  - Components of the Producing System; Integrated Production Modeling; Basic Fluid Flow Concepts: Fluid flow in porous media, Darcy Law; Phase Behaviour of Reservoir Fluids
- Flow from Reservoir to the Wellbore
  - Oil and Gas Well Flow Equations; Productivity Index; Factors Affecting PI; What is IPR; Factors Affecting IPR; Effects of Drive Mechanisms on IPR
- Predicting Present time and Future IPR for Vertical and Horizontal Oil Wells.

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- ❑ Straight Line IPR; Vogel; Vogel Modified with Standing; Darcy IPR; Jones et al; Future IPR; Fetkovich; Fetkovich-Vogel; Klins and Clark Method
- Predicting Present time and Future IPR for Gas Wells
- Fluid Flow in Pipes and Restrictions, Vertical and Horizontal fluid flow regimes;; PI; Holdup; Slippage; Erosional Velocity
- Well flow Correlations; Oil pipeline flow correlations; Effects of variables on pipeline performance; Pressure drop through restrictions Critical Flow correlations
- Complete System Analysis; Reservoir aspect of production and well completion; IPR; VLP; Well Design; Well, Modeling - Predicting well performance; Selecting best IPR/VLP correlations
- Using Softwares Application for Nodal Analysis (PERFORM and PROSPER)
  - Introduction to Well Test Interpretation, Oil well testing; Gas Well Testing; Skin Analysis, Artificial Lift, Gas Lift Analysis, Coning in Vertical and Horizontal Wells, Class Test; Revision; Questions etc.

### **Who should attend?**

Production, operations, and reservoir engineers; senior technicians and field supervisors with an engineering background

**5 Days**

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### **Production System Analysis with Nodal Analysis**

#### **About the Course**

Understanding the principles of fluid flow through the production system is important in estimating the performance of individual wells and optimizing well and reservoir productivity. In the most general sense, the production system is the system that transports reservoir fluids from the subsurface reservoir to the surface, processes and treats the fluids, and prepares the fluids for storage and transfer to a purchaser. The reservoir is the source of fluids for the production system. It is the porous, permeable media in which the reservoir fluids are stored and through which the fluids will flow to the wellbore. It also furnishes the primary energy for the production system. The wellbore serves as the conduit for access to the reservoir from the surface. It is composed of the drilled wellbore, which normally has been cemented and cased. The cased wellbore houses the tubing and associated subsurface production equipment, such as packers. The tubing serves as the primary conduit for fluid flow from the reservoir to the surface, although fluids also may be transported through the tubing-casing annulus.

Nodal analysis is the total producing system as a group of components potentially encompassing reservoir rock/irregularities, completions (gravel pack, open/closed perforations, open hole), vertical flow strings, restrictions, multi-lateral branches, horizontal/hilly terrain flow lines/risers, integrated gathering networks, compressors, pump stations, metering locations, and market/system rate/pressure constraints. An improper design of any one component, or a mismatch of components, adversely affects the performance of the entire system. The chief function of a system-wide analysis is to increase well rates. It identifies bottlenecks and serves as a framework for the design of efficient field wide flow systems, including wells, artificial lift, gathering lines and manifolds. Together with reservoir simulation and analytical tools, nodal analysis is used in planning new field development. Software is used extensively during the class and the participant is encouraged to bring their own laptop.

#### **Course Objectives**

The participants will be made to understand the practical flow of production system analysis with nodal analysis.

#### **Course Content**

- Introduction/Course Objectives
- Components of the Producing System; Integrated Production Modelling; Basic Fluid Flow Concepts: Fluid flow in Porous media, Darcy Law; Phase Behaviour of Reservoir Fluids

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- Flow from Reservoir to the Wellbore
- Oil and Gas Well Flow Equations; Productivity Index; Factors Affecting PI; What is IPR; Factors Affecting IPR; Effects of Drive Mechanisms on IPR
- Predicting Present time and Future IPR for Vertical and Horizontal Oil Wells;
- Straight Line IPR; Vogel; Vogel Modified with Standing; Darcy IPR; Jones et al; Future IPR: Fetkovich; Fetkovich-Vogel; Klins and Clark Method
- Predicting Present time and Future IPR for Gas Wells
- Fluid Flow in Pipes and Restrictions, Vertical and Horizontal fluid flow regimes; PI; Holdup; Slippage; Erosional Velocity
- Well flow Correlations; Oil pipeline flow correlations; Effects of variables on pipeline performance; Pressure drop through restrictions Critical Flow correlations
- Complete System Analysis; Reservoir aspect of production and well completion; IPR; VLP; Well Design; Well Modelling - Predicting well performance; Selecting best IPR/VLP correlations
- Using Software Application for Nodal Analysis (PERFORM and PROSPER)
  - Introduction to Well Test Interpretation, Oil well testing; Gas Well Testing; Skin Analysis, Artificial Lift, Gas Lift Analysis, Coning in Vertical and Horizontal Wells, Class Test; Revision; Questions etc.

### **Who should attend?**

Production, operations, and reservoir engineers; senior technicians and field supervisors with an engineering background

**5 Days**

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### **Applied Reservoir Simulation with ECLIPSE About the Course**

The ECLIPSE industry-reference Black oil simulator offers the most complete and robust set of numerical solutions for fast and accurate prediction of dynamic behavior—for all types of reservoirs and degrees of complexity, structure, geology, fluids, and development schemes. ECLIPSE is a fully implicit, three-phase, 3D, general purpose black-oil simulator that includes several advanced and unique features. In this course, you will discover the various solutions ECLIPSE offers over the entire spectrum of reservoir simulation. This training focuses on understanding ECLIPSE syntax rather than simulation methodology.

### **Course Objectives**

- Understand the concept of mathematical models and modelling of physical systems, simulation and analysis of physical systems and the steps involved in using such methods as a tool for problem solution.
- Be able to explain and understand the foundation, laws and elements of the Bond Graph method.
- Be able to identify physical laws and component descriptions according to the Bond Graph elements and constitutive laws, and to assess the validity of these for in simulation.
- Be able to utilize the Bond Graph method for modelling of mechanical, electrical, hydraulic, thermal and thermodynamic systems, and hybrid and multidisciplinary systems in general.
- Be able to develop the dynamic equations in state space form directly from the Bond Graph.
- Be able to develop the state space equations for systems with differential causality or algebraic loops, i.e. implicit or differential-algebraic first order differential equations, using causality analysis and/or model modification.
- Develop models of mechatronic or hybrid systems and carry out simulations for evaluation of the dynamic properties of the models or in support of problem solution.
- Be able to utilize modern modelling and simulation software as 20-Sim and Matlab for modelling, simulation and analysis of dynamic systems.

### **Course Content**

- Introduction to Reservoir Simulation
- Single Fluid Flow Equation
- Multiphase Flow Equation
- Finite-Difference Approximations

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- ❑ Consistency, Convergence and Stability
- ❑ Grid Systems and Boundary Conditions

### **PRACTICAL SESSION.**

#### **Course Outline**

- Eclipse Data File Structure Overview
  - RUNSPEC, GRID Section Overview
  - PROPS Section & REGIONS Section Overview
  - SOLUTIONS Section & SUMMARY Section Overview
  - SCHEDULE Section Overview
- Eclipse Simulation Workflow
  - Runs Specification and Keywords
  - Grid Import/Grid Properties Definition/Grid Edit and Keywords
  - PVT Modelling and Keywords
  - SCAL Modelling and Keywords
  - Equilibration Data Specification/ Initialization and Keywords
  - Wells/Production Scheduling and Keywords
  - History Matching
  - Forecasting (Prediction); Keywords for Summary Vectors
- Auxiliary Programs required for Dynamic Simulation with Eclipse
  - PVTi; SCAL; VFPI (Prosper/Perform); SCHEDULE
- Miscellaneous Topics

Black Oil and Compositional Simulation in Eclipse; Aquifers Modeling; API Tracking; Dual Porosity; Local grid refinements; Hysteresis; Miscible Flooding; Multi-Segment Well Option; Saturation Functions (two families of keywords); Total compressibility

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Checks; Transmissibility Calculations and modification; Vertical Equilibrium; Use of the Calculator; Automatic History matching / Optimization.

➤ Special Topics

De Bugging Eclipse runs; Monotonicity errors; Numerical Convergence problems; Solutions method (Fully implicit, Adaptive Implicit and Explicit formulations) ; Gi-pseudocompositional

- Economic Theory of Natural Resource Extraction Examples of Black Oil Reservoir Simulation (Oil Reservoir; Gas Reservoir)
- Example of Compositional Reservoir Simulation (Gas Injection /Condensate Reservoir Simulation)

### **Who should attend?**

Reservoir Engineers, Production Engineers, Geologists, Geophysicists Petroleum Inspectors and Managers.

**5 Days**

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### **Material Balance Study with Mbal and Decline Curve Analysis**

#### **About the Course**

Material balance relates the volumetric changes within the reservoir under the pressure reduction due to production, to the observed surface volumes. Uncertainties in system compressibilities, or in the behaviour of the fluids under the pressure reduction will translate directly into uncertainties in the implied volumes from the material balance. Production allocation will be required to assign the fluid withdrawals correctly to the various reservoirs to allow the material balance predictions to be accurate. Reservoir drive indicators will be calculated from the material balance equations and the main sources of reservoir energy identified.

#### **Course Content**

- Introduction/Course Objectives; The material balance equation
- Material Balance Study in Undersaturated and saturated oil reservoirs
- Graphical solution of MBE in oil reservoirs (Havlena and Odeh plot, Campbell's plot, etc)
- Evaluation of reservoir Drive Mechanisms
- Estimation of STOIP, Recovery factors and forecasting production with MBAL & Integration of Well's IPRs and VLPs to forecast production on well level.
- Investigating, Modeling and Quantifying Water influx
- Effect of Water and Gas injection & Workflow for material balance study of oil reservoirs
- Material balance in gas reservoirs & Volumetric gas reservoirs
- Graphical methods of solving and analyzing the MBE in gas reservoirs (P/Z vs. Gp plot, Havlena and Odeh plot, and Cole plot).
- Effects of Water influx in gas reservoir material balance study.
- Workflow for material balance study in gas reservoirs
- Classical decline curve analysis, Special decline curve analysis
- Decline curve analysis using type curves (e.g Fetkovich)

#### **Who should attend?**

Production, operations, and reservoir engineers; senior technicians and field supervisors with an engineering background

**5 Days**

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[md@sbtpetroleum.com.ng](mailto:md@sbtpetroleum.com.ng), [sbtpetroleum@gmail.com](mailto:sbtpetroleum@gmail.com)

+234 – 09092358932

### **Design, Diagnosis and Optimization of Gas Lift Systems**

#### **About the Course**

This course is intended to familiarize production personnel with the use, basic principles, selection of the equipment, types, design, monitoring, etc, of a continuous and intermittent gas lift system. Engineers will obtain the basic skills to the analysis and design of any artificial lift system by using a continuous or intermittent gas flow rate. The description in details of certain technical aspects will allow engineers propose solutions in a rapid and save way in order to either increase or optimize the production of an oil well..

#### Overview Continuous Gas Lift Method:

- Principle of Application
- Introduction to Gas Lift Concepts
- Advantages and Disadvantages of the Method
- Description of the Gas Lift Surface and Downhole Equipment

#### Valve Mechanics:

- Principle of Operation
- Classification of Gas Lift Valves
- Opening and Closing Forces of Gas Lift Valves
- Valve Calibration in the Shop
- Determination of the Gas Lift Seat Size

#### Continuous Gas Lift Installation Design:

- Preliminary Calculations (Nodal Analysis, Curve Determination of Minimum Gradient and Gas Static Pressure Gradient, Mandrel Spacing, and Selection of Operating and Discharge Valve)
- Design Procedure
- Discharge Process

#### Overview Intermittent Gas Lift Methods (Conventional and Unconventional Methods):

- Principle of Application
- Advantages and Disadvantages of the Method
- Description of the Gas Lift Surface and Downhole Equipment

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Intermittent Gas Lift Installation Design:

- Preliminary Calculations (Nodal Analysis, Mandrel Spacing, and Selection of Operating and Discharge Valve)
- Design Procedure and Operation Cycle

**5 Days**



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### **Well Surveillance & Production Enhancement Analysis**

#### **About the Course**

This will help operators to bridge the gap between well potential and current production capacity. Our cost-effective techniques will help participants to optimize production capacity at minimum unit operating cost OPEX.

#### **Course Content**

- ❑ Fundamentals of well surveillance. Analogy to Medical Diagnostics (Problem-Symptoms - Diagnosis - Treatment - Post treatment evaluation)
- ❑ Regulatory Requirements of well surveillance
- ❑ Well surveillance process and tools for production technology.
- ❑ Quality Assurance and Quality Control (Data) procedures, techniques, quality checks of BHP, Production data etc.
- ❑ Oil well surveillance: low THP, HGOR, HBSW, Sand production, Emulsion Scaling, Corrosion, tubing integrity, communication, formation damage, waxy crude oil well surveillance
- ❑ Gas well surveillance: water problem, hydrate, scaling, corrosivity, tubing integrity.
- ❑ Flow station capacity surveillance
- ❑ Unsafe wells surveillance
- ❑ Sanding tendency and Sand failure predication
- ❑ Real time prediction of well Potential, Uncertainty in well Potential prediction, Prediction of critical coning Rates
- ❑ Well Completion / well performance efficiency prediction correlations
- ❑ Formation Damage Assessment/Control: Prediction of Ideals PI; The effect of Drawdown on well productivity/WIQI; PI decline Curve Analysis; Average WIQI prediction. The effect of oil/water viscosity Ratio of PI history
- ❑ Production Optimization/Nodal Analysis
  - Intelligent Selection of the best correlations for well system Description and calibration.
  - Bean Performance Optimization
  - Prediction of critical flow
  - Prediction of unstable flow
- ❑ Improved candidate selection of workovers, stimulation and TT intervention including
  - Water shut-off and Gas shut-off.
- ❑ Optimum Demulsification of oil -in- water emulsion and water - in - oil emulsion, Downhole Dehydration
- ❑ Prediction of Corrosivity and scaling tendency.
- ❑ Well surveillance as an Important Environmental Monitoring Process
- ❑

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- Well Surveillance as an input to Field Review/ Field Development Planning
- Development of field-specific correlations
- Computerized well surveillance
- Case Studies/ Field Example

### **Who should attend?**

Petroleum Engineers, Production engineers, well technologists, production foremen, reservoir engineers

**5 Days**

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### **Gas Lift Design and Optimization**

#### **About the Course**

This course is intended to familiarize production personnel with the use, basic principles, selection of the equipment, types, design, monitoring, etc, of a continuous and intermittent gas lift system. Engineers will obtain the basic skills to the analysis and design of any artificial lift system by using a continuous or intermittent gas flow rate. The description in details of certain technical aspects will allow engineers propose solutions in a rapid and save way to either increase or optimize the production of an oil well.

#### **Course Outline**

- ❑ Gas-Lift Values
  - Pressure Operated Values
  - Fluid Operated Values, Throttling Values
  - Valve Selection
  - Valve Mechanics, Valve Spread, Pilot Values
  - Flow Characteristics of a Gas-Lift Valve
- ❑ Design of continuous Gas-lift Installation
  - Pressure Traverse Curves with and without Gas-lift
  - Pressure Gradient in Annulus
  - Gas Volume Required for Gas-lift
  - Calculating Inflow Performance
  - Flowing Tubing Pressure at the Surface
  - Satisfying Required Volume and Pressure of Injected Gas
  - Location and Design of the Operating Valve
  - Selection of Tubular Goods
  - Unloading Design for Gas-Lift Wells
- ❑ Surface Facilities Design
  - Calculating Compression Horsepower
  - Design Safety Factors

#### **Who should attend?**

Petroleum Engineers, Production engineers, well technologists, production foremen, reservoir engineers

**5 Days**

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### **Well Productivity and Enhancement**

The participants will cover well performance and productivity. Participants will learn about productivity enhancement by stimulation, work over, sand management, corrosion control, and artificial lifting.

#### **Well Performance and Productivity**

- Well performance and productivity.
- Reservoir types and performance
- Perforating and productivity
- Well productivity impairment.
- Well inflow & outflow performance.
- Total well (NODAL) systems analysis

#### **Well Surveillance and Problem Well Identification**

- Well surveillance and problem well identification.
- Production logging applications and techniques
- Electric and slickline surveys
- Sand production, control, and productivity effects
- Water production, control, and productivity effects

#### **Productivity Enhancement**

- Well intervention
- Matrix stimulation
- Hydraulic fracturing
- Candidate selection and stimulation exercise

#### **Productivity Enhancement (cont.) and Well Controls**

- Well Intervention
- Presentation and discussion of Candidate Selection Exercise
- Tubing techniques and workover (Rig)
- Sand management
- Corrosion monitoring and control
- Control of paraffins, asphaltenes, and hydrates
- Scale deposition, control and removal

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### **Artificial Lift and Electrical Submersible Pumps (ESP)**

- Artificial lift
- Electrical Submersible Pumps (ESP) and other systems
- Exercises on ESP systems
- Final Exam

**5 Days**

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### **Overview of Reservoir Management**

#### **About the course**

Reservoir management models for optimum field development and field operating plans are analysed. The interdisciplinary reservoir management approach shows how each technology or function contributes to the plan and how checks and balances are developed.

#### **Course Objectives**

The participants will learn the following:

- Apply the principles of sound reservoir management.
- Use the interdisciplinary synergistic approach to efficient reservoir management.
- Include each reservoir management component and the importance of timing and cost/benefit analysis.
- Develop checks and balances.

#### **Course Content**

- Definition of reservoir management: an integrated, interdisciplinary team effort
- Goal setting, planning, implementing, monitoring, and evaluating reservoir performance.
- Field development and field operating plans to optimize profitability.
- Efficient monitoring of reservoir performance
- Minimizing drilling of unnecessary wells, Wellbore, and surface systems
- Well testing and automated production systems.
- Economic impact of operating plans
- Identifying and acquiring critical data, data acquisition, and analysis
- Maximizing economic recovery and minimizing capital investment, risk, and operating expenses
- Timing of field implementation of reservoir management plan
- Case histories and analysis
- Importance of reservoir characterization and drilling and operating plans.
- Primary recovery, pressure maintenance, and secondary and tertiary recovery
- Responsibilities for team members

#### **Who Should Attend?**

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Reservoir, production, and operations engineers, geologists, geophysicists, managers, experienced technicians, and service company personnel responsible for improving the performance of petroleum reservoirs.

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### **Concepts in Dynamic Modelling/ Applied Reservoir Simulation With ECLIPSE**

#### **About the Course**

The ECLIPSE industry-reference Black oil simulator offers the most complete and robust set of numerical solutions for fast and accurate prediction of dynamic behavior—for all types of reservoirs and degrees of complexity, structure, geology, fluids, and development schemes. ECLIPSE is a fully implicit, three-phase, 3D, general purpose black-oil simulator that includes several advanced and unique features. In this course, you will discover the various solutions ECLIPSE offers over the entire spectrum of reservoir simulation. This training focuses on understanding ECLIPSE syntax rather than simulation methodology.

#### **Course Content**

- ❑ Introduction to Reservoir Simulation
- ❑ Single Fluid Flow Equation
- ❑ Multiphase Flow Equation
- ❑ Finite-Difference Approximations
- ❑ Consistency, Convergence and Stability
- ❑ Grid Systems and Boundary Conditions

#### **PRACTICAL SESSION.**

#### **Course Outline**

- Eclipse Data File Structure Overview
  - RUNSPEC, GRID Section Overview
  - PROPS Section & REGIONS Section Overview
  - SOLUTIONS Section & SUMMARY Section Overview
  - SCHEDULE Section Overview
- Eclipse Simulation Workflow
  - Runs Specification and Keywords
  - Grid Import/Grid Properties Definition/Grid Edit and Keywords
  - PVT Modelling and Keywords
  - SCAL Modelling and Keywords
  - Equilibration Data Specification/ Initialization and Keywords
  - Wells/Production Scheduling and Keywords
  - History Matching

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- Forecasting (Prediction); Keywords for Summary Vectors
- Auxiliary Programs required for Dynamic Simulation with Eclipse
  - PVTi; SCAL; VFPI (Prosper/Perform); SCHEDULE
- Miscellaneous Topics

Black Oil and Compositional Simulation in Eclipse; Aquifers Modelling; API Tracking; Dual Porosity; Local grid refinements; Hysteresis; Miscible Flooding; Multi-Segment Well Option; Saturation Functions (two families of keywords); Total compressibility Checks; Transmissibility Calculations and modification; Vertical Equilibrium; Use of the Calculator; Automatic History matching / Optimization.

- Special Topics

De Bugging Eclipse runs; Monotonicity errors; Numerical Convergence problems; Solutions method (Fully implicit, Adaptive Implicit and Explicit formulations); Gi-pseudocompositional

- C. Economic Theory of Natural Resource Extraction Examples of Black Oil Reservoir Simulation (Oil Reservoir; Gas Reservoir)
- Example of Compositional Reservoir Simulation (Gas Injection /Condensate Reservoir Simulation)

### **Who should attend?**

Reservoir Engineers, Production Engineers, Geologists, Geophysicists Petroleum Inspectors and Managers.

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### **Well Test Design and Analysis**

This course stresses practical application of well test theory to design and interpret pressure transient tests. An integrated approach to well test interpretation is emphasized throughout the course. Class exercises involving hand calculations and simple spreadsheet applications will reinforce the concepts illustrated by both synthetic data sets and real field examples. Participants will be able to apply the knowledge and skills they gain in this course to their job assignments upon course completion.

#### **Types of Test Analysis**

- Steady state, semi-steady state, and transient well performance
- Basic concepts for test analysis, Drawdown, and build-up testing
- Semilog analysis and estimating average reservoir pressure.

#### **Diagnostic and Derivative Analysis**

- Diagnostic and derivative analysis, Wellbore storage and type curve matching, Sealing faults and stratigraphic pinch outs.
- Late time boundary and depletion effects

#### **Types of Well Testing**

- Interpretation of well test data, Analysis of post-fracture tests
- Variable rate analysis methods, Horizontal well testing, Multi-well testing

#### **Analysis Gas and Gas Condensate Reservoirs**

- Modifications for gas wells and multiphase flow
- Well test analysis in gas and gas condensate reservoirs.
- Pseudo-pressure and type curve analysis techniques
- Phase redistribution

#### **DST**

- DST key features, DST design and analysis, Interference tests, Reservoir limit tests, Well test design and step-by-step procedure

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### **Reservoir Management and Monitoring**

#### **About the course**

This course will cover the basic techniques used in modern reservoir management and reservoir monitoring. The reservoir management process with data analysis, reservoir dynamic modelling, and production operations will be discussed. Surface facilities, related project evaluations and economics will be covered. The class will also cover the general aspects of reservoir monitoring and planning.

#### **Course Objectives**

The participants will learn the following:

- Apply the principles of sound reservoir management.
- Use the interdisciplinary synergistic approach to efficient reservoir management.
- Include each reservoir management component and the importance of timing and cost/benefit analysis.
- Develop checks and balances.

#### **Course Content**

##### **Reservoir Management: Processes, Concepts, and Analysis**

- Reservoir management process
- Concepts, sources of expertise, data acquisition, and data use
- Cycle, integration, analysis, and modeling
- Data Analysis, models, and Geo-Sciences Static Model

The first day of this course will focus mainly on the reservoir management process. Participants will also learn about the concepts, sources of expertise, data acquisition and data use in respect to reservoir management. The cycle integration, analysis and modeling of a reservoir will also be covered. The day will end with a discussion of data analysis, models, and the Geo-Sciences Static Model.

##### **Reservoir Model, Operations, and Facilities**

- Reservoir model – Dynamics Well Model
- Production operations
- Surface facilities

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Participants will learn about the reservoir model, specifically the dynamics well model, during the second day of this course. Production operations and surface facilities will also be discussed. On this day the participants will be given a group project that will be evaluated the following day.

