



## مواصفات مقرر: هندسة الغاز الطبيعي

### Course Specification of: Natural Gas Engineering

المعلومات العامة عن المقرر					
1.	اسم المقرر Course Title	Natural Gas Engineering هندسة الغاز الطبيعي			
2.	رمز المقرر ورقمه Course Code and Number	PNGE 446			
3.	الساعات المعتمدة للمقرر Credit Hours	الساعات المعتمدة			الإجمالي Total
		محاضرات Lecture	عملي Practical	سمنار/تمارين Seminar/Tutorial	
		2		1	3
4.	المستوى والفصل الدراسي Study Level and Semester	Fourth Year: First Semester			
5.	المتطلبات السابقة للمقرر (إن وجدت) Pre-requisites (if any)	PNGE 342			
6.	المتطلبات المصاحبة (إن وجدت) Co-requisites (if any)	N.A.			
7.	البرنامج الذي يدرس له المقرر Program (s) in which the course is offered	Petroleum and Natural Gas Engineering			
8.	لغة تدريس المقرر Language of teaching the course	English			
9.	نظام الدراسة Study System	Semester wise			
10.	مكان تدريس المقرر Location of teaching the course	Faculty of Petroleum and Natural Resources			
11.	اسم معد (و) مواصفات المقرر Prepared by	Dr.Salem Obaid Baarimah			
12.	تاريخ اعتماد مجلس الجامعة Date of Approval	2020			

وصف المقرر	
وصف المقرر بالإنجليزية	وصف المقرر بالعربية
This course provides students with comprehensive study of volumetric method and different forms of the general material balance equation for gases reservoirs. Covered topics include: Introduction, volumetric and material balance calculations, decline curves analysis, Pressure transient of gas wells, deliverability testing of gas wells, and gas flow performance.	
مخرجات تعلم المقرر (CILOs)	
After completing the course, the student will be able to:	بعد الانتهاء من دراسة المقرر سوف يكون الطالب قادرا على أن:

Prepared by  
Assoc.Prof. Adel Al-Matary

Quality Assurance Unit  
Assoc.Prof. Adel Al-Matary

Dean of the Faculty  
Assoc.Prof. Bassim  
AlKhirbash

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& Quality Assurance Center  
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Prof. Dr. Al Qaseem Mohammed Abas



a1.	Identify the theoretical principles and concepts related to gas engineering.		- a1
a2.	Recognize principles and concepts of volumetric and material balance, decline curves, gas pressure transient tests and gas flow performance.		- a2
b1.	Apply the theoretical analysis of volumetric, material balance and decline curves for calculating gas flow performance behavior.		-b1
b2.	Interpret results of different types of transient test and deliverability test.		- b2
c1.	Calculate the initial oil in place and the oil recovery using volumetric, material balance and decline curves.		- c1
c2.	Analyze the components of transient test and deliverability test system to determine the reservoir and well characteristics.		- c2
c3.	Apply various models to estimate gas reserves and performance prediction of gas reservoirs.		- c3

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.	Identify the theoretical principles and concepts related to gas engineering.	A1.	Demonstrate the concepts of basic science and mathematics related to field of petroleum engineering.
a2.	Recognize principles and concepts of volumetric and material balance, decline curves, gas pressure transient tests and gas flow performance.		
b1.	Apply the theoretical analysis of volumetric, material balance and decline curves for calculating gas flow performance behavior.	B1.	Use the principles of engineering in developing solutions to practical petroleum engineering and select appropriate computer software for modeling.
b2.	Interpret results of different types of transient test and deliverability test.	B2.	Evaluate well logs and well test operations to identify maps of reservoir and select the best method of petroleum recovery.
c1.	Calculate the initial oil in place and the oil recovery using volumetric, material balance	C1.	Carry out special engineering design in all petroleum engineering projects.



	and decline curves.		
c2.	Analyze the components of transient test and deliverability test system to determine the reservoir and well characteristics.		
c3.	Apply various models to estimate gas reserves and performance prediction of gas reservoirs.	C3.	Deal with the high level of uncertainty in definition and solution of petroleum reservoir problems.

