



Course Code OGEE-470	