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**Department of Chemistry**

**College of Education**

**University of Salahaddin**

**Subject: Petroleum**

**Course Book of Stage 4th.**

**Lecturer's name: Azad S. Sadraddin, Darya J. Raheem**

**Academic Year: 2022-2023**

**Course Book**

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| **1. Course name** |  **Petrol & Polymer chemistry** |
| **2. Lecturer in charge** |  **Azad S. Sadraddin, Darya Jaleel Raheem** |
| **3. Department/ College** | **Chemistry/Education** |
| **4. Contact** | **azad.sadraddin@su.edu.krd****darya.raheem@su.edu.krd** |
| **5. Time (in hours) per week**  | **Practical: 10**  |
| **6. Office hours** | **Sunday 9:30am-10:30am** **While I have put official office hours on the syllabus that I will honor, I expect to see each student in my office any time he is struggling too much. In addition, I have put my cell phone on the syllabus that you may call at any courteous hour (before 9:00 p.m.). Very Important: If you find yourself struggling in the course, please see me quickly. Don’t wait!** |
| **7. Course overview:** This subject is an exploratory and an important subject for the chemistry students, Chemistry students get more information on the conversion processes and chemistry that are involved in the production of petrochemicals and petroleum products in petroleum industries. Testing the crude oil & petroleum products, It gives information on the Economic importance of petrochemicals and derived products, for commercial, industrial and domestic uses are ready to delve into the polymer science world.  |
| **8. Course objective:**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. |
| **9. Student's obligation****Attendance:** All students are expected to attend every class meeting. Attendance will be taken. In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible to any of the instructors, indicating the reason for the absence. **The student that attended all the classes will take 0.5 degree all over the total marks.** **Electronic devices:** As described in lab Student rules, unwarranted disruption of classroom activities is not permissible. Accordingly, with the exception of calculators, ALL electronic devices, including cell phones, pagers, iPod's, MP3 players, Blackberries, etc. must be TURNED OFF and stowed during class. The use of laptop, tablet, or other portable computers during class is strictly limited to recording notes or viewing course-related materials, such as on-line lecture notes or topic-related web sites. Prior to the start of examinations, all calculator memories must be cleared of any stored text or equations. • Actively **participate** in class/group discussions. • **Relate** knowledge gained in class which can be applied to “real-world” problems.•Working in **groups** for support throughout the term. |
| **10. Forms of teaching**All documents used in this year are copied, you have the right to copy all the documents for your personal academic use. Other forms of teaching are hand out and discussion.  |
| **11. Assessment scheme****Lab report**: the lab report should be complete during the lab lesson; student is expected to collaborate with his fellow students to complete the lab report. You are not allowed to make copies of another person’s work and submit it as your own; that is plagiarism **Weekly Quizzes:** Every lab lesson a quiz will be given at the beginning of class.**Open book exam:** the students will take two open book exams during this year. Completion of the exam will be supervised. Outside help such as texts, notes, etc…will be permitted.Collaborate with his fellow students to complete the exam will not be permitted.The grading of the course will consist weekly quizzes, lab reports, two open book exams, and a final examination**.****Activity and participate** in class discussions and home works preparation. |
| **12. Student learning outcome:**Upon successful completion of this course, the student will be able to:Petroleum chemistry1. Tell the origin of petroleum, the petroleum producing countries. 2.Give the processes involved in the exploration of petroleum.3. Give the processes of treating petroleum and petroleum products. 4. Tell the various petrochemicals their production and uses. 5. Graduates find employment in government departments, prostates, research and development institutes, production, and oil and petroleum industry. |
| **13. Course Reading List and References‌:**• Malcolm P. Stevens (1990). An Introduction to Polymer Chemistry. 2nd Edition. OxfordUniversity Press, New York. Pp 3-43, 189-485.• Hall C. M. (1981). Polymer materials: An introduction for technologist and scientists.•Industrial Chemistry Textbook, 4th Edition. Sharma Lee, publisher Wiley &Co, copy right 2010. |
| **14. Practical Topics**  | **Lecturer's name** |
| **Petroleum chemistry practical session**Experiment 1: Evaluation of petroleum and its products by distillation. (Week1) Experiment 2: Normal paraffin separation. (Week 2) Experiment 3: Separation of aromatic and non-aromatic compounds from the high Bp oils using liquid - solid chromatography. (Week 3) Experiment 4: Determination of molecular weight of petroleum using viscosity method. (Week 4) Experiment 5: Analysis of compound group of petroleum using (n-d-M) method (Week 5) Experiment 6: Determination of water content of petroleum and petroleum products. (Week 6) Experiment 7: Determination of specific gravity of petroleum and petroleum products using pycnometer method. (Week 7) Experiment 8: Determination Aniline point and Diesel index. (Week.8) Experiment 9: Flash Point by Cleveland Open Cup. (Week 9) Experiment 10: Pour point test of petroleum products. (week10) Experiment 11: Octane number measurement. (Week 11)Experiment 12: Carbon Residue and Ash Content Determination. (Week12)  | Darya Jaleel (2 hrs) |
| **15. Examinations:*****1. Compositional:***  Explain the significant of water content determination ***2.******True or false type of exams:***\*A branched alkane is called n-paraffin’s which is straight-chain hydrocarbons having no branches. ***3. Multiple choices:*** \*The type of hydrocarbon that not exist in the crude oil is a**.** Alkane b. Olefin c. Aromatic d. Naphthenic | Answer: Knowledge of the water content of petroleum products is important in the refin ing, purchase, sale, and transfer of products.The amount of water as determined by this test method may be used to correct the volume involved in the custody transfer of petroleum products and bituminous materials, also it is specified in the contracts. |
| **16. Extra notes:** |  |
| **17. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ**   |
|   Azad S, Sadraddin  **Dr. Azad S. Sadraddine** |