مواصلة مخرجات التعلم باستراتيجيات التعليم والتعلم والتقييم Alignment of CILOs to Teaching and Assessment Strategies			
أولاً: مواصلة مخرجات تعلم المقرر (المعارف والفهم) باستراتيجية التعليم والتعلم والتقييم: First: Alignment of Knowledge and Understanding CILOs			
مخرجات المقرر / المعرفة والفهم Knowledge and Understanding CILOs	استراتيجية التعليم والتعلم Teaching Strategies	استراتيجية التقييم Assessment Strategies	
a1- Identify the principle concepts theoretical principles and concepts related to gas engineering.	- Lecture - class Discussions	- Quiz - Oral questions - Written assessments	
a2- Recognize principles and concepts of volumetric and material balance, decline curves, gas pressure transient tests and gas flow performance.	- Independent-learning - Video	- Exam	
ثانياً: مواصلة مخرجات تعلم المقرر (المهارات الذهنية) باستراتيجية التدريس والتقييم: Second: Alignment of Intellectual Skills CILOs			
مخرجات المقرر / المهارات الذهنية Intellectual Skills CILOs	استراتيجية التعليم والتعلم Teaching Strategies	استراتيجية التقييم Assessment Strategies	
b1- Apply the theoretical analysis of volumetric, material balance and decline curves for calculating gas flow performance behavior.	- Lecture - Class Discussions - Project - Problem-based learning	- Quiz - Home work - Exercises - Exam	
b2- Interpret results of different types of transient test and deliverability test.	- Tutorial - Group working		
ثالثاً: مواصلة مخرجات تعلم المقرر (المهارات المهنية والعملية) باستراتيجية التدريس والتقييم: Third: Alignment of Professional and Practical Skills CILOs			
مخرجات المقرر / المهارات المهنية والعملية Professional and Practical Skills CILOs	استراتيجية التعليم والتعلم Teaching Strategies	استراتيجية التقييم Assessment Strategies	
c1- Calculate the initial oil in place and	- Lecture	- Quiz	



	the oil recovery using volumetric, material balance and decline curves.	- Tutorial - Discussion	- Home work - Exercises - Exam
c2-	Analyze the components of transient test and deliverability test system to determine the reservoir and well characteristics.	- Problem solving - Group working - Project - Petroleum computer software	
C3-	Apply various models to estimate gas reserves and performance prediction of gas reservoirs.		

رابعاً: موازنة مخرجات تعلم المقرر (المهارات العامة) باستراتيجية التدريس والتقييم:

Fourth: Alignment of Transferable (General) Skills CILOs

مخرجات المقرر Transferable (General) Skills CILOs	استراتيجية التعليم والتعلم Teaching Strategies	استراتيجية التقييم Assessment Strategies

محتوى المقرر Course Content

موضوعات الجانب النظري Theoretical Aspect

الرقم Order	الموضوعات الرئيسية/ الوحدات Topic List / Units	الموضوعات الفرعية Sub Topics List	عدد الأسابيع Number of Weeks	الساعات الفعلية Contact Hours	رموز مخرجات التعلم للمقرر (CILOs)
1	Introduction	<ul style="list-style-type: none"> <li>➤ Development of natural gas.</li> <li>➤ Classification of gas. reservoirs.</li> <li>➤ Properties of natural gas.</li> </ul>	1	2	a1,a2
2	Volumetric and material balance calculations	<ul style="list-style-type: none"> <li>➤ Dry gas reservoirs volumetric method calculations.</li> <li>➤ Wet gas reservoirs volumetric method calculations.</li> <li>➤ Gas condensate reservoirs volumetric method calculations.</li> </ul>	2	4	a1,a2,b1,c1
		<ul style="list-style-type: none"> <li>➤ Dry gas reservoirs material balance calculations.</li> <li>➤ Wet gas reservoirs material balance calculations.</li> <li>➤ Gas condensate reservoirs</li> </ul>	2	4	a1,a2,b1,c1