### **Financial Management**

- Project evaluation
- Economics
- Net cash flow and time value of money
- Investment decisions
- Project selection and revision

This day will start out with the project evaluations for the assignments from the day before. The day will then continue with a discussion on economics, net cash flow, time value of money, and investment decisions. Project selection and revision will also be covered.

### **Reservoir Monitoring**

- Reservoir Surveillance
- Pressure profiling
- Production logging, measurements, and interpretation
- Saturation monitoring

### **Reservoir Management Application**

- Example generic applications
  - Mature field
  - Waterflood
  - New field

### **Who Should Attend?**

Engineers, geoscientists, operating personnel, and team members.

**5 Days**

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## **Petroleum Economics & Risk Analysis**

### **About the Course**

This training course teaches you the fundamental financial aspects of a petroleum company. The course focuses on modelling aspects within the petroleum industry and is suitable for finance and non-finance professionals within the petroleum industry.

### **Course Objectives**

- Understand various economic terms used in the Oil & Gas industry
- Understand how to develop economic models of various petroleum fiscal regimes.
- Carry out cash flow analysis, different economic analyses for petroleum related project and determine economic indicators.
- Evaluate and quantify risks and uncertainties.
- Make the right investment decision in the presence of risk.
- Carry out a comprehensive economic evaluation study for any petroleum related project including risk analysis and sensitivity study using spreadsheet.
- Contribute to the petroleum project investment within a solid economic system and do a detailed economic evaluation.
- Contribute to the decision-making process for any petroleum related project.

### **Course Content**

#### **Session 1: Financial Reporting & Performance Measurement**

- Introduction to Petroleum Economics
- The Financial Statements
- Accounting Ratios & Key Performance Indicators

#### **Session 2: Cash Flow Analysis and Project Evaluation**

- Cash Versus Profit
- Introduction to Financial Theory
- Project Investment Analysis

#### **Session 3: Economic Models & Spreadsheet Design**

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- Economic Models and Spreadsheet Design
- Calculation of Margins

### **Session 4: Fiscal Regimes**

- Fiscal Regimes

### **Session 5: Risk, Uncertainty & Decision Analysis**

- Risk and Sensitivity Analysis
- Decision Analysis

### **Session 6: Corporate Finance**

- Sources of Capital
- Valuation of Corporate Liabilities
- Oil and Gas Stock Valuation

### **Who Should Attend?**

CFO's, Accountants, Corporate Treasury Managers, Investment professionals, Corporate Finance professionals, Financial controllers, accountants and analysts, Project finance professionals, Engineers, Project Managers, Non-finance professionals working within the petroleum industry.

**5 Days**

**Performance Analysis, Prediction, and Optimization Using Nodal Analysis**  
**About the course**

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[md@btpetroleum.com.ng](mailto:md@btpetroleum.com.ng), [sbtpetroleum@gmail.com](mailto:sbtpetroleum@gmail.com)

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In this course, we will apply nodal analysis concepts viewing the total producing system as a whole from the reservoir rock through the completion, well bore and gathering system, to the market while honoring system rate/pressure constraints. We will also avoid improper design where any one component, or a mismatch of components, adversely affects the performance of the entire system. Then Perform a system-wide analysis to increase well rates by identifying bottlenecks and design an efficient field-wide flow system, including wells, artificial lift, gathering lines and manifolds. Finally, we will use nodal analysis, together with reservoir simulation and analytical tools.

### **Course Content**

#### Nodal Analysis Overview

Inflow Performance: Basics, well-test pros and cons, best models for all well types, IPR curves

Completions: Modeling basics, flow patterns in gravel packs, pressure drop in perforations, gravel packs and wellbore, optimal perforation density

Tubing Performance: Videos of flow patterns, flow dynamics, logging in horizontal wells, slugging and pressure changes in all completion types, friction drop in horizontal wells, unloading techniques and examples

Flowlines: Pressure drop models, bottlenecks in a gathering network, line loops and jumpers, gathering systems

- Forecast: Field forecasts, economic optimization, evaluation of options
- Artificial Lift: Gas lift design, ESP and other methods basics
- Liquid in gas streams, what is a dry gas well, loaded wells, predicting temperatures.

### **Who Should Attend?**

Production, operations, and reservoir engineers; senior technicians and field supervisors with an engineering background.

**5 Days**

### **Gas Lift**

About the course Gas lift is one of the most widely used artificial lift techniques. Participants will learn the impact of tubing sizing, gas lift valve selection, gas lift mandrel

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spacing, gas lift valve design, casing pressure, surface choke size, gas volume, etc., on well design and operation. After attending this course, participants will be able to identify, diagnose, analyze, and solve gas lift problems. With increased prices, more emphasis is placed on techniques to maximize production. New developments at various stages of development and application are also covered.

### **Course Content**

- Gas lift concepts and data, Inflow/Outflow
- Nodal analysis, Equilibrium curves
- Gas lift equipment and valve mechanics
- Valve selection and calibration, Unloading.
- Mandrel spacing and step-by-step, complete gas lift design for a well.
- Temperature effects on valves
- Determine the Ptro, Orifice sizing techniques.
- Lift gas rates for best economics, Causes and solutions of instability.
- Gas lift surveillance and measurement
- Analysis of flowing pressure gradient surveys
- Analysis of GL surface charts and measurements
- Gas allocation and field optimization
- Use of computer programs for gas lift design, troubleshooting, and optimization.

### **Who Should Attend?**

Production engineers and operations staff responsible for designing gas lift installations and/ or performing surveillance and optimization on wells using gas lift; appropriate for staff at all levels of gas lift expertise and has been given with good results to both production engineers new to gas lift as well as industry gas lift consultants.

**5 Days**

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### **Artificial Lift Systems**

#### **About the course**

Participants work with software that allows them to design and analyze artificial lift designs, which should improve performance and result in higher production rates and/or reduced operating costs. Participants learn how to design and troubleshoot rod pumping, continuous gas lift, and electric submersible pump systems. Other methods such as PCP, plunger lift, jet pump, hydraulic pump, and intermittent gas lift will also be addressed. Participants gain experience in solving problems by hand and by using advanced computer programs. Troubleshooting is an important part of artificial lift operations and several typical surveillance problems are solved.

#### **Course Content**

- Overview of artificial lift technology
- Criteria for selection of artificial lift system
- Reservoir performance: inflow and outflow relationships
- Artificial lift screening
- Introduction to rod-pumping, gas lift, and ESP systems
- Rod-pump design: pumping unit, rods, pump, prime movers, gas anchor, pump-off controls
- Gas lift design: mandrels, valves, injection gas requirements, temperature, chokes, spacing, equilibrium curve, continuous flow design.
- ESP design: pump performance curves, pump intake curves, typical problems, installation, troubleshooting.
- Best practices for installation and maintenance
- Economic analysis

#### **Who Should Attend?**

Engineers, technicians, field supervisors, and others who select, design, install, evaluate, or operate artificial lift systems.

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## **Introduction to Production Engineering**

This course covers fundamental concepts, following the hydrocarbons production cycle. The course starts with a revision of Reservoir Engineering fundamental notions, focusing then in the effect of well completion in production and finally concentrating in the most common operations and well interventions.

### **Overview of Reservoir concepts. How reservoir properties affect production:**

- Introduction, Course Objectives, Overview of Production Engineering
- Geology and Production, Rock Properties
- Fluid Properties; Reserves, Reservoir Driving Mechanisms
- Damage and Skin

### **Performance Prediction:**

- Well Testing, Nodal Analysis, Nodal Analysis exercises

### **Typical Upper Completion:**

- Casing string and suspension, Tubing Selection
- Tubing Connections; Packers, Wellheads and Xmas trees
- Accessories, Safety Valves, Running Completions, Artificial Lift, Multilaterals

### **Typical Lower Completions:**

- Introduction to Sand Control, Gravel Pack Design
- Alternative Path, Perforations

### **Production Operations: Stimulation, Surface Facilities, Wireline and Coiled Tubing:**

- Acidizing Candidate Selection, Acidizing; Fracturing
- Surface Facilities, Production Logging
- Concerns in typical coiled tubing applications

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### **Introduction to Reservoir Engineering**

This course will introduce participants to the basics of reservoir engineering. It will cover the role of reservoir engineers in exploration and production. Participants will also learn about fluid and rock properties used in reservoir engineering applications and the fundamental concepts of fluid flow in porous media. Multiphase situations, types of oil and gas reservoirs, reservoir drive mechanisms, the basics of material balance and decline curve analysis, and reserve definitions will also be discussed.

#### **Reservoir Engineering Basics**

- Overview of Reservoir Engineering
- Reservoir life cycle
- Reservoir formation properties
- Identification of fluid contacts and pressure gradients

#### **Reservoir Conditions**

- Fundamentals of reservoir fluids phase behaviour
- Darcy's Law and fundamentals of fluid flow in porous media

#### **Understanding Reservoir and its Production Capacity**

- Principles of Well Testing in reservoir characterization.
- Oil and Gas Well Inflow Performance Analysis

#### **Reservoir Drive**

- Reservoir Drive Mechanisms, Principles of Material Balance Analysis
- Immiscible displacement concepts

#### **Reserves**

- Definition of Reserves and Volume Estimation Methods
- Decline Curves Analysis

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### **Production Operations**

#### **About the Course**

Course participants will become familiar with both proven historical production practices as well as current technological advances to maximize oil and gas production and overall resource recovery. The course structure and pace apply a logical approach to learn safe, least cost, integrated analytical skills to successfully define and manage oil and gas operations. Applied skills guide the participant with a framework to make careful, prudent, technical oil and gas business decisions. Currently emerging practices in the exploitation of unconventional resources including shale gas and oil, and heavy oil and bitumen complement broad, specific coverage of conventional resource extraction.

#### **Course Objectives**

- Recognize geological models to identify conventional and unconventional (shale oil and gas and heavy oil) hydrocarbon accumulations.
- Understand key principles and parameters of well inflow and outflow.
- Build accurate nodal analysis models for tubing size selection and problem well review.
- Design and select well completion tubing, packer, and other downhole equipment tools.
- Plan advanced well completion types such as multilateral, extended length, and intelligent wells.
- Design both conventional and unconventional multistage fractured horizontal wells
- Apply successful primary casing cementing and remedial repair techniques.
- Select equipment and apply practices for perforating operations.

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- Plan well intervention jobs using wireline, snubbing, and coiled tubing methods.
- Manage corrosion, erosion, soluble and insoluble scales, and produced water handling challenges.
- Apply well completion and workover fluid specifications for solids control and filtration.
- Employ the five main types of artificial lift systems.
- Identify formation damage and apply remedial procedures.
- Design and execute successful carbonate and sandstone reservoir acidizing programs.
- Understand the causes of sand production and how to select sand control options.
- Understand the proper use of oilfield surfactants and related production chemistry.
- Identify and successfully manage organic paraffin and asphaltene deposits.
- Choose cased hole production logging tools and interpret logging results.
- Understand modern conventional fracture stimulation practices.
- Understand multistage, horizontal well shale gas and shale oil massive frac job design and operations.
- Review heavy oil development and extraction including mining operations and current modern thermal processes.

### **Course Content**

- Importance of the geological model
- Reservoir engineering fundamentals in production operations
- Understanding inflow and outflow and applied system analysis
- Well testing methods applicable to production operations.
- Well completion design and related equipment.

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- Primary and remedial cementing operations
- Perforating design and applications
- Completion and workover well fluids
- Well intervention: wireline, hydraulic workover units, and coiled tubing.
- Production logging
- Artificial lift completions: rod pump, gas lift, ESP, PCP, plunger lift, and others
- Problem well analysis
- Formation damage
- Acidizing
- Corrosion control
- Scale deposition, removal, and prevention
- Surfactants
- Paraffin and asphaltenes
- Sand control
- Hydraulic fracturing
- Unconventional resources: shale gas and oil, heavy oil and bitumen

### **Who Should Attend?**

Petroleum engineers, production operations staff, reservoir engineers, facilities staff, drilling and completion engineers, geologists, field supervisors and managers, field technicians, service company engineers and managers, and especially engineers starting a work assignment in production engineering and operations or other engineers seeking a well-rounded foundation in production engineering.

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### **Fundamentals of Reservoir Engineering**

This training course introduces reservoir engineering concepts and methods to enable cross-disciplinary exchange of ideas and experience. It provides the required input to help you understand questions crucial to the reservoir engineer: How much oil & gas is there (accumulation)? How much can be recovered (reserves)? How fast can it be recovered (rate)? By the end of the course, participants will have gained a foundational understanding of reservoir engineering that they can use while moving forward in their training.

#### **Course Content**

1. Introduction
  - Characteristics of Petroleum Reservoirs
  - Geological Concepts in Reservoir Engineering
2. Properties of Reservoir Rocks
  - Porosity and its Measurements, Absolute Permeability of Rocks
  - Rock Pore-Volume Compressibility
  - Rocks with Multiple Saturations (Wettability, Capillary Pressure, Relative Permeability), Rock Property Correlation for the Hydrocarbon. Producing Reservoir Sands of the Niger-Delta.
3. Characteristics of Reservoir Fluids
  - Nature of Reservoir Fluids, Phase Behaviour of Reservoir Fluids
  - Reservoir Fluid's Properties
4. Determination of Hydrocarbon In-Place and Oil Recovery
  - Volumetric Methods. Material Balance & Applications. Water Influx Calculations.
5. Fluid Flow Concepts
6. Advances in Reservoir Engineering
  - Computer Applications, Reservoir Characteristics and Reservoir Simulation

#### **Who should attend?**

Petroleum Engineers, Production Engineers, Geologists, Technologists etc.

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## **Theoretical principles of Crude oil, Natural Gas & Condensate Reserve Estimation**

### **About the Course**

Reserves remain the main input for several decisions in the oil industry. However, reserve estimation is quite subjective requiring considerable experience and a high degree of professional skill and judgment. In many cases, reserve estimates must be made before enough data can be collected.

This course present different methods for reserve estimation and highlight the uncertainties.

### **Course Objectives**

Participants will learn how to:

Interpret and apply the 2018 SPE-PRMS reserves definitions and principles.

- Interpret and apply the US SEC reserve definitions under SEC reporting regulations.
- Generate compliant reserves estimates and reports using either PRMS or SEC definitions
- Comprehend and work with a typical third-party reserve report
- Understand the proper use of traditional engineering and geoscience techniques to satisfy reserve reporting requirements.
- Demonstrate the reliability of modern techniques in your reserve estimates.
- Prepare for audit reviews of your reserves estimates by third-party auditors, the SEC, or banks.
- Document and defend your reserve estimates for external inspection or internal historical records.

### **Course content**

- Definition of petroleum fluids
- Classification of reserves
- Reserve estimation method

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- Analogy
- Volumetric methods
- Material balance
- Performance/decline trend analysis
- Probabilistic estimation
- Problems in reserve estimation
- Field examples

### **Who should attend?**

Reservoir, production, and drilling engineers; geologist, engineering technicians, and production and exploration managers.

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### **Integrated Production Modelling with MBA Prosper and Gap**

#### **About the Course**

The course is designed to improve the engineers understanding of the approach to building Integrated Production Models. There is a focus on the engineering, quality control and program navigation. This will equip professionals in production domain to understand production system and how different production tools can be integrated to optimize production.

#### **Course Objectives**

- To equip professional in production domain to understand production system and how different production tools can be integrated to optimize production.
- Basic understanding of the physics
- Understanding the limitation of the methods and techniques being used

#### **Course Contents**

##### **Topic 1**

- Introduction to integrated production system and importance of the integration
- Introduction to PROSPER - theory and methodology.
- Pressure loss in the wellbore - gravity and friction terms, slip, holdup
- Importance of PVT and VLP flow correlations theory.
- Important parameters and Inflow performance models – introduction
- Workshop - building a wellbore model, matching PVT and flow correlations, running sensitivities, generation of lift curves for output to GAP or simulator.

##### **Topic 2**

- Inflow performance models - Vogel, Darcy, multi-layer, horizontal, fractured etc.
- Special topics: skin calculation, gravel pack design
- Gas lift introduction –design and diagnostics using “Quick look” for gas lifted wells.
- Introduction to ESP modelling – design and analysis
- Workshop - inflow performance, gravel pack and skin modelling, running sensitivities.
- Practice in building and analysing well problems. Artificial lift design

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### **Topic 3**

- Introduction to MBAL - theory and capabilities
- Aquifer models, history matching techniques (numerical and graphical), simulation.
- Running a prediction - importing VLPs and IPRs from PROSPER, adding constraints.
- Introduction to multi-tank and multi-PVT MBAL
- Workshop - Building a tank model, history matching, integration with PROSPER for predictions. Field development example

### **Topic 4**

- Introduction to GAP - theory and capabilities
- Building a surface network model - linking to PROSPER well models.
- Generation of surface performance curves
- Production monitoring with well tests. Pipeline modelling and matching
- Adding constraints at well, manifold, pipeline, and separator level
- Linking PROSPER and MBAL to GAP for full field optimisation and forecasting.
- Batch generation of lift curves and IPRs. Production allocation Field optimisation - gas lift gas allocation. Full field forecasting with linked reservoir model(s)

### **Topic 5**

- Integrated modelling Workshop - Full field development example. Well development schedule to meet target production profile. Effect of artificial lift.

### **Who Should Attend?**

Anybody who wants to become familiar with production system and how the production tools are used and integrated. It is also intended for new hires in production domain. Unrelated disciplines trying to understand the production context such as accountants, project managers etc can also attend.

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### **Reservoir Management**

#### **About the course**

Reservoir management models for optimum field development and field operating plans are analyzed. The interdisciplinary reservoir management approach shows how each technology or function contributes to the plan and how checks and balances are developed.

#### **Course Content**

- Definition of reservoir management: an integrated, interdisciplinary team effort
- Goal setting, planning, implementing, monitoring, and evaluating reservoir performance.
- Field development and field operating plans to optimize profitability.
- Efficient monitoring of reservoir performance
- Minimizing drilling of unnecessary wells, Wellbore, and surface systems
- Well testing and automated production systems.
- Economic impact of operating plans
- Identifying and acquiring critical data, data acquisition, and analysis
- Maximizing economic recovery and minimizing capital investment, risk, and operating expenses
- Timing of field implementation of reservoir management plan
- Case histories and analysis
- Importance of reservoir characterization and drilling and operating plans.
- Primary recovery, pressure maintenance, and secondary and tertiary recovery
- Responsibilities for team members

#### **Who Should Attend?**

Reservoir, production, and operations engineers, geologists, geophysicists, managers, experienced technicians, and service company personnel responsible for improving the performance of petroleum reservoirs.

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### **PVT Properties of Reservoir Fluids**

This course will present the methods for obtaining values of reservoir fluid properties from laboratory data and correlations. Chemical properties of hydrocarbons, conventional laboratory PVT (Pressure-Volume-Temperature) tests and quality control will also be covered. Participants will learn about phase diagrams, mixing rules, EOS, EOS tuning, and fluid properties while attending this course. Each day participants will be given examples and problems to solve.

This course will help participants gain a better understanding of the relationship between the five reservoir fluids and how to manage problem concerning reservoir fluid properties with increased confidence.

#### **Fundamentals of PVT (Pressure-Volume-Temperature)**

- Overview of PVT Analysis
- Hydrocarbon Chemistry
- Phase Behaviour of single and multi-component systems
- Miscibility concept
- Reservoir Fluids

#### **PVT Fluid Properties, Reporting and Evaluating**

- Equations of State for Ideal and Real Gases
- PVT Properties of Natural Gas
- PVT Properties of Black Oil
- Reservoir Fluid Studies Reports

#### **Development of Equation of State (EoS) Models**

- Black Oil Correlations
- Ideal and Non-Ideal Gas-Liquid Equilibrium
- Evaluation of phase boundaries and flash equilibrium with EoS

#### **Tuning and Data Requirements**

- Cubic Equation of State
- Solution of van der Waals EOS
- Fugacity Evaluations
- PVT-VLE Evaluation

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- Tuning of Equations of State

### **Oil Filed Applications**

- Surface Separation and example separator Calculations
- Properties of Oilfield Water
- Gas Hydrates and Hydrate Prediction correlations

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## **Reservoir Fluid Properties: Preparation for Reservoir Engineering and Simulation Studies**

### **About the course**

The purpose is to be able to prepare the most accurate possible set of values of fluid properties for use in other engineering calculations. An understanding of the advantages of the application of both laboratory data and correlations will be provided. Accordingly, participants are encouraged to bring their own PVT laboratory data to deconstruct in class. Equations of State calculations are introduced, and a tuning exercise is conducted on commercial software.

### **Course Content**

- Fluid fundamentals, Dry gas models
- Brine models, Wet gas models
- Dead oil models, Black oil models
- Volatile oil models, Gas condensate models
- Fluid sampling, Laboratory tests
- Reading a PVT report, Quality checks on a PVT report
- Corrections to laboratory data, Equations of State
- Tuning Equations of State

### **Who Should Attend?**

Reservoir, production and facilities engineers who have a need to model the flow of oil, gas and water through reservoirs, wellbores, and surface facilities.

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### **Resources and Reserves Evaluation**

#### **About the course**

The participants will learn various compliant methods of preparing reserves estimates, learn to estimate and understand the impact of economics on those estimates, and properly classify those reserves using the current reserves definitions. Recent case studies, SEC audit questions, and class problems are used extensively to develop an understanding of those skills and include ethical issues that arise when calculating and reporting reserves.

#### **Resource Classification**

- Overview of resources classification, Classification of resources and reserves, Supplementary resources and reserves definitions

#### **Petroleum Economics**

- Basic petroleum economics, Before tax cash flow
- After tax cash flow, Selecting investments, Economic limit.

#### **Deterministic Reserves**

- Deterministic reserves estimation methods
- Criteria for analogues, Field examples of deterministic reserves estimates.

#### **Statistics, Probability, and Uncertainty**

- Statistics, probability, uncertainty, Expected value and decision trees.

#### **Reserve Estimation**

- Simulation and probabilistic reserves estimation

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### **Oil and Gas Reserves Evaluation**

#### **About the course**

This course will include the presentation of various reserve estimating methodologies, to include the difference between resources and reserves. The classifications and definitions of these reserves and resources, along with a guideline for the application of these definitions will be covered. PRMS, SPE, WPC, AAPG, SEC, and other regulatory authority guidelines will be discussed.

The course will update G&G and reservoir engineers with the newest and most accurate methods for obtaining the value of a reserve. Following the completion of this course, all participants should be able to manage deterministic and probabilistic methods, with the aim of gaining a thorough understanding of various reserve levels and their equivalence in both systems.

#### **Course Content**

- Purpose and uses of reserves estimate, Types of reserves studies.
- How to read and understand a reserves report
- SPE-PRMS reserves definitions
- SEC reserves definitions, Compliant reserves estimation methods using analogies, volumetric analysis, performance analysis, and material balance.
- Supplemental compliant estimation techniques incorporating probabilistic analysis and simulation, Economics and reserves
- Special reserves estimation topics - reserves reporting in low permeability reservoirs, shale gas reservoirs, CBM, and EOR projects

#### **Who Should Attend?**

Geologists, geophysicists, reservoir engineers, reserves managers, bankers, and government officials involved in reserves reporting, reserves auditing, and reserves estimations.

**5 Days**

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### **Production Technology for Other Disciplines**

#### **About the course**

This course introduces a broad array of important daily Production Technology practices to team members. Emphasis is upon proven technology required to effectively develop and operate an asset in a multidiscipline development environment. Participants work several exercises such as basic artificial lift designs, acidizing programs, gravel pack designs, and fracturing programs. Shale gas and oil development challenges are thoroughly explained. Horizontal and multilateral technology is presented.

