

Lube Base Oil and Wax Processing

1.1 Course Number: CH381

1.2 Contact Hours: 2-0-0 Credits: 06

1.3 Semester-offered: 4th Year-even

1.4 Prerequisite: Nil

1.5 Syllabus Committee Member: Dr M S Balathanigaimani, Dr Deepak Dwivedi

2. Objective: The preparation of lube base stock, classification of lube base oil, additives used to improve the properties of lube products will be discussed in this course. The convention (separation) and unconventional (Conversion) approaches followed in the lube base stock preparation will be taught in depth. In addition, the dewaxing of various hydrocarbon liquid streams will be introduced.

3. Course Content:

Unit-wise distribution of content and number of lectures

Unit	Topics	Sub-topics	Lectures
1	Introduction	Brief Introduction on Lubricating Oils Basestocks (LOBs), Key properties of LOBs, Functions of Lube oil, Feedstocks for LOBs	4
2	Solvent Deasphalting and Aromatic Extraction	Lube Base Oil Deasphalting Processes: Process Flow and Process variables, Solvent Refining of LOBs: Selection of Solvents, Operation Conditions and Solvent Recovery & Processing	5
3	Lube Hydrocracking	Lube Base Oil Hydrogen Refining Processes	4
4	Dewaxing	Solvent Dewaxing and Wax De-oiling Catalytic Dewaxing	5
5	Lube Finishing & Additives	Lube Base Oil Finishing (Solvent and catalytic and hydro-finishing), Lube additives	6
6	Waste Lube Re-refining	Composition of used Lube oil, Analytical methods for use lube oil, Re-refining of used lube oil	4
		Total	28

4. Readings

4.1 Text Books:

1. Avilino Sequeria, Jr., Lubricant Base Oil and Wax Processing, Marcel Dekker, Inc., 1994.
2. J.P. Wauquier, Petroleum Refining Volume 2: Separation Processes, Edition Technips, 2000.

4.2 Reference Books:

1. Thomas R. Lynch, Process Chemistry of Lubricant Base Stocks, CRC Press, 2008

5. **Outcome of the Course:** The students will have knowledge on,

1. The basic chemical and physical properties of LOBs
2. The preparation methods for various grades of LOBs
3. The process followed for the re-refining of was lube.