MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Gas Technology**			**Module Delivery**	
Module Type	**C**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	1 UGIII		**Semester of Delivery**	Six	
Administering Department	Fuel and Energy Technologies Engineering		College	Shatt Al-Arab University College	
Module Leader	Murtada Firas Hassa		**e-mail**	Murtada.Firass@sa-uc.edu.iq	
Module Leader's Acad. Title	Assistance Lecturer		**Module Leader's Qualification**	MSc. Chemistry	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. General look on the importance of natural gas and its reserves. 2. Natural Gas, Natural Gas kinds and gas reservoir characteristics, Phase Behavior, Chemical and Physical Properties. 3. Gas Compression, Compressions of Natural Gas, Types of gas compressors: Rotary, Jet, and Reciprocating natural gas compressors. 4. Gas Physical Separation, Separators, the removal of solid, water and condensates, Stabilization process, Drying of gaseous fuel by adsorption and absorption. 5. Sweetening of Gaseous fuel, Sweetening by adsorption and absorption, Gas Flaring Reduction. Natural Gas Liquefaction (NGL), NGL fractionation: de-ethanizer, de-propanizer, de-butanizer.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The student able to: 1.Understanding the general look on the importance of natural gas and its reserves. 2. Knowledge the Natural Gas kinds and gas reservoir characteristics. 3.Understanding the Phase Behavior, Chemical and Physical Properties of Natural Gas. 4.Understanding the Gas Compression, Compressions of Natural Gas. 5.Knowledge the types of gas compressors: Rotary, Jet, and Reciprocating natural gas compressors. 6.Knowledge the Gas Physical Separation, Separators, the removal of solid, water and condensates, Stabilization process. 7.Understanding the Drying of gaseous fuel by adsorption and absorption. 8.Understanding the Sweetening of Gaseous fuel, Sweetening by adsorption and absorption, Gas Flaring Reduction. 9.Know the Natural Gas Liquefaction (NGL), NGL fractionation: de-ethanizer, de-propanizer, de-butanizer. 10- Understanding the Liquefied Petroleum Gas (LPG), LPG methods, process, and description. Some problems associated with Natural Gas treatment and production. Understanding the Hydrate control in gas production causes, occurrence and control. Understanding the law Temperature Separation, methods, process and description. Knowledge the Gas Gathering and Transportation, Pipe Line Design Calculation and Economics, Gas flow in series, Parallel and Looped Pipeline. Understanding the Hydrogen production, methods, process, and description.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. General look on the importance of natural gas and its reserves. (3hr) 2. Natural Gas kinds and gas reservoir characteristics, Phase Behavior, Chemical and Physical Properties. (3hr)

	3. Gas Compression, Compressions of Natural Gas, Types of gas compressors: Rotary, Jet, and Reciprocating natural gas compressors. (3hr) Gas Physical Separation, Separators, removal of solids, water and condensates, Stabilization, Drying of gaseous fuel by adsorption and absorption. (6hr) 4. Liquefied Petroleum Gas (LPG), LPG methods, process, and description. Hydrate control in gas production causes, occurrence and control. (6hr) Low Temperature Separation, methods, process and description. (3hr) 5. Sweetening of Gaseous fuel, Sweetening by adsorption and absorption, Gas Flaring Reduction. (3hr) Natural Gas Liquefaction (NGL), NGL fractionation: de-ethanizer, de-propanizer, de-butanizer. (6hr) Gas Gathering and Transportation, Pipe Line Design Calculation and Economics, Gas flow in series, parallel and looped pipeline. (6hr) Hydrogen production, methods, process, and description. (3hr)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Assessment is based on hand-in assignments, written exam, Quizzes, reports, seminars, Practical testing and Online testing.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	10% (10)		
	Assignments	2	10% (10)		
	Projects	1	10% (10)		
	Report/ Lab.	10	10% (10)		
Summative assessment	Midterm Exam		10% (10)		
	Final Exam	4 hr	50% (50)		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction, general look on the importance of natural gas and its reserves.
Week 2	Natural Gas kinds and gas reservoir characteristics.
Week 3	Phase Behavior, Chemical and Physical Properties of Natural Gas.
Week 4	Gas Compression, Compressions of Natural Gas.
Week 5	Types of gas compressors: Rotary, Jet, and Reciprocating natural gas compressors.
Week 6	Gas Physical Separation, Separators, the removal of solid, water and condensates, Stabilization process.
Week 7	Drying of gaseous fuel by adsorption and absorption.
Week 8	Sweetening of Gaseous fuel, Sweetening by adsorption and absorption, Gas Flaring Reduction.
Week 9	Natural Gas Liquefaction (NGL), NGL fractionation: de-ethanizer, de-propanizer, de-butanizer.

Week 10	Liquefied Petroleum Gas (LPG), LPG methods, process, and description. Some problems associated with Natural Gas treatment and production.
Week 11	Hydrate control in gas production causes. Occurrence and control.
Week 12	Low Temperature Separation, Methods, process, and description.
Week 13	Gas Gathering and Transportation, Pipe Line Design Calculation and Economics, Gas flow in series, Parallel and Looped Pipeline.
Week 14	Hydrogen production, methods, process, and description.
Week 15	Course review.
Week 16	**Final exam**

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	
Week 2,3	
Week 4,5	
Week 6,7	
Week 8.	
Week 9	
Week 10.11	
Week 11,12	
Week 13	
Week14	
Week15	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Shreve's Chemical Process Industries/ 5th edition, McGraw-Hill/ 2001	yes
Recommended Texts	The Oil and Gas Industry, A Nontechnical Guide/ Joseph F. Hilyard	no
Websites	https://petrowiki.spe.org =	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.