مواصفات مقرر: التسجيلات البئرية
Course Specification Of: Well Logging

Information about Faculty Member Responsible for the Course معلومات عن أستاذ المقرر

الاسم Name	Assoc.Prof. Adel M. Al-Matary	الساعات المكتبية (أسبوعيا) Office Hours					
المكان ورقم الهاتف Location &Telephone No.	Sana'a, 770770769	السبت SAT	الأحد SUN	الاثنين MON	الثلاثاء TUE	الأربعاء WED	الخميس THU
البريد الإلكتروني E-mail	a.almatary@su.edu.ye						

General information about the course معلومات عامة عن المقرر

.1	اسم المقرر Course Title	Well Logging التسجيلات البئرية				
.2	رمز المقرر ورقمه Course Code and Number	PNGE 343				
.3	الساعات المعتمدة للمقرر Credit Hours	Credit Hours الساعات المعتمدة				الإجمالي Total
		محاضرات Lecture	عملي Practical	سمنار/تمارين Seminar/Tutorial	تدريب Training	
		2	1	-	-	3
.4	المستوى والفصل الدراسي Study Level and Semester	3rd level, 1st semester				
.5	المتطلبات السابقة للمقرر Pre-requisites	PNGE 222				
.6	المتطلبات المصاحبة (إن وجدت) Co –requisite	-				
.7	البرنامج الذي يدرس له المقرر Program (s) in which the course is offered	Bachelor of Petroleum and Natural Gas Engineering				
.8	لغة تدريس المقرر Language of teaching the course	English/ Arabic				
.9	مكان تدريس المقرر Location of teaching the course	Faculty of Petroleum and Natural Resources				

Course Description وصف المقرر

This course is aim to give understanding of the meaning of well logging and work of the Borehole environmental tool. The main topics are introduction to the electrical, nuclear, and acoustic properties of subsurface rocks, Well logging techniques, principles of measurements, log tools characteristics and quick method in (HC) detection.

Course Intended Learning Outcomes (CILOs) مخرجات تعلم المقرر

After completing the course, the student will be able to:	بعد الانتهاء من دراسة المقرر سوف يكون الطالب قادرا على أن:

1. Recognize the role of well logging in petroleum exploration and the different types of logging tools.	
2. Explain the physical properties of rocks for each zone in the well from well logs	
3. Recognize the possible Reservoir zone and non-reservoir zone from logging.	
4. Predict any log in details and investigate models that calculate water saturation and clay volume.	
5. Evaluate well logs data of each zone and determine petro physical properties	
6. Apply different Tools to characterize the reservoir	
7. Solve Problems on clay volume and water saturation with limited data.	
8. Practice the difference between conventional and unconventional reservoir from log.	
9. Work coherently and successfully as a part of a team in projects.	
10. Make a successful report clearly on well performance	

Course Content محتوى المقرر

Theoretical Aspect خطة تنفيذ الموضوعات النظرية

الرقم Order	الوحدات (الموضوعات الرئيسة) Units	الموضوعات التفصيلية Sub Topics	الأسبوع Week Due	الساعات الفعلية Con. H
1	What is Well Logging (General Introduction)	- Clay Types and properties and its effect on porosity values - logging Unit	Week 1	2
2	Volume of measurements	Log display Sampling rate Vertical resolution Depth of investigation	Week 2	2
3	Well logging (Borehole Environment)	Invasion and Resistivity profiles	Week 3	2
4	*Caliper Log* *Gamma Ray Logs*	Theory, Type of tools, Uses	Week 4	2
5	The Spontaneous Self potential (Sp) log.	Theory, Type of tools, Uses	Week 5	2
6	Porosity logs Density Measurement Tool	Theory, Type of tools, Uses	Week 6	2

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7	Porosity logs Neutron Measurement Tool	Theory, Type of tools, Uses	Week 7	
	MIDTERM EXAM		Week 8	2
	Porosity logs Sonic Measurement Tool	Theory, Type of tools, Uses	Week 9	2
	Photo-Electric Measurements,		Week 10	2
	Resistivity Measurement Tool	Theory, Type of tools, Uses	Week 11-12	4
	Induction Measurement Tool	Theory, Type of tools, Uses	Week 13	2
	Imaging Measurement Tool	Theory, Type of tools, Uses	Week 14	2
	Other logs	NMR	Week 15	2
	FINAL EXAM		Week 16	2
عدد الأسابيع والساعات الفعلية **Number of Weeks /and Contact Hours Per Semester**			**16**	**32**