#### **Course Content**

- Role and tasks of production technology
- Completion design
- Inflow and outflow performance
- Artificial lift well completion systems (beam pump, gas-lift, ESP, PCP, plunger lift)
- Formation damage and well acidizing
- Perforating practices
- Sand control
- Hydraulic fracturing
- Shale gas and oil development
- Smart well completions
- Field surveillance and data

#### **Who Should Attend?**

Exploration and production technical professionals, asset team members, team leaders, line managers, IT department staff who work with data and support production applications, data technicians, executive management, and all support staff who require a more extensive knowledge of production technology and engineering.

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### **Production operations and Optimization**

- Well performance, Operational problems, Well testing.

### **Enhanced Recovery Mechanism**

- Types of EOR schemes, Planning of waterflood design.
- Monitoring of waterflood projects

### **Unconventional Oil and Gas**

- CBM, Shale gas and oil shale, Heavy oil

### **Economics**

### **The Drilling Rig**

- Down hole equipment, Offshore and inland drilling
- Properties of drilling fluids, well casing and cementing.

### **Normal & Special Drilling Operations**

- Deviated drilling, Multi-laterals and horizontal drilling.
- High pressure and high temperature (HPHT) wells
- Underbalanced drilling,
- Rig management (staff role, safety, environment, blow-out)

### **New Developments**

- Automatic drilling rigs and casing drilling, Slim hole drilling
- Expandable tubular and slim hole drilling

### **Well Abandonment**

### **Who Should Attend?**

This course is aimed at non-engineering professionals involved in the oil industry and for junior exploitation engineers/technologists, and geologists. **5 Days**

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### **Cost Estimation in Oil and Gas Industry**

#### **Course Description**

In this course, the participants will learn cost estimating process, principles and procedures based on best-practices. In addition, they will learn step-by-step process for developing accurate and realistic project cost estimates that withstand the scrutiny of customers and management and form a baseline for tight financial control. They will also learn how to incorporate risk and uncertainty in their estimates, provide range estimates and manage the cost estimating process throughout the project life cycle.

Participants will benefit from seasoned advice on avoiding pitfalls, mistakes and inaccuracies that can spell the difference between failure and success in any project.

This course will equip the attendees with skills in cost estimation covering but not limited to the following areas:

- Cost estimating process, principles, and procedures
- Different Cost Estimating techniques and methodologies
- Step-by-step process for developing accurate and realistic project cost estimates that withstand the scrutiny of customers and management and form a baseline for tight financial control.
- Cost data sources, validation, and normalization.
- How to incorporate risk and uncertainty in cost estimates.
- How to prepare range estimates and manage the cost estimating process throughout the project life cycle, with practical demonstration of oil and gas facilities' CAPEX and OPEX cost estimates.
- Assessment and management of contingency
- Validation and documentation of cost estimates

#### **Course Objectives**

- This course is designed to help the participants achieve the following:
  - Understand the nature of the oil and gas industry, the management of projects and costs and their relationship to the strategy of the business.
  - Be familiar with how to organize and plan an estimate, apply different estimating techniques and the relationship to the design and life cycle of a project
  - Be aware of cost control methods and reporting structures including earned value management techniques.
  - Know the principles of uncertainty and risk and the estimation and management of contingency.
  - Be exposed to the key profitability indicators for the economic justification of Oil & Gas projects.

#### **The Key Learning Points**

- Overview of activities in the oil and gas industry

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- The importance of cost as a business driver
- Different cost estimation techniques
- Controlling, reporting, and managing costs
- Evaluating and managing contingency
- Qualitative and quantitative risk management.
- Economic justification of Oil & Gas projects (Measures of Profitability)

## Course Content

- 1. Cost Estimating steps**
  - Purpose of estimate
  - How to develop estimate plan
  - How to determine cost estimate structure e.g. Work Breakdown Structure
- 2. Cost Estimating Basics**
  - Basic Project Management definitions
  - Cost Selection Methods
  - Typical project terminology & setting up for success
  - Project cost management, Cost Control
  - Resource & Cost Allocation
  - Understanding project management inputs to cost estimation
- 3. Pricing, Contracts and Risk**
  - Project management inputs to cost budgeting
  - Resource Requirements
  - Direct & Indirect Project Costs
  - Probability and Standard Deviation Formulae
  - Contract types according to risk distribution
  - Fixed Price Contracts, Cost-Plus Contracts
- 4. Classes of Estimate**
  - Cost Estimate Classes
  - Determination of Cost Estimates
  - Cost Estimate Accuracy
  - Data Availability Vs Estimate Classes
- 5. Cost Data Management**
  - How to create data collection plan
  - Types of Data
  - Sources of Data
  - Data applicability
  - Validating and Analyzing Data
- 6. Components of Estimates**
  - Base scope
  - Inflation
  - Owner's cost
  - Contingency
- 7. Risk and Uncertainty**

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- Risk Identification, Analysis & Management
  - Qualitative Risk Analysis
  - Quantitative Risk Analysis
  - Method of Assessing Contingency
- 8. Estimating Methods**
- Different estimating methods
  - How to select best estimating methods
  - Material Estimating
  - Labor estimating, Detailed estimating with labor crews
  - CAPEX Project Estimation e.g. Civil/Construction, Process plant Estimating, Drilling and Exploration Estimating
  - OPEX Cost Estimating
- 9. Estimate Report**
- Identification of ground rules and assumptions
  - Developing list of exclusions and Inclusions
  - Period, Real Term, Currency and applicable Rates of Exchange
  - Estimate Accuracy, Contingencies and Escalation applied, Confidence Level, Validity

### **Who Should Attend?**

All personnel involved in project cost estimation (Engineers and Non-Engineers).

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### **Enhanced Oil Recovery**

#### **Course Descriptions**

Since discovering new giant oil fields is becoming difficult and world oil demand is increasing, it became necessary to adopt more applications of enhanced oil techniques in mature oil fields. This training course teaches an integrated approach of enhanced oil recovery (EOR) methods. It explains the connection of each process to the reservoir principles.

The participants will learn different design aspects, types, screening criteria, and field application of current and advanced types of Enhanced oil Recovery (EOR) processes. This course teaches basics, applications, problems, uncertainties, and field development of each EOR method. Reservoir characterization techniques required for EOR will be explained and compared.

#### **Objectives of The Training**

The objectives of the training include, but not limited to, the following:

- Describe and apply different EOR processes.
- Reservoir characterization and screening actual fields for EOR methods.
- How to maximize oil recovery using Mobility Ratio and Capillary Number
- Chemical EOR: polymer, alkaline-polymer, and alkaline/surfactant/polymer
- Miscible and thermal EOR techniques and new advancements in EOR techniques
- Describe and apply different EOR processes.
- Reservoir characterization and screening actual fields for EOR methods.
- How to maximize oil recovery using Mobility Ratio and Capillary Number
- Chemical EOR: polymer, alkaline-polymer, and alkaline/surfactant/polymer
- Miscible and thermal EOR techniques and new advancements in EOR techniques

#### **Course Outline**

##### **Different EOR Processes and Screening Criteria**

- EOR: What, why and how?
- Different enhanced oil recovery (EOR) methods
- Reservoir concepts, RCAL, SCAL and fluid properties for EOR
- Screening criteria and mechanisms of different EOR methods
- How to maximize oil recovery using mobility ratio and capillary number
- Limitations, challenges, uncertainties, and problems of different EOR methods

##### **Reservoir Fluid Properties and Reservoir Characterization**

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- Reservoir concepts, main rock, and fluid properties for EOR
- Routine and Special Core Analysis (RCAL & SCAL)
- Five different reservoir fluids and downhole sampling tools
- Detailed reservoir fluid study (five tests)
- Different tools for downhole fluid sampling
- Advanced reservoir characterization techniques for EOR methods

### **Water flooding and Different Chemical EOR Processes**

- Water flooding: design requirement, frontal displacement theory
- Classification and screening of different chemical EOR methods
- Polymer flooding: polymer types, properties, and degradation
- Alkaline/polymer (AP) and ASP flooding: process and limitations

### **Miscible and Immiscible EOR Processes**

- Minimum miscibility determination
- First contact miscible vs multi-contact miscible
- Optimising WAG ratios
- Hydrocarbon: LPG, enriched gas and lean gas
- VAPEX / Heavy Oils
- CO<sub>2</sub> properties and required volumes
- Estimating recovery
- Well and facility requirements, Corrosion protection

### **Thermal and the EOR processes**

- Introduction to thermal EOR,
- Heat transfer in reservoirs,
- Steam generation and properties,
- Heat losses in flow lines and in wellbores,
- Reservoir heating / Marx and Langenheim,
- Steam drive / Myhill and Stegemeier,
- Cyclic steam / Boberg and Lantz / Contigo and Aziz, SAGD / Bulter,
- In situ combustion / Nelson and McNiel.

### **Who Should Attend?**

Petroleum, Production & Reservoir Engineers, Processing engineers & other discipline engineers, Geologists & Petro physicists, Engineers who are new to the profession. Other individuals who need to know about EOR technologies.

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## **Hydrocarbon Phase Changes In Surface Facilities/ Basic Production Operations**

### **About the Course**

This course introduces the physical and chemical behaviour of reservoir fluid from subsurface facilities through surface to the transport lines. This course focuses on the phase behaviour of petroleum reservoir fluids and phase changes when they move from one point to the other. At the end participants will be able to incorporate phase behavioural knowledge to daily work activities.

### **Course Objectives**

The learning objectives are: Description of the origin, nature and appearance of petroleum fluids, Understanding the different systems, phases, intensive and extensive properties of reservoir fluids, Description with aid of a pressure-temperature diagram the behaviour of a pure component and multi component, to give an overview of surface facilities in relation to the functions of each of the equipments, Ability to incorporate phase behaviour knowledge to daily work activities

### **Course Content**

- ❑ Introduction, Basic Principles
  - Production facility and types of facility
  - Reservoir Pressure and Temperature
  - Basic oil field chemistry and physical properties of reservoir fluids
  - Basic Oil Field Processing Scheme
- ❑ Basic System Configuration, Phase Behaviour of petroleum reservoir fluids
  - Description of Wellhead and manifold, oil treatment and storage, pumps, relief valves, chokes
  - Phase behaviour of pure substances, two component system, multi-component system
  - Phase analysis and characteristics of different oil
- ❑ Controlling the process, fluid flow from wellbore to surface
  - Pressure control, temperature control and level control
  - Phase changes from wellbore to surface, fluid flow in tubing, fluid flow in pipes (Horizontal and vertical flow)
- ❑ Two and Three Phase oil and gas separator, phase changes in facilities
  - Separation, Phase equilibrium and factors affecting separation.



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Two phase separator – Functional part of the separator, potential operating problems

Three phase separator – Functional part of the separator, potential operating problems

- Phase changes in selected facilities and revision.  
Heat Exchangers, Pumps, Water Treatment, Surge Tank, De-gaser, Assessment

### **Who should attend?**

This course will be beneficial to Production Operators, Production Foreman, Production Supervisors and Production maintenance.

**5 Days**

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### **Gas Conditioning and Processing**

#### **Course Descriptions**

The course will cover concepts and techniques necessary to design, specify and manage gas field production facilities. It covers gas conditioning and processing technology and provides a clear understanding of the equipment and processes used in common separation and gas treating systems.

Other things covered are gas dehydration, sweetening and gas processing operations and the integration between the individual processing operations. Hydrocarbon reconciliation and allocation of produced fluids to the contributing reservoirs are explained and supported by exercises to cement the learning of the various topics treated. This training seminar will enable the participants to develop a “feel” for the important parameters of designing and operating a production facility. The participants will understand the uncertainties and assumptions inherent in designing and using the equipment in these systems and the limitations, advantages and disadvantages associated with their use.

#### **Objectives Of The Course**

- Selection and evaluation of processes used to dehydrate natural gas, meet hydrocarbon dewpoint specifications and extract NGLs.
- Application of gas engineering and technology in facilities and gas plants
- Important specifications for gas, NGL and condensate
- How to apply physical/thermodynamic property correlations and principles to the operation, design and evaluation of gas processing facilities
- Equipment sizing methods for major process equipment.
- To evaluate technical validity of discussions related to gas processing.
- To recognize and develop solutions to example operating problems and control issues in gas processing facilities.

#### **Course Outline**

##### **Introduction to Natural Gas Processing**

- Introduction to natural gas processing
- Fundamentals and of natural gas engineering
- Physical properties of natural gas
- Natural gas production
- Impurities in the gas
- Contract terms

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- Heating value/ BTU (British Thermal Unit) importance
- Plant normal and abnormal conditions
- Startup and initial operation
- Natural Gas Liquid (NGL), Gas-to-Liquid (GTL), Liquefied Petroleum Gas (LPG)

### **Gas-Liquid Separation Systems**

- Gas-liquid separation system
- Separators (types of separators - separator sizing)
- Common variables such as pressure, temp., flow and level
- Instrumentation, control, and measurement of natural gas and gas liquids
- Control valves & actuators
- Pressure, temperature, and level controls
- Field application of instruments
- Structured approach to the process operation
- Contaminants removal
- Process plant machinery specific plant issues
- Management, planning and control.
- Start up and shut down planning & control.

### **Mercury Removal Systems / Hydrate Problems / Dehydration of Natural Gas**

- Mercury problem in natural gas
- Process description of the mercury removal units
- Hydrate formation conditions
- Hydrate prevention and mitigation methods
- Water content estimation
- Water dew point control
- Dehydration systems and methods

### **Dehydration of Natural Gas / NGL Recovery and Removal of Heavy Hydrocarbon**

- Glycol dehydration unit
- Process description of the TEG (Triethylene Glycol) dehydration unit
- The factors affect the TEG dehydration unit performance.
- Trouble shooting of the TEG dehydration unit.
- The nature of process problems affecting performance.
- Removal of heavy hydrocarbons (LTS & turbo expanders systems)
- Condensate stabilization - refrigeration system - cryogenics applications – turbo-expanders

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### **Sweetening Systems**

- Removal of acid gases (H<sub>2</sub>S, CO<sub>2</sub>)
- Sweetening systems: membrane system
- Troubleshooting & problem solving
- Risk management
- Introduction to the theory of inventive problem solving
- Effect of maintenance on operation
- Managing, environment, safety and quality concern
- Case studies

### **Who Should Attend?**

- Process engineers along with the petroleum and production engineers
- Field operators and technicians and other company staff involved in gas treatment and processing.
- Managers involved in the planning and development of new gas processing facilities or modifying existing facilities.
- Managers and government officials and others involved with supervising gas processing operations.

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***IWCF (International Well Control Forum) COURSES***

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### **IWCF Starter Level (Level 1)**

#### **About the Course**

This course is designed to give an overview of the drilling process and the relevance/ necessity for well control.

#### **Course Objectives**

It is designed to introduce the participants to the activities taking place on the rig and introduce the terminology of well control.

#### **Course Content**

The course is run online on the IWCF website. It is divided into easy step by step modules with tests at the end of each module.

On successful completion of the course, participants are issued an IWCF Level 1 certificate

#### **Who Should Attend?**

It is designed for people who are new in oil and gas well control.

**5 Days**



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### **IWCF DWC Introductory Level (Level 2)**

#### **About the Course**

Level 2 courses are aimed at members of the wellsite operations team working in roles which could directly contribute to the creation, detection or control of a well influx or lack of well integrity.

#### **Course Objectives**

It is designed to introduce to strategies to reduce the increasing tendency of well control incidents and techniques that can be applied to avoid the escalation of incidents to uncontrolled events and catastrophic consequences.

#### **Course Content**

- The 'U'-tube – Well Pressure Analysis
- Kicks – Causes, Prevention and Detection
- Well Shut-In Procedures
- Well Control Methods (constant BHP) with Circulation
- Special Well Control Situations
- Tertiary Well Control Industry (API) Standards and Best Practices
- Well Control Equipment, BOP Inspection and Testing Procedures

At the end of the 4<sup>th</sup> day, exams will be conducted, and the exams have two components as:

- i. Principles and Procedures
- ii. Equipment

Candidates that successfully pass both components will be issued the L2 IWCF Certificate that is valid for five years only.

#### **Who Should Attend?**

It is designed for people who are in to drilling/well control.

**5 Days**

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### **IWCF DWC Driller/Supervisor Levels (Level 3)**

#### **About the Course**

Level 3 courses are aimed at any role expected to shut in a well, such as a Driller or Assistant Driller and equivalent positions in completions, well-servicing, or intervention operations. The course covers well control theory (principles & procedures) and well control equipment with tons of work examples and questions and scheduled well control simulation sessions for surface and/or subsea installations at Driller and/or Supervisor level.

#### **Course Objectives**

It is designed to introduce to strategies to reduce the increasing tendency of well control incidents and techniques that can be applied to avoid the escalation of incidents to uncontrolled events and catastrophic consequences.

#### **Course Content:**

- The principles and procedures of rotary drilling well control for surface or combined (surface and subsea) BOP operations.
- Rotary drilling well control equipment
- Simulator familiarization and IWCF practical assessment
  - o Primary Well Control Principles
  - o Normal and Abnormal Formation Pressures
  - o Causes of Kicks and Basic kick control sheet calculations.
  - o Secondary Well Control
  - o System Pressure Losses, pressure loss due to Improper Hole Fill
  - o Equivalent Circulating Densities
  - o Leak-off Tests / Equivalent Mud Weights & Maximum Mud Weights
  - o Rotary drilling well control equipment
  - o Simulator familiarization and learning
  - o Principles & procedures of rotary drilling well control for surface / subsea BOPs

Participants shall indicate which type of BOP certificate course (i.e. “Surface” or “Combined”) is needed by the participants. The training will be done for 4 days while the exams will be conducted on the 5<sup>th</sup> day.

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The exam has three components –

1. Principles and Procedures
2. Equipment
3. Simulator Assessment

Candidates that successfully pass all components will be issued the L3 IWCF Certificate that is valid for two years.

### **Who Should Attend?**

This course is designed for Personnel involved in drilling/well control operations.

**5 Days**

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### **IWCF DWC Driller/Supervisor Levels (Level 4)**

#### **About the Course**

Level 4 courses are aimed at wellsite supervisory and office-based personnel that are primarily involved with the operational decision-making process. The course covers well control theory (principles & procedures) and well control equipment with tons of work examples and questions and scheduled well control simulation sessions for surface and/or subsea installations at Driller and/or Supervisor level.

#### **Course Objectives**

It is designed to introduce to strategies to reduce the increasing tendency of well control incidents and techniques that can be applied to avoid the escalation of incidents to uncontrolled events and catastrophic consequences.

#### **Course Content:**

- The principles and procedures of rotary drilling well control for surface or combined (surface and subsea) BOP operations.
- Rotary drilling well control equipment
- Simulator familiarization and IWCF practical assessment
  - o Primary Well Control Principles
  - o Normal and Abnormal Formation Pressures
  - o Causes of Kicks and Basic kick control sheet calculations.
  - o Secondary Well Control
  - o System Pressure Losses, pressure loss due to Improper Hole Fill
  - o Equivalent Circulating Densities
  - o Leak-off Tests / Equivalent Mud Weights & Maximum Mud Weights
  - o Rotary drilling well control equipment
  - o Simulator familiarization and learning
  - o Principles & procedures of rotary drilling well control for surface / subsea BOPs

Participants shall indicate which type of BOP certificate course (i.e. “Surface” or “Combined”) is needed by the participants. The training will be done for 4 days while the exams will be conducted on the 5<sup>th</sup> day.

The exam has three components –

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1. Principles and Procedures
2. Equipment
3. Simulator Assessment

Candidates that successfully pass all components will be issued the L4 IWCF Certificate that is valid for two years.

### **Who Should Attend?**

This course is designed for Personnel involved in drilling/well control operations.

**5 Days**

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## **IWCF DWC Experienced Driller in Well Design Levels (Level 5)**

### **About the Course**

Level 5 is aimed at experienced and knowledgeable candidates who play a critical role in well design and the approval of well designs. The programme must recognise the impact that design, planning and programming of well operations can have on well integrity assurance throughout the life cycle of the well.

### **Course Objective**

Request

### **Course Content:**

Request

### **Who Should Attend?**

Key engineering and technical authority positions in drilling or well intervention operations who already hold a Level 4 certification are strongly encouraged to attend an IWCF Well Control Level 5 course.

**5 Days**



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## ***DRILLING ENGINEERING COURSES***

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### **Cementing Operation**

#### **About the Course**

Cementing is a fundamental element of effective well construction. By understanding cement chemistry, additive use, and lab procedures the participants will be able to build a solid foundation to design and execute cement jobs. Mud removal and centralization will be taught so that the participants can apply effective processes to ensure cement job success.

Special purpose cements will be discussed in a way to show when they should and should not be used, as well as how they can be used to solve challenges encountered in complex and extreme well environments. Foamed, engineered particle sized, flexible, and salt cements will also be covered in detail.

#### **Course Objectives**

During this course, participants will practice cementing calculations, as well as job design exercises and cement evaluation methods using real-life examples. Liner cementing and stage cementing jobs will be developed in the classroom. Cement design software will also be demonstrated.

#### **Course Outline**

##### **Cement Placement and Primary Cement**

- Primary cementing overview
- Criteria for successful cementing
- Casing hardware
- Cement chemistry

##### **Cementing Additives**

- Cementing additives
- Rheology
- Cement laboratory equipment
- Mud removal techniques
- Temperature prediction and importance in job success
- Set cement properties.

##### **Special Purpose Cements**

- Salt cementing
- Gas migration control
- Foamed cement

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- Engineered particle slurry cements
- Lost circulation

### **Cement Job Designs and Calculations**

- Primary cement job design
- Primary cementing calculations
- Stage and liner cementing
- High angle and horizontal cementing
- Deepwater, plug, and squeeze cementing.

### **Cement Job Execution, Procedures, and Evaluation**

- Cement job execution
- Cement job procedures
- Cement quality evaluation
- Sonic and ultrasonic tools
- Cementing design and evaluation software

### **Who Should Attend?**

Non-Mechanical Engineers • Facility Managers • Maintenance Managers • Energy Engineers and Managers • Engineering Managers • Safety Managers • Architects?

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## **Formation Damage: Assessment and Mitigation**

### **About the Course**

The participants will learn formation damage mechanisms and the methods used for mitigation, including a good overview of matrix treatments, in sandstones and carbonates, and hydraulic fracturing in high permeability reservoirs.

### **Course Objectives**

*Formation damage can occur in oil and gas wells during drilling, completion, etc. This course will cover and explain in detail mechanisms of *formation damage and Mitigation*.*

### **Course Content**

- Introduction
- 1st day quiz
- Damage and Skin
- Completion Effects on Formation Damage
- Matrix Stimulation or Perforating?
- Problem Diagnosis and Well Intervention
- Acidizing Candidate Selection
- Introduction to Stimulation
- Sandstones Stimulation
- Sandstones Stimulation Fluids
- Fracturing High Permeability Formations
- Tip Screen-Out
- Rheology and Properties of Frac Fluids
- Types of Frac Fluids
- Proppants
- Resin Coated Proppants
- Proppant Flowback
- Acidizing Carbonates
- Acid Placement
- Last day quiz
- Round table

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### **Who Should Attend?**

Production, Drilling, Reservoir Engineers and other field personnel willing to be introduced to wellbore damage mechanisms and mitigation methods.

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### **Well Design and Engineering**

#### **About the Course**

Participants are actively engaged in every aspect of the technical activities required to deliver a cost-effective well plan while also gaining valuable perspective on how the overall process should be managed in a dynamic team environment. The workshop content is often customized to address technologies and practices that may be specific to a project or operational situation. The single most important goal of the workshop is to draw the linkages between the design topics and to leave the participants with an understanding that each decision has influence on those that follow. Intensity mounts as the course progresses and each design topic builds on those that came before.

#### **Course Objectives/Course Content**

Understand the responsibilities of a well planner as a designer and project manager •  
Review offset analysis and data gathering.

