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**Department of Earth Sciences and Petroleum**

**College of Science**

**Salahaddin University -Erbil**

**Subject: Subsurface Geology-Practical**

**Course Book 4th year**

**Lecturer's name M.Sc. Hisham Khalil Mustafa**

**Academic Year: 2022/2023**

**Course Book**

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| **1. Course name** | **Practical Subsurface Geology** | |
| **2. Lecturer in charge** | **Hisham Khalil Mustafa** | |
| **3. Department/ College** | **Earth sciences and petroleum/ Science** | |
| **4. Contact** | **e-mail: Hisham.mustafa@su.edu.krd**  **Tel: (optional)** | |
| **5. Time (in hours) per week** | **Theory: 2**  **Practical: 2** | |
| **6. Office hours** | **9am-3pm** | |
| **7. Course code** |  | |
| **8. Teacher's academic profile** | **B.Sc. Salahaddin university-Erbil college of Science Dep. Of Geology 2001 Erbil -Iraq**  **M. Sc. Mosul University college of Science Dep. Of Geology 2006 Mosul-Iraq**  **General specialization Geology**  **Specific specialization Clastic Sedimentology** | |
| **9. Keywords** | **Geology, petrology, sedimentary rocks** | |
| **10. Course overview:**  The course will cover subsurface geology in practical way of selective topics. The course will give students a better understanding of a number of Subsurface geology features problem and exercises, the followings are examples but not restricted to: Subsurface sections , Drawing subsurface section from surface data, Vertical exaggeration application in subsurface section, Estimation of marker bed from subsurface section, Porosity determination from sonic and density logs, Hydrocarbons identification from Neutron-Density combination logs, drilling time log, correction of lag time for sample log, Dipmeter log. | | |
| **11. Course objective:**  At the end of this Course, you will be able to learn   * Understanding the volume of the hydrocarbon Generation * Calculation of the volume of the hydrocarbon in the reservoir * Understanding the relationship between time and temperature in petroleum * Understanding the burial history * Understanding hydrocarbon trap and seismic interpretation * information about coring, drilling, and logging | | |
| **12. Student's obligation**  The student should attend all labs and prepare each lab report | | |
| **13. Forms of teaching**  Different forms of teaching will be used to reach the objectives of the course: power point presentations for the head titles and definitions and summary of conclusions, classification of materials and any other illustrations.  To get the best of the course, it is suggested that student attend lab, as much as possible, read the required problem, teacher’s notes regularly as all of them are foundations for the course. | | |
| **14. Assessment scheme**  The students are required to do one closed book practical exam at the mid and end of the semester. The exams have 20 marks and the average of these exams is obtained, the attendance, classroom activities and weekly report 15 marks.  Mid-semester Practical exam: 20 %  Average 20%  +  End-semester Practical exam: 20%  Laboratory participation and weekly report 15%  Total:35  ‌ | | |
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| **15. Course Reading List and References‌:**  1- Asquith, G. B. and DH. R. Gibson, 1983; Basic well log analysis for geologists (methods in exploration) series published AAPG, 231P.  2- Khaiwka, M.H., 1992; Geology of petroleum, modern basic principles and laboratory exercises.baghdad.Iraq.644P. | | |
| **16. The Topics:** | | **Lecturer's name** |
| * Week 1: Course outline * Week 2: Volumetric calculation of hydrocarbons generated * Week 3: Calculating hydrocarbon volumes in a reservoir * Week 4: Burial history and petroleum exploration * Week 5: Time and temperature in petroleum formation * Week 6: Hydrocarbon traps * Week 7: Seismic interpretation * Week 8: Midterm Exam * Week 9: Three points problem * Week 1o: Correlation using log data * Week 11: Core and cutting samples * Week 12: Lag time during drilling * Week 13: Composite wireline logs * Week 14: Perforation | | 2 hrs  Hisham Khalil |
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