

## CSIR-INDIAN INSTITUTE OF PETROLEUM, DEHRADUN (Training)

Training Program on "PETROLEUM REFINING TECHNOLOGY and PETROCHEMICALS"

Duration: 3 weeks

### PROGRAMME CONTENTS

<b>Day-1 to 3</b>
<ul style="list-style-type: none"><li>• Inauguration and Introduction about IIP and Participants</li><li>• Petroleum Refining Industry in India and Future Trends</li><li>• Recent developments in Petroleum Industry /Technologies</li><li>• Chemistry of Crude Oil: Composition and Classification</li><li>• Crude Oil Evaluation Techniques (for fuels/lube/feedstock)</li><li>• Lab distillation, their inter conversion and significance</li><li>• Pretreatment of Crude Oil/Desalting Operation</li><li>• General refinery configuration (Fuel, Lubes and Petrochemical Integration)</li><li>• LPG-domestic, industrial and Auto) &amp; Motor spirit (Including Ethanol Blending)</li><li>• Basic Testing Principles/Lab &amp; Pilot Plant visits etc</li></ul>
<b>Day-4 to 5</b>
<ul style="list-style-type: none"><li>• Naphtha – specifications for different end users, test methods and significance</li><li>• Kerosene / ATF and Diesel (Including Biodiesel)</li><li>• Introduction to Separation Processes</li><li>• FO/LSHS/HPS – Grades/Specifications/Test Methods</li><li>• LOBS, Waxes and Greases – Grades/Specifications/Test Methods</li><li>• RPC/CPC/Needle Coke/Bitumen – Grades/Specifications/Test Methods</li><li>• Basic Testing Principles/Lab &amp; Pilot Plant visits etc</li></ul>
<b>Day-6, 7 Excursion /Study trip</b>
<b>Day-8 &amp; 9</b>
<ul style="list-style-type: none"><li>• Crude Oil Distillation (Atm &amp; Vacuum)</li><li>• Column Internals and Operational Tips</li><li>• Liquid-liquid Equilibrium - Principle of Solvent Extraction</li></ul>
<b>Day-10</b>
<ul style="list-style-type: none"><li>• Petrochemical products Specifications – LAB,PX,PTA, Propylene, Benzene, Toluene etc.</li><li>• Specialty Products– FGH/MTBE/Butene-1 /IOC-solvent/ White oil etc.</li></ul>
<b>Day 11</b>
<ul style="list-style-type: none"><li>• Fundamental – Operation of catalytic Reforming Units (CRU/CCRU)</li><li>• Fluid Catalytic Cracking (FCC/RFCCU)</li><li>• Visbreaking unit</li><li>• Delayed Coking Unit/Technology</li></ul>
<b>Day 12</b>
<ul style="list-style-type: none"><li>• Lube Extraction (NMP &amp; Furfural)</li><li>• Solvent Extraction (BTX)</li><li>• De-asphalting of Short Residue for Lubes and other Feed Stocks</li><li>• Solvent Dewaxing, Deoiling and Manufacture of Waxes including Isodewaxing</li></ul>
<b>Day 13 &amp; 14 Excursion /Study trip</b>
<b>Day 15</b>
<ul style="list-style-type: none"><li>• Diesel Hydro treatments (DHDS/DHDT)</li></ul>

<ul style="list-style-type: none"> <li>• Hydro cracking Units HCU/OHCU</li> </ul>
Day 16
<ul style="list-style-type: none"> <li>• Integration of Refinery and Petrochemicals</li> <li>• Fundamentals of Polymers</li> <li>• Production of PP and HDPE</li> <li>• Production of PTA , PX and MEG</li> </ul>
Day 17
<ul style="list-style-type: none"> <li>• Hydrogen Generation Units – Steam Reforming Process</li> <li>• Isomerization/MSQ Units</li> <li>• Alkylation Units</li> </ul>
Day 18
<ul style="list-style-type: none"> <li>• Sour Gas Treatment(Amine – Absorption &amp; Amine Recovery Units) Sour Water Treatment Units</li> <li>• Sulphur Recovery Units</li> <li>• Industrial Water Treatment for Steam generation/Cooling</li> </ul>
Day 19
<ul style="list-style-type: none"> <li>• Role of Catalysts in Petroleum Refining</li> <li>• Basics of Plant Simulation</li> <li>• Corrosion problem in Refinery</li> <li>• Alternative Fuels -LNG, CNG, Gas Hydrates etc.</li> </ul>
Day20 & 21 Excursion /Study trip/ Return journey

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