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AlKhirbash

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		material balance calculations.			
3	<b>Decline curves analysis</b>	<ul style="list-style-type: none"> <li>➤ Introduction to decline curves analysis.</li> <li>➤ Exponential decline curve.</li> <li>➤ Harmonic decline curve.</li> <li>➤ Hyperbolic decline curve.</li> <li>➤ Decline type curves.</li> </ul>	2	4	a1,a2,b1,c1
4	<b>Mid-term exam</b>	<ul style="list-style-type: none"> <li>➤ In class written test.</li> </ul>	1	2	a1,a2,b1,c1
5	<b>Pressure transient of gas wells</b>	<ul style="list-style-type: none"> <li>➤ Introduction to gas pressure transient .</li> <li>➤ Types and purposes of pressure transient tests.</li> <li>➤ Homogeneous reservoir model.</li> <li>➤ Non-Darcy flow.</li> <li>➤ Gas well flow tests.</li> <li>➤ Hydraulically fractured gas wells.</li> <li>➤ Naturally fractured gas wells.</li> </ul>	2	4	a1,a2,b2,c2
6	<b>Deliverability testing of gas wells</b>	<ul style="list-style-type: none"> <li>➤ Introduction to deliverability gas wells.</li> <li>➤ Types of deliverability testing of gas wells.</li> <li>➤ Flow after flow test.</li> <li>➤ Isochronal test.</li> <li>➤ Modified isochronal test.</li> </ul>	2	4	a1,a2,b2,c2
7	<b>Gas flow performance</b>	<ul style="list-style-type: none"> <li>➤ Introduction to gas Flow Performance.</li> <li>➤ Pressure-squared approximation form.</li> <li>➤ Pressure-approximation form</li> <li>➤ Real gas potential (pseudo-pressure) form.</li> <li>➤ Low-permeability gas well.</li> <li>➤ Tubing performance.</li> <li>➤ Choke performance.</li> <li>➤ Flow line performance.</li> <li>➤ Two-phase inflow performance.</li> </ul>	1	2	a1,a2,b1,c3

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		<ul style="list-style-type: none"> <li>➤ Vogel's method.</li> <li>➤ Fetkovich method.</li> <li>➤ Standing's method.</li> </ul>			
9	<b>Final theoretical exam</b>	<ul style="list-style-type: none"> <li>➤ In class written test.</li> </ul>	1	2	
عدد الأسابيع والساعات الفعلية Number of Weeks /and Contact Hours Per Semester			<b>14</b>	<b>28</b>	

الموضوعات العملية (إن وجدت) Practical Aspect (if any)				
الرقم Order	التجارب العملية/ التمارين / تدريبات Practical / Exercises/ Tutorials topics	عدد الأسابيع Number of Weeks	الساعات الفعلية Contact Hours	رموز مخرجات التعلم Course ILOs
1	Estimating initial gas in place and the gas recovery for dry gas reservoirs by using: - Volumetric method - Material balance method	2	4	b1,c1
2	Estimating initial gas in place and the gas recovery for dry gas reservoirs by using: - Volumetric method - Material balance method	2	4	b1,c1
3	Estimating initial gas in place and the gas recovery for dry gas reservoirs by using: - Volumetric method - Material balance method	2	4	b1,c1
4	Estimating gas reserves and predicting future production by: - Exponential decline - Harmonic decline - Hyperbolic decline	2	4	b1,c1
5	Pressure transient of gas wells	1	2	b2,c2
6	Deliverability testing of gas wells	1	2	b2,c2
7	Generating the IPR for vertical gas well by using various methods.	1	2	b1,c3
8	Calculating the IPR for horizontal gas well by using various methods.	1	2	b1,c3
9	-Final Practical exam.	1	2	b1,b2,c1,c2,c3
اجمالي الأسابيع والساعات الفعلية		<b>13</b>	<b>26</b>	

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Number of Weeks /and Contact Hours Per Semester

### Teaching Strategies استراتيجيات التعليم والتعلم

- Class Discussions
- Group working
- Independent-learning
- Lecture
- Problem-based learning
- Project
- Tutorial
- Video
- Petroleum computer software

