COURSE OVERVIEW DE0108
Corrosion in Downhole Tubing

Course Title
Corrosion in Downhole Tubing

Course Date/Venue
Session 1: April 28-May 02, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
Session 2: October 26-30, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference
DE0108

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and up-to-date overview of tubing design and selection. It covers the preliminary casing and tubing design including design approaches like deterministic (WSD) and probabilistic; the basis of design, initial conditions, installation loads, drilling loads and production/injection loads for casing strings and tubing; the design factors, tubular strength, buckling and temperature considerations; and the design optimization techniques, material selection, metallurgy fundamentals, corrosion mechanisms and sour service grade selection.

Further, the course will also discuss the tubing design, casing and tubing design criteria and completion equipment selection; the types, applications, limitations, testing and qualification of connections; the well architecture, well integrity, basis of design, initial conditions and worst-case discharge loads; and the installation loads, drilling load, production/injection loads, drilling and production thermal loads.

During this interactive course, participants will learn the temperature considerations, load cases, pipe strength, material selection, movement, buckling and APB; the fracture failure (brittle burst analysis), quality assurance and quality control; the connection assessment levels (CAL), testing and qualification and the use of qualifies envelopes in casing and tubing design; and the casing wear proposed workflow, wear prediction workflow, wear factors and key factors impacting casing wear; the survival design considerations, WCD, WCD loads multi-string analysis, special problems and expandable tubular; and the steam cycling issues like plastic strain, bauschinger effect, low cycle fatigue and subsidence/compaction.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain a good working knowledge on tubing design and selection
- Discuss preliminary casing and tubing design including design approaches like deterministic (WSD) and probabilistic
- Identify the basis of design, initial conditions, installation loads, drilling loads and production/injection loads for casing strings and tubing
- Recognize the design factors, tubular strength, buckling and temperature considerations
- Carryout design optimization techniques, material selection, metallurgy fundamentals, corrosion mechanisms and sour service grade selection
- Describe tubing design, casing and tubing design criteria and completion equipment selection
- Identify the types, applications, limitations, testing and qualification of connections
- Illustrate well architecture, well integrity, basis of design, initial conditions and worst-case discharge loads
- Recognize installation loads, drilling load, production/injection loads, drilling and production thermal loads
- Discuss temperature considerations, load cases, pipe strength, material selection, movement, buckling and APB
- Apply fracture failure (brittle burst analysis), quality assurance and quality control
- Carryout connection assessment levels (CAL), Testing & qualification and the use of qualifies envelopes in casing and tubing design
- Identify casing wear proposed workflow, wear prediction workflow, wear factors and key factors impacting casing wear
- Explain survival design considerations, WCD, WCD loads, multi-string analysis, special problems, expandable tubular, steam cycling issues like plastic strain, bauschinger effect, low cycle fatigue and subsidence/compaction

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of tubing design and selection for well services engineers, drilling operations section leaders, drilling engineering supervisors, well engineers, petroleum engineers, well servicing/workover/completion staff and field production staff.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

