

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

This course outline template acts as a guide for writing your course outline. As every course is different, please feel free to amend the template/ format to suit your requirements.

COURSE OUTLINE TEMPLATE			
Course Title	PETROLEUM AND PETROCHEMICAL ENGINEERING		
Course Code	CLPE10	No. of Credits	3
Department	Chemical Engineering	Faculty	Srinath. A
Pre-requisites Course Code	A basic knowledge in Engineering physics and Engineering Chemistry is required.		
Course Coordinator(s) (if, applicable)	NIL		
Other Course Teacher(s)/Tutor(s) E-mail	NIL	Telephone No.	09677576869
Course Type	Elective course		
COURSE OVERVIEW			
<ol style="list-style-type: none"> 1. To understand the knowledge of primary processing and secondary processing in the refinery plant from the crude oil. 2. The course is beneficial to supervise and improve all Petrochemical-producing operations, and development to abandonment. 3. After completing the course they may focus on safety issues, or maintenance support, identifying and planning upgrades of equipment or systems. 			
COURSE OBJECTIVES			
<ol style="list-style-type: none"> 1. To impart introductory knowledge of petroleum refining and corresponding processes. 2. To provide an insight into petrochemical industry. 			
COURSE OUTCOMES (CO)			
Course Outcomes		Aligned Programme Outcomes (PO)	
1. Develop overview of petroleum industry and know about origin, formation, composition and characterization of crude oil.		PO1, PO2, PO8, PO10,	
2. Comprehend primary processing mechanisms of crude to obtain various petroleum cuts.		PO1, PO3, PO5, PO11, PO12	
3. Know about secondary conversion techniques and treatment processes in petroleum refinery to get products of desired yield and quality.		PO1, PO3, PO5, PO8, PO9, PO10, PO11, PO12	

4. Understand manufacturing processes and applications of various petrochemicals.	PO1, PO3, PO5, PO10, PO12
5. Grasp environmental and safety aspects in petroleum refinery and petrochemical industries.	PO1, PO3, PO4, PO5, PO6, PO8, PO10, PO11, PO12

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week	Topic	Mode of Delivery
1	Week - 1	Introduction & primary processing: Origin & formation of crude oil, Classification of crude,	Chalk & Talk – (Black Board) BB, PPT
2	Week – 2	Characterization of crude, Distillation practise, Atmospheric distillation, Vacuum distillation.	Chalk & Talk – (Black Board) BB, PPT
3	Week – 3	Secondary Processing: FCCU, Hydro cracking, Visbreaking, Coking,	Chalk & Talk – (Black Board) BB, PPT
4	Week – 4	Reforming, Alkylation, Isomerisation and polymerization processes.,	Chalk & Talk – (Black Board) BB, PPT
5	Week – 5	Treatment Techniques: Physical & chemical impurities in petroleum fractions, General mechanisms for removal of Sulphur	Chalk & Talk – (Black Board) BB, PPT
6	Week – 6	Treatment of LPG, Gasoline, Kerosene, Diesel and Lube oils. Properties of ATF and Bitumen.	Chalk & Talk – (Black Board) BB, PPT
7	Week – 7	Petrochemical: Building blocks, intermediates, major petrochemicals and their applications,	Chalk & Talk – (Black Board) BB, PPT
8	Week – 8	Chemicals from methane and synthesis gas,	Chalk & Talk – (Black Board) BB, PPT
9	Week – 9	Chemicals from aromatics, Chemicals from olefins,	Chalk & Talk – (Black Board) BB, PPT
10	Week – 10	Synthetic fibres, plastics and rubber.	Chalk & Talk – (Black Board) BB, PPT
11	Week – 11	Environment and safety: Gaseous contaminants in refinery - sources & treatment,	Chalk & Talk – (Black Board) BB, PPT
12	Week – 12	Process waste water - sources and treatment,	Chalk & Talk – (Black Board) BB, PPT

13	Week – 13	Fire hazards – active & passive prevention,	Chalk & Talk – (Black Board) BB, PPT
14	Week – 14	Occupational diseases and personal protective equipment,.	Chalk & Talk – (Black Board) BB, PPT
15	Week – 15	Site selection & plant layout	Chalk & Talk – (Black Board) BB, PPT

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test - I	Week 7 / 23 -08-2017	1 hour	20%
2	Cycle Test - I	Week 13 / 05-10-2017	1 hour	20%
3	Retest	Week 17 / 01-11-2017	1 hour	20%
4	Assignments	----	2 week for each assignment	10%
5	End Semester Exam	Week 19 / 15-11-2017	3 hours	50% (Total = 100%)

ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc

REFERENCE BOOKS

1	W.L. Nelson, "Petroleum Refinery Engineering", 4th Edn., McGraw Hill, New York, 1985
2	B. K. Bhaskara Rao, "Modern Petroleum Refining Processes", 5th Edn., Oxford and IBH Publishing Company, New Delhi, 2012.
3	G. D. Hobson and W. Pohl., "Modern Petroleum Technology", John Wiley & sons Publishers, 4th Edn. 2004.
4	R. A. Meyers, "Hand book of Petroleum Refining Processes", McGraw Hill, 3rd Edn. 2003.

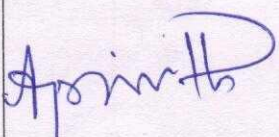

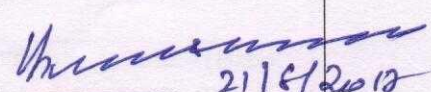
COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

1	Feedback from students during class committee meeting.
2	Anonymous feedback through questionnaire.
COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)	
1	Cycle Test – I and Cycle Test - II will be conducted in regular class.
2	Portions for Cycle Test - I are Unit – I and Unit – II (1 st and 2 nd paragraph of the syllabus.)
3	Portions for Cycle Test - II are Unit – III and Unit – IV (3 rd and 4 th paragraph of the syllabus.)
4	Student who have missed the first or second or both the cycle test (s) can register with the concerned faculty for the RE – TEST Exam which shall be conducted soon after the second cycle test, but before the End semester examination. The weight age for Retest is 20 % and time duration is 1 hour. The portions for Retest include both cycle test(s) portions.
5	75% Attendance is compulsory for writing the End Semester Examination.
6	Mandatory classes (after the semester examinations of the current session) should be attended by the students, whose attendance falls below 75% but above 50 % in the subjected concerned.
7	Students who have less than 50 % of attendance have to redo subject CLPE10.
8	Students who have failed in the semester examination with F grade, those completed mandatory classes and those have missed the end semester examination shall take reassessment (supplementary examination).
9	The passing minimum should be $X_{avg} / 2$ or $X_{max} / 3$, whichever is less where X_{avg} is the mean of the class and X_{max} is the maximum marks in the class.

ADDITIONAL COURSE INFORMATION

Faculty is available for discussion after the class hours in the Department of Chemical Engineering at Room No. 106 and can also be contacted through cell no. 9677576869. Queries may also be email – id to the course faculty directly at srinath@nitt.edu

FOR SENATE'S CONSIDERATION

Course Faculty _____ CC-Chairperson _____ HOD _____ 21/6/2018