### Tasks and Assignments الأنشطة والتكليفات

م No	التكليف/ الواجب Assignments/ Tasks	نوع التكليف (فردى/ تعاوني)	الدرجة المستحقة Mark	أسبوع التنفيذ Week Due	مخرجات التعلم CILOs (symbols)
1	Exercises & Home works	personal	15	By-weekly basis	b1,b2,c1, c2,c3
<b>Total Score إجمالي الدرجة</b>			<b>15</b>		

### Learning Assessment تقييم التعلم

الرقم No.	أنشطة التقييم Assessment Tasks	أسبوع التقييم Week due	الدرجة Mark	نسبة الدرجة إلى الدرجة النهائية Proportion of Final Assessment	مخرجات التعلم CILOs (symbols)
1	الأنشطة والتكليفات Tasks and Assignments	By-weekly basis	15	10%	b1,b2,c1,c2,c3
2	كوز (1) Quiz	W6	5	3.3 %	a1,a2,b1,c1
3	اختبار نصف الفصل Midterm Exam	W8	25	16.7%	a1,a2,b1,c1
4	كوز (2) Quiz	W12	5	3.3 %	a1,a2,b2,c2
5	اختبار نهاية الفصل (عملي) Final Exam (practical)	W 15	30	20%	b1,b2,c1,c2,c3
6	اختبار نهاية الفصل (نظري) Final Exam (theoretical)	W16	70	46.7%	a1,a2,b1,b2,c1,c2,c3
<b>Total الإجمالي</b>			<b>150</b>	<b>100%</b>	



## Learning Resources مصادر التعلم

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

### Required Textbook(s) المراجع الرئيسية (لا تزيد عن مرجعين)

1. Lee J. and Wattenbarger R.A., 1996, Gas Reservoir Engineering, SPE.
2. William C. Lyons, 2010, Working Guide To Petroleum and Natural Gas Production Engineering, Gulf Publishing is an imprint of Elsevier, MA01803, USA, Langford Lane, Oxford OX5 1GB.

### Essential References المراجع المساندة

1. H. Dale Beggs, 1984, Gas Production Operations, Oil & Gas Consultants International, Tulsa, Oklahoma.
2. Kidnay, A. J. and Parrish, W. R., 2006, Fundamentals of Natural Gas Processing, Taylor and Francis Group, LLC.
3. IkoKu, Chi., U., 1992, Natural Gas Production Engineering, Krieger publishing company Malabar.
4. Mohan Kelkar, 2007, Natural Gas Production Engineering, PennWell Corporation, 1421 South Sheridan Road, Tulsa, Oklahoma 74112-6600 USA.
5. Craft, B. C., and Hawkins M., 1991, Applied Petroleum Reservoir Engineering, Prentice Hall, New Jersey.

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

1. Sites of society petroleum engineers. <https://www.spe.org/en/>
2. Journal of Petroleum Science and Engineering. <https://www.journals.elsevier.com/journal-of-petroleum-science-and-engineering>

## Course Policies الضوابط والسياسات المتبعة في المقرر

1	<b>Class Attendance</b> حضور الفعاليات التعليمية A student should attend not less than 75 % of total hours of the subject, otherwise he/she will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic. If the absent is more than 25% of a course total contact hours, student will be required to retake the entire course again.
2	<b>Tardy</b> الحضور المتأخر For late in attending the class, the student will be initially notified. If he repeated lateness in attending class, he/she will be considered as absent.
3	<b>Exam Attendance/Punctuality</b> ضوابط الامتحان A student should attend the exam on time. He/she is permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4	<b>Assignments &amp; Projects</b> التعيينات والمشاريع In general one assignment is given to the students after each chapter, the student has to submit all the assignments for checking on time, mostly one week after given the assignment.