Practical / Training/ Tutorials/ Exercises Aspects خطة تنفيذ موضوعات الجانب العملي

الرقم Order	موضوعات العملي/ المهام / التمارين Practical/ Tutorials/ Exercises Aspects	الأسبوع Week Due	الساعات الفعلية Cont. H
1	Log presentation and formats	Week1	2
2	Estimating of formation temperature with depth	Week2	2
3	Adjusting fluid resistivity for temperature	Week3	2
4	Reading Log Responses	Week4	2
5	Gamma Ray Log	Week5	2
6	Density Log	Week6	2
7	Mid Term practical exam	Week7	2
8	Neutron Log	Week8	2
9	Sonic Log	Week9	2
10	Resistivity Logs	Week10-11-12	6
11	Integrated Exercise	Week13	2
12	Final practical exam	Week14	2
اجمالي الأسابيع والساعات الفعلية Number of Weeks /and Contact Hours Per Semester		**14**	**28**

Teaching Strategies استراتيجيات التعليم والتعلم

Lectures
Discussion
Inductive and deductive
Demonstration

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Brain storm
Problem solving
Self and independent learning
Tutorials & practical classes,
Case study,
Computer based teaching
Small group working
Student-led Seminars

Tasks and Assignments الأنشطة والتكليفات

م No	التكليف/ الواجب Assignments	نوع التكليف (فردي/ تعاوني)	الدرجة المستحقة Mark	أسبوع التنفيذ Week Due
1	LAS file with MS word	فردي	5	Week 4
	إجمالي الدرجة Total Score		5/150 10/ 100	

Learning Assessment تقويم التعلم

م No	أساليب التقويم Assessment Method	موعد(أسبوع) التقويم Week Due	الدرجة Mark	الوزن النسبي% Proportion of Final Assessment
1	Assignments	Quarter	5	3.4%
2	Participation	Weekly	10	6.6%
3	Quizzes	End of a topic	10	6.6%
4	Mid-Term (theoretical)	Week 8	15	10%
5	Mid-Term (practical)	Week 6	15	10%
6	Final Exam (practical)	Week 12	25	16.7%
7	Final Exam (theoretical)	Week 16	70	46.7%
	Total المجموع		150	%100

Learning Resources مصادر التعلم

توثق المراجع حسب نظام APA (اسم المؤلف، سنة النشر، اسم الكتاب، دار النشر، بلد النشر).

Required Textbook(s) المراجع الرئيسة (لا تزيد عن مرجعين)

1. Classroom Lectures and Assignments
2. Asquith, G., and Krygowski, D. **2004**. Basic well log analysis, 2nd edition. AAPG Memory.

Essential References المراجع المساندة

1-Toby Darling. **2005**. WELL LOGGING AND FORMATION EVALUATION. Gulf Professional Publishing is an imprint of Elsevier Science.pp335
2-Baker Hughes INTE. **1998**. Log Interpretation Charts. Reference manual. Baker Hughes INTEQ
3-Schlumberger. **2009**. Log Interpretation Charts. 2009 edition.
4- Schlumberger. **1996**. Log Interpretation Principles/Applications. 4th edition Schlumberger Education

5- Juergen H. Schoen. FOUNDATIONS OF PETROPHYSICS. Lecture Notes
Electronic Materials and Web Sites *etc.* المصادر الإلكترونية ومواقع الإنترنت
1. www.spe.com 2. www.schlumberger.com 3. www.aapg.com

Course Policies الضوابط والسياسات المتبعة في المقرر

1	**Class Attendance حضور الفعاليات التعليمية** - Students are expected to attend classes regularly and promptly. - The attendance should not be less than 80%. - If the student has been absent, he is responsible for finding out any missed material by consulting other students or going to the professor's office hours.
2	**Tardy الحضور المتأخر** - Attendance and arriving on time for the class are necessary. If the student is late, he will be prevented from class.
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4	**Assignments & Projects التعيينات والمشاريع** - Papers survey or projects should be submitted by the time detriment by the professor.
5	**Cheating الغش** - According to the rules, cheating is a serious offense and will always result in an imposition of a penalty. The penalties that can be started from the range of canceling the result of the course to canceling the student's admission.
6	**Plagiarism الانتحال** - Plagiarism is a serious offense and will always result in an imposition of a penalty. The penalties that can be started by making a zero mark for the work.
7	**Other policies سياسات أخرى** - The student should by a commitment by the rules inside class and university. Therefore, he is expected to show respect for his classmate, instructors &others.

