TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION: Gas Technology

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	Al-Ayen University
2. University Department/Centre	College of Petroleum Engineering
3. Course title/code	Gas Technology
4. Modes of Attendance offered	Online, classrooms and Tutorial
5. Semester/Year	Academic year 2022/2023
6. Number of hours tuition (total)	30 Theoretical hours
7. Date of production/revision of this specification	2/10/2022

8. Aims of the Course:

A. Some brief definitions of terms used in the petroleum industry to describe natural gas reservoirs.

B. Natural Gas Composition and Phase Behavior.

C. It is necessary for the petroleum engineer to determine the properties Natural Gas from empirically derived correlations.

D. The engineer involved in gas production operations must be able to predict not only the rate at which a well or field will produce, but also how much gas is originally in the reservoir and how much of it can be recovered economically.

E. Determination of the inflow performance or reservoir flow capacity for a gas well requires a relationship between flow rate coming into a well and the sand-face pressure or flowing bottom-hole pressure.

F. All calculation of natural gas flow in wells.

G. Calculate of the static or flowing pressure at the formation must be known in order to predict the productivity or absolute open flow potential of gas wells.

H. All calculation of Natural Gas flow through Restrictions.

I. Several equations in the petroleum industry for calculating the flow of gases in pipelines.

J. Introduction to natural gas processing.
9· Learning Outcomes, Teaching , Learning and Assessment Method
A. Cognitive goals
a. Knowledge of Natural gas resources
b. The ability to relate volumes of gas existing in the reservoir to reservoir pressure, because the flow capacity of a well depends on the reservoir pressure.
c. Fundmantels of natural gas processing
B. The skills goals special to the course.
a. Simulation
b. Applying the equations to relate volume and pressure of natural gas flow through production system.
c. Economic Evaluation
Teaching and Learning Methods
a. Lectures
b. Discussions, dialogues and questions.
c. Group tasks.
Assessment methods
a. Quizzes
b. Monthly exams
c. Homework
d. Final exam
C. Affective and value goals
a. Academic honesty in duties and not use cheating.
b. Get knowledge about the latest technologies.
c. Logic
d. Critical Thinking
Teaching and Learning Methods
d. Lectures
e. Discussions, dialogues and questions.
f. Group tasks.
Assessment methods
e. Quizzes
f. Monthly exams

g. Homework
h. Final exam
D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)
a. Encouraging teamwork and self-confidence to accomplish tasks better.
b. Encouraging creativity, innovation, and modernization.

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Introduction to Natural gas resources	Natural gas resources	Theoretical lecture &Tutorial	Assignments and quizzes
2	2	Natural Gas Composition and Phase Behavior	Phase Behavior	Theoretical lecture &Tutorial	Assignments and quizzes
3-4	4	Natural Gas Properties	PVT	Theoretical lecture &Tutorial	Assignments and quizzes
5-7	6	Flow of Natural Gas in Porous Media	Flow Regime	Theoretical lecture &Tutorial	Assignments and quizzes
8-9	4	Basic flow equation Flow of natural gas in wells	Static and Flowing Bottom Hole Pressure	Theoretical lecture &Tutorial	Assignments and quizzes
10-11	4	Flow of Natural Gas through Restrictions	General Equation for Flow Through Restrictions	Theoretical lecture &Tutorial	Assignments and quizzes
12-13	4	Flow of natural gas in pipelines	Pipeline flow calculations	Theoretical lecture &Tutorial	Assignments and quizzes
14-15	4	Introduction to natural gas processing	Gas Dehydration and Sweetening	Theoretical lecture &Tutorial	Assignments and quizzes

11. Infrastructure

1. Books Required reading:	Natural Gas Production Engineering, Chi U. Ikoku Advanced Natural Gas Engineering, Xiuli Wang, Michael Economides Gas Production Operations, H. Dale Beggs
2. Main references (sources)	

A- Recommended books and references (scientific journals,reports…).	SPE Electronic papers: *www.onepetro.org*
B-Electronic references, Internet:	*www.onepetro.org*

12. The development of the curriculum plan

a. Adding some modern concepts in the oil production technology.
b. Adding more technical skills by introducing more problems.