- Understand the influence of completion design and production requirements on well design
- Identify trajectory design issues and their influence on torque and drag, wellbore stability, and future intervention
- Develop specific casing design skills including casing point selection; design load case development; burst, collapse, and tension calculations; controlling load and safety factor determination and select appropriate size, weight and grade
- Perform cement slurry and displacement volume calculations
- Complete drill string and BHA designs and failure prevention assessment for each hole section, and review for directional well applications
- Understand different bit types and applications, and perform calculations to support bit run economics
- Optimize hydraulics for each hole interval based upon wellbore, fluids and drill string configurations
- Compile risks to well delivery, and develop mitigations and contingency plans

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- Develop minimum rig capability specifications to deliver well requirements
- Present and defend a well plan to management

### **Who Should Attend?**

Drilling engineers, completion engineers, and drilling supervisors involved with drilling operations and well planning.

**5 Days**



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### **Mud Logging Operations**

#### **About the Course**

The sessions will be run with experienced professionals providing an in-depth explanation of Mud Logging services.

The course will provide participants with a clear understanding of the primary objective of Mud Logging services, which is the surface measurement of drilling parameters, gas data, and geological information.

#### **Course Objectives**

- Make well to well correlation.
- Understand well drilling.
- Understand mud logging equipment.
- Calculate the lag time and advanced volumes calculations.
- Describe the formation cuttings.
- Integrate the cuttings evaluation with the drilling parameters.
- Interpret all the acquired geological and engineering data at the rig site.
- Evaluate the hydrocarbon potential of the formation.
- Deal with drilling mud rheology and hydraulics.
- Handle, process and describe cores.
- Evaluate different types of pressure.
- Handle formation pressure to minimize borehole risks.

#### **Course Content**

##### **Introduction to Mud Logging and Geology**

- Safety briefing
- Mud logging definition
- Introduction to geology and sedimentology

##### **Practical Session and Acquisition Chain**

- Practical Session: Recognize these Rocks!
- Acquisition chain

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- Sensors, signals, and systems

### **Acquisition Chain and Gas Detection**

- End of an acquisition chain
- Understanding gas detection
- Degassing process and technologies
- Types of gas analysis

### **Gas Detection (Cont.)**

- Interpretation generalities
- Gas in and out, Case studies

### **Gas Detection and Close Out**

- Understanding gas detection, Mud logging and added value.

### **Who Should Attend?**

New hire geologists and geophysicists; and reservoir, petroleum, and drilling engineers.

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### **Deepwater Drilling Design and Operations**

#### **About the Course**

This course is designed to give drilling engineering professionals an understanding of the technology, processes, and equipment used to drill deepwater oil and gas wells. The course will follow a typical deepwater drilling program and drilling process from geology setting, through metocean environment, station-keeping, rig selection, conductor driving, surface casing setting, to drilling the remainder of the well. Wellhead systems, BOP, and marine riser systems for typical deepwater MODUs will be covered.

Once the drilling process and equipment has been reviewed the class will then look at some operational aspects such as well control and shallow hazards; then it will continue with emerging technologies such as multi-axis rigs, Dynamic Pressure Drilling, and surface BOP's.

#### **Course Objectives**

The participants will gain awareness of key issues with testing, completing, and interventions, as well as overall operations management of deepwater well projects.

#### **Course Outline**

##### **Deepwater Drilling Challenges and History**

- Deepwater drilling operations
- Deepwater history
- Deepwater locations and geology
- Overburden and compaction
- Pore and fracture pressures

##### **Planning Operations**

- Metocean and currents
- Rig selection
- Station keeping
- Open water operations (ROV's)
- Conductors

##### **Conductors, Surface Casing and Well Design**

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- Conductors
- Subsea wellheads and casing strings
- Cementing
- BOP systems

### **Deepwater Rig Surface Equipment and Well Operations**

- Drilling Riser Systems
- Drilling equipment for deepwater
- Deepwater well control
- Fluids
- Salt

### **Drilling Fluids, Subsalt Issues, and New Technologies**

- Multi-axis rigs
- Dynamic pressure drilling
- Testing, completions, and interventions
- Operations management

### **Who Should Attend?**

Drilling professionals with well design and operations experience onshore and/or in shallow water desiring an understanding of challenges and solutions in the deepwater drilling environment. Drilling Engineers, Wellsite leaders, Well Engineering Team, Leaders, Well Operations Superintendents, Managers associated with deepwater well projects

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## **Drilling Fluids**

### **About the Course**

This course will take participants through a comprehensive look at the functions of drilling fluids. It will address how to engineer a mud system, as well as cover water based, oil based, and synthetic mud systems.

The course material for each class can be customized to the client's specifications and requirements, as well as be extended into a two-week course. A lab visit can also be arranged depending on location and availability.

### **Basics of Drilling Fluids**

- Functions of drilling fluids, Composition of water-based mud
- Clay chemistry, Rheology

### **Water Based & Oil Based Mud Systems**

- Products and systems, High performance WBM
- Oil and synthetic based mud products and systems

### **System Circulation and Pipe Problems**

- Lost circulation, Stuck pipe problems
- HPHT challenges, HPHT applications and systems

### **Hole Cleaning and Completion Fluids**

- Hole cleaning
- Virtual hydraulics and real time measurements
- Reservoir drill-in fluid system, Completions fluid
- Well clean up and displacement procedures

### **Equipment and Future Technologies**

- Solid control equipment, Emerging technologies
- Course review and wrap up

**5 Days**

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### **Basic Drilling Technology**

#### **Course Descriptions**

This course discusses the technology used to drill wells. The procedures and equipment used in drilling oil and gas wells are described for people to understand irrespective of their academic background. The overall drilling process is presented along with definitions and descriptions of drilling equipment. This provides the vocabulary to understand the drilling process. Also discussed in this course are various components and procedures with explanations of the basic science concepts which guide these processes. Some of these are drill bits, directional drilling, drilling fluids, solids control, cementing, casing, well bore stability, well control, measurement-while-drilling techniques, stuck pipe, lost circulation, and well bore hydraulics.

Some technology enhancements are included to improve understanding of drilling operations for all participants, with or without a science background. A discussion of clay mineralogy helps understand well bore instability and drilling fluids.

#### **Course Content**

- Overview of the drilling process
- The overall drilling process and equipment.
- The language of drillers-understanding their terminology.
- Understanding the abbreviations and acronyms associated with drilling.
- Rig equipment and types, Types of drill bits, MWD
- Drill strings Drilled solids management.
- Mud tank arrangements,
- Drilling fluid properties
- Well control, Cementing.
- Casing design, Hole problems (stuck pipe, lost circulation)
- Well control, Directional drilling operations and tools.

#### **Who Should Attend?**

Petroleum and production engineers, completion engineers, geoscientists, managers, technical supervisors, service and support personnel, entry level drilling engineers, drilling operations personnel, drilling office support staff.

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### **Basic Drilling, Completion and Workover**

#### **Course Descriptions**

This course presents the basics of drilling and completion operations, plus post-completion enhancement (workovers). Participants will learn what is happening downhole, discover what can be accomplished, and learn how drilling and completion can alter reservoir performance. Learn to communicate with drilling and production personnel.

#### **Course Content**

- Overview of the drilling process
- Language of drilling, completing, and well intervention.
- Drill string components: bits and accessories
- Drilling fluids and hydraulics
- Hole problems, stuck pipe, side-tracking and fishing.
- Cores and coring, Electric logging, MWD, LWD
- Casing design and installation
- Primary and remedial cementing
- Directional, horizontal, multilateral, and under-balanced drilling
- Wellhead equipment and trees
- Options for completions and workovers
- Tubing, packers, and completion equipment
- Safety and flow control devices, Open hole completions, Perforating
- Coil tubing operations, Wireline techniques
- Well stimulation - surfactants, solvents, acidizing, hydraulic fracturing.
- Formation and sand control - mechanical retention, chemical consolidation, and gravel packing, Scale and corrosion
- Directional drilling and multi-laterals
- Scale and corrosion, Paraffin and asphaltenes

#### **Who Should Attend?**

Technical, field, service, support, and supervisory personnel desiring to gain an awareness of wellbore operations. Excellent for cross-training of other technical disciplines such as reservoir and facility engineers, geoscientists, supervisors, service personnel, and anyone who interacts with drilling, completion, or workover engineers.

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### **Basic Petroleum Engineering Practices**

#### **Course Descriptions**

This is a basic introduction to Petroleum Engineering discipline, which includes reservoir, production, and drilling engineering as well as related topics. Basic Petroleum Engineering Practices will set the foundation for technical professionals with regards to technology and its engineering applications. The course describes reservoir fluids, petroleum geology, and petroleum reservoirs, exploration technology, drilling engineering and operations, well completion technology, and production technology are treated.

#### **Course Content**

- Reservoir fluid properties
- Petroleum geology
- Reservoir properties and evaluation
- Unconventional resources
- Exploration technology
- Drilling engineering
- Well completion, stimulation, and workover.
- Well testing and formation damage.
- Production operations
- Recovery methods
- Surface processing

#### **Who Should Attend?**

Engineers, engineering trainees, technical managers and assistants, technicians, geologists, geophysicists, chemists, physicists, service company personnel, sales representatives, and data processing personnel.

**5 Days**

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### **Basic Petroleum Technology**

#### **Course Descriptions**

This course provides the participant with an understanding of basic petroleum technology in the context of the Petroleum Value Chain, from exploration to abandonment. The participant will understand how and when geoscience and engineering professionals use technology to determine and then optimize the economic value of an oil and gas field. This enables the participant to maximize their professional and administrative contribution in their organization. Participants first learn and understand why various global oil and gas production types have different value. The participant learns which technologies are used by the geoscience and engineering departments during each stage of the asset life cycle and WHY! This E&P lifecycle context accelerates an understanding of basic petroleum technologies and the oil industry. This learning is achieved through guided discussions, videos, animations, and progressive team exercises utilizing 'Our Reservoir' and 'Our Well' as working models.

#### **Course Content**

- E&P asset management process overview
- Reservoir fluid properties
- Petroleum geology
- The petroleum reservoir, conventional and unconventional
- Exploration technologies
- Drilling and operations
- Well completions and workovers.
- Production operations
- Reservoir recovery mechanisms
- Surface processing

#### **Who Should Attend?**

This course is appropriate for those who need to achieve a context and understanding of E&P technologies, and/or the role of technical departments in oil and gas operations, and/or be able to understand and use the language of the oilfield.

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### ***Petroleum Engineering for Non-Engineers***

#### **Course Objective:**

This course is designed to provide non-engineering petroleum industry professionals with a thorough overview of most key aspects of petroleum engineering technology and its applications. The course addresses engineering issues ranging from initial involvement at the exploration stage to production optimization challenges. The training sessions focus on relevant and practical issues and include a combination of classroom exercises and basic engineering problems.

#### **Course Content**

##### **Reservoir Geology**

- Geologic cycle, Types of reservoir rocks
- Main elements of petroleum reservoirs

##### **Rock and fluid properties**

- Types of rock porosity and measurements
- Definitions of formation permeability
- Hydrocarbon classifications and fluid sampling

##### **Reservoir drives**

- Primary and secondary recoveries
- Types of reservoir drives and impact on performance.

##### **Reserves determination**

- Volumetric and material balance methods, Decline analysis.
- Empirical method to estimate recoverable reserves.

##### **Reservoir delineation & development**

- Field development considerations, Types and applications of artificial lift
- Horizontal well applications and Multi-stage fracturing

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### **Drilling for Non-Drilling Personnel**

This five-day course is designed to give participants the fundamental knowledge of oil and gas drilling concepts and operations. The course will provide a comprehensive overview of how it all actually functions. The hands-on training will give participants the knowledge of drilling planning and operations, technology, and costs, enabling them to understand the terms used in daily drilling reports.

#### **Course Content**

- Introduction to Oil & Gas Industry
- Introduction to Drilling
- Drilling Rig Components
- Well Planning and Design
- Drilling Bits
- Drilling Operations and Hole Cleaning
- Functions of Drilling Fluids
- Casing and Cementing
- Blowout Prevention System
- Logistics Support and Services
- Health, Safety, Environment and Security
- Well Completion

#### **Who Should Attend?**

Reservoir Engineers, Petrophysicists, Geoscientists, Economists and planners, Facilities planning engineers, Accountants, Mid-level management, Service Companies, Logistics, Procurement, IT, HR and HSE personnel, Secretaries, and support staff.

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### **Casing and Cementing**

#### **About the Course**

The course uses a process-based perspective that takes participants from initial casing depth and size selection, casing and liner design procedures, casing running practices, and planning and executing primary cementing through remedial cementing and plugging operations.

#### **Course Objectives**

- Determination of casing loads for design purposes
- To design casing properties to meet burst, collapse, and tensile strength requirements.
- To conduct casing running operations safely and successfully
- Specification of cement slurry properties and volumes to meet well objectives.
- Determination of best procedures for attaining successful primary cementing.
- To conduct stage jobs, squeeze jobs, and set cement plugs.

#### **Course Content**

- Setting depths
- Casing loads
- Selecting casing and connections
- Casing stress calculations
- Cement and cement additives
- Selecting appropriate slurries
- Mud removal and cement placement
- Stage cementing, squeezes, and plugs.
- Preventing gas migration
- Cementing calculations
- Cementing equipment
- Well head equipment.

#### **Who Should Attend?**

Personnel responsible for planning, overseeing, and conducting casing and cementing operations; operator and service personnel.

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### **Fundamental of Completions and Workovers**

#### **About the Course**

This is a 5-day course introducing engineers, technologists, service personnel and others involved directly or indirectly with the planning and programming of completion and workover operations. This course provides an overview of key considerations in well completion and workover design.

#### **Course Content**

- Completion Design Process
- Reservoir Parameters and Hydrostatics
- Safety, Regulations, Risk and Uncertainties
- Well Performance Basics
- Wellbore and Completion Equipment
- Materials and Corrosion
- Tubing Design Overview
- Completion and Workover Fluids
- Perforating Overview
- Flow Assurance Basics
- Stimulation Overview
- Well Testing Basics
- Well Intervention Overview
- Examples of Well Completion Designs – HPHT, Deepwater, Heavy Oil, etc

#### **Who Should Attend?**

Engineers, Technologists, Service Personnel, and others involved directly or indirectly with the planning and programming of completion and workover operations.

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### **Introduction to Onshore Drilling**

#### **About the Course**

This is a five day that gives a general overview of operations, and terminology used in the drilling and completion of an onshore oil or gas well. It is prepared for non-drilling personnel who work with drilling professionals. No prior experience or knowledge of drilling operations is required. The course will provide participants with a better understanding of all phases of onshore drilling operations.

#### **Course Content**

- Basic Petroleum Geology
- The "Well Construction" Process
- Drilling Rig - Components and Functions
- Drilling a Well - From Top to Bottom
- Lease Preparation, Cellar, Conductor, Drill Bits, Drilling Fluids, Tripping, Casing, Cementing
- Formation Evaluation (Cuttings, Logging, Coring, Drill stem Testing)
- Directional, Horizontal and Relief Wells
- Completions – Perforating, Hydraulic Fracturing, Acidizing

#### **Who Should Attend?**

Accounting, Administrative, and Support Staff, Environmentalists, Landsmen, Stock Analysts, etc.

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### **Introduction to Offshore Drilling**

#### **About the Course**

This is a five day that gives a general overview of operations, and terminology used in the drilling and completion of an offshore oil or gas well. It is prepared for non-drilling personnel who work with drilling professionals. No prior experience or knowledge of drilling operations is required. The course will provide participants with a better understanding of all phases of onshore drilling operations.

#### **Course Content**

- Basic Petroleum Geology
- Offshore Well Construction Process
- Drilling Rig Components and their Functions
- Bottom Founded Offshore Rigs (types and description)
- Drilling a Well from a Bottom Founded Rig
- Drill Bits, Drilling Fluids, Casing and Cementing, Evaluation
- Offshore Drilling from a Floating Rig (Drillships, Semisubmersibles)
- Anchoring, Dynamic Positioning, Motion Compensation, Subsea BOPs, ROVs, Supply Boats, Personnel Transfer
- Completion and Testing
- Directional Drilling and Relief Wells
- Offshore Production Systems
- Offshore Pipelines

#### **Who Should Attend?**

Accounting, Administrative, and Support Staff, Environmentalists, Landsmen, Stock Analysts, etc.

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### **Fundamental of Directional Drilling**

#### **About the Course**

This is a five-day introductory course. It will introduce the history of directional drilling and provide exposure to the basics associated with directional and horizontal drilling. The sessions will cover both the advantages and disadvantages of directional wells along with numerous applications. The basics of directional data, tool-face orientation, overview of well planning, and basic calculations will be delivered.

#### **Course Content**

- Borehole Representation
- Well Planning
- Anti-Collision Monitoring
- Survey Tools
- Well Design Constraints
- Vertical Drilling
- Applications of Directional Drilling
- Downhole Motors
- Deviation Techniques
- Tool face Orientation
- Directional Control with Rotary Systems
- Steerable Drilling Systems
- Shop Tour

#### **Who Should Attend?**

All the Engineers who are involved in drilling either directly or indirectly.

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### **Introduction to Drilling, Completion and Fracturing Fluids**

#### **About the Course**

This is a five-day course. This course will present an overview of the application of oil well drilling and completion fluids. The course includes discussions of fluids technology and products, emphasizing the reasons for fluid selection and application.

#### **Course Contents**

- Upstream Petroleum Introduction and Terminology
- Fluid Types
- Generic Product Classifications
- Fluid Applications
- Fluids Engineering, Testing and Reporting, Specific Gravity and Pressure Control, Rheology, Viscosity and Hydraulics, Filtration and Fluid Loss, Solids Control and Solids Treatment
- Fluid Systems and Chemistry, Clays and Polymers, Water-Based Muds, Salt-Based Muds, Non-Aqueous Muds, Clear Brine Completion Fluids, Reservoir Drill-In Fluids, Fracturing Fluids
- Problems and Solutions, Wellbore Stability, Lost Circulation, Formation Damage
- Special Systems
- Health, Safety and the Environment
- Waste Disposal

#### **Who Should Attend?**

It is designed for Engineers, Geologists, Technologists, Managers and Operations Personnel.

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### **Understanding and Optimizing Well Performance**

#### **About the Course**

This is a five-day course. It delivered towards well performance basics and evaluation, production and operation concerns, flow assurance, completion design and workovers, and optimization solutions. The course provides an understanding of the fundamental factors affecting wells. It focuses on when and how a well begins to see performance changes, along with the process and design requirements to understand and optimize well productivity.

#### **Course Content**

- Well Performance Basics: Inflow and Outflow Relationships
- Well Design Process
- Well Testing Basics
- Flow Assurance
- Stimulation Overview
- Artificial Lift Design and Operation
- Deliquifying Gas Well Techniques
- Well Surveillance and Optimization Process

#### **Who Should Attend?**

Engineers, Technologists, Service Personnel, and others involved directly or indirectly with the design and operation of wells.

**5 Days**

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### **Drilling Project and Risk Management Course**

#### **About the Course**

The main goal of this five-day course is to teach participants how to apply the critical project and risk management concepts that are required to run drilling projects in a safe, efficient, cost-effective, and environmentally friendly manner.

The course is designed to deliver how to run project planning and design, contract models, drilling program and planning software. Other topics that will be covered include tendering and contracting strategy, project finance and administration, supply chain management, and project closeouts. HSEQ management systems, risk management processes, levels of risk management, and operational risk management and analysis will also be covered.

By the end of the training, the participants would have learnt how to integrate these principles in the asset or project teams to optimize the management of the drilling project and manage identified risks to increase the value of a project.

#### **Course Contents**

##### **Drilling Project and Risk Management**

- Overview of drilling project and risk management
- Cost vs Value
- Contract models
- Project planning and design

##### **Drilling Software and Programming**

- Planning software
- Drilling programming and analysis
- Tendering and contracting strategy
- Project finance and administration

##### **Supply Chain Management and Reporting Systems**

- Supply chain management
- Reporting systems
- Communications and knowledge management

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- Project closeout

### Management

- Management systems
- HSEQ management systems
- Introduction to risk management

### Risk Management

- Risk management process
- Levels of risk management
- Operational risk assessments

### Who Should Attend?

This is an important training for any personnel involved in drilling projects in one or the order.

**5 Days**





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### **Mud Logging Operations**

The sessions will be run with experienced professionals providing an in-depth explanation of Mud Logging services.

The course will provide participants with a clear understanding of the primary objective of Mud Logging services, which is the surface measurement of drilling parameters, gas data, and geological information.

#### **Introduction to Mud Logging and Geology**

- Safety briefing
- Mud logging definition
- Introduction to geology and sedimentology

#### **Practical Session and Acquisition Chain**

- Practical Session: Recognize these Rocks!
- Acquisition chain
- Sensors, signals, and systems

#### **Acquisition Chain and Gas Detection**

- End of an acquisition chain
- Understanding gas detection
- Degassing process and technologies
- Types of gas analysis

#### **Gas Detection (Cont.)**

- Interpretation generalities
- Gas in and out, Case studies

#### **Gas Detection and Close Out**

- Understanding gas detection, Mud logging and added value.
- Close out

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## **Cement Integrity Assurance and Evaluation**

The cement sheath behind the casing is the first barrier between the reservoir and the surface. Any failure, either during the placement or in the first hours following the cement job, can lead to catastrophic consequences related to safety and costs related to safety and environment. The cement sheath integrity is also a key factor controlling the life of the well. The development of fluid migration paths in the annulus or fractures can dramatically shorten the life of the well and reduce its value.

Therefore, it is extremely important to understand and control drilling, cementing, and well completion parameters, all of which can affect the integrity of the cement sheath for the entire life of the well.

### **Cementing Objectives and Importance of Mud Removal**

- Introduction to cementing, Cement rheology, Mud displacement.

### **Importance of Temperature for Proper Design Plus Cement Evaluation**

- Temperature determination, Temperature simulation
- Cement evaluation – logging tools and interpretation

### **Annular Fluid Migration and Cement Defects**

- Consequences of gas migration, Paths for gas migration
- Cement slurry to solid transition effects, Migration prevention
- Flow path effects

### **Mechanical Properties of Set Cement, Lab Testing, and Use of Ultrasonic Imaging Tool**

- Overview of mechanical properties of solids, Laboratory testing of cement.
- Important properties for long term integrity, Ultrasonic imaging tool (USIT)

### **Remedial Cementing**

- Squeeze cementing theory and objectives.
- Running vs. hesitation squeezes, Well preparation
- Recommended practices and misconceptions

**5 Days**



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## **Introduction to Drilling**

*This course will give participants a complete understanding of the processes involved in the drilling of oil and gas wells.*

### **Well Construction Overview**

- *Oil & Gas Field Lifecycle, Interaction with other disciplines*
- *Well construction risks*
- *Roles and responsibilities of the team, Rig types and equipment*

### **Well Design Overview**

- *Geology Fundamentals, Timeline and long lead times*
- *Preliminary Well Preparation, Cost Estimation - AFE*

### **Casing and Directional Drilling**

- *Casing and Cementing Overview*
- *Directional wells; types and applications*
- *Deflection Tools and Kick off Techniques.*
- *Bit types, features, and applications*

### **Geodetic Coordinates, Drilling Fluids and Well Control**

- *Geodetics and coordinate systems*
- *Surveying, Drilling fluids*
- *Kick causes, prevention, and detection*
- *Well control equipment.*

### **Well Execution and Real-Time Operations**

- *Risk Management*
- *Typical drilling problems and operations risks.*
- *Failure Prevention*
- *Real-time concepts, infrastructure, and monitoring*

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### **Introduction to Well Completions**

The course introduces basic concepts of Completion Engineering. It familiarizes the attendants with conventional completions and equipment.

Introduction to the Course.