5	<b><u>Cheating الغش</u></b> For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.
6	<b><u>Plagiarism الانتحال</u></b> Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he/she will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university or according to the university roles.
7	<b><u>Other policies سياسات أخرى</u></b> <ul style="list-style-type: none"><li>➤ Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room.</li><li>➤ Mobile phones are not allowed in class during the examination.</li><li>➤ Lecture notes and assignments might be given directly to students using soft or hard copy.</li></ul>



قسم/ برنامج: هندسة النفط والغاز الطبيعي Petroleum and Natural Gas Engineering  
العام الجامعي: 2019-2020م

## خطة مقرر: هندسة الغاز الطبيعي

### Course Plan (Syllabus): Natural Gas Engineering

معلومات عن أستاذ المقرر Information about Faculty Member Responsible for the Course						
الاسم Name	Dr.Salem Obaid Baarimah		الساعات المكتبية (أسبوعياً) Office Hours			
المكان ورقم الهاتف Location & Telephone No.	711629232		السبت SAT	الأحد SUN	الاثنين MON	الثلاثاء TUE
البريد الإلكتروني E-mail	<a href="mailto:soob2005@gmail.com">soob2005@gmail.com/</a> hu.edu.y					الأربعاء WED
						الخميس THU

معلومات عامة عن المقرر General information about the course					
1.	اسم المقرر Course Title	Natural Gas Engineering هندسة الغاز الطبيعي			
2.	رمز المقرر ورقمه Course Code and Number	PNGE 446			
3.	الساعات المعتمدة للمقرر Credit Hours	الساعات المعتمدة Credit Hours			الإجمالي Total
		محاضرات Lecture	عملي Practical	سمنار/تمارين Seminar/Tutorial	
		2		1	3
4.	المستوى والفصل الدراسي Study Level and Semester	Fourth Year: First Semester			
5.	المتطلبات السابقة للمقرر Pre-requisites	PNGE 342			
6.	المتطلبات المصاحبة (إن وجدت) Co-requisite	N.A.			
7.	البرنامج الذي يدرس له المقرر Program (s) in which the course is offered	Petroleum and Natural Gas Engineering			
8.	لغة تدريس المقرر Language of teaching the course	English			
9.	مكان تدريس المقرر Location of teaching the course	Faculty of Petroleum and Natural Resources			

وصف المقرر Course Description	
<p>This course provides students with comprehensive study of volumetric method and different forms of the general material balance equation for gases reservoirs. Covered topics include: Introduction, volumetric and material balance calculations, decline curves analysis, Pressure transient of gas wells, deliverability testing of gas wells, and gas flow performance.</p>	



### 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. Identify the theoretical principles and concepts related to gas engineering.	- a1
a2. Recognize principles and concepts of volumetric and material balance, decline curves, gas pressure transient tests and gas flow performance.	- a2
b1. Apply the theoretical analysis of volumetric, material balance and decline curves for calculating gas flow performance behavior.	-b1
b2. Interpret results of different types of transient test and deliverability test.	- b2
c1. Calculate the initial oil in place and the oil recovery using volumetric, material balance and decline curves.	- c1
c2. Analyze the components of transient test and deliverability test system to determine the reservoir and well characteristics.	- c2
c3. Apply various models to estimate gas reserves and performance prediction of gas reservoirs.	- d1

### Course Content محتوى المقرر

#### Theoretical Aspect الموضوعات الجانب النظري

الرقم Order	الموضوعات الرئيسية/ الوحدات Topic List / Units	الموضوعات الفرعية Sub Topics List	عدد الأسابيع Number of Weeks	الساعات الفعلية Contact Hours
1	<b>Introduction</b>	<ul style="list-style-type: none"> <li>➤ Development of natural gas.</li> <li>➤ Classification of gas reservoirs.</li> <li>➤ Properties of natural gas.</li> </ul>	1	2
2	<b>Volumetric and material balance calculations</b>	<ul style="list-style-type: none"> <li>➤ Dry gas reservoirs volumetric method calculations.</li> <li>➤ Wet gas reservoirs volumetric method calculations.</li> <li>➤ Gas condensate reservoirs volumetric method calculations.</li> </ul>	2	4