US$ 8,000 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Dr. Chris Kapetan, PhD, MSc, is a **Senior Drilling & Petroleum Engineer** with over **40 years** of international experience within the **onshore** and **offshore oil** & **gas** industry. His wide experience covers **Horizontal & Multilateral Wells**, **Well Completion & Stimulation**, **Artificial Lift System Selection & Design**, **Drilling Practices**, **Drilling Fluids Technology**, Drilling **Operations**, **Directional** Drilling**, Formation Damage** Evaluation & Preventive, **Formation Damage** Remediation, **Drilling & Formation Damage**, Simulation Program for The **International Petroleum Business**, **Well** Testing & Analysis, **Well** Design, **Well** Testing & Oil Well Performance, **Well** Test Design Analysis, **Well Test** Operations, **Well Testing & Perforation**, Root Cause Analysis (**RCA**), RCA Method for Process Plant, **RCA** Techniques, Control Well-Flow Lines Parameters, Decision Analytic Modelling Methods for **Economic Evaluation**, **Probabilistic Risk Analysis** (**Monte Carlo Simulator**) **Risk Analysis** Foundations, Sulphur, Sour Natural Gas, **Natural Gas Sweeting**, **Petroleum Production**, Field Layout, **Production** Techniques & Control, **Surface Production** Operations, **Project Risk Analysis**, **Feasibility Analysis** Techniques, **Capital Operational Costs**, **Flowmetering & Custody Transfer** and **Oil Refinery**. Further, he is also well-versed in Enhanced Oil Recovery (**EOR**), Electrical Submersible Pumps (**ESP**), **Oil Industries Orientation**, **Geophysics**, **Cased Hole** Formation Evaluation, **Cased Hole** Applications, **Cased Hole** Logs, **Production Wells** Operations, **Production Facilities** Management, **Perforating** Methods & Design, **Perforating** Operations, **Fishing** Operations, **Well & Reservoir** Testing, **Reservoir** Stimulation, **Hydraulic Fracturing**, **Carbonate** Acidizing, **Sandstone** Acidizing, **Drilling Fluids** Technology, Drilling Operations, **Directional** Drilling, **Artificial Lift**, **Gas Lift Design**, **Gas Lift** Operations, Petroleum Business, **Petroleum Economics**, **Field Development** Planning, **Gas Lift Valve** Changing & Installation, **Well Completion** Design & Operation, **Well** Surveillance, **Well** Testing, **Well** Stimulation & Control and **Workover** Planning, Completions & Workover, **Rig Sizing**, **Hole Cleaning & Logging**, **Well Completion**, **Servicing & Work-Over** Operations, Practical **Reservoir Engineering**, **X-mas Tree & Wellhead** Operations, Maintenance & Testing, Advanced **Petrophysics/Interpretation** of **Well Composite**, **Construction Integrity** & **Completion**, **Coiled Tubing** Technology, **Corrosion Control**, **Slickline**, **Wireline & Coil Tubing**, **Pipeline Pigging**, **Corrosion** Monitoring, **Cathodic Protection** as well as Root Cause Analysis (**RCA**), Root Cause Failure Analysis (**RCFA**), **Gas Conditioning & Process Technology**, **Production Safety** and **Delusion of Asphalt**. Currently, he is the **Operations Consultant** & the **Technical Advisor** at **GEOTECH** and an independent **Drilling Operations Consultant** of various engineering services providers to the international clients as he offers his expertise in many areas of the **drilling & petroleum discipline** and is well **recognized & respected** for his process and procedural expertise as well as ongoing participation, interest and experience in continuing to promote technology to producers around the world.

Throughout his long career life, Dr. Chris has worked for many international companies and has spent several years **managing** technically **complex wellbore interventions** in both **drilling** & **servicing**. He is a **well-regarded** for his **process** and **procedural expertise**. Further, he was the **Operations Manager** at **ETP Crude Oil Pipeline Services** where he was fully responsible for optimum operations of crude oil pipeline, **workover** and **directional drilling**, **drilling rigs** and equipment, drilling of various geothermal deep wells and **exploration wells**. Dr. Chris was the **Drilling** & **Workover Manager** & **Superintendent** for **Kavala Oil** wherein he was responsible for supervision of **drilling** operations and **offshore exploration**, quality control of performance of **rigs**, **coiled tubing**, **crude oil** transportation via pipeline and abandonment of **well** as per the API requirements. He had occupied various key positions as the **Drilling Operations Consultant**, **Site Manager**, **Branch Manager**, **Senior Drilling** & **Workover Manager** & **Engineer**, **Drilling** & **Workover Engineer**, **Process Engineer**, **Operations Consultant** and **Technical Advisor** in several petroleum companies responsible mainly on an **offshore** sour oil field (under water flood and gas lift) and a gas field. Further, Dr. Chris has been a **Professor** of the **Oil Technology College**.

Dr. Chris has **PhD** in **Reservoir Engineering** and a **Master's** degree in **Drilling & Production Engineering** from the **Petrol-Gaze Din Ploiesti University**. Further, he is a **Certified Surfaced BOP Stack Supervisor** of **IWCF**, a **Certified Instructor/Trainer**, a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**) and has conducted numerous short courses, seminars and workshops and has published several technical books on **Production Logging**, **Safety Drilling Rigs** and **Oil Reservoir**.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0745	*Registration & Coffee*
0745 – 0800	*Welcome & Introduction*
0800 – 0815	***PRE-TEST***
0815 – 0900	***Preliminary Casing & Tubing Design, Design Approaches like Deterministic (WSD) & Probabilistic***
0900 - 0930	***Basis of Design, Initial Conditions***
0930 – 0945	*Break*
0945 – 1030	***StressCheck Exercises-Well File Build-Up with all Inventory Entries***
1030 – 1100	***Load-Cases- Casing & Tubing***
1100 - 1230	***Installation Loads, Drilling Loads, Production/Injection Loads for Casing Strings & Tubing***
1230 – 1245	*Break*
1245 – 1330	***Design Factors: Rationale & Assumptions, Design Factors for Tubing, Casing & Connections***
1330 - 1420	***Tubular Strength: Axial, Burst, Collapse, De-ration due to Corrosion & Temperature***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 - 0830	***StressCheck Exercises – Tubing Design***
0830 – 0930	***Buckling & Temperature Considerations, Design Optimization Techniques***
0930 – 0945	*Break*
0945 – 1030	***Material Selection, Metallurgy Fundamentals, Corrosion Mechanisms, Sour Service Grade Selection***
1030 – 1230	***Tubing Design, Difference between Casing & Tubing Design Criteria, Completion Equipment Selection***
1230 - 1245	*Break*
1245 – 1330	***Connections: Types, Applications, Limitations, Testing & Qualification***
1330 – 1420	***StressCheck Exrecises – Casing Design***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 - 0830	***Well Architecture, Well Integrity, Basis of Design, Initial Conditions (Procedures & Injectors), Worst-Case Discharge Loads***
0830 – 0930	***Installation Loads, Drilling Loads, Production/Injection Loads, Drilling & Production Thermal Loads***
0930 – 0945	*Break*

1030 – 1130	***WellCAT Exercises – Well File Build up with all Inventory Entries***
1130 - 1230	***Design Factors: Rationale & Assumptions, Uni-Axial & Tri-Axial Design Factors, Design Fcators for Connections***
1230 - 1245	*Break*
1245 – 1330	***Tubular Strenght: Axial, Burst, Collapse, De-Ration due to Corrosion & Temperature, Material Anisotropy, High Collapse (Non API), Limit State Collapse***
1330 - 1420	***WellCAT Exercises – Drill & Prod Module***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 - 0830	***Temperature Considerations***
0830 – 0930	***Load Cases, Pipe Strength, Material Selection, Movement, Buckling, APB***
0930 – 0945	*Break*
1030 – 1130	***Fracture Failure (Brittle Burst Analysis), Quality Assurance & Quality Control***
1130 - 1230	***WellCAT Exercises – Casing & Tube Module***
1230 - 1245	*Break*
1245 - 1330	***Connections: Types, Applications, Limitations***
1330 – 1420	***Connection Assessment Levels (CAL), Testing & Qualification, Use of Qualifies Envelopes in Casing & Tubing Design (Connection Tri-Axial Design)***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 5

0730 – 0830	***Casing Wear Proposed Workflow, Wear Prediction Workflow, Wear Factors, Key Factors Impacting Casing Wear***
0830 – 0930	***WellCat Exercises – Design with Connection Envelope, Casing Wear Analysis***
0930 – 0945	*Break*
0945 – 1045	***Kick Tolerance***
1045 – 1230	***Survival Design Considerations, WCD, WCD Loads (Cap & Contain, Hot Collapse)***
1230 - 1245	*Break*
1245 -1315	***Multi-String Analysis incl. WHG, APB, System Fixity Considerations***
1315 – 1345	***Special Problems, Expandable Tubular, Steam Cycling Issues like Plastic Strain, Bauschinger Effect, Low Cycle Fatigue, Subsidence/Compaction Loads***
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Certificates*
1430	*Lunch & End of Course*

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org