CHE 304 - Petroleum Chemistry I.

**COURSE PARTICULARS**

Course Code: CHE 304  
Course Title: Petrochemistry I  
No. of Units: 2  
Course Duration: Two hours of theory per week for 15 weeks.  
Status: Compulsory  
Course Email Address: che304@gmail.com  
Prerequisite: NIL

**COURSE INSTRUCTORS**

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and

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**COURSE DESCRIPTION**

This course is an exploratory and an important course for the chemistry students, especially designed primarily for 300 level classes and allied disciplines. However, it also meets the need of students in other fields, as a course that provides more information on the conversion processes and chemistry that are involved in the production of petrochemicals and petroleum products in petroleum industries and allied industries. Designing and drawing of conversion/product flow charts with conditions necessary to achieve the said products and derivatives, handling of side chain reactions for effective cost of production and at the use of minimum energy for maximum output. It gives information on the Economic importance of petrochemicals and derived products, for commercial, industrial and domestic uses.
COURSE OBJECTIVES

The objectives of this course are to:

- Introduce students to the basic chemistry in the petroleum industry and in the production of petroleum products especially petrochemicals, as well as their usage as feedstock in for conversion plants and their end uses.
- Provide students with opportunities to understand and develop basic skills in designing and drawing conversion flow charts, development and incorporation of condition necessary in the chemical processes.

COURSE LEARNING OUTCOMES / COMPETENCIES

Upon successful completion of this course, the student will be able to:

(Knowledge based)

- Tell the origin of petroleum, the petroleum producing countries.
- Give the processes involved in the exploration of petroleum
- Give the processes of treating petroleum and petroleum products.

(Skills)

- Tell the various petrochemicals their production and uses
- Write on the inorganic petrochemicals

GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Class Attendance</td>
<td>5%</td>
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<tr>
<td>Assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Test(s)</td>
<td>20%</td>
</tr>
<tr>
<td>Final Examination</td>
<td>60%</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

GENERAL INSTRUCTIONS

**Attendance:** It is expected that every student will be in class for lectures and also participate in all practical exercises. Attendance records will be kept and used to determine each person’s qualification to sit for the final examination. In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible with any of the lecturer, indicating the reason for the absence.

**Academic Integrity:** Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances are prohibited. You are not allowed to make
copies of another person’s work and submit it as your own; that is plagiarism. All cases of academic dishonesty will be reported to the University Management for appropriate sanctions in accordance with the guidelines for handling students’ misconduct as spelt out in the Students’ Handbook.

Assignments and Group Work: Students are expected to submit assignments as scheduled. Failure to submit an assignment as at when due will earn the student zero for that assignment. Only under extenuating circumstances, for which a student has notified any of the instructors in advance, will late submission of assignments be permitted.

Code of Conduct in Lecture Rooms and Laboratories: Students should turn off their cell phones during lectures. Students are prohibited from engaging in other activities (such as texting, watching videos, etc.) during lectures. Food and drinks are not permitted in the laboratories.

READING LIST


Legend
1- Available in the University Library
2- Available in Departmental/School Libraries
3- Available on the Internet.
4- Available as Personal Collection
5- Available in local bookshops.
## COURSE OUTLINE

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to the history of petroleum. Its prominence in world economy.</td>
<td>During this first class, the role of petroleum as major source of world energy is emphasized</td>
</tr>
<tr>
<td>2 &amp; 3</td>
<td>Petroleum reserves, exploration and exploitation of petroleum. Geological conditions for accumulation of petroleum.</td>
<td>The personels involved in the exploitation of petroleum and geological conditions are learnt</td>
</tr>
</tbody>
</table>
| 4 & 5| • Exploitation of petroleum, different types of wells, Recovery processes.  
     • Refining of oil. Separation processes.  
     • Conversions, cracking. | Various wells must be dug to ascertain the size of a well and to exploit most maximum petroleum. |
| 6    | • Treating processes.  
     • Sweetening  
     • Acid, clay and solvent treatment | Petroleum at refining. |
| 7 & 8| • **Blending and separation.**  
     • Structure of the refinery | Different parts of the refinery the separation towers |
<p>| 9 &amp; 10| • Reforming processes, alkylation, polymerization, isomerization | Various chemical processes embarked upon before the products are released into the market. |</p>
<table>
<thead>
<tr>
<th>11 &amp; 12</th>
<th>Petroleum products, cracking and separation of products.</th>
<th>Cracking is major source of petrochemicals.</th>
</tr>
</thead>
</table>
| 13 & 14 | petrochemicals  
BEXT in the petroleum companies. | The benzenes, ethylbenzenes, xylenes, and toluenes are stating materials in the petrochemical industry. |
| 15 | REVISION | This is the week preceding the final examination. At this time, evaluation will be done to assess how far the students’ expectations for the course have been met. |