- Initial quiz.
- Revision of Reservoir concepts.
- Characterization of reservoir fluids.
- Well Completion methods.
- Flow in porous media.
- Well deliverability (exercises).
- Completion effects.
- Flow in pipes.
- Choke performance.
- System analysis.
- Wellheads.
- Casing suspension.
- Tubing selection.
- Tubing design.
- Tubing connections.
- Upper completion accessories.
- Safety valves.
- Packers.
- Artificial Lift.
- Multilaterals.
- Sand Control.
- Fracturing.
- Intelligent completions.
- Use of slickline equipment during well completion.
- Perforations.
- Visit to Schlumberger base for visualization of completion equipment.
- Final quiz.

**5 Days**

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### **Advanced Drilling Completion and Work Over Technology**

#### **Course Description**

This course presents the basics of drilling and completion operations, plus post-completion enhancement (workovers). Participants will learn what is happening downhole, discover what can be accomplished, and learn how drilling and completion can alter reservoir performance. Learn to communicate with drilling and production personnel.

#### **Objectives of The Course**

The objectives of the course are as enumerated below.

- How to comprehend drilling and workover reports
- What can be done within open-hole and cased wells, as a part of reservoir management?
- How drilling practices can optimize cash flow and ultimate recovery
- How to communicate with drilling and production personnel

#### **Course Outline**

- Overview of the drilling process
- Language of drilling, completing, and well intervention.
- Drill string components: bits and accessories
- Drilling fluids and hydraulics
- Hole problems, stuck pipe, side-tracking and fishing
- Cores and coring, Electric logging, MWD, LWD
- Casing design and installation
- Primary and remedial cementing
- Directional, horizontal, multilateral, and under-balanced drilling
- Wellhead equipment and trees
- Options for completions and workovers
- Tubing, packers and completion equipment
- Safety and flow control devices, Open hole completions, Perforating
- Coil tubing operations, Wireline techniques
- Well stimulation - surfactants, solvents, acidizing, hydraulic fracturing.
- Formation and sand control - mechanical retention, chemical consolidation, and gravel packing, Scale, and corrosion
- Directional drilling and multi-laterals
- Scale and corrosion, Paraffin and asphaltenes

#### **Who Should Attend?**

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+234 – 09092358932

Technical, field, service, support, and supervisory personnel desiring to gain an awareness of wellbore operations. Excellent for cross-training of other technical disciplines such as reservoir and facility engineers, geoscientists, supervisors, service personnel, and anyone who interacts with drilling, completion, or workover engineers.

**5 Days**



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### **Mechanical Engineering for Non-Mechanical Engineers**

#### **Course Description**

This course provides non-mechanical engineers and other professionals with an introduction to mechanical engineering. This course focuses on the traditional mechanical engineering subject areas. It covers design, statics (stationary objects), dynamics (things that move), fluids (gases and liquids) and other general subjects. The theory covers the terminology and the basic laws that underpin each topic. A better understanding of the precise use of terms can help improve communication with mechanical engineers, and participation in mechanical engineering projects. For example, we discuss the difference between 'gauge' and 'absolute' pressure, and why that matters.

This course covers a broad range of mechanical engineering subjects. The subjects are explained with examples of engineering applications, with a range of exercises to enhance understanding and support learning.

#### **Objectives Of The Course**

- The function of various engineering components
- Alignments of Rotating Equipment (Pumps/Motors)
- Flame cutting shapes in 12 mm steel plate.
- Manually arc weld down-hand fillet welds
- Setting-up of equipment in a safe and efficient manner

#### **Course Outline**

- Mechanical Engineering Concepts, Principles and System of units
- Materials and Mechanics of Materials
- Determinate Analyses of Beams in Static Equilibrium
- Truss Analysis
- Dynamics – Kinematics
- Dynamics – Kinetics
- Thermodynamics
- Refrigeration Cycle
- Fluid Statics & Dynamics
- Engineering Economics & Financial Analysis of Engineering Projects

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### **Who Should Attend?**

Non-Mechanical Engineers • Facility Managers • Maintenance Managers • Energy Engineers and Managers • Engineering Managers • Safety Managers • Architects

**5 Days**



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## ***FACILITY ENGINEERING COURSES***

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### **Corrosion and Corrosion Control**

#### **Course Description**

This course provides great opportunity for corrosion practitioners, designers, technical managers, inspection, and maintenance engineers. Other professional that will benefit from this course are quality control personnel and those involved in failure analysis to update their appreciation of corrosion and the awareness of the emerging technologies for corrosion control, prevention, testing and monitoring.

#### **Objectives of The Course**

- to understand why and how corrosion occurs and
- to know how to control and prevent corrosion.

#### **Course Outline**

##### **Basic Concepts in Corrosion and Society**

- The economic, social, political and environmental impacts
- Liabilities due to corrosion
- Lessons of history
- Terminologies and conventions
- Why do metals corrode?
- How do metals corrode

##### **Different forms of Corrosion: Mechanism, Recognition & Prevention**

- Uniform Corrosion
- Galvanic Corrosion
- Dealloying and graphitization (graphitic corrosion)
- Intergranular stress corrosion cracking, weld decay and knife-line attack
- Exfoliation
- Crevice corrosion
- Pitting corrosion
- Filiform corrosion
- Microbiologically-Influenced Corrosion (MIC)
- Environment-sensitive cracking
- Hydrogen Damage, corrosion fatigue
- Fretting
- Erosion corrosion, impingement attack and cavitation damage
- Stray current corrosion.

##### **Corrosion in Atmosphere**

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- Classification of atmosphere
- Absolute humidity and relative humidity
- Calculation of time-of-wetness (ToW)
- Effect of moisture thickness on corrosion
- Effect of air pollutants
- Corrosion behaviour of common metals and alloys in atmospheres

### **Corrosion of Common Metals and Alloys**

- Cast Irons and carbon steels.
- Stainless steels and nickel alloys
- Aluminium alloys, copper alloys, titanium alloys

### **How to control and prevent corrosion**

- Material selection and design
- Corrosion Resistant Coatings
- Cathodic & Anodic Protection
- Corrosion Inhibitors
- Corrosion Testing & Monitoring
- Corrosion Modelling and Corrosion Prediction

### **Who Should Attend?**

Corrosion practitioners, designers, architects, technical managers, inspection and maintenance engineers, quality control personnel and those involved in failure analysis.

**5 Days**



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### **Oil and Gas Production Operation Surface Facility**

#### **Course Descriptions**

This course aims to provide the participants with an integrated view of how oil and gas is produced, focusing on production and related facilities throughout the lifetime of the reservoir. The role of current technology will be presented and in addition, will include an overview of new and emerging technologies used to improve the bottom line.

This course will dwell into the understanding of the wide range of oilfield production handling and treatment equipment that are utilized during exploration and production. Participants will be able to appreciate how fluids behave in the reservoir and how these are extracted, processed, and refined.

#### **Course Objectives**

- Up-to-date global statistics of oil & gas, reserves, production, consumption, and exports
- Familiarization of the oil and gas supply chain: upstream, mid-stream and downstream operations and related facilities
- Update participants of the various methods and technologies used to explore, drill, produce, treat, and transport oil, gas and their products.
- Essentials of international oil and gas supply, economics, and transportation
- The key economic drivers of the international oil gas value chain.
- Primary logistics – tanker freight costs and chartering
- Supply logistics – major international pipelines, shipping routes, and choke points
- The configuration and structure of different refineries from simple to complex
- The value of crude oil based on product market prices retail and distribution.

#### **Course Content**

##### **Introduction, Facility Types**

##### **Choosing a Process (Introduction, Controlling the Process)**

- o Operation of a Control Valve
- o Pressure Control
- o Level Control, Temperature Control, Flow Control, Basic System Configuration

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- o Wellhead and Manifold, Separation, Oil Treating
- o Lease Automatic Custody Transfer (LACT), Pumps
- o Water Treating, Compressors, Gas Dehydrators (Well Testing, Gas Lift, Offshore Platform Considerations)
- o Overview, Modular Construction
- o Equipment Arrangement

### **Fluid Properties** (Introduction, Basic Principles)

- o Specific Gravity and Density, Viscosity (Flash Calculations, Characterizing the Flow Stream)
- o Molecular Weight of Gas, Gas Flow Rate
- o Liquid Molecular Weight, Specific Gravity of Liquid, Liquid Flow Rate, the Flow Stream (Approximate Flash Calculations, Other Properties)

### **Two-Phase Oil and Gas Separation** (Introduction, Factors Affecting Separation, Equipment Description)

- o Horizontal Separators, Vertical Separators
- o Spherical Separators, Other Configurations
- o Scrubbers (Horizontal vs. Vertical Vessel Selection, Vessel Internals)
- o Inlet Diverters, Wave Breakers, Defoaming Plates
- o Vortex Breaker, Mist Extractor (Potential Operating Problems)
- o Foamy Crudes, Paraffin, Sand
- o Liquid Carryover and Gas Blowby (Theory)

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- o Settling, Drop Size, Retention Time
- o Re-entrainment (Separator Sizing)
- o Horizontal Separators, Procedure for Sizing Horizontal Separators, Vertical Separators (Examples)
- o Sizing a Vertical Separator
- o Sizing a Horizontal Separator

### **Oil and Water Separation (Introduction, Equipment Description)**

- o Horizontal Separators, Vertical Separators
- o Horizontal vs. Vertical Selection (Vessel Internals)
- o Coalescing Plates, Sand Jets and Drains (Emulsions, Theory)
- o Gas Separation, Oil/Water Settling
- o Water Droplet Size in Oil, Oil Droplet Size in Water
- o Retention Time (Separator Sizing)
- o Horizontal Separators, Settling Equation
- o Vertical Separators (Examples)
- o Sizing a Vertical Three-Phase Separator
- o Sizing a Horizontal Three-Phase Separator

### **Crude Oil Treating Systems (Introduction, Emulsion Treating Theory)**

- o Forming Emulsions, Emulsifying Agent

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- o Demulsifies (Gravity Separation)
- o Coalescence, Viscosity, Temperature Effects
- o Heat Input Equations, Water Droplet Size and Retention
- o Time, Coalescing Media, Electrostatic Coalescers (Treating Equipment)
- o Vertical Treaters, Horizontal Treaters
- o Electrostatic Treaters (Equipment Sizing and Theory)
- o Settling Equations, Retention Time Equations,
- o Water Droplet Size (Design Procedure)
- o Sizing a Horizontal Treater, Sizing a Vertical Treater

### **Produced-Water Treating Systems** (Introduction, System Description, Theory)

- o Gravity Separation, Dispersion, Coalescence
- o Flotation (Treating Equipment)
- o Settling Tanks and Skimmer Vessels
- o Skimmer Sizing Equations, Plate Coalescers
- o Skimmer/Coalescers, Precipitators/Coalescing Filters
- o Free-Flow Turbulent Coalescers (SP Packs)
- o Flotation Units, Hydrocyclones, Disposal Piles
- o Skim Pile (Drain Systems, Information Required for Design, Influent Water Quality)

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- o Produced Water, Soluble Oil, Deck Drainage (Equipment Selection Procedure, Equipment Specification, Example: Design the Produced-Water Treating System for the Data Given)

### **Pressure Drop in Piping (Introduction, Basic Principles)**

- o Reynolds Number, Flow Regimes
- o Bernoulli's Theorem, Darcy's Equation
- o Moody Friction Factor (Fluid Flow Equations)
- o Liquid Flow, Gas Flow, Two-Phase Flow (Head Loss in Valves and Pipe Fittings)
- o Resistance Coefficients, Flow Coefficient
- o Equivalent Length, Laminar Flow Coefficient
- o Pressure Drop in Liquid Line
- o Pressure Drop in Gas Line,
- o Pressure Drop in Two-Phase Line

### **Choosing a Line Size and Wall Thickness (Introduction, Line Size Criteria)**

- o Erosional Flow, Liquid Lines, Gas Lines
- o Two-Phase Flow (Wall Thickness Criteria)
- o Standards and Requirements, General Hoop Stress
- o Formula for Thin Wall Cylinders (Pressure Rating Classes)
- o Industry Standards, API 6A

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- o Pipe, Valve, and Fitting Specifications
- o Liquid Line, Gas Line, Two-Phase Line

### **Who Should Attend?**

The course is recommended for production personnel and other staff who want to increase their understanding of the oil & gas production & operation.

**5 Days**



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### **Separators in Oil and Gas Industry**

#### **Course Description**

This course is about separation process which is a fundamental part of all petroleum producing operations. The fluids produced from hydrocarbon reservoirs consist mainly of a mixture of oil, water, and gas, in varying proportions. Before any further treatment of the fluids can be carried out, these three components must be separated from each other.

The training will help the Production Technicians or Staff to understand the basic principle of Oil and Gas separation before they start working in Production field.

#### **Course Objectives**

- Describe the construction and functions of typical Gathering Systems.
- Describe how a separator may achieve its purpose.
- Describe the internal and external features of a separator.
- Describe the principles of process control.
- Describe the equipment used in separator level control.

#### **Course Outline**

##### **The Gathering System (Flow Lines and Headers)**

##### **The Theory of Separation**

Methods of Separation

Stage of Separation

##### **Construction of Separators**

Classification of Separators

Separator Internal

External Features of Separators

##### **Control of Separators**

The Control Loop

Separator Level Control

Separator Pressure Control

##### **Separator Safety Systems**

Level Control and Systems

Pressure Control and Safety

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Emergency Shutdown Valves

### **Operation of Separators**

Routine Operation Checkup

Start-up Procedure

Shut-down Procedure

Blow-down Procedure

### **Who Should Attend?**

Oil and Gas Industry Technicians and Staff involved in the Production Process.

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### **Introduction to Oil and Gas Production Facilities**

#### **About the Course**

In this course, what will be discussed ranged from overview of the oil and gas industry, hydrocarbon phase behaviour characteristics, and different reservoir types, to product specifications and the processes used to meet these. processing that may impact the production facility selection and operation.

#### **Course Content**

- Overview of the oil and gas industry
- Overview of qualitative phase behaviour and reservoirs
- Important hydrocarbon properties and terminology
- Typical sales/disposal specifications
- Flowlines, piping and gathering systems.
- Production separation
- Oil processing
- Water injection systems (including pumps)
- Gas handling - compression
- Gas handling - dehydration
- Measurement and storage
- Other facilities considerations - utilities, process safety
- Midstream facilities - gas processing
- Midstream facilities - pipelines
- Midstream facilities - LNG

#### **Who Should Attend?**

Those interested in an overview of production facilities, including subsurface professionals, line managers, sales or business development staff, environmental personnel, operational staff, and those new to the industry.

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## **Concept Selection and Specification of Production Facilities in Field Development Projects**

### **Course Description**

This course is similar to Introduction to Oil and Gas Production Facilities (PF-2) but is presented in the context of concept selection and front-end field development planning.

### **Course Content**

- Reservoir types, fluid properties, and typical product specifications
- Flowlines, gathering systems, flow assurance, and production separation.
- Oil dehydration and stabilization
- Produced water treating and water injection systems.
- Gas handling, including compression, dehydration, and sweetening.
- The effect of artificial lift systems, and secondary and tertiary recovery projects
- Midstream facilities – gas processing, pipelines, product storage, and LNG
- Other facility considerations – utility systems, process safety and asset integrity, and environmental regulations

### **Who Should Attend?**

This course is intended for those working on field development teams, as well as those who need to better understand how surface facilities are selected and how subsurface characteristics affect facility design and specification?

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### **Fundamentals of Pump and Compressor Systems**

In this course, a comprehensive overview of pumps and compressor systems will be taught. This will include equipment selection; type, unit, and station configuration; and integration of these units in the process scheme and control strategy in upstream and midstream oil and gas facilities. The material of the course is applicable to field production facilities, pipelines, gas plants, and offshore systems.

#### **Course Content**

- Types of pumps, compressors, and drivers, and their common applications and range of operations
- Evaluation and selection of pumps and compressors, and their drivers for long-term efficient operations
- Unit and station configuration including multiple trains in series and/or parallel operations.
- Integration with upstream and downstream process equipment, local and remote-control systems, and facilities utilities
- Key auxiliary systems including monitoring equipment, heat exchangers, lube and seal systems, and fuel/power systems.
- Major design, installation, operating, troubleshooting, and maintenance considerations.

#### **Who Should Attend?**

Engineers, senior technicians, and system operators designing, operating, and maintaining pump and compressor systems in oil and gas facilities.

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### **Overview of Offshore Systems**

#### **Course Description**

This course provides an overview of field development concepts and how offshore structures and facilities function as integrated systems. The content includes different water ranges from shallow water to ultra-deep water. To be discussed are requirements of offshore developments such as fixed and floating platforms, drilling and workover rigs, pipelines, risers, process and utilities and construction equipment. The importance of life-cycle considerations during development planning is emphasized.

#### **Course Content**

- Field development concepts fixed and floating.
- Subsea systems
- Wells, construction, and servicing
- Topsides facilities; processing; utilities
- Oil and gas transportation systems, design, and installation
- Production operations
- Offshore construction; equipment
- Fabrication; transportation; integration; installation project management
- Life-cycle considerations, including decommissioning.

#### **Who Should Attend?**

Technical staff, business professionals, technicians, analysts, and other non-technical staff who are involved but have limited experience, or will be involved, with offshore oil and gas facilities. The course provides a basic understanding of offshore systems in all water depths, from shallow to ultra-deep water, including design, construction, and operations.

**5 Days**

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### **Process Safety Engineering**

#### **Course Description**

This course covers the broad scope of process safety engineering. Apart from this, all topics relevant to process safety are introduced, showing how process safety engineering fits into the broader context of risk management and process safety management, but the emphasis is on the technical content. Though many of the examples are drawn from upstream and midstream oil and gas facilities, the principles are applicable across the hydrocarbon processing industries.

#### **Course Content**

- Historical incidents and problem areas
- Risk analysis basics
- Process hazards analysis techniques - overview
- Layers of protection
- Inherently safer design
- Hazards associated with process fluids.
- Leakage and dispersion of hydrocarbon releases
- Combustion behavior of hydrocarbons
- Sources of ignition
- Hazards associated with specific plant systems.
- Plant layout and equipment spacing
- Pressure relief and disposal systems
- Corrosion and materials selection
- Process monitoring and control.
- Safety instrumented systems
- Fire protection principles
- Explosion protection

#### **Who Should Attend?**

Anyone who needs to work with process safety engineers; this would include facilities engineers, operations and maintenance supervisors, project engineers and managers, entry level process safety engineers, experienced professionals new to oil and gas, and anyone who needs a general understanding of the breadth of the process safety engineering discipline.

**5 Days**

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+234 – 09092358932

## **Overview of Subsea Systems**

### **Course Description**

This course deals with overview of subsea components and how they are integrated into field architecture. Individuals will develop a basic understanding of the various subsea components used in all water depths, from relatively shallow to ultra-deep water. The participants will all learn how the components are integrated into subsea field developments. Installation and flow assurance are emphasized as key drivers in subsea design. The course emphasizes a system approach to design. Individual and group exercises are used throughout the course, including a case study to develop field architecture recommendations, basic component selection, and high-level project execution plans for a subsea development.

### **Course Content**

- Applications for subsea systems
- Flow assurance considerations in system design and configuration
- Field architecture considerations
- Subsea component descriptions and functions
- Fabrication, testing, installation, commissioning, and operational issues
- Production, maintenance, and repair considerations

### **Who Should Attend?**

Technical staff who are beginning or transitioning into the design, construction, and operation of subsea systems. Non-technical staff working with a subsea development team will benefit by developing an awareness of subsea systems.

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### **Oil Production and Processing Facilities**

This course will treat oil production facilities - from the wellhead to the delivery of a specification crude oil product, to the refinery. Both onshore and offshore facilities are the priority of this course. Produced water treating and water injection systems are also covered. Solution gas handling processes and equipment will also be discussed. In addition to the engineering aspects of oil production facilities, practical operating problems will also be covered, including emulsion treatment, sand handling, dealing with wax and asphaltenes.

#### **Course Content**

- Reservoir traps, rocks, and drive mechanisms
- Phase envelopes and reservoir fluid classification
- Well inflow performance.
- Artificial lift
- Gas, oil, and water - composition and properties
- Oil gathering systems.
- Gas-liquid separation
- Emulsions
- Oil-water separation
- Oil treating
- Desalting
- Oil stabilization and sweetening
- Oil storage and vapor recovery
- Sand, wax, asphaltenes, and scale
- Transportation of crude oil
- Produced water treatment.
- Water injection systems
- Solution gas handling

#### **Who Should Attend?**

Process/facilities engineers and senior operating personnel involved with the design and operation of oil and produced water processing facilities.

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### **Separation Equipment-Selection and Sizing.**

#### **Course Description**

Treated in this course are different types of separation equipment typically encountered in oil and gas production facilities. You will learn where the different types of separation equipment are used based on operating conditions and separation performance requirements. Typical operational problems and their solutions will also be discussed. Exercises requiring calculations are utilized throughout the course as well.

#### **Course Content**

- Fluid properties and phase behaviour
- Phase separation processes
- Gas-liquid separation equipment: slug catchers, conventional separators (horizontal and vertical), scrubbers, compact separators, filter separators/coalescing filters
- Separator internals: inlet devices, mist extractors, baffles, weirs, etc.
- Emulsions
- Oil-water separation equipment: conventional 3-phase separators and freewater knockouts, wash tanks
- Oil treating and desalting equipment: mainly electrostatic coalescers.
- Liquid-liquid coalescing filters
- Mechanical design aspects: pressure vessel codes, wall thickness and vessel weight estimation, material selection, relief requirements
- Operational problems

#### **Who Should Attend?**

Process/Facilities engineers who need skills for design and troubleshooting of separators.

**5 Days**

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### **CO2 Surface Facilities**

#### **Course Description**

This course emphasizes the effect of carbon dioxide on the selection and operation of equipment (separators, compressors, and dehydrators), as well as sweetening process equipment. This course is particularly applicable to those persons who operate and/or design enhanced oil recovery (EOR) facilities using CO<sub>2</sub> as a miscible agent. Physical and thermodynamic property data for carbon dioxide/natural gas mixtures are treated in this course. Calculations are performed to illustrate principles and techniques.

#### **Course Content**

- Overview of CO<sub>2</sub> injection and process facilities
- Heavy emphasis on CO<sub>2</sub> for enhanced oil recovery
- Physical and thermodynamic properties of CO<sub>2</sub> and high CO<sub>2</sub> mixtures
- Materials selection and design consideration in CO<sub>2</sub> systems
- Process vessel specification
- Pumps and compressors
- Fluid flow and special pipeline design considerations such as the control of ductile fractures
- Dehydration of CO<sub>2</sub> and CO<sub>2</sub>-rich gases
- General overview of processes to treat/recover CO<sub>2</sub>

#### **Who Should Attend?**

Engineers and senior operating personnel involved with carbon dioxide/natural gas/CO<sub>2</sub> EOR systems.

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### **Pumps and Valves Operation and Maintenance**

#### **About the Course**

This course provides detailed practical training for maintenance staff on all common types of pumps and valves used in manufacturing industries. with some theories that will aid the understanding of their functions.

#### **Course Objectives**

At the end of the program, participants can:

- Resolve pumps and valve issues
- Understand pumps and valve behaviors better
- Carry out repairs in the most cost-effective manner
- Maintain and prolong the life of pumps and valves
- Select the best type and capacity of pumps and valves for different applications.

#### **Course Content**

- Types of pumps and valves and their characteristics
- Operating principles
- Troubleshooting
- Pumps and valves maintenance
- Safe work practices
- Pumps and valves selection theories and guide
- Pumps and valves inspection systems
- Bearings faults and remedies
- General bearings maintenance.

#### **Who Should Attend?**

- Mechanical and industrial engineers/managers/supervisors
- Utility staff
- Machine/equipment operators
- Water treatment plant operators
- Procurement staff.

**5 Days**

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### **Facility Maintenance and Management**

#### **Course Description**

This course is designed for Facility Managers and Office Managers who support the Facility Managers. It is to give them the know-how to effectively manage the physical assets.

