



Department of Earth Sciences and Petroleum

College of Science

University of Salahaddin/Erbil

Subject: Well logging

Course Book – For (Years 3)

Lecturer's name: Mr. Mahdi Khairi

Academic Year: 2022/2023

Course Book

1. Course name	Well Logging
2. Lecturer in charge	Mahdi Khairi
3. Department/ College	Earth Sciences and petroleum
4. Contact	e-mail: mahdi.aswad@su.edu.krd Tel: (optional)07504790723
5. Time (in hours) per week	theory 1 Practical: 6 for three groups
6. Office hours	Availability of the lecturer to the student during the week
7. Course code	
8. Teacher's academic profile	Mr. Mahdi Khairi Aswad I have MSc in petroleum Geology and I am a Ph.D. Candidate in petroleum Geology. I have worked with different oil and gas companies in drilling, production, logging, geology, and HSE.
9. Keywords	Wireline Logging interpretation
10. Course overview: This course is considered the core course in the petroleum and earth science department as it is one of the selective courses that the students should cover. The aim of the course is to let the students understand the main logging and drilling services done at any well location. Understand the logging and drilling service types and companies that work in this field. Wireline logging is helping the student to have a wide knowledge of the petroleum fields. It is more focused on the oil and gas field in Kurdistan.	
11. Course objective: The main aim of this course is to show the logging tool and components then, they will learn <ul style="list-style-type: none"> • Wireline logging operation • LWD operation • Learn drilling site services types and functions of each company • Work on the drilling services fields • Learn different equipment used in drilling operations • Comparing horizontal and vertical drilling • Wireline process in both cases Understand drilling operation steps and the drilling process	
12. Student's obligation All the students must attend in the class and do exams, homework, and quiz.	

13. Forms of teaching

- Active learning
- Cooperative learning
- Class discussion
- Homework
- Assignment
- Quiz
- Seminar
- Applied Student-centered classroom

The above-mentioned learning and teaching strategies have been implemented as a strategy of learning in order to motivate the students to participate and engage in the class more effectively.

Teaching will be done using a data show, PowerPoint, practical simulations, and course notes will be handed to students.

14. Assessment scheme

we will assess our students based on the following criteria

- Monthly Exam
- Cooperative learning
- Class discussion
- Class activity
- Homework
- Assignment
- quiz

15. Student learning outcome:

The students will be able to get a job in the oil and gas sector anywhere in the world, specifically in the Kurdistan petroleum industry. the material which will be provided and studied in this course is highly technical level material. It is related to the current application in oil and gas.

The current industry needs people at the level of our students to fill different positions.

16. Course Reading List and References:

- Malcolm, R. And martin, k., 2011. The geological interpretation of well logs. Rider-french consulting ltd. Scotland.
- Hurst, a., Lovell, M. And morton, A., 1990. *Geological applications of wireline logs*. London: geological society.
- Parasnis, d., 1997. *Principles of applied geophysics*. London: chapman and hall.

<ul style="list-style-type: none"> ➤ Serra, o., 2008. <i>Well logging handbook</i>. Paris, france: éditions TECHNIP. ➤ Serra, o., 1986. <i>Fundamentals of well-log interpretation</i>. Amsterdam: elsevier. ➤ Harrison, b., 1995. <i>Russian-style formation evaluation</i>. Londres: london petrophysical society. ➤ Merkel, r., 1979. <i>Well log formation evaluation</i>. Tulsa, okl.: American association of petroleum geologists. ➤ 2012. <i>Openhole log analysis and formation evaluation</i>. [Erscheinungsort nicht ermittelbar]: richardson. 	
17. The Topics:	Lecturer's name
<p>Week1: Introduction about well logging.</p> <p>Week2: Conventional Well logging Calliper Tool and GR</p> <p>Week3: Resistivity Log</p> <p>Week4: Neutron log</p> <p>Week5: Density Log</p> <p>Week6: Acoustic Log</p> <p>Week7: Midterm Exam</p> <p>Week8: Lithology through logging</p> <p>Week9: Combination Logs</p> <p>Week10: Porosity through logs</p>	<p>Mahdi Khairi</p>

<p>Week11: M and N</p> <p>Week12: Saturation types</p> <p>Week13: Midterm Exam</p> <p>Week14: Image log</p> <p>Week15: Correlation</p>	
<p>18. Practical Topics (If there are any)</p>	
<p>In this section, the lecturer shall write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date, and time of the lab:</p> <ul style="list-style-type: none"> ➤ Lab.1: Course Book and Log reading ➤ Lab.2: HC detection from Calliper and GR log ➤ Lab.3: Identify HC and water from Resistivity Log ➤ Lab.4: Oil and gas detection from Density and Neutron log ➤ Lab.5: Hydrocarbon detection from logs set ➤ Lab.6: lithology identification from logs ➤ Lab.7: porosity identification from Neutron ➤ Lab.8: porosity identification from Three sisters' log ➤ Lab.9: M and N Logs ➤ Lab.10: Saturation identifications from Log 1 ➤ Lab. 11: Saturation identifications from Log 1 ➤ Lab.12: sequence stratigraphy from log ➤ Lab. 14: Correlation ➤ Lav. 14: software application 	<p>Mahdi Khairi</p>
<p>19. Examinations:</p> <p>1. Compositional: In this type of exam the questions usually start with Explain, Evaluation and analysis How is lithology is identified by GR? Explain the steps and procedures. What is the relation of GR to the source rock? Evaluate both cases.</p> <p>2. draw the log relations</p>	

In this type of exam, a draw about a specific subject will be provided, and then students will comment on the illustrations. Examples should be provided

3. Interpretation:

In this type of exam, there will be a number of statements and figures, students will interpret the existing example. Examples should be provided.

20. Extra notes:

Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks.

-To enrich the wireline logging course, we must have practical study or work in the field and in oil companies, for this, we need the support of precedence of Salahaddin university.

21. Peer review

پیداچوونهوهی هاوهل

This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing a few sentences in this section.

(A peer is a person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, lecturer, or an expert in the field of your subject).

ئهم کۆرسبووکه دهبیئت له لایهن هاوملئیکی ئەکادیمیوه سهیر بکرنیت و ناوهرۆکی بابتهکانی کۆرسهکه پهسهند بکات و جهند ووشهپهک بنووسیت لهسهه شیاوی ناوهرۆکی کۆرسهکه و واژووی لهسهه بکات.
هاوهل ئهو کهسهیه که زانیاری ههبیئت لهسهه کۆرسهکه و دهبیئت پلهی زانستی له ماموستا کهمتر نهبیئت.