قسم/ برنامج Department: هندسة النفط والغاز الطبيعي Petroleum and Natural Gas Engineering

مواصفات مقرر: خواص النفط والغاز

Course Specification Of: Petroleum Properties

General information about the course المعلومات العامة عن المقرر						
.1	اسم المقرر Course Title	Petroleum Properties				
.2	رمز المقرر ورقمه Course Code and Number	PNGE 327				
.3	الساعات المعتمدة للمقرر Credit Hours	Credit Hours الساعات المعتمدة				الإجمالي Total
		محاضرات Lecture	عملي Practical	سمنار/تمارين Seminar/Tutorial	تدريب Training	
		2	1	0	0	3
.4	المستوى والفصل الدراسي Study Level and Semester	Third Year/ First Semester				
.5	المتطلبات السابقة المقرر (إن وجدت) Pre-requisites (if any)					
.6	المتطلبات المصاحبة (إن وجدت) Co-requisites (if any)					
.7	البرنامج الذي يدرس له المقرر Program (s) in which the course is offered	هندسة النفط والغاز الطبيعي PETROLEUM AND NATURAL GAS ENGINEERING				
.8	لغة تدريس المقرر Language of teaching the course	ENGLISH/ARABIC				
.9	نظام الدراسة Study System	SEMESTERS				
.10	مكان تدريس المقرر Location of teaching the course	FACULTY OF PETROLEUM AND NATURAL RESOURCES				
.11	اسم معد(و) مواصفاتالمقرر Prepared by	Assoc. Prof. Mahyoub A. Saeed				
.12	تاريخ اعتماد مجلس الجامعة Date of Approval	2020				

Course Description وصف المقرر

وصف المقرر ر بالعربية	وصف المقرر ر بالإنجليزية
	This course will discuss many topics related to the properties of crude oil and natural gas. These topics include Crude Oils chemical composition, classification, density, specific gravity; viscosity, molecular weight; vapor pressure, specific heat; heat of combustion; boiling range, flash point; pour point, sulfur content; aniline point; fractional distillation, TBP curve; and Natural gas properties. In addition to those topics, Introduction to the history of petroleum Industry, Definitions of Petroleum Crude Oil and Natural Gas, Classification of Crude Oils and Natural Gas Fields.

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Course Intended Learning Outcomes (CILOs) مخرجات تعلم المقرر			
After completing the course, the student will be able to:		بعد الانتهاء من دراسة المقرر سوف يكون الطالب قادرا على أن:	
a1	illustrate the history of petroleum industry		-a1
a2	recognize the classification of petroleum and AAPG oil fields classification		–a2
a3	Discuss the chemical composition of crude oil and its products		a3
a4	Discuss the physical properties of crude oil and its products		a4
a5	Discuss the natural gas properties		a5
b1	predict the chemical and physical crude oil properties and is products		–b1
b2	Analysis of crude oil Fractions and Refining		-b2
c1	conduct experiments that illustrate the different properties of petroleum		- c1
d1	Collaborate Effectively Within Team		-d1

مواءمة مخرجات تعلم المقرر مع مخرجات التعلم للبرنامج:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

مخرجات التعلم المقصودة من المقرر (Course Intended Learning Outcomes)		مخرجات التعلم المقصودة من البرنامج (Program Intended Learning Outcomes) (تكتب جميع مخرجات البرنامج كما هي رمزا ونصا)	
a1	illustrate the history of petroleum industry	A1	
a2	Recognize the classification of petroleum and AAPG oil fields classification.	A2	
a3	Discuss the chemical composition of crude oil and its products	A1	
a4	Discuss the physical properties of crude oil and its products	A1	
a5	Discuss the natural gas properties	A1	
b1	predict the chemical and physical crude oil properties and is products.	B1	
b2	Analysis of crude oil Fractions and Refining	B1	
c1	The ability to conduct experiments that illustrate the different properties of petroleum	C1	
d1	Collaborate Effectively Within Team	D1	