#### **Course Contents**

Facility Risk Assurance

- Understanding your Facilities and Assets

Modern ideas about Facility Management

Feeling the heartbeat of your Facility

Criticality Analysis

Facility Management Benchmarking techniques

Using the Pareto's Principle

- Asset Management

- o What Asset and Asset Management means

- o Critical Asset ranking

- o Understanding Asset failure

- o Effective Asset Management Implementation

- Asset Management Resources

- o Integrated Facilities Management

Life Cycle Costing

Continuous improvement philosophy

- Facility Condition Indexing

- o Interpreting the FCI range in Facility Management

- o FCI impacts, Failures and Occupant's Morale

- o Asset Management tools for Corrective maintenance and repairs

- Depreciation technique of Facility components

- Facility Stakeholders Management for effective results

- o Elements of stakeholders Management

- o Stakeholders Analysis

- o Stakeholders Prioritization techniques

- Facility Condition Indexing

- Facility Management Technology

- o Computer Aided Facility Management Technology

- o Preparing a strategic technology plan

- o Technology optimizing Process

Maintenance Management

- Maintenance – the Modern Concept

- o Challenges of cultural issues and maintenance management

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- o Maintenance planning and scheduling
- o Classification of maintenance work according to plan and schedules
- Cost Planning and Management
- o Facility Management master budgeting
- o Facility Management budget performance System
- o Maintenance using Facility master schedule
- o Facility Management Master Schedule
- Fault Diagnosis
- o Maintenance Codes using Facility Management master plan
- o Failure Management in Facility Management
- o Failure Reporting using a Criticality Analysis Guide
- Maintenance Management Tactics
- o Proactive and Predictive Maintenance
- o Preventive Maintenance
- o Reactive Maintenance
- o Predictive Maintenance
- o Corrective Maintenance
- o Deferred Maintenance
- o Operation and Maintenance exercise
- o 90:10 Facility Maintenance development
- Troubleshooting & Emergency Recovery
- Failure Management and Control
- o Reliability-Centered Maintenance
- o Downtime reduction
- o Tools for controlling Failure in Facility Management
- o Checklist systems development and operations
- o Developing a robust Service Level Agreement
- Energy Management
- o The increasing cost of Energy
- o What is Energy Management
- o Goals of an effective Energy Management Program
- o Implementing the major strategies of Energy Management
- o Energy Audit for Facility Managers
- Disaster Planning, Emergency Preparedness and Business Continuity
- o JIT Management
- o What a Disaster Recovery Plan is and why it is important
- o Identifying potential Hazards
- o Business Impact analysis
- o Personnel Policies and Crisis Communication
- o Strategic Alliance
- o Case Study and Exercise

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- o Setting up an Action Plan
- o Emergency Planning Implementation checklist.

### **Who Should Attend?**

Facility Managers and Office Managers who support the Facility Managers.

**5 Days**

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### **Terminals and Storage Facilities**

#### **Course Description**

This course treats key issues associated with development, design, construction, and operation of terminals and storage facilities for liquid hydrocarbons and NGLs. This course focuses on terminal codes and siting constraints, terminal design and equipment layout, types of storage and selection criteria, design considerations for loading racks, fire protection, vapor recovery, blending equipment, and water treatment, detailed design of storage tanks, vessels, and caverns, and operations and maintenance. Safety, quality control, system reliability, availability, and regulatory compliance are integrated throughout the course. Case studies and team exercises are used.

#### **Course Content**

Sizing criteria and economics for storage and terminal facilities  
Various storage types (atmospheric storage tanks, pressure vessels, salt or rock caverns) and appropriate applications  
Terminal and tank farm layout constraints  
Details of industry codes and standards, plus regulatory and environmental compliance  
Selection of equipment for delivery and receipt to/from pipelines, barges and ships, trucks, and rail, including metering options, loading arms, pumps, and control systems  
Blending options and equipment, VRU/VCU, water treating, and fire protection  
Key factors affecting safety, product quality, system reliability, and profitability in design, construction, and operations

#### **Who Should Attend?**

Project managers, engineers, operations and maintenance supervisors, and regulatory compliance personnel with some experience in planning, engineering, constructing and/or operating terminals and storage facilities for hydrocarbon liquids, NGLs, and petrochemical feedstocks.

**5 Days**

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### **Onshore and Offshore Pipeline System**

#### **Course Description**

This course covers the design, construction, and operation of pipeline systems. The focus is on pipeline routing, hydraulics, mechanical design, and construction for both onshore and offshore pipelines. The result of this course is cost-effective, safe and environmentally sound design, construction, inspection, operation, and maintenance of pipelines.

#### **Course Content**

- Pipeline systems definition and applications
- Codes and standards related to pipelines.
- Pipeline hydraulics: single-phase gas and liquids, multiphase fluids and heavy/waxy crudes
- Major design considerations for strength, stability, and installation
- Pipeline survey and mapping
- Pipeline route engineering
- Pipeline materials and components
- Corrosion and cathodic protection of pipelines
- Special design aspects, covering such issues as risers, slug catchers, pigging facilities, etc
- Basic design considerations for pipeline facilities
- Pipeline construction for cross country and offshore systems focusing on welding.
- Pressure testing, pre-commissioning, and commissioning
- Pipeline integrity aspects including in-line inspection.
- Leak detection and emergency planning considerations
- Repairs and modification considerations
- Safety, environmental, and regulatory requirements

#### **Who Should Attend?**

Pipeline project managers, pipeline engineers, facilities engineers, pipeline design and construction engineers, engineering, and construction contractors.

**5 Days**

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## *MANAGEMENT COURSES*

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## **Project Management Fundamentals**

### **About the Course**

Fundamental project management knowledge and skills are required to successfully manage all types of projects. The practical application of standard project management methodology will be enhanced with a workshop style approach.

The course will provide the student with the ability to apply project management best practices in initiating, planning, executing, and closing a project. During the workshop sessions, participants will develop a project charter, perform a stakeholder analysis and use it in developing a communication plan, develop a work breakdown structure. .

### **Project Management Overview and Project Initiation**

- Project management and the project life cycle, Initiating a project.
- Developing a project charter, Identifying and establishing a project governance

### **Project Planning**

- Stakeholder analysis and communication planning, Scope definition
- Develop a Work Breakdown Structure (WBS)
- Defining task dependencies, resources, and estimating the level of effort for the project schedule, Determining critical path and float

### **Project Planning and Project Execution**

- Planning for quality, Procurement planning, Project risk analysis, Project change control

### **Project Execution Simulation and Project Monitor/Control**

- Project simulation game

### **Project Monitor/Control and Project Closing**

- EVA analysis, Project quality reviews, closing processes and conducting lessons learned, Organizational change management **3 Days**

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### **Effective Communication Skills for Managers**

#### **About the Course**

Any aspiring manager needs to know how to communicate effectively. Communication skills are essential for all major tasks in the workplace, from understanding employees' concerns and requests to ensuring that objectives are clear.

#### **Course Objectives**

This communications course is designed to boost your workplace communication skills so that you can have the confidence and clarity of communication that you need to really excel as a manager.

#### **Course Content**

Effective Communication Skills - Verbal and Non-Verbal Skills

- The topics in this module are designed to engage the learner and deliver learning which sticks. Aimed primarily at junior or aspirational managers, each of the topics is designed to hit hard and fast. Core skills are stripped to the bone, allowing exploration of only the essential elements. In minutes learners will have acquired enough information to begin the transference of the skill into their workplace or home life. In this module you will learn how to successfully prepare for and engage in any difficult conversation you may be faced with in a workplace situation. You will learn about the rules of communication, the importance of non-verbal communication and how to develop effective listening skills. You will also learn how to build rapport with your colleagues so that you can start to lead the conversation. Effective Communication Skills - Successful Presentations and Meetings
- The topics in this module are designed to engage the learner and deliver learning which sticks. Aimed primarily at junior or aspirational managers, each of the topics is designed to hit hard and fast. Core skills are stripped to the bone, allowing exploration of only the essential elements. In minutes learners will have acquired enough information to begin the transference of the skill into their workplace or home life. You will learn how to plan and develop an effective presentation. You will learn how to overcome nervousness and deliver presentations naturally, whether you are speaking at a small team meeting or presenting to an audience of hundreds. Finally, you will learn about the key communication skills needed for successful team meetings. You will also learn about the importance of creating and distributing minutes of the meeting that accurately describe what was discussed at the meeting, and any actions that were agreed upon and whose responsibility they are.

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### **Who Should Attend?**

This course is suitable for anybody who is a manager or is becoming a manager or supervisor.

**5 Days**



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### **Leadership Skills for Managers: Managing by Influence**

#### **About the Course**

Participants will be exposed to practical principles to help managers motivate and mobilize team members, vendors, and contractors toward the fulfilment of team and corporate objectives, with a strong focus on interpersonal skills.

The course, designed to help participants understand, accept, motivate, and effectively manage their "direct reports" as well as contractors and vendors where they may not have direct authority but still need to get results.

This session will explore the nature of leadership, help you to understand your own leadership strengths and challenges as well as provide you with a communication skill set that allows you to effectively manage using influence even when you don't have authority.

#### **Course Objectives**

Even when we are not in a leadership position it can sometimes be extremely difficult to get people's help, especially when we have no authority over them. This is where an approach and an influencing model can help us identify what we and other people value in a given influencing situation. We can then explore that information so that everyone can view and pursue a common purpose.

This course will enhance and promote the skill set necessary for any leader or manager, allowing our in-depth influencing knowledge to be applied into your working environment. From an employer's perspective this award can be a significant long-term return on investment by developing your leaders and managers.

#### **Course Content**

Introduction - Leadership

- Characteristics of Respected Leaders
- The Uniqueness of Individuals
- Understanding Personality Types using DISC Model
- The Requirement for Trust: Trust-Building Behavior
- Creating an Ownership Environment: Managing Performance
- Achieving Results Through Others: Strategic Delegation
- Prioritizing Activities and Resources
- Leading Teams
- Cultivating Good Decision-Making Habits
- Preventing and Resolving Conflict
- Confronting Unacceptable Behavior

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### **WHO Should Attend?**

Anyone who is pursuing project management. If you're a member of project teams or just want to become more familiar with Knowledge Areas and terminology to "speak the language"; this course is an ideal solution.

**5 Days**

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## **Technical Report Writing and Presentation Skills**

### **Technical Report Writing Skills**

#### **About the Course**

Information from reports of technical researches are used to take decision. This means that report must be written in a way it can easily be understood by technical and non-technical people. A good researcher does not end his work until a good report is put in place. A good technical report must not be ambiguous in meaning. It must be simple and easy to understand by anybody in any continent.

However, whilst engineers and technicians undergo many years of training to become proficient in their field of expertise, this does not necessarily include the art of writing. Because writing takes place in the absence of the reader it may represent a boring, dull, difficult and unfamiliar chore for the technologist.

The result is that, too often, technical writing has a flat style making documents difficult and tedious to read. Complex writing results in a waste of time, lost contracts and alienated customers – in other words, a loss of money.

#### **The Course Objectives**

- To develop the principles of technical writing that gives it a logical base that will appeal to both the technical and non-technical readers.
- To encourage writers to be efficient and logical in their use of words to ensure that the purpose of each component is understood and achieved.
- To equip participants with the knowledge and skills and capabilities for professional technical report writing.
- To show participants how to collate results of their researches and technical information into a coherent, accurate and unbiased document because decision makers make important choices based on the reports they receive.

#### **At the end of the course, participants will:**

- Understand the types and purposes of technical reports
- Write realistic specifications

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- Organize reports and plan the sections and subsections you need.
  - Fully understand the steps in writing a report
  - Write clear and concise formal reports, equipment manuals and other technical documentation
  - Understand the principles of clear and concise writing
  - Develop effective communication with technical as well as non-technical staff at all levels – matching your content to your readers' knowledge.
  - Keep information specific rather than general.
  - Brainstorm and identify technical problems and solutions
  - Collect, organize, analyses and evaluate information
- 
- Appreciate the use of active verbs rather than passive verbs.
  - Edit wordy phrases – using simple words rather than complex ones
  - Keep technical terms to a minimum – avoiding jargon, acronyms and abbreviations
  - Use examples and illustrations.
  - Transfer technical information into graphs, flowcharts and tables.
  - Use good layout to draw attention to key technical information.
  - Translate technical documents into compelling oral presentations
- 

### **Course Content**

#### Introduction of Course

- Writing in perspective
- Writing in a Technical Context
- The Technical Report Writer in YOU

#### The technical writing processes

- The Technical Writing Process

#### Arranging

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- Structure and Layout
- Types of Reports
- Formats of Different types of Reports
- Procedures for writing reports
- Tables, Figures and Equations in a report

### Writing, Reviewing and Editing

- Language and Grammar
- Sentences, Parts of Speech, Punctuation and Problems
- Types of Technical Reports
- Monitoring Project Progress
- Format for an Evaluation Report
- Checklist for Editing Work

### Problems in Technical Reports

- Poor Organization of Facts
- Use of unnecessary complex words
- Impersonal writing
- Passive writing ETC.

### Information to Writer

- Units and Symbols
- Words, styles, abbreviations and capitalization

## **Presentation Skills**

### **About the Course**

Public speaking is fundamental to success in professional and public circles. Presentation is the only way to explain to catch people's attention so that they are briefed on what a technical outcome is. Therefore, it must be presented in a way that people will understand the idea the presenter is trying to sell.

This presentation skill course will help people to create simple, clear and compelling presentation and deliver them effectively, whatever the situation. This course will empower professionals to deliver with confidence, authority and impact.

### **The Course Objectives**

By the end of this one-day presentation skills training, the participants will have:

- Practiced projecting and vary the pitch, pace and tone of their voice to gain and retain audience interest and reinforce the presentation messages, when public speaking

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- Used posture and movement to give additional impact to verbal messages rather than distract or irritate the audience
- Reviewed how to prepare presentations and visual aids to be interesting, persuasive and to communicate key messages
- Identified the best ways to interact with the audience, control and handle challenging individuals
- Applied their learning to a work presentation and received feedback on their style and impact in presenting

### **At the end of the course, the participants should be able to:**

- Plan and confidently deliver a presentation relevant to their professional need.
- Understand the need for collecting facts on both the subject and the audience (audience analysis).
- Select and use visual aids for maximum impact and understanding.
- Handle questions and objections confidently and minimise bad mannerisms.

### **Course Content**

#### Preparing Your Presentation: Overview

- Setting Your Objectives
- Knowing Your Audience
- Building the Structure

#### Setting Your Objectives

- What Are You Trying to Do?
- Identifying your Objective
- Discussion

#### Knowing Your Audience

- A Basic Definition of your Audience
- Understanding Your Audience
- Focus, Plan, and Convey
- Audience Profile

#### Building the Structure

- The Consequences of Bad Preparation
- The Three Benefits of a Plan
- Presentation Structure: An Overview

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### Timing Your Presentation

- How to prevent over-running

### Overview of Communication

- The Three Parts of Communication
- Your Competition

### Controlling Your Nerves

- Overcoming Your Fears
- Thinking Positive
- Being Realistic
- Taking Control
- Sticky Situations
- Paying Attention to Your Appearance
- Tips to Combat Nerves
- Nervousness Presentation

### Our Body Language

- First Impressions
- Non-Verbal Factors of Communication
- Avoiding the Traps

### The Importance of Voice

- Factors Affecting the Voice
- Achieving Optimum Conditions for Speech
- Using Your Voice

### Presentation Practice

This is the practical session where each participant will be asked to prepare and make a presentation to practice what is learnt so far

- Presentation Preparation
- Presentation Delivery
- Presentation Evaluation

### Who Should Attend?

- Engineering professionals (e.g. project and design engineers)
- Technical Personnel

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- Maintenance/Supervisory Managers
  - Maintenance Planning Staff
  - Technical managers
  - Project team members in: manufacturing, process industries, tendering, contracting, marketing, procurement, research & development, utilities, and local authorities
- 

**5 Days (Monday-Friday)**

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### **Essential Leadership for Technical Professionals**

#### **About the course**

The participants will learn that skillful and competent leadership is extremely important for safety, productivity, and asset management. The 21st century brings new emphasis on leaders, new communication technologies, increased focus on safety, information overload, workforce dynamics, asset integrity, and many other concerns which challenge even the most proficient leader/manager. How do we blend these new challenges with tried and true wisdom of success? There are skills to learn that will help you be more effective, with less stress.

In this seminar/workshop you will explore your internal drivers and learn how to combine them with new skills for greater effectiveness. This seminar/workshop will include self-assessment, discussion, lecture, readings. This course will help you unleash natural motivation in your team. Your stress level can be lowered by working more efficiently and effectively by tapping the emotional intelligence of your team and co-workers.

#### **Course Content**

- The nature of teams
- Leadership vs. management
- Self-centering and tangential leadership
- Listening
- Motivation
- Group dynamics
- Conflict management
- Team-building
- Critical thinking and taking action

#### **Who Should Attend?**

Anyone who has new responsibilities to lead a team. Supervisors, team leads, managers, and others interested in becoming a better leader and a contributing team member will greatly benefit from this one-week experience.

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### **Team Leadership**

#### **About the course**

This program will develop and refine the skills essential for leading a high-performance team. Emphasis is placed on the leader's role in effectively enhancing total team functionality and maximum team productivity. Individual communication styles will be assessed and examined to identify the most appropriate communication style to use with your team. This will be an active experience. In addition to receiving individual assessment information, participants will be exposed to team concepts, theories, and skill development through the use of lectures, videos, readings, role plays, case studies, and discussions. This course has been constructed to maximize opportunity to improve both knowledge and practical skills in leading a team and being a team player.

#### Course Content

Definition and purpose of teams

Characteristics of a high-performance team

Gaining clarity of goal and worthiness

Developing a team charter, Gaining commitment

- Team collaboration and trust, Establishing operational norms
- Stages of team development, Team roles and relationships
- System influences, Conditions for effective team building
- Individual and team assessments
- Team communications, Group dynamics
- Developing a personal team leadership plan
- Monitoring team progress, Developing a team leadership action plan

#### **Who Should Attend?**

Team leaders, supervisors, managers, and others responsible for leading a team and interested in establishing and/or being a part of a highly productive team.

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### **Leadership and Management Training**

- How do you get the best from yourself and others?
- Develop the six key leadership management skills.
- How to develop goal focus
- The accurate use of language: clear, persuasive, and friendly
- Distinguish the positive critic from the negative cynic.
- Define your most important ideas.
  
- How to handle difficult people
- Use factual, objective language.
- Prepare your message in advance.
- Distinguish Reasons from Excuses
- When to compromise and when not to
- Action plan
  
- Time management training
- Understanding "deadline pressure" and "value"
- Distinguish between being "busy" and being "productive".
- Prioritise work according to its importance.
- Handling interruptions and distractions
- Delegate the right tasks to the right person.
- The 80/20 principle and its application to time management
  
- How your mental attitude affects your results.
- Inspire more optimism and motivation in yourself and others.
- Eliminate fear and replace it with confidence.
- Learn the Continuous improvement formula.
- Make more rapid progress.
- Action plan, final summary close

**5 Days**

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### **Office Politics for Managers**

#### **About the Course**

As a manager, it is inescapable to be caught in the middle of office politics sometimes, often to your disadvantage. When you find yourself in such a sticky situation, it is important to know what to do in order to handle it tactfully or, if possible, get out of it completely.

#### **Course Objectives**

---

1. Define office politics and how it is relevant and cannot be avoided in a workplace.
2. Examine why workplace politics exist and why people do this and their motivations behind it
3. Look at 7 ways to “win” at office politics and be better at this “game” that is playing.
4. Accept that politics is a reality and is something that everyone should be aware of so they know how to deal with it
5. Develop strategies to recognize and understand political behavior and use it to your advantage.
6. Decipher how influence flows between parties and how it spreads within the workplace.
7. Know what you are trying to achieve when dealing with politics at work.
8. Understand that office politics can turn cubicles into fox holes and conference rooms into combat zones.
9. Build a **strategic network of allies** and champions who advocate for you
10. Differentiate between politics and personality and describe how each influence the people you work with
11. Tally the cost of a political misstep to avoid making the same mistake in the future.
12. Identify the positive aspects of office politics and how it affects the culture in the workplace in a positive light

#### **Course Content**

---

##### **Introduction**

1. What is “Office Politics” and why do most people in the workplace do it?
2. Examples of scenarios where office politics occur and how they go down.

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3. How to deal with office politics to be better at doing it and use it to your own advantage

### **Seven Survival Tips for Office Politics**

4. Map the political power and influence because office politics often circumvent the formal organizational structure.
5. Understand the informal network and examine people's interactions and relationships and decipher how influence flows between parties.
6. Build high-quality connections with the team and don't be afraid of politically powerful people.
7. Develop interpersonal skills and emotional intelligence as it will stand you in good stead when it comes to building and maintaining your network.
8. Build your personal brand and raise team's profile, communicate your achievements to your connections, and it will open opportunities.
9. Be brave but not naïve. Be courteous but guarded and understand their goals to avoid the impact of their negative politicking.
10. Neutralize negative politics by not fuelling the fire and joining in negative politics.

### **Two strategies on how a manager deals with office politics.**

11. Relationships the manager has with each employee and how he/she deals with them in the workplace.
12. Perception others have about the relationship between the manager and the employee and how they view it.

### **Who Should Attend?**

All Staff Within An Organization, Managers, Team Leaders, Executives, Assistants, Officers, Secretaries

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### **Leadership and Management Skills**

#### **About the Course**

This Management and Leadership training course aims to encourage effective, collaborative methods of leadership and management. This comprehensive training course helps delegates to work in their organizations and leverage the leadership potential of team members. Delegates will be exposed to focus on developing leadership skills, personal influence, as well as explore strategies for building a team of strong professionals who will support each other, deal with tough problems efficiently, and take accountability. This training course focuses on tactful leadership practices that are effective in any business.

This training course also offers a comprehensive overview of good management practice for those new to supervision. This training course introduces delegates to the variety of skills needed to be successful and offers insights into how to personally manage the transition from being a '*technical expert*' to supervision and team management. If you are new to supervision or management this course offers a compendium of ideas which will impact your practice immediately.

#### **Course Objectives**

- Leadership styles and transformation
- How to build strong collaborative teamwork
- Develop strategies for using personal leadership power and building strong, mutual influence relationships within organization
- Using the performance management process profitably

#### **Course Content**

- How do you get the best from yourself and others?
- Develop the six key leadership management skills
- How to develop goal focus
- The accurate use of language: clear, persuasive and friendly
- Distinguish the positive critic from the negative cynic
- Define your most important ideas
- How to handle difficult people
- Use factual, objective language
- Prepare your message in advance
- Distinguish Reasons from Excuses

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- When to compromise and when not to
- Action plan
- Time management training
- Understanding "deadline pressure" and "value"
- Distinguish between being "busy" and being "productive".
- Prioritise work according to its importance.
- Handling interruptions and distractions
- Delegate the right tasks to the right person.
- The 80/20 principle and its application to time management
- How your mental attitude affects your results.
- Inspire more optimism and motivation in yourself and others.
- Eliminate fear and replace it with confidence.
- Learn the Continuous improvement formula.
- Make more rapid progress.
- Action plan, final summary close

### **Who Should Attend?**

- Employees about to undertake supervisory or management positions.
- Current Supervisors who are interested in building their management skills.
- Team Leaders, site, operations, and production Supervisors
- First time Managers with no formal management training
- Young employees identified as '*high potential*' future Managers.

**5 Days**

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### **Making Effective Decisions**

#### **About the Course**

This fun, activity-based, half-day session is designed to provide participants with a range of structured methods for making well considered decisions. These will be practiced by using worked examples, case studies and group activities.

#### **The Course Objectives**

- Recognize decision-making options and when to use each.
- Choose appropriate strategies for certain types of decision.
- Explore the behaviours that promote effective decision-making.
- Use criteria to help make group decisions.

