

Course code	Course name	L-T-P-Credits	Year of Introduction
AE472	PETROLEUM ENGINEERING	3-0-0-3	2016
Prerequisite : Nil			
Course objectives			
<ul style="list-style-type: none"> To impart the basic concepts of petroleum production, testing etc. To impart idea on Health Safety and Environment in Petroleum Industry. To update with the latest trends in Petroleum Engineering. 			
Syllabus			
Refinery products - Coking and thermal process - Catalytic Cracking - Coring and core analysis - Reservoir fluid properties - Reserve estimation & techniques - Well equipments - Well servicing & Workover operations - Field processing of oil & gas - Production system analysis & optimization - Nodal system analysis - LNG value chain - Lubricating oil blending stocks petrochemical feedstocks - Evaluation of CBL/VDL, USIT, SFT, RFT. - Production logging tools, principles, limitations and applications. - Cost Evaluation - Latest trends in Petroleum Engineering.			
Expected outcome			
At the end of the semester students will be able			
<ol style="list-style-type: none"> To gain advanced knowledge in petroleum engineering To get knowledge in industrial safety and cost evaluation 			
Text Books			
<ol style="list-style-type: none"> A.Lucas Hurley , Modern Petroleum Technology Upstream Vol I Edition 2002. A.G. Lucas Hurley , Modern Petroleum Technology Downstream Vol II Edition 2002. J.CH Garry , Hardward G.E and M.J.Kaiser, Petroleum Refining : Technology and economics CRC Press V Edition 			
Course Plan			
Module	Contents	Hours	Semester Exam Marks
I	Refinery products – Refinery Feeds – Crude distillation – Coking and thermal process : Classification and description of some common rocks with special reference to clastic and nonclastic reservoir rocks. Origin, migration and accumulation of Petroleum. Petroleum exploration methods.	6	15%
II	Catalytic Cracking - Catalytical hydro cracking – Hydro processing and Reused processing hydro treating. Petrophysical properties of reservoir rocks. Coring and core analysis. Reservoir fluid properties. Phase behavior of hydrocarbon system. Flow of fluids through porous media. Water and gas coning.	6	15%
FIRST INTERNAL EXAMINATION			
III	Well equipments. Well completion techniques. Well production problems and mitigation. Well servicing & Workover operations. Workover & completion fluids. Formation damage. Well stimulation techniques. Artificial lift techniques. Field processing of oil & gas. Storage and transportation of petroleum and petroleum products. Metering and measurements oil & gas.	7	15%

IV	Production system analysis & optimization. Production testing. Multiphase flow in tubing and flow-lines. Nodal system analysis. Pressure vessels, storage tanks, shell and tube heat exchangers, pumps and compressors, LNG value chain.	7	15%
SECOND INTERNAL EXAMINATION			
V	Lubricating oil blending stocks petrochemical feedstocks. Evaluation of petro physical of sub-surface formations: Principles applications, advantages and disadvantages of SP, resistivity, radioactive, acoustic logs and types of tools used. Evaluation of CBL/VDL, USIT, SFT, RFT. Production logging tools, principles, limitations and applications.	8	20%
VI	Special type of logging tools. Casing inspection tools (principles, applications and limitations), Formations micro scanner (FMS), NMR logging principles. Standard log interpretation methods. Cross-plotting methods. Cost Evaluation – Economic evaluation of petroleum reused and refineries. Latest trends in Petroleum Engineering: Coal bed methane, shale gas, oil shale, gas hydrate, and heavy oil.	8	20%
END SEMESTER EXAMINATION			

QUESTION PAPER PATTERN:

Maximum Marks:100

Exam Duration: 3 Hours

Part A

Answer any two out of three questions uniformly covering Modules 1 and 2 together. Each question carries 15 marks and may have not more than four sub divisions.

(15 x 2 = 30 marks)

Part B

Answer any two out of three questions uniformly covering Modules 3 and 4 together. Each question carries 15 marks and may have not more than four sub divisions.

(15 x 2 = 30 marks)

Part C

Answer any two out of three questions uniformly covering Modules 5 and 6 together. Each question carries 15 marks and may have not more than four sub divisions.

(20 x 2 = 40 marks)