		<ul style="list-style-type: none"> <li>➤ Dry gas reservoirs material balance calculations.</li> <li>➤ Wet gas reservoirs material balance calculations.</li> <li>➤ Gas condensate reservoirs material balance calculations.</li> </ul>	2	4
3	<b>Decline curves analysis</b>	<ul style="list-style-type: none"> <li>➤ Introduction to decline curves analysis.</li> <li>➤ Exponential decline curve.</li> <li>➤ Harmonic decline curve.</li> <li>➤ Hyperbolic decline curve.</li> <li>➤ Decline type curves.</li> </ul>	2	4
4	<b>Mid-term exam</b>	<ul style="list-style-type: none"> <li>➤ In class written test</li> </ul>	1	2
5	<b>Pressure transient of gas wells</b>	<ul style="list-style-type: none"> <li>➤ Introduction to gas pressure transient .</li> <li>➤ Types and purposes of pressure transient tests.</li> <li>➤ Homogeneous reservoir model</li> <li>➤ Non-Darcy flow.</li> <li>➤ Gas well flow tests.</li> <li>➤ Hydraulically fractured gas wells.</li> <li>➤ Naturally fractured gas wells.</li> </ul>	2	4
6	<b>Deliverability testing of gas wells</b>	<ul style="list-style-type: none"> <li>➤ Introduction to deliverability gas wells.</li> <li>➤ Types of deliverability testing of gas wells.</li> <li>➤ Flow after flow test.</li> <li>➤ Isochronal test.</li> <li>➤ Modified isochronal test.</li> </ul>	2	4
7	<b>Gas flow performance</b>	<ul style="list-style-type: none"> <li>➤ Introduction to gas Flow Performance.</li> <li>➤ Pressure-squared approximation form.</li> <li>➤ Pressure-approximation form</li> <li>➤ Real gas potential (pseudo-pressure) form.</li> <li>➤ Low-permeability gas well.</li> <li>➤ Tubing performance.</li> <li>➤ Choke performance.</li> <li>➤ Flow line performance.</li> <li>➤ Two-phase inflow performance.</li> <li>➤ Vogel's method.</li> <li>➤ Fetkovich method.</li> <li>➤ Standing's method.</li> </ul>	1	2

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9	<b>Final theoretical exam</b>	➤ In class written test.	1	2
عدد الأسابيع والساعات الفعلية Number of Weeks /and Contact Hours Per Semester			14	28

Practical / Training/ Tutorials/ Exercises Aspects خطة تنفيذ موضوعات الجانب العملي			
الرقم Order	موضوعات العملي/ المهام / التمارين Practical/ Tutorials/ Exercises Aspects	عدد الأسابيع Number of Weeks	الساعات الفعلية Contact Hours
1	Estimating initial gas in place and the gas recovery for dry gas reservoirs by using: - Volumetric method - Material balance method	2	4
2	Estimating initial gas in place and the gas recovery for dry gas reservoirs by using: - Volumetric method - Material balance method	2	4
3	Estimating initial gas in place and the gas recovery for dry gas reservoirs by using: - Volumetric method - Material balance method	2	4
4	Estimating gas reserves and predicting future production by: - Exponential decline - Harmonic decline - Hyperbolic decline	2	4
5	Pressure transient of gas wells	1	2
6	Deliverability testing of gas wells	1	2
7	Generating the IPR for vertical gas well by using various methods.	1	2
8	Calculating the IPR for horizontal gas well by using various methods.	1	2
	Final Practical exam.	1	2
اجمالي الأسابيع والساعات الفعلية Number of Weeks /and Contact Hours Per Semester		13	26
Teaching Strategies استراتيجيات التعليم والتعلم			
<ul style="list-style-type: none"> <li>▪ Class Discussions</li> <li>▪ Group working</li> <li>▪ Independent-learning</li> <li>▪ Lecture</li> </ul>			



- Problem-based learning
- Project
- Tutorial
- Video
- Petroleum computer software

### Tasks and Assignments الأنشطة والتكليفات

م No	التكليف/ الواجب Assignments/ Tasks	نوع التكليف (فردى/ تعاوني)	الدرجة المستحقة Mark	أسبوع التنفيذ Week Due	خرجات التعلم CILOs (symbols)
1	Exercises & Home works	personal	15	By-weekly basis	b1,b2,c1,c2,c3
إجمالي الدرجة Total Score			15		