#### **Course Content**

##### **1. Welcome and introduction**

##### **2. 6 decision-making options**

##### **3. Techniques for prioritizing and choosing from options**

- Decision grids
- Cost benefit analysis
- Pareto analysis
- Multi-voting

##### **4. Model – decision strategies**

##### **5. Decision strategy case studies**

##### **6. Effective behaviours in decision-making**

##### **7. ‘Cave Rescue’ activity – seeking consensus using value-based criteria**

##### **8. Criteria-based decision-making**

##### **9. Conclusion**

#### **Who Should Attend?**

This workshop is appropriate for all levels of staff.

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### **Leadership Skills for Managers: Managing by Influence**

#### About the Course

Participants will be exposed to practical principles to help managers motivate and mobilize team members, vendors, and contractors toward the fulfilment of team and corporate objectives, with a strong focus on interpersonal skills.

The course, designed to help participants understand, accept, motivate, and effectively manage their "direct reports" as well as contractors and vendors where they may not have direct authority but still need to get results.

This session will explore the nature of leadership, help you to understand your own leadership strengths and challenges as well as provide you with a communication skill set that allows you to effectively manage using influence even when you don't have authority.

#### **Course Outline**

Introduction - Leadership

- Characteristics of Respected Leaders
- The Uniqueness of Individuals
- Understanding Personality Types using DISC Model
- The Requirement for Trust: Trust-Building Behavior
- Creating an Ownership Environment: Managing Performance
- Achieving Results Through Others: Strategic Delegation
- Prioritizing Activities and Resources
- Leading Teams
- Cultivating Good Decision-Making Habits
- Preventing and Resolving Conflict
- Confronting Unacceptable Behavior

#### ***WHO Should Attend?***

Anyone who is pursuing project management. If you're a member of project teams or just want to become more familiar with Knowledge Areas and terminology to "speak the language"; this course is an ideal solution.

**5 Days**

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***PETROLEUM INDUSTRY SAFETY AND SECURITY COURSES***

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### **Oil and Gas Industry Security**

#### **About the Course**

As an oil and gas security personnel, you are tasked with discovering and analysing risks or potential risks. You are also charged with developing security measures to prevent these risks or mitigate the corresponding effects. Therefore, you need to understand security systems and architecture, automation, information technology, databases and cyber security. You also need knowledge of pipeline systems and the corresponding technology.

This course explores oil and gas security as a whole. It also explores pipeline technology. At the end of this course, you will be acquainted with the skills needed to evolve as an oil and gas security specialist and take on prospective oil and gas industry jobs.

#### **Course Objectives**

- Understand mitigation procedures for fully blown threats in the oil and gas sector
- Have in-depth knowledge of the best practices across different types of threats
- Understand pro-activity and how to apply professional methods to prevent risks
- Comprehend the process of key asset identification and loophole assessment
- Be able to carry out a proper risk assessment
- Understand the metrics of risk quantification and threat measurement
- Know the procedures for risk and damage control. This includes cost control, personnel and reputational management
- Know how to prepare and execute security projects
- Understand the application of cyber security in oil and gas security
- Analyse secure cyber-security courses to protect intellectual property in the oil and gas sector
- Understand how to pitch security issues to the executive and gain support to implement security projects of different facets

#### **Core content**

##### **An Introduction to Oil and Gas Security Management**

- Meaning
- Overview

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- Types
- Objectives

### **Security Risks Common in the Oil and Gas Industry**

- Risk Management in the Oil and Gas Industry
- Analysis of the different forms of risks
- Discussing the strategies and processes involved in risk management

### **Oil and Gas Industry Security Culture**

- The local, national, and international legal obligations to security
- Steps to creating a successful security culture in an organisation
- Concept of reputations management
- The nuances and planning of security projects
- Implementation of security project
- Emergency response and systems recovery
- Immediate response to crisis/incidents
- Principles of personnel allocation – Who does What?
- Managing incidents on scene

### **Security Audit and Identification of Potential Threats to Assets**

- How to identify key access points
- Conducting a thorough survey of security systems
- Procedures for personnel screening
- The screening process for contractors and sub-contractors
- Screening procedure for visitors – local and international

### **Asset Protection Methods**

- Understanding building design and physical security
- Breakdown of perimeter defences
- Surveillance systems and patrol routine
- Counter and anti-surveillance training

### **Emergency Response Procedures**

- Successful investigations & interviewing techniques
- Fire breakout response and basic evacuation training

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- Emergency communication
- Response to terrorism

### **Structures to Put in Place for Oil and Gas Security Management**

- Social media management and public relations
- Emergency communication strategies
- Channels of communication – control rooms and control centres
- Contingency structures
- Plans and procedures for security crisis management and effect mitigation
- Security mutual aid

### **Cybersecurity in Oil and Gas Industry**

- Meaning of cybersecurity
- Forms of cybersecurity in the Oil and Gas Industry
- Major cyber threats in the Oil and Gas Industry
- Network and information security
- Cyber and computer security
- Theft of identity – What to do and how to prevent it
- Principles of workstation security
- Data privacy and retention
- Principle of a clear desk

### **Who Should Attend?**

- *Human resource supervisors* responsible for security management
- *Fire department officers* in oil and gas facilities globally
- *Security supervisors* in oil and gas facilities
- *Facility supervisors* in national and international oil and gas facilities
- *Oil and gas IT security expert*
- *Database management personnel* in oil and gas facilities
- *Health, safety and environment management personnel*
- *Any individual* interested in knowing about oil and gas security and risk management.

## **Security and Safety in the Oil and Gas Industry**

### **About the Course**

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A detailed and interactive programme designed to give you a thorough understanding of how to manage security within an organization.

### **Course content**

- Security Risk Management
- Security Operations Management
- Security Policies & Procedures
- Security Design, Introduction to Investigations
- Introduction to Security Surveying
- Perimeter & Buildings Security
- Access Management
- Workplace Crime Prevention
- Protection Against Explosive Devices
- Manpower Selection & Development
- Leadership & Motivation
- Information Security
- IT Security
- Protection of At-Risk Personnel
- Crisis Management
- Change Management

### **Who Should Attend**

Designed for both experienced and non-experienced security personnel and managers.



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### **Managing Security Risks in the Oil and Gas Industry**

#### **About the Course**

Oil and Gas Risk and Security is all about people, plant, equipment, and procedures. Even with the best intentions these can and will often have gaps and weaknesses that may not always been seen from within the organisation. Occupational safety, environmental safety, and public safety priorities demand reliable and trustworthy security industrial control systems to facilitate human oversight of complex physical processes. Security threats from the most commonplace malware to today's pervasive targeted attacks of all persuasions must all be addressed and mitigated.

#### **Course content**

##### Understanding the Professional Issues of Security Management

- Introduction and review of Security Risks in the Oil & Gas Industry
- Consider the Full Range of Risks - *Local, National, International*
- Strategic and Operational Management of those Risks
- Managing Guarding Operations
- Manpower Management Styles
- Crime Management and Prevention

##### The Importance of Implementing a Culture of Security

- Legal Obligations - *Local, National, International*
- Creating a successful Organisational Culture of Security
- Customer Relations and the Reputation of the Security Function
- Planning and Directing Security Projects
- Principles of Emergency Response and Recovery
- Incident Response
- Who does what? – Who goes where? – Who calls who?
- On-Scene Management

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#### Threats to Assets – Security Audits

- Key Asset Point Identification
- Conducting Effective Security Surveys
- Screening
- Personnel
- International Visits
- Contactors and Sub-Contractors
- Information, Cyber & Computer Security
- Clear Desk Policy
- Workstation / Laptop Security
- Data Retention
- Identity Theft
- Basic Fire Fighting & Evacuation Planning

#### Principles of Asset Protection

- Physical Security & Building Design
- Perimeter Security - *Zones*
- Access Control
- Searches
- Cordons
- Surveillance Patrols
- Successful Investigations & Interviewing Techniques
- Special Risks
- Terrorism
- Kidnap

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- Crowd Control
- Bomb Warnings
- Search Techniques
- Explosive's Recognition
- Anti and Counter Surveillance
- Firearms and Weapons
- Security Survey – *Syndicate Workshop*

### Implementing Courses – What should now be in Place?

- Security Crisis Management Plans & Procedures
- Business Continuity of Security Functions
- Security Mutual Aid
- Security Communication Strategies & Control/Emergency/Control Centres
- Communication Skills - Verbal, Phone and Radio
- Social Media and Public Relations

### Who Should Attend

All those who have responsibility for security or are included in security response plans should therefore attend.

- Security Supervisors / Managers
- Facility Supervisors / Managers
- HSSE Personnel and Fire Department Personnel
- HR and Administrative supervisors responsible for security



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## **Security Risk Analysis and Management**

### **About the Course**

Through measurements and estimates to risk, security can be managed, and cost-benefit decisions can be made. This course explores the principles and tools behind risk analysis for security, providing practical experience on a realistic case study.

### **Course content**

- Overview of risk
- Assets, Harm & Threats
- Vulnerability Analysis
- Risk Evaluation
- Security Planning & Management
- Business Cases for Security
- Risk Management
- Managing Risks
- Risk Analysis

### **Who Should Attend**

Chief Security Officers, Operation Managers, Security Supervisors, Security Officers, Security Co-ordinators.

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### **Safety in Process and Design Operation**

#### **About the Course**

This course explores the principles and tools behind safety in process and design operation.

#### **Course content**

##### Overview of Safety in Process Design

- Definition of Safety in Process Design
- Overview of Historical Incidents and Problem Areas
- Components of Process Safety: People, Plant, Process
- Risk Identification and Safety Analysis
- Process Hazard Analysis: HAZOP, LOPA, FMEA
- Hazards Associated with Specific Plant Systems
- Elimination of Hazards through Process Design
- Prevention of Human Error through Process Control and Monitoring

##### Inherently Safer Design

- Inherently Safer Design Methodology
- Pre-Design and Design Phases
- Materials of Construction and Optimized Fabrication
- Hazard Associated with Process Fluids and Chemical Reactions
- Corrosion, Erosion and Material Degradation
- Leakage and Loss of Primary Containment
- Dispersion of Hydrocarbon Release
- Flammability of Chemicals

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### Safety of Process Equipment

- Hazard Associated with Process Equipment
- Safety Considerations in Reactor Design
- Design Procedure for Safety of Pressure Vessels, Storage Tanks, Reactors, Heat Exchangers
- Venting of Tanks and Vessels: Codes, Standards and Best Practices
- Piping System Design and Safety
- Design of Piping System Accessories: Valves, Fittings, Supports
- Assessment of Material Degradation during In-Life Cycle: Fitness for Service
- Monitoring, Testing and Inspection (NDT)

### Design of Pressure Relief Systems

- Design of Safety Valves
- Operation of Pressure Relief System
- Calculation and Sizing of Relief Loads of Pressure Relief Systems
- Pressure Relief Valves vs. Rupture Discs
- Codes, Standards and Best Practices
- Specifics of Pressure Relief Systems for Pumps, Compressors, Turbines
- Process Plant Disposal Systems
- Disposal Hazards, Risk Assessment and Environmental Factors

### Process Monitoring and Control

- Safety Instrumented Systems
- Process Plant Monitoring and Control System: SCADA
- Emergency De-Pressurization Systems (EDP)
- Prevention of Fire and Gas or Dust Explosions

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- Safety Consideration in Plant Layout and Equipment Spacing
- Management of Change and Integrity Operation Window
- Plant Equipment Inspection and Maintenance Procedures
- Final Conclusions

### **Who Should Attend**

Chief Security Officers, Operation Managers, Security Supervisors, Security Officers, Security Co-ordinators.



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### **Innovation and Creativity at Work**

#### **Course Description**

This course is designed to provide managers, specialists, and other decision makers with a range of simple creative thinking techniques that they can use to generate ideas and solve problems at work. Real life work problems and opportunities are built into the course to generate ideas and potential solutions. This course also shows that different problems and situations require different implementable ideas.

#### **Course Objectives**

- An understanding of why some people are naturally creative, but also how everyone can develop their creative skills
- Knowledge of how to use a range of creative thinking methods, tools, and techniques to generate ideas and solve problems.
- The opportunity to apply the methods and tools to generate ideas for improving areas of their own work.

#### **Get a Quote**

#### **Course Content**

**Facilitator presentation, participant personal introductions**

#### **Difference between creativity & innovation**

- Different between creativity and innovation
- Understanding the cycle of innovation
- *Facilitator presentation and group discussion*

#### **Thought patterns and assumptions.**

- Recognising left and right brain thinking
- Identifying how creative we are
- *Individual creative thinking exercise, group review and self assessment questionnaire*

#### **Enabling creativity**

- Simple methods and techniques to develop creativity
- Identifying ways to further develop creative thinking
- *Individual practical exercises and group review*

#### **Methods and tools for generating ideas**

- Brainstorming or blue-sky thinking session
- Reverse brainstorming
- Sort cards or mind maps
- Sticky notes/Metaplanning technique

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- Identifying when best to use each idea generation technique
- *Facilitator technique demonstration with group plus learning review*

### **Logical versus lateral thinking**

- Recognising the differences between lateral and logical thinking
- Appreciating our strengths
- *Energiser exercise, short presentation, ‘Message in a bottle’ exercise, review*

### **Creative problem solving**

- Creative problem-solving techniques
- Using the problem checklist, “go wild” and 5 whys
- Applying to work related problems
- *Facilitator demonstration of techniques, pairs or trios exercise*

### **Applying the learning**

- Turning creative ideas into action
- *Small group practical problem solving and creative thinking activities, group feedback and review*

### **Who Should Attend?**

Suitable for business teams, to enhance creativity and promote the generation of innovative ideas.

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***OIL AND GAS COMMERCIAL COURSES***



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### **Business Analytics in Oil and Gas Industry**

#### **ABOUT THE COURSE**

Business Analytics in oil and gas is an industry specific training which is designed to offer training to professionals in oil and gas industry. This training will be focused on helping oil and gas executives and professionals to understand key business analytics concepts, solve business challenges and a lot more.

Business analytics is now a driving force for improved decision making for companies across the globe. Unfortunately, many companies are getting it wrong by not identifying the business needs properly at start or by mining wrong data or interpreting the data wrongly leading to bad business decision. This training will address all these.

#### **OBJECTIVES OF THE TRAINING**

The participants will learn how to exactly assess business trends and resulting needs accurately. Sleep better knowing that you will not be caught empty handed and unable to deliver. The participants will know why business analytics fail, like any other tools, if not applied correctly.

The participants will learn if their companies are performing to full potential or there is a need to go back and fix it. The participants will gain communication techniques to get a buy in from their management on the best way to apply the business analytics tools.

#### **COURSE OUTLINE**

##### **Module 1- Microsoft Excel**

- Introduction to basic Microsoft Excel
- Using functions and formular
- Data modelling using Power Pivot
- Micro Analysis using Pivot table
- Data Representation using Charts and Pivot Charts
- An Introduction to Statistics
- Forecasting Techniques

##### **Module 2- Microsoft Power BI**

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- Introduction to Power BI Desktop
- Connecting and Shaping Data
- Creating Data models
- Data Analysis Expressions (DAX)
- Visualizing Data with Reports

### **Who Should Attend?**

This Course is good geologist, petrophycists, reservoir engineers, drilling engineers, geophycists, well logging engineers, business analysts, managers, executives in oil and gas industry etc.

**5 Days**



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### **Business Analysis**

#### **ABOUT THE COURSE**

The Business Analysis course has been designed for those aspiring to start a career as a Business Analyst. The course will help participants build Business Analysis skills needed for the profession.

In this introductory course, you'll delve into the role and responsibilities of the business analyst (BA) - the communication link between all business areas and a critical player in project success. Learn techniques for ensuring project success every step of the way-from identifying and analyzing potential projects to making sure that the final project product meets the requirements you identified. You'll consider the unique needs of customers, stakeholders, and the IT department as you work toward building, documenting, communicating, and managing requirements.

#### **What You'll Learn**

- Role and importance of the BA
- Plan Business requirements activities
- Elicit requirements from stakeholders, with an emphasis on interviews
- Analyze stated requirements, with an overview of modeling techniques
- Document requirements for different types of projects
- Verify and validate requirements
- Elements of requirements management and communication and the BA's role in them
- Elements of solution verification and validation and possible BA roles
- Enterprise analysis: choosing appropriate projects
- Necessary competencies and best practices of BAs
- Waterfall, incremental, and agile lifecycles and how they change BA practices

#### **COURSE CONTENTS**

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### **Introduction to Business Analysis**

- Purpose of BABOK Guide
- What is Business Analysis?
- Who is a Business Analyst?
- Structure of the BABOK

### **Business Analysis Key Concept**

- The Business Analysis Core Concepts Model
- Key Terms
- Requirement Classification Schema
- Stakeholders
- Requirements and Designs

### **Business Analysis Planning and Monitoring**

- Plan Business Analysis Approach
- Plan Stakeholder Engagement
- Plan business Analysis Governance
- Plan Business Analysis Information Management
- Identify Business Analysis Performance Improvements

### **Elicitation and Collaboration**

- Prepare for Elicitation
- Conduct Elicitation
- Confirm Elicitation Results
- Communicate Business Analysis Information
- Manage Stakeholder Collaboration

### **Requirements Life Cycle Management**

- Trace Requirement



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- Maintain Requirement
- Prioritize Requirements
- Assess Requirement Changes
- Approve Requirement

### **Strategy Analysis**

- Analyze Current State
- Define Future State
- Assess Risks
- Define Change Strategy

### **Requirements Analysis and Design Definition**

- Specify and Model Requirements
- Verify Requirements
- Validate Requirements
- Define Requirements Architecture
- Define Design options
- Analyze Potential Value and Recommend Solution

### **Solution Evaluation**

- Measure Solution Performance
- Analyze Performance Measures
- Assess Solution Limitations
- Assess Enterprise Limitations
- Recommend Actions to Increase Solution Value

### **Underlying Competencies**

- Analytical Thinking and Problem Solving
- Behavioral Characteristics



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- Business Knowledge
- Communication Skills
- Interaction Skills
- Tools and Technology

### **WHO SHOULD ATTEND?**

- Experienced individuals who manage business analysis activities in diverse fields
- Working professionals seeking to change career, job, or industry to business analysis related field
- Mid to senior-level executives in any sector

**5 Days**





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## **Data Analysis**

### **ABOUT THE COURSE**

Data analysis and analytics are evolving disciplines. Big data, predictive analytics, data science, AI, and modelling techniques.

Whether one is charting your overall business intelligence strategy or performing analysis yourself, these basic tools and techniques rapidly inform effective decision-making. In this fast-paced introductory workshop, we'll examine the history of business intelligence, its relationship to data analysis, and why the two are needed to help businesses deliver a complete assembly of the 'data puzzle'. We'll also address hurdles teams face when dealing with data overload and suggests some possible solutions.

### **COURSE OBJECTIVES**

- Measure business performance.
- Identify improvement opportunities for business processes.
- Describe the need for tracking and identifying the root causes of deviation or failure.
- Use the principles, properties, and application of Probability Theory.
- Discuss data distribution including central tendency, variance, normal distribution, and non-normal distributions.
- Draw conclusions about a data population using statistical inference.
- Forecast trends using simple linear regression analysis.
- Perform accurate analysis after learning about sample sizes and confidence intervals and limits, and how they influence the accuracy of your analysis.
- Explore different methods and easy algorithms for forecasting future results and to reduce current and future risk.

### **COURSE CONTENTS**

#### **Data and Information**

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6. Data in the Real World
7. Data vs. Information
8. The Many “Vs” of Data
9. Structured Data and Unstructured Data
10. Types of Data

### **Data Analysis Defined**

6. Why do we analyze data?
7. Data Analysis Mindset
8. Data Analysis Steps
9. Data Analysis Defined
10. Descriptive Statistics vs Inferential Statistics

### **Types of Variables**

6. Categorical vs Numerical
7. Nominal Variables
8. Ordinal Variables
9. Interval Variables
10. Ratio Variables

### **Central Tendency of Data**

4. (Arithmetic) Mean
5. Median
6. Mode

### **Basic Probability**

8. Probability Uses In Business
9. Ways We Can Calculate Probability
10. Probability Terms



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11. Calculating Probability
12. Calculating Probability from a Contingency Table
13. Conditional Probability
14. Frequency Distribution

### **Distributions, Variance, and Standard Deviation**

13. Discrete Distributions
14. Continuous Distributions
15. Range
16. Quartiles
17. Variance
18. Standard Deviation
19. Population vs. Sample
20. Application of the Standard Deviation (Standard Deviation and the Normal Distribution, Sigma ( $\sigma$ ) Values (Standard Deviations)
21. Bimodal distribution
22. Skew and Summary
23. Other Distributions (Poisson Distribution, Exponential, Pareto Distribution and Log Normal Distribution)
24. Distributions in Excel

### **Fitting Data**

6. Bivariate Data (Two Variables)
7. Covariance and Correlation
8. Simple Linear Regression
9. Multiple Linear Regression
10. Fitting Functions (Linear Fit, Polynomial Fit, Logistic Regression and Power-Law Fit)

### **Predictive Analytics Overview**

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2. Monte Carlo Method

### WHO SHOULD ATTEND?

Anyone involved in operations, project management, business analysis, or management who needs an introduction to data analysis, would benefit from this class.