مواءمةمخرجات التعلم باستراتيجيات التعليم والتعلم والتقويم

Alignment of CILOs to Teaching and Assessment Strategies

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أولا: مواءمة مخرجات تعلم المقرر (المعارف والفهم)باستراتيجيةالتعليم والتعلموالتقويم:

First: Alignment of Knowledge and Understanding CILOs

مخرجات المقرر/ المعرفة والفهم KnowledgeandUnderstandingCILOs		استراتيجية التعليم والتعلم TeachingStrategies	استراتيجية التقويم AssessmentStrategies
a1-	illustrate the history of petroleum industry	Lecture and discussion	Written exam Quizzes
a2 -	Recognize the classification of petroleum and AAPG oil fields classification.		
a3 -	Discuss the chemical composition of crude oil and its products.		
a4 -	Discuss the physical properties of crude oil and its products.		
a5 -	Discuss the natural gas properties.		

ثانيا:مواءمة مخرجات تعلم المقرر(المهارات الذهنية) باستراتيجيةالتدريس والتقويم:

Second: Alignment of Intellectual Skills CILOs

مخرجات المقرر/ المهارات الذهنية IntellectualSkillsCILOs		استراتيجية التعليم والتعلم TeachingStrategies	استراتيجية التقويم Assessment Strategies
b1 -	predict the chemical and physical crude oil properties and is products.	Lecture and discussion	Written exam Quizzes Lab reports
b2 -	Analysis of crude oil Fractions and Refining		

ثالثا:مواءمة مخرجات تعلم المقرر(المهارات المهنية والعملية)باستراتيجيةالتدريس والتقويم:

Third: Alignment of Professional and Practical Skills CILOs

مخرجات المقرر/ المهارات المهنية والعملية Professional and Practical Skills CILOs		استراتيجية التعليم والتعلم TeachingStrategies	استراتيجية التقويم AssessmentStrategies
c1-	design experiments that illustrate the different properties of petroleum	Lecture and discussion Lab reports	Lab report

رابعا: مواءمة مخرجات تعلم المقرر(المهارات العامة) باستراتيجيةالتدريس والتقويم:

Fourth: Alignment of Transferable (General) Skills CILOs

مخرجات المقرر Transferable (General) Skills CILOs		استراتيجية التعليم والتعلم TeachingStrategies	استراتيجية التقويم AssessmentStrategies
d1-	Collaborate Effectively Within Team	Small group work	interview

Course Contentمحتوى المقرر

Theoretical Aspectموضوعات الجانب النظري

الرقم	الموضوعات الرئيسة/ الوحدات	الموضوعات الفرعية	عدد	الساعات	رموز مخرجات التعلم

Order	Topic List / Units	Sub Topics List	الأسابيع Number of Weeks	الفعلية Contact Hours	للمقرر (CILOs)
1	Introduction to the history of ptroleum Indstry. Defininition Of Petroleum Crude Oil and Natural Gas	BREIF HISTORY OF PETROLEUM INDUSTRY Exploration DRLLING PRODUCTION TRANPORTATION	1	2	a1
2	CLASSIFICATION OF CRUDE OILS AND NATURAL GAS FIELDS	AAPG CLASSFICATION OF OIL AND GAS FIELS	1	2	a2
3	PROPERTIES OF CRUDE Oils	DENSITY, SPECIFC GRAVITY AND API VISCOSITY, MOLECULAR WEIGHT, VAPOUR PRESSURE AND SPECIFIC HEAT HEAT OF COBUSTION, BILING POINT RANGE AND FLASH POINT POUR POINT, CLOUD POINT AND SULFUR CONTENT AND ANILINE POINT	5	10	a3,a4,b1,b2,c1
4	CRUD OIL, FRACTIONAL DISILLATION AND BP CURVE	Crude oil distillation Conducting boiling points curve	**2**	**4**	a3,a4,b1,b2,c1
5	ANAYSIS OF FRACIONS AND REFINING	Chemical and physical analysis of fractions	1	2	a3,a4,b1,b2,c1
6	Gasoline Octane number and diesel cetane number	Calculating gasoline Octane number and diesel Cetane number.	1	2	a3,a4,b1,b2,c1
7	NATURAL GAS PROPERTIES	DISCUSSING CHEMICAL AND PHYSICAL PROPERTIES OF NATURAL GAS	3	6	a5,c1

