

GAS TECHNOLOGY

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Technology
2. University Department/Centre	Chemical Engineering Department
3. Course title/code	Gas Technology/CE.449
4. Programme(s) to which it contributes	none
5. Modes of Attendance offered	Full time
6. Semester/Year	1 semester/year
7. Number of hours tuition (total)	3
8. Date of production/revision of this Specification	
9. Aims of the Course	
1. To introduce and develop an understanding of the natural gas fundamentals	
2. Understanding the basic concepts of natural gas processing	
3. Provide an insight to what is known as Gas to Liquids Technology	
4. Provide practice at developing critical thinking skills, solving open ended problems and to work in teams.	

10• Learning Outcomes, Teaching ,Learning and Assessment Method
A- Knowledge and Understanding A1.Develop a deep understanding of issues related to the natural gas formation, resources, and properties A2.Familiarize students with the basic concepts of natural gas processing A3. Provide the students with the concepts and methods of design for the main gas processing units
B. Subject-specific skills B1. Analyze the different processes comprising a typical gas processing plant. B2. Apply the basic concepts of chemical engineering to design a certain gas trating unit.
Teaching and Learning Methods
Lectures, Tutorials , Example Classes , Informal and formal teamwork , Weekly homework problems
Assessment methods
Midterm exams , Final exam , Quizzes, Weekly homework, Team and homework problems , partial test (Oral questions :- multiple choice ,alternative response), Open questions that have a definite answer , or do not have a definite answer
C. Thinking Skills C1. An ability to apply effective, creative and innovative solutions, both independently and cooperatively, to current and future problems. C2. Characterization and analyses the performance of gas processing plant and evaluate the the selected process to achieve a certain.
Teaching and Learning Methods
Lectures, Tutorials , Example Classes , Informal and formal teamwork , Weekly homework problems , Analysis of cases linked to the work environment , Practical Applications
Assessment methods
Midterm exams , Final exam , Quizzes, Weekly homework, Team and homework problems , partial test (Oral questions :- multiple choice ,alternative response), Open questions that have a definite answer , or do not have a definite answer.

D. General and Transferable Skills (other skills relevant to employability and personal development).

D1. Work together in same-discipline teams to solve engineering problems.

D2. To review state-of-the-art concepts for process intensification and design approaches used for such gas processing units.

D3. Speed intuitive, predictability and evaluate information and ideas in the handling of gas processing

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
2nd semester					
1	2	Ability to classify and identify the importance of gaseous fuels. Be familiar with natural gas origin and composition	Gaseous fuels, Natural gas fundamentals: Natural gas origin and composition	Lectures Report	Oral questions
2	2	Be familiar with natural gas resources, phase behavior	Natural gas fundamentals: Natural gas resources, phase behavior	Lectures, Example Tutorials	Homework
3	2	Ability to predict the physical properties of natural gas	Natural gas fundamentals: physical properties of natural gas	Lectures Tutorials	Quiz
4	2	Understand the Natural gas process modules	Basic concepts of natural gas processing: Natural gas process modules	Lectures Report Tutorials	Open questions
5	2	Analyse the processing objectives	Basic concepts of natural gas processing: Processing objectives	Lectures, Tutorials	Oral questions Quiz

6	2	Understand the principals of gravity separators and multistage separators	Phase Separation: Gravity and multistage separators	Lectures, Example Tutorials ,	Open questions
7	2	Analyse the high efficiency liquid gas coalescers	Phase Separation: Liquid gas coalescers	Lectures, Example Tutorials	Homework
8	2	Ability to understand the basics of stabilization processes	Condensates stabilization: Basics of stabilization processes	Lectures Tutorials	Open questions
9	2	Ability to distinguish between flash vaporization and Stabilization by Fractionation	Condensates stabilization: Flash vaporization, fractionation	Lectures, Tutorials	Homework
10	2	Understand the fundamentals of the Amine processes and their design aspects	Acid Gas Treating: Amine processes	Lectures, Examples Tutorials	Open questions, Team homework problems
11	2	Analyse the sulfur recovery processes	Acid Gas Treating: sulfur recovery processes	Lectures, Examples Tutorials.	Quiz
12	2	Ability to understand the basics of Glycol dehydration process and its design aspects	Natural Gas Dehydration: Glycol dehydration process	Lectures, Examples Tutorials.	Open questions, Team homework problems
13	2	Ability to understand the basics of solid bed dehydration process and its design aspects	Natural Gas Dehydration: Solid bed dehydration processes	Lectures, Examples Tutorials	Quiz
14	2	Understand the principals of NGLs recovery and separation	Natural Gas Liquids Recovery	Lectures, Tutorials	Open questions
15	2	Ability to understand the Liguification and conversion of gas to liquids technologies	LNG and GTL Processes	Lectures, Examples Tutorials	Oral questions Open questions

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	<ul style="list-style-type: none"> ○ Lecturers ○ Book “Arthur J Kidnay & W. R. Parrish "Fundamentals of Natural Gas Processing" (2006) ○ Other support books :- Saeid Mokhatab, W. A. Poe and James G. Speight," Handbook of Natural Gas Transmission and Processing" 2006. Xiuli W. XGAS "Advanced Natural Gas Engineering" 2009.
Special requirements (include for example workshops, periodicals, IT software, websites)	Websites
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	Before undertaking this module the student should have undertaken the following courses: Basic Principles of chemical engineering, Physical chemistry, Thermodynamics, Heat and mass transfer.
Minimum number of students	Central Admission
Maximum number of students	Central Admission