**5 Days**



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## **International Gas Business**

### **ABOUT THE COURSE**

Natural gas is a source of hydrocarbons for petrochemical feedstock and a major source of elemental sulfur. Its popularity as an energy source is expected to grow substantially in the future because natural gas can help achieve two important energy goals for the twenty-first century — providing the sustainable energy supplies and services needed for social and economic development and reducing adverse impacts on global climate and the environment in general

### **COURSE OBJECTIVES**

- Understand how natural gas is found in nature and how gas wells are developed
- Gain better understanding of the dynamics of the entire natural gas value chain addition from wellhead to the burner tip
- Recognize the major and common processes of the natural gas plants, and understand technical process drawings
- Determine various methods used to purify natural gas
- Understand the oil and gas facilities terminology
- Recognize how gas processing fits into the value chain for hydrocarbon products and identify the key issues at the plants
- Distinguish the difference between various gas conditioning and processing technologies, and decide which technique should be used based on the process
- Understand the principles of gas measurement and common measurement devices  
Discuss the market's needs for NGL, LPG, ethane, propane, and butane
- Understand the pipeline transfer
- Learn economic evaluation benchmarks and determine return on investments

### **COURSE CONTENT**

#### **Setting the Natural Gas Scene in Energy Industry**

- Natural Gas Fundamentals
  - Introduction
  - History
  - Natural Gas Origin and Sources
  - Natural Gas Composition & Classification

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- Natural Gas Resources
- Natural Gas from Wellhead to the Market
  - Exploration and Production
  - Processing and Production
  - Sales Gas Transmission
  - Underground Storage
  - Distribution
- Natural Gas Fundamentals
  - Characteristics of Natural Gas
  - Chemistry of Oil and Gas
  - Raw Gas Contaminants
  - Sales Gas and Product Specifications
  - Vapor / Liquid Separation Principals
  - Terminology
- Gas Traditional Processes
  - Excess Water Removal
  - Acid Gas Removal
  - Dehydration
  - Mercury Removal
  - Nitrogen Removal
  - NGL Separation
  - Gas Sweetening and Sulfur Recovery
  - Acid Gas Reinjection
  - Natural Gas Liquids and Dew Point Control

### **Essential Logistics in Natural Gas Business**

- Nitrogen Rejection Processes
  - Cryogenic Process



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- Absorption Process (using lean oil or solvent) Membrane Separation
- Adsorption Process (activated carbon) Storage System
- Storage Tanks
  - Vapour Recovery System LACT Unit
  - Sampling
  - Natural Gas Transportation
  - Pipeline Components
  - Compressor Stations
  - Metering Stations
  - Valves
  - Control Stations
- Liquefied Natural Gas (LNG)
  - Why LNG a Growth Industry
  - Compression & Refrigeration
  - Transportation of LNG
  - Major LNG Exporting Nations
  - Major Importing Nations
- Pipeline Operations
  - Basics of Gas Pipeline
  - Gas Flow Measurement

### **Introduction to the LNG Industry**

- LNG Sales, Marketing and Trade
  - Price Disparity in Different Regions
  - LNG Benchmarks
  - Major Changes in LNG Business
- Business Sector
  - Industry and Market Structure

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- Natural Gas Demand
- Natural Gas Supply
- Economics of the Natural Gas Plants
- Global Markets
  - Where and Who are the Users of LNG
  - Projects Currently under Development
- Key Project Risk and Value Identification
  - Understanding the Fundamental Commercial Drivers for Project Success
  - Identification of Key Project Risks (from a commercial perspective) and Mitigation Strategies
  - Reserves Definitions and Reserves Certification
  - Completion and Cost Overrun Risks
  - Cost Linkages to Oil and Gas Prices

### **Risk Management and Dispute Prevention**

- Handling Risks
  - Risk Management Techniques
  - The Risk Matrix
- Disputes
  - Causes of Disputes
  - Dispute Resolution
  - Arbitration and Expert Determination
- LNG Project Financing Essentials
  - Financial Structures in LNG
  - Investment Decision Making
  - The Key Value Drivers in LNG Financing
- Overview of LNG Financing Options
  - Balance Financing
  - ECA and Multilateral Agency Funding

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- Capital Markets
- Asset based Financing
- Project Financing and Structured Re-seminar Financing

### **License Agreements, Regulations, Future Trends**

- Upstream Fiscal & License Agreements
  - Fiscal and Legal Regimes Worldwide
  - Production Sharing Arrangements
- Regulations
  - The History of Regulations
  - The Market under Regulation
  - The Environmental Impact
- The Future Trends in Natural Gas Trends
  - Trends in LNG Markets
  - Latest Changes and Movements in LNG Trading
  - The Impact of Shale Gas
  - Hubs vs. Oil for Price Setting
  - Market Shifts in Importation and Liquefaction
  - Mid and Small-Scale LNG
  - Floating and Niche LNG Concepts

### **WHO SHOULD ATTEND**

- Business Development Managers, Corporate Planning Professionals, Geoscience & Engineering Professionals, Supply Planners & Scheduling Professionals, Government Regulators, Law Professionals, Tax & Finance Advisors, Auditing Personnel, Compliance Officers, Equity Analyst and Bankers
- Joint Venture Officers, Negotiators and Contracting Professionals
- Trading Professionals

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### **International Oil Supply, Transportation, Refining and Trading**

#### ***About the Course***

This course provides an overview of the oil supply chain - crude oil from source to refinery, processing, trading and the onwards movement of oil products. It is designed for new or recent entrants to the oil industry and is also ideal for use as part of an induction programme or for bringing those transferring disciplines up to speed. Through the medium of a series of progressive, specific exercises, delegates will address day-to-day problems to understand the relevant commercial driving forces in this area. After learning about the fundamentals, delegates will cover the valuation of crude oil. Ocean tanker transport and freight will be explored together with an overview of terminals and pipelines. The structure of a refinery will be explained in the context of the need to produce marketable products. Key aspects of product quality will be covered together with the major refining processes needed to achieve them. The course moves on to cover oil markets and pricing, oil trading contracts, and an introductory guide to paper markets and hedging using futures.

#### **Course Objectives**

- How to value crude oil based on product market prices
- How to evaluate spot tanker freight costs
- How to evaluate crude netbacks and refining margins and alternative crude breakeven
- How tankers are chartered
- How spot oil purchase/sale contracts are structured
- How a refinery is structured
- The significance of non-tanker logistics - pipelines, storage, rail, and road
- Key points on product quality; how key specifications are met.
- Fundamental economic drivers of the supply chain
- How the international crude oil and products markets are priced.
- Futures markets: characteristics and use
- The basic use of hedging within a trading environment

#### **Course Content**

Market Fundamentals

Crude Oil

- Types
- Assay
- Yield

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- Crude value
- Calculation of gross product worth and netback

### The Refinery

- Structure of simple, upgrading, and complex refineries
- Description, function and yields of the various refining processes.
- Refining costs and refinery margins
- Future refining issues

### Product Quality

- Key specifications for main product grades
- How quality specifications are achieved
- Cost implications of quality

### Logistics

- Tanker freight & Worldscale
- Chartering
- Pipelines, terminals and storage
- Oil losses

### Contracts

- Formulation of the contract
- Oil contract purchase and sale terms
- The tanker contract (charter-party)

### Oil Markets

- Nature of pricing mechanisms and price reporting
- Crude oil markets
- Products markets
- Forward markets
- Futures markets
- Introduction to derivatives
- Use of hedging

### Exercises and Case Studies will include:

- Gross product worth
- Freight
- Netback, refining margin and breakevens
- Quality & specifications
- Blending
- Pipeline economics
- Price Exposure
- Hedging

### Who Should Attend?

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New entrants to the oil industry, and staff from integrated functions such as supply, trading and logistics, Managers changing disciplines into the midstream or downstream Professional personnel inside and outside oil companies who interface with supply, refining, trading and transportation functions and who need an understanding of this sector, such as legal, banking, insurance, finance and production.

**5 Days**



## **Oil Price Risk Management**

### **About the Course**

This intensive and interactive course focuses on the price risks involved in trading oil on the international markets. The course identifies the price risks involved and the use of exchange traded and OTC instruments in managing risk. You will compare the advantages and disadvantages of futures and OTC instruments and review the different trading procedures available and the profiles of the different hedgers in the market.

### **Course Objective**

This will enable the participants to know how to manage oil prices and all the risks associated with it.

### **Course Content**

Review of pricing mechanisms

- Fixed, floating, EFP's
- Physical vs forward vs futures
- The value of the differential

Understanding exposure

- When does price risk begin?
- Actively managing price risk
- What is hedging?

Hedging instruments

- Futures vs. swaps vs. options

Hedging with exchange traded products

- As a producer
- As a refiner
- As a consumer

Hedging with OTC products

- The underlying
- Rateable exposure

Comparative analysis

- Which instrument to use when and why?



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### **Who Should Attend?**

- Anyone who is affected by the changes in the international price of oil
- Oil industry personnel working in supply, trading, risk management, refining, finance, transport, exploration, and production.
- Oil trading and distribution companies
- Energy-related government departments and regulators
- Purchasing, planning, and finance departments in major energy consumers
- Energy publications
- Bankers, accountants, auditors and others associated with oil companies and oil financing.

**5 Days**





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### **Crude Oil and Refined Product Sales, Marketing, Trading and Risk Management**

#### ***About the Course***

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This course is designed to give delegates a comprehensive picture of the crude oil and refined markets, risks, legal and regulatory issues involved in the international trading of crude oil and refined products. It is presented with the wide range of essential practices of petroleum industry spanning, exploration, extraction, refining; and global oil supply, reserves, production and trade flows.

With the overview of these essential upstream and midstream practices, the industry downstream operations dealing with crude oil and refined products trading and its associated risks and uncertainties can be fully understood. Since price volatility always exists, the Price Risk Management appropriate techniques are presented in detail. Sales, Marketing, Trading and Risk Management are crucial and the most dynamic parts of the value chain, and extremely important for managers to stay on the top of these activities.

#### ***Course Objectives***

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- Gain the business acumen of the wide-ranging subjects of upstream production to the downstream sales, marketing and trading of crude oil and refined products.
- Understand the critical crude oil pricing dynamics and the use of crude oil benchmarks.
- Develop the price-risk management strategies using the hedging instruments.
- Acquire essential legal and regulatory issues relating to trading in the global markets.
- Reduce the overall risk of Petroleum Industry and maximize the value chain profitability.

#### ***Course Content***

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### **Essential Upstream Practices**

- Introduction to Course
- Introduction to How Oil was Formed.
- Fundamentals of Oil & Gas Geology and Petroleum Engineering
- Well Logging and Well Completion
- Essence of International Oil Supply – *Global Reserves, Production & Trade*
- Fundamentals of Oil Economics

### **Crude Oil Trading**

- The Evolution of International Oil Pricing System – *The Big Picture*
- Trading Physical Crude Oil and its Logistics
- The Dissection of Crude Oil Price
- Oil Price Formula – *Time Differential*
- Oil Price Formula – *Grade Differential*
- Price Risk Management - *Hedging the Crude Oil Price*

### **Refined Products Trading**

- The Trading Refined Products
- Refining I – *Crude Oil Properties and Processes*
- Refining II – *Conventional Refinery Upgrading*
- Oil Products and their Qualities
- Oil Logistics and the Art of Trade
- The Price of Refined Oil Products

### **Risk Management**

- Oil Products Price Risk Management
- Measuring Risk
- The Forward Market
- The Future Market
- The Swaps Market
- The Options
- Crack Spreads

### **Legal and Regulatory Aspects of Oil Trade**

- Legal and Regulatory Issues
- 

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- International Aspects of Oil Trading
- Oil Trading, Law and International Petroleum Exchange in:
  - a. The United States
  - b. United Kingdom
  - c. Singapore

### ***Who Should Attend?***

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- Business & Development Managers
- Corporate Planners
- Lawyers & Law Firms' Personnel
- Geoscientists, Engineers and Refiners
- Bankers, Accountants
- Auditors
- Media Personnel who interface with traders and trading
- Government Regulators
- Tax & Finance Advisors
- Compliance Officers
- Equity and Financial Analysts
- Joint Venture Officers
- Negotiators
- Those who moved from elsewhere to Trading

**5 Days**



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### **International Oil Trading and Pricing**

#### **About the Course**

International Oil Trading and Pricing is a four-day instructor-led oil trading course presented by the energy training experts at Mennta Energy Solutions. This course covers the basic principles of oil trading and the markets. Through a variety of specific exercises, delegates will learn the techniques involved in trading and how to address day-to-day problems.

The course focuses on the key markets, pricing and the mechanisms involved in oil trading. Aspects of the various exposures encountered in trading are covered together with hedging and price risk management techniques. Syndicate exercises will address each skill required. Over the course, syndicate groups will manage their own company positions in live trading situations.

#### **Course Objectives**

- Comprehend the Brent Market and its influence on international pricing
- Position management with hedging tools
- The structure of purchase/sales contracts including exposures and transaction costs.
- Price risk management
- Developing successful trading strategies
- The use of trading instruments to capture the market.
- Use of Freight Forwards to manage freight risk.
- Working the arbitrage
- Trading structured positions and live markets

It is recommended that delegates should have attended "International Oil Supply, Transportation, Refining and Trading" (SP1) or have working knowledge of all of the subjects covered in that course.

Not sure if you have the appropriate experience? Click here to test yourself on the knowledge necessary for this course.

#### **Course Content**

Crude Oil and Product Markets

- Why trade?
- Supply/demand
- How the markets work

Shipping and Freight

- Freight exposure and freight forwards

Pricing

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- Price reporting
- Pricing mechanisms
- Price risk

### Contracts

- Issues and problems

### Price Risk and Risk Management

- Summary of markets (Physical, Forwards, Futures, Swaps, Options)
- Understanding long and short positions
- Introduction to hedging tools
- Basis risk

### Product Trading

- Light and Middle Distillate Trading
- Fuel Oil Trading
- Developing successful trading strategies
- World product markets and pricing
- Locations, time and quality arbitrages
- Futures - features of the key futures markets
- Delivery

### Crude Trading

- Developing successful trading strategies
- Negotiating term deals
- Other risks and exposures
- Arbitrage price risk management
- Payment mechanisms, letters of credit
- Counterparty selection

### Introduction to Advanced Instruments

- The EFP
- Swaps & Options
- Spreads and basis trading

### Case Studies and Exercises Include:

- Price exposure
- Arbitrage
- Basis risk
- Negotiating a deal
- Freight Hedging
- Option valuation
- Contract Risks
- Managing ongoing positions
- Trading the live market

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## **SBT PETROLEUM GEOSCIENCE LIMITED** RC 1405715

30 Oba Yekini Elegushi Road, Ikate-Elegushi, Eti-Osa, Lekki, Lagos. Nigeria

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### **Who Should Attend?**

- Personnel who are entering the trading arena
- Oil company staff who interface with the oil trading sector and require a better understanding of trading practice, such as operations, accounting, financial control, treasury, supply, or production function.
- Those in the legal and banking fields who want a better understanding of trading practice.

**5 Days (Monday-Friday)**



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### **Overview of Physical Crude Oil Trading and Operations**

#### **About the Course**

Overview of Physical Crude Oil Trading and Operations is a two-day instructor-led course presented by the energy training experts at Mennta Energy Solutions. This course introduces the trading of physical crude oil. Delegates will gain an understanding of the knowledge possessed by a physical crude oil trader and the steps involved in negotiating a physical crude oil transaction. In addition, delegates will be given an overview of crude oil quality, vessel and pipeline transportation, and the terminology associated with this facet of the petroleum industry. Energy futures contracts and over the counter instruments are also covered in this course offering. There are periodic quizzes and a trading game in the course, and these reinforce the course material.

Includes Online Pre-study Module

#### **Course Objectives**

This course is accompanied by a preparatory course available online. Delegates will receive a web voucher as part of their joining instructions upon confirmation of registration. By taking advantage of this "blended" learning approach, in-class time and learning are optimized.

#### **Course Content**

Introduction

- What is crude oil?

Industry Components

- Major components of an integrated oil company
- What does each area do?

Upstream Sector

- How crude traders interface with upstream
- Areas where is crude oil produced

Midstream Sector

- How is crude oil transported?
  - trucks, vessels, and pipelines
- Locations of crude oil markets
- Who trades crude oil?
- Evolution of crude prices

Downstream Sector

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- Definition of refining processes
  - Overview of worldwide refining
- Crude Oil Characteristics
- Major crude oil quality factors
    - gravity, sulphur, pour point, and viscosity.
  - The most traded crudes
  - Synthetic crude and non-conventional crude sources
- Crude Oil Pricing
- Benchmark crudes
  - Major markets where crude is typically traded.
  - Term contracts
  - Definition of a spot transaction vs. term deal
  - How are crude prices determined?
  - Netback calculations and GPW
  - Physical markets
- Paper Trading
- Definition of terminology within Paper markets
  - Differentiation of oil futures vs. physical
  - Futures markets locations and specification
  - OTCs vs. futures
  - Who uses futures? – market players and their roles?
  - Definition of EFP
  - Brent crude oil traded markets
  - Forwards and Swaps
- Reasons for Trading Physical Crude Oil
- Why do companies trade crude oil?
  - Refinery supply optimization and crude selection
  - System balancing
  - Trading for profit
- Influences on Crude Oil Trading Decisions
- Fundamental analysis
  - Definition of OPPEC and its role
  - Locations of crude reserves and strategic storage
  - Refinery shutdowns
  - Crude inventories
- Crude Oil Price Drivers
- Market structure – contango and backwardation
  - Economic factors that affect supply and demand
  - Geo-political factors
  - Technical analysis
  - Using fundamentals and Technical Analysis together
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### The Art of the Trade

- Trader networks and socializing
- How is a trade actually negotiated?
- Types of international purchases
- The terms negotiated in a crude oil deal

### Crude Oil Operations, Credit, and Legal

- LOA definition
- Vessel chartering
- Different types of crude oil tankers
- World scale – definition and calculation
- Demurrage – definition and charges
- Minimising shipping costs
- Crude oil pipelines and scheduling
- Payments for crude oil transactions – credit issues and forms of security
- The role of lawyers in crude oil deal

### Who Should Attend?

This course is designed for those individuals new to the crude oil trading area and anyone interacting with crude oil trading personnel in their company. Specifically, operations, mid-office and back office employees would benefit from the material offered in this course. The course assumes no prior crude oil trading experience.

**5 Days**

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### **Oil Markets & Trading**

#### **About the Course**

This course is designed for participants to understand importance of maritime transport costs in oil supply economics. We will review the different oil trading markets by type of transaction. The instructor will analyze the parameters which influence prices of crude oil and prices of petroleum products. The participants will be able to comprehend hedging techniques available for protection against fluctuations in prices.

#### **Course Objectives**

- Review crude oil supply, demand, and products.
- Understand crude oil refining, evaluation, and selection.
- Explore physical markets, shipping, and contracts.
- Appreciate pricing formation and price risk management.
- Learn about futures, swaps, options, and over-the-counter markets.
- Become familiar with trading techniques and terminology.
- Participate in trading & hedging exercises and improve negotiation skills.

#### **Course Content**

##### **Oil Supply & Demand Fundamentals**

- Energy resources.
- Energy demand and supply.
- Oil producing countries, OPEC, consuming countries, international oil companies: constraints and strategies.

##### **Shipping**

- General features.
- The Market and its players-Fixing of the freight rate (World scale).
- Chartering contracts.
- Risk control and environmental protection.

##### **Crude & Petroleum Products Physical Trading**

- What is the value of a crude oil? The refiner's point of view.
- Different types of contracts: long term, spot and forward.
- Main oil markets and their features.
- Key benchmark crudes.

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- The role of the PRAs (price reporting agencies).
- Links between Trading and Shipping.
- Products trading.
- Main provisions of a sale/purchase contract.

### **Exchanges & Futures Trading**

- The concept of volatility
- Definition of a contract: the cases of WTI and Brent.
- Exchanges and their organization: the cases of NYMEX and ICE.
- Main Futures Markets.
- Hedging principles.
- Hedging imperfections, basis risk.
- Market structure (contango, backwardation).
- *Case studies*.

### **Derivatives**

- Options: principles, basics, and characteristics.
- Interests and limits of options.
- Swaps: principles, basics, and characteristics.
- Interests and limits of swaps.

### **Hedging Strategies - Various Case Studies on Hedging**

- For a refiner.
- For a crude oil producer.
- For a marketer.
- For an industrial consumer.

### ***Who Should Attend?***

All personnel in the petroleum or associated industries needing to improve their knowledge and understanding of crude oil and petroleum products trading and pricing mechanisms.

**5 Days**



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### **Commercial Fundamentals In Upstream Oil And Gas Industry**

#### **About the Course**

This intensive course introduces the fundamental commercial elements of the upstream oil & gas industry, enabling participants to understand and manage the key commercial structures, agreements, and risks in major onshore and offshore projects worldwide.

#### **Course Objectives**

- An appreciation of the relationships between all components of the commercial structures and players within the industry
- Crucial techniques needed for dispute management and resolving issues that arise when commercial agreements go wrong
- A thorough understanding of the complex financial aspects relevant to the upstream industry, including project finance
- An understanding of how commercial contracts are central to risk management
- Key skills and knowledge needed for successful decision making and commercial/portfolio management

#### **Course content**

- Overview of the oil & gas industry
- Agreements governing oil & gas investments
- Upstream joint venture agreements
- Unitization and unit operating agreements
- Oil and oil product sales

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- Gas sales
- Oil & gas infrastructure use agreements
- Disputes and their resolution
- Financial aspects of upstream commercial
- Managing risks in upstream projects
- Portfolio management
- Corporate and investment decision making risk.

### **Who Should Attend?**

This is a very good course for anybody who is interested in the commercial aspects of oil and gas industry.

**5 Days**



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## LIST OF TRAINING RECENTLY EXECUTED BY SBT PETROLEUM GEOSCIENCE 1

S/ N	Company	Projects/Jobs	Year
1	SEPLAT	Cost Estimations	2023
2	NAPIMS (Through DAP Energy Consult Limited)	Business Analytics in Oil and Gas Industry	2022
3	Platform Petroleum	Crude Oil Market and Trading	2022
4	Platform Petroleum	Introduction to Oil and Gas Industry	2022
5	Ankor Pointe	Introduction to Oil and Gas Industry	2022
6	NAPIMS	Technical Report Writing and Presentation	2022
7	Con Oil	Field Development Plan	2021
8	Newcross E and P	Field Development Plan	2021
9	Pillar Energy	Field Development Plan	2021
10	Oriental Energy	Field Development Plan	2021
11	NAPIMS	Field Development Plan	2021
12	SEPLAT	Cost Estimations	2021
13	Chevron	Reservoir Static Modelling	2021
14	Con Oil	Cost Estimations	2020
15	NAPIMS	Field Development Plan	2019
16	Midwestern Oil and Gas	Leadership and Management Skills	2019
17	Ankor Pointe	Introduction to Oil and Gas Industry	2019

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## LIST OF TRAINING RECENTLY EXECUTED BY SBT PETROLEUM GEOSCIENCE 2

S/N	Company	Projects/Jobs	Year
18	Platform Petroleum	Introduction to Oil and Gas Industry	2019
19	Waltersmith	Cost Estimations	2019
20	Con Oil	Dynamic Simulation with Eclipse	2019
21	Sahara Energy	Petroleum Economics	2018
22	Sahara Energy	Fundamental of Reservoir Engineering	2018
23	Energia	Completions and Workover	2018
24	PPS Group	Cost Estimation	2018
25	Nubian Group	Reservoir Engineering Analysis	2018
26	Ankor Pointe	Introduction to Oil and Gas Industry	2018
27	Nubian Group	Reservoir Engineering Analysis	2018
28	NAPIMS	Field Development Plan	2018
29	DPR	Short course training	2018
30	Platform Petroleum	Petroleum Economics	2018
31	Belema Oil	Reservoir Static Modelling	2018
32	Belema Oil	Petrophysical Evaluation	2018
33	Platform Petroleum	Introduction to Oil and Gas Industry	2018
34	Energia	Fundamental of Drilling	2017
35	Energia	Fundamental of Completion	2017
36	Nubian Group	Reservoir Engineering Analysis	2017

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**LIST OF SOME OF CONSULTANTS, THEIR QUALIFICATIONS,  
SPECIALIZATION AND YEARS OF EXPERIENCE**

S/N	NAMES	QAULIFICATION	SPECIALIZATION	YEAR OF EXPERIENCE
1	Engr. Chimaroke Anyanwu (MNSE)	M.Eng	Drilling Engineering	10
2	Engr. Okeke Chinweike	M.Eng	Production Engineering	10
3	Engr. Michael Ebong	M.Eng	Reservoir Engineering	20
4	Nnamdi Nwabulue	B. Eng	Reservoir Engineering	18
5	Kala-Otaji, Tamunotroko	B. Eng	Reservoir Engineering	8
6	Dr. Agharanya Ugochukwu Paul	PhD	Geology/Biostratigraphy	20
7	Daniel Haruna Mshelia	B.Sc.	Geophysics/Geomodeling	7
8	Ayorinde, Folorunso Olanrewaju	B.Sc.	Geology/Geomodeling	20
9	Omekeh, Peter Chukwuyem	M. Sc.	Geology/Sedimentology	23
10	Oluwafisayo Oladapo	M.Sc. (Petroleum Engineering)	Reservoir/Production Engineering	12
11	Sunday Osasuyi	M.Sc. Geophysics	Seismic Interpretation	35
12	Oyekade Babatunde	M.Sc.	Geology/Modelling	20
13	Adesokan Ibrahim	M. Sc.	Petrophysics	20
14	Ipinyemi Gbemiga	M.Sc.	Geology/Production	18
15	Saheed Balogun	M.Sc.	Chemical Engineering	12
16	Olowoyeye Sola	M.Sc.	Petrophysics	10
17	Ameh Okokro	M.Sc.	Petrophysics	7



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## INTSRUCTORS' PROFILE FOR SPECIFIC COURSES

This will be provided for each course of interest and the clients will be satisfied before we proceed with training.

### SOME OF OUR CLIENTS' LOGO



Platform Petroleum Limited

ANKOR POINTE INTEGRATED LIMITED

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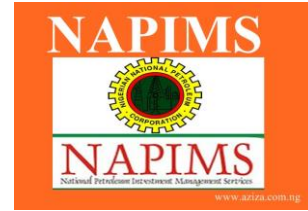
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