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عدد الأسابيع والساعات الفعلية Number of Weeks /and Contact Hours Per Semester	14	28	

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	Measuring the density Of Crude oil and its fractions. .	1	2	a4, b1,b2,c1,d1
2	Calculating the specific gravity and API of Crude oil and its fractions.	1	2	a2, a3, a4, a5, b1, c1,d1
3	Measuring the viscosity of Crude oil and its fractions	1	2	a4, b1,b2, c1,d1
5	Aniline point **determination**	1	2	a4, b1,b2, c1,d1
6	Crude oil Fractional distillation	1	2	a4, b1,b2, c1,d1
7	Measuring Boiling point and flash pointsof Crude oil and its fractions. .	1	2	a4, b1,b2,c1,d1
8	Measuring ofPour and cloud pointsof Crude oilsamples.	1	2	a4, b1,b2,c1,d1
9	Octane and Cetane numbers Calculation	1	2	a4, b1,b2,c1,d1
Number of Weeks /and Units Per Semester	**8**	**16**		

Teaching Strategies استراتيجيات التعليم والتعلم

Active Lectures (supported with discussions),
Hands-on laboratory work,
Tutorials
project/presentation
Computer and web-based learning,
Design work and projects

Tasks and Assignments الأنشطة والتكليفات

م No	التكليف/ الواجب Assignments/ Tasks	نوع التكليف (فردي/ تعاوني)	الدرجة المستحقة Mark	أسبوع التنفيذ Week Due	خرجات التعلم CILOs (symbols)
1	AAPG oil and gas fields classification in Yemen	Collecting data	3	**3**	**a2**
2	Octane number calculation	exercise	4	**12**	**a3,b2**
3	Octane number calculation	excercise	4	**12**	**a3,b2**
4	Crude oil types in yemen	lab	4	**13**	**a3,b2,c1**
	Total Score إجمالي الدرجة		**15**		

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Learning Assessment تقييمالتعلم

الرقم No.	أنشطة التقييم Assessment Tasks	أسوع التقييم Week due	الدرجة Mark	نسبة الدرجة إلى الدرجة النهائية Proportion of Final Assessment	مخرجات التعلم CILOs (symbols)
1	الأنشطة والتكليفات TasksandAssignments	3,6,8	15	10%	a1,a2,a3
2	كوز(1) Quiz	3	5	3.3%	a1,a2,a3
3	اختبار نصف الفصل Midterm Exam	W8	25	16.7%	a1,a2,a3
4	كوز(2) Quiz	W12	5	3.3%	a3,a4,b1,b2,c1
5	اختبار نهاية الفصل (عملي) Final Exam (practical)	W 15	30	20%	b1,b2,c1,c2
6	اختبار نهاية الفصل (نظري) Final Exam (theoretical)	W16	70	46.7%	All outcomes
	Total الإجمالي		150	%100	

توثق المراجع حسب نظام APA (اسم المؤلف، سنة النشر، اسم الكتاب، دار النشر، بلد النشر).

Required Textbook(s) المراجع الرئيسة(لا تزيد عن مرجعين)

1. M.R. Riazi, 2005, Characterization and Properties of Petroleum Fractions, Published by ASTM International.
2- James G. Speight , 2010, The Chemistry and Technology of Petroleum, 4th Edition

Learning Resources مصادر التعلم

1. Mohammed A. Fahim, Taher A. Alsahhaf, and Amal Alkilani, Fundamentals of petroleum refining.
2. Malcolm A. Kelland , Production Chemicals for the Oil & Gas Industry, 2nd Edition, CRC Press,

Electronic Materials and Web Sites *etc.* المصادر الإلكترونية ومواقع الإنترنت

1. Journal of ASTM International
2. http://www. Arab Oil Natural Gas. Com
3. http://www.panolacollegestore.com

Course Policies الضوابط والسياسات المتبعة في المقرر

1	**Class Attendance حضور الفعاليات التعليمية** - Students are expected to attend classes regularly and promptly. - The attendance should not be less than 80%. - If the student has been absent, he is responsible for finding out any missed material by consulting other students or going to the professor's office hours.
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