### Learning Assessment تقييم التعلم

الرقم No.	أنشطة التقييم Assessment Tasks	أسبوع التقييم Week due	الدرجة Mark	نسبة الدرجة إلى الدرجة النهائية Proportion of Final Assessment
1	الأنشطة والتكليفات Tasks and Assignments	By-weekly basis	15	10%
2	كوز (1) Quiz	W6	5	3.3 %
3	اختبار نصف الفصل Midterm Exam	W8	25	16.7%
4	كوز (2) Quiz	W12	5	3.3 %
5	اختبار نهاية الفصل (عملي) Final Exam (practical)	W 15	30	20%
6	اختبار نهاية الفصل (نظري) Final Exam (theoretical)	W16	70	46.7%
الإجمالي Total			100	%100

### Learning Resources مصادر التعلم

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

#### المراجع الرئيسية (لا تزيد عن مرجعين) Required Textbook(s)

1. Lee J. and Wattenbarger R.A., 1996, Gas Reservoir Engineering, SPE.
2. William C. Lyons, 2010, Working Guide To Petroleum and Natural Gas Production Engineering, Gulf Publishing is an imprint of Elsevier, MA01803, USA, Langford Lane, Oxford OX5 1GB.

#### المراجع المساندة Essential References

1. H. Dale Beggs, 1984, Gas Production Operations, Oil & Gas Consultants International, Tulsa, Oklahoma.
2. Kidnay, A. J. and Parrish, W. R., 2006, Fundamentals of Natural Gas Processing, Taylor and Francis

Prepared by  
Assoc.Prof. Adel Al-  
Matary

Quality Assurance Unit  
Assoc.Prof. Adel Al-Matary

Dean of the Faculty  
Assoc.Prof. Bassim  
AlKhirbash

Dean of the Development  
& Quality Assurance Center  
Assoc.Prof. Huda Al-Emad

Rector of Sana'a University  
Prof. Dr. Al Qaseem Mohammed Abas



Group, LLC.

3. IkoKu, Chi.,U., 1992, Natural Gas Production Engineering, Krieger publishing company Malabar.
4. Mohan Kelkar,2007, Natural Gas Production Engineering ,PennWell Corporation,1421 South Sheridan Road,Tulsa, Oklahoma 74112-6600 USA.
5. Craft, B. C., and Hawkins M., 1991, Applied Petroleum Reservoir Engineering, Prentice Hall, New Jersey.

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

1. Sites of society petroleum engineers. <https://www.spe.org/en/>
2. Journal of Petroleum Science and Engineering. <https://www.journals.elsevier.com/journal-of-petroleum-science-and-engineering>

**Course Policies الضوابط والسياسات المتبعة في المقرر**

<b>1</b>	<p><b><u>Class Attendance</u> حضور الفعاليات التعليمية</b></p> <p>A student should attend not less than 75 % of total hours of the subject, otherwise he/she will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic. If the absent is more than 25% of a course total contact hours, student will be required to retake the entire course again.</p>
<b>2</b>	<p><b><u>Tardy</u> الحضور المتأخر</b></p> <p>For late in attending the class, the student will be initially notified. If he repeated lateness in attending class, he/she will be considered as absent.</p>
<b>3</b>	<p><b><u>Exam Attendance/Punctuality</u> ضوابط الامتحان</b></p> <p>A student should attend the exam on time. He/she is permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.</p>
<b>4</b>	<p><b><u>Assignments &amp; Projects</u> التعيينات والمشاريع</b></p> <p>In general one assignment is given to the students after each chapter, the student has to submit all the assignments for checking on time, mostly one week after given the assignment.</p>
<b>5</b>	<p><b><u>Cheating</u> الغش</b></p> <p>For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.</p>
<b>6</b>	<p><b><u>Plagiarism</u> الانتحال</b></p> <p>Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he/she will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university or according to the university roles.</p>
<b>7</b>	<p><b><u>Other policies</u> سياسات أخرى</b></p> <ul style="list-style-type: none"> <li>➤ Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room.</li> <li>➤ Mobile phones are not allowed in class during the examination.</li> <li>➤ Lecture notes and assignments might be given directly to students using soft or hard copy.</li> </ul>