COURSE OVERVIEW PE0200
Petroleum Refinery Processing

Course Title
Petroleum Refinery Processing

Course Date/Venue
Session 1: May 04-08, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
Session 2: November 17-21, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
PE0200

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

Course Description

This practical and highly-interactive course includes real-life case studies 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 applied petroleum refinery processing. It covers the overall process operation of an integrated petroleum refinery and the extensive vocabulary unique to the industry; and the identification of various refinery products, properties and features of refinery feedstocks.

During this interactive course, participants will learn the various refinery processes including crude distillation, coking, thermal processes, catalytic cracking, catalytic hydrocracking and hydroprocessing; the resid processing, hydrotreating, catalytic reforming and isomerization, alkylation and polymerization; the product blending and other supporting processes used in petroleum refinery; the lubricating oil blending stocks; and the various petrochemical and additives production feedstocks.

Course Objectives

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

- Apply and gain an in-depth knowledge on petroleum refinery processing
- Explain overall process operation of an integrated petroleum refinery and the extensive vocabulary unique to the industry
- Identify the various refinery products and explain the properties and features of refinery feedstocks
- Employ various refinery processes including crude distillation, coking, thermal processes, catalytic cracking, catalytic hydrocracking, hydroprocessing, resid processing, hydrotreating, catalytic reforming & isomerization, alkylation and polymerization
- Carryout product blending and other supporting processes used in petroleum refinery
- Determine the lubricating oil blending stocks and identify the various petrochemical and additives production feedstocks

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 is intended for personnel who have limited refinery process or operating experience, who are involved in supporting operations or who interact with refinery personnel. Engineers and supervisory personnel from the production and/or pipeline branches of oil companies should find a great deal of beneficial information, particularly if they have the need to gain an overview of the entire refinery.

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 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:

Mr. David Berryman is a **Senior Drilling Operations Engineer** with over **40 years** of **Offshore** & **Onshore** experience within the **Oil & Gas** industries. He is an international expert in **Drill String** Intensity & Design, **Drill String** Optimization, **Stuck Pipe Prevention**, **Wireline** Operations & Techniques, **Fishing** Operations, **Drilling & Petroleum** Engineering, **ERD Drilling**, **Well Service** Operations, **Well Test** Design & Analysis, **Well Composite**, **Construction Integrity**, **Completion & Production** Optimization, **Well Completion**, **Well Integrity** Management, **Well Bore** Analysis, **Well Control** & **Blowout Prevention**, **Well Bore Integrity**, High Pressure High Temperature (**HPHT**), Pulling Out of Hole (**POOH**), **PWD Interpretation**, **Surface Logging**, **Drilling Optimization**, **Well Planning**, **Horizontal** & **Directional Drilling**, **Well Hole Cleaning**, **Mud-Logging**, **Downhole Vibration**, **Extended Reach Drilling**, **Torque & Drag Modelling**, **Pore Pressure** Evaluation, **Pressure Transient Testing & Reservoir Performance** Evaluation, **Review Process Data & Fluid Properties**, **Conductor Line Pressure Surveys** and **Chemical Tubing Cutting**. He is also well-versed in Bow-Tie HSE Risk Management System, **Hydraulics** Management, Data Interpretation, **Petroleum Data** Management, Hydraulic Calculations, Safety Management System, **Rig** Operations and various **drilling softwares** including **Well Plan** and **Compass** (**Landmark**); DFG, Planit, Insite Anywhere (**Halliburton**); Discovery Well, Discovery Web (Kongsberg); Digital Well File (Petrolink) and Well View (Peloton).

Throughout his long career life, Mr. Berryman has worked for many international companies in the **Gulf of Mexico**, **Europe**, **Africa**, **Central Asia** (Kazakhstan) the **Middle East**, **Far East** and the **North Sea** such as Marathon Oil UK, Talisman-Sinopec, BG Group, Sperry Drilling, Stavanger, BP, Hycalog, Camtest/Camco and Gearheart. He had occupied various key positions as the **Drilling Manager**, **Drilling Engineer Supervisor**, **Drilling Supervisor**, **Drilling Operations Engineer**, **Applied Drilling Technology Engineer**, **Data Engineer**, **Mud Logger**, **Sales & Service Engineer** and **Downhole Gauge Engineer** and **Senior Instructor/Trainer**. During this period, he has led the development of a **software solution** for real-time monitoring of drag whilst tripping in extended reach wells.

Mr. Berryman has a **Bachelor's** degree in **Mining** from the **University of Leeds**, **UK**. Further, he has acquired **certifications** from the **IWCF** for **Combined Surface** and **Subsea Blow-Out Preventer Stack**, the **BOSIET**, the **UKCS** for Offshore Working and the **Prince2 Foundation** for **Project Management**. Further, he is a **Certified Instructor/Trainer**, a **Drill String Design Proctor** by **Fearnley**, a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**) and has delivered and presented innumerable training courses and workshops worldwide.

