1. Basic Information

Program Title	All academic programs
Department offering the Program	
Department Responsible for the Course	Mathematics and Engineering Physics
Course Code	BAS031
Year/ Level	Preparatory Year-First Semester
Specialization	Minor
Authorization data of course specification	

Teaching Hours	Lectures	Exercises	Practical
	3	1	1

2. Course aims:

No.	Aim
1	**Apply basic chemistry** science to identify engineering problems.

3. Learning Outcomes (LOs):

$A_{1.1}$	Identify types of fossil fuel, types of metallic corrosion and methods of its prevention, and chemical industrial processes
$A_{1.2}$	Define the concepts of ideal gas, real gas, laws of thermodynamics, colligative properties of solution, physical and chemical equilibrium
$A_{1.3}$	Apply laws of gasses, thermodynamics, colligative properties, stoichiometry in material and energy balance, and property units and dimensions in calculations.
$A_{2.1}$	Analyze the results given from experiments.
$A_{8.1}$	Communicate verbally with the colleagues in the lab and others.

4. Course Contents:

No.	Topics	week
1	Equation of state.	1-3
2	Chemical thermodynamics.	4
3	Material and heat balance in fuel combustion and chemical processes.	5-6
4	Properties of solutions	7
5	Electrochemistry	9-10
6	Introduction to corrosion engineering	11
7	Industries of Dyas & Chemistry of cement &fertilizer	13و12
8	Dynamic Equilibrium in Physical and Chemical Processes	14

5. Teaching and Learning Methods:

No.	Teaching Method
1	lectures (hybrid learning)
2	Discussion Sessions

3	Flipped classroom

6. Teaching and Learning Methods for Disable Students:

No.	Teaching Method
1	Additional Tutorials
2	Online lectures

7. Student Assessments:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Mid Term (written examination)	$A_{1.3}$, $A_{1.1}$, $A_{1.2}$
2	Semester work, (Portfolio, online Quiz, online assignments and reports)	$A_{1.3}$, $A_{1.1}$, $A_{1.2}$
3	Oral Examination	$A_{1.2}$
4	Practical Examination	$A_{8.1}$, $A_{2.1}$
5	Final Term Examination	$A_{1.3}$, $A_{1.1}$, $A_{1.2}$

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term (written examination)	**8**
2	Semester work, (Portfolio, Quiz, assignments and reports)	**weekly**
3	Oral Examination	**14**
4	Practical Examination	**14**
5	Final Term Examination	**15**

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term (written examination)	**10%**
2	Semester work, (Portfolio, Quiz, assignments and reports)	**10%**
3	Oral Examination	**6%**
4	Practical Examination	**7%**
5	Final Term Examination	**67%**
Total		**100%**

8. List of References

No.	Reference List
1	Brown, L. T, LeMay H. E. Jr; Bursten, B. E.; Murphy, C.J., and Woodward, P.; "CHEMISTRY THE CENTRAL SCIENCE", Pearson International Edition (14th edn), Pearson Printice Hall, (2019).

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Visualizer
5	Presenter
6	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	Equation of state.	1	$A_{3.1}$, $A_{1.2}$
2	Chemical thermodynamics.	1	$A_{1.3}$, $A_{1.2}$
3	Material and heat balance in fuel combustion and chemical processes.	1	$A_{1.1}$, $A_{8.1}$, $A_{2.1}$
4	Properties of solutions	1	$A_{3.1}$, $A_{1.2}$, $A_{8.1}$, $A_{2.1}$
5	Electrochemistry	1	$A_{1.1}$, $A_{8.1}$, $A_{2.1}$
6	Introduction to corrosion engineering	1	$A_{1.1}$
7	Industries of Dyas & Chemistry of cement &fertilizer	1	$A_{1.1}$, $A_{8.1}$
8	Dynamic Equilibrium in Physical and Chemical Processes	1	$A_{1.1}$

Course Coordinator: Prof. Dr. Mohamed Mohamed EL-Halwany

Head of Department: Prof. Dr. Mohamed Mohamed El- Gamal

Date: 14/10/2020

Course: *Engineering Chemistry*	
Program LOs	**Course LOs**
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	$A_{1.1.}$ Identify types of fossil fuel, types of metallic corrosion and methods of its prevention, and chemical industrial processes $A_{1.2.}$ Define the concepts of ideal gas, real gas, laws of thermodynamics, colligative properties of solution, physical and chemical equilibrium $A_{3.1.}$ Apply laws of gasses, thermodynamics, colligative properties, stoichiometry in material and energy balance, and property units and dimensions in calculations.
A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	A2.1 Analyze the results given from experiments.
A8. Communicate effectively–graphically, verbally and in writing–with a range of audiences using contemporary tools.	A8.1 Communicate verbally with the colleagues in the lab and others.