Course Fee

US$ 5,500 per Delegate + **VAT**. The 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 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 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Refinery Products*** *Low-Boiling Products ● Gasoline ● Gasoline Specifications ● Distillate Fuels ● Jet and Turbine Fuels ● Automotive Diesel Fuels ● Railroad Diesel Fuels ● Heating Oils ● Residual Fuel Oils*
0930 – 0945	*Break*
0945 – 1100	***Refinery Feedstocks*** *Crude Oil Properties ● Composition of Petroleum ● Crudes Suitable for Asphalt Manufacture ● Crude Distillation Curves*
1100 – 1230	***Crude Distillation*** *Desalting Crude Oils ● Atmospheric Topping Unit ● Vacuum Distillation*
1230 – 1245	*Break*
1245 – 1420	***Crude Distillation (cont'd)*** *Auxiliary Equipment ● Crude Distillation Unit Products ● Case-Study Problem: Crude Units*
1420 - 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 -0900	***Coking & Thermal Processes*** *Types, Properties and Uses of Petroleum Coke ● Process Description--Delayed Coking ● Operation-Delayed Coking ● Process Description – Flexicoking ● Process Description – Fluid Coking*
0900 – 0915	*Break*
0915 – 1100	***Coking & Thermal Processes (cont'd)*** *Yields from Flexicoking and Fluid Coking ● Capital Costs and Utilities for Flexicoking and Fluid Coking ● Visbreaking ● Case Study Problem: Delayed Coker*
1100 – 1230	***Catalytic Cracking*** *Fluidized-Bed Catalytic Cracking ● New Designs for Fluidized-Bed Catalytic Cracking Units ● Cracking Reactions ● Cracking of Paraffins ● Olefin Cracking ● Cracking of Naphthenic Hydrocarbons ● Aromatic Hydrocarbon Cracking ● Cracking Catalysts ● FCC Feed Pretreating ● Process Variables ● Heat Recovery ● Yield Estimation ● Capital and Operating Costs ● Case Study Problem: Catalytic Cracker*

1230 – 1245	*Break*
1245 – 1420	***Catalytic Hydrocracking*** *Hydrocracking Reactions ● Feed Preparation ● The Hydrocracking Process ● Hydrocracking Catalyst ● Process Variables ● Hydrocracking Yields ● Investment and Operating Costs ● Modes of Hydrocracker Operation ● Case Study Problem: Hydrocracker*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0900	***Hydroprocessing & Resid Processing*** *Composition of Vacuum Tower Bottoms ● Processing Options ● Hydroprocessing ● Expanded-Bed Hydrocracking Processes ● Moving-Bed Hydroprocessors ● Solvent Extraction*
0900 – 0915	*Break*
0915 – 1100	***Hydrotreating*** *Hydrotreating Catalysts ● Aromatics Reduction ● Reactions ● Process Variables ● Construction and Operating Costs ● Case-Study Problem: Hydrotreaters*
1100 – 1230	***Catalytic Reforming & Isomerization*** *Reactions ● Feed Preparation ● Catalytic Reforming Processes ● Reforming Catalyst ● Reactor Design*
1230 – 1245	*Break*
1245 – 1420	***Catalytic Reforming & Isomerization (cont'd)*** *Yields and Costs ● Isomerization ● Capital and Operating Costs ● Isomerization Yields ● Case Study Problem: Naphtha Hydrotreater, Catalytic Reformer & Isomerization Unit*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0900	***Alkylation & Polymerization*** *Alkylation Reactions ● Process Variables ● Alkylation Feedstocks ● Alkylation Products ● Catalysts ● Hydrofluoric Acid Processes*
0900 – 0915	*Break*
0915 – 1100	***Alkylation & Polymerization (cont'd)*** *Sulfuric Acid Alkylation Processes ● Comparison of Processes ● Alkylation Yields and Costs ● Polymerization ● Case Study Problem: Alkylation & Polymerization*
1100 – 1230	***Product Blending*** *Reid Vapor Pressure ● Octane Blending ● Blending for Other Properties ● Case-Study Problem: Gasoline Blending ● Case Study Problem: Diesel and Jet Fuel Blending*
1230 – 1245	*Break*
1245 – 1420	***Supporting Processes*** *Hydrogen Production and Purification ● Gas Processing Unit ● Acid Gas Removal ● Sulfur Recovery Processes ● Ecological Considerations in Petroleum Refining ● Waste Water Treatment ● Control of Atmospheric Pollution ● Noise Level Control ● Case Study Problem: Saturated Gas Recovery, Amine and Sulfur Recovery Units*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0900	***Lubricating Oil Blending Stocks*** *Lube Oil Processing ● Propane Deasphalting ● Viscosity Index Improvement and Solvent Extraction ● Viscosity Index Improvement & Hydrocracking ● Dewaxing ● Hydrofinishing ● Finishing by Clay Contacting ● Environmental Impacts*
0900 – 0915	*Break*
0915 – 1100	***Petrochemical Feedstocks*** *Aromatics Production ● Unsaturated Production ● Saturated Paraffins*
1100 – 1230	***Additives Production from Refinery Feedstocks*** *Use of Alcohols and Ethers ● Ether Production Reactions ● Ether Production Processes ● Yields ● Costs for Ether Production ● Production of Isobutylene ● Commercial Dehydrogenation Processes*
1230 – 1245	*Break*
1245 – 1345	***Additives Production from Refinery Feedstocks (cont'd)*** *Houdry's CATOFIN ● Phillips Petroleum's STAR ● UOP LLC's OLEFLEX ● Snamprogetti/Yarsintez Process ● Costs to Produce Isobutylene from Isobutane ● International Union of Pure and Applied Chemists*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

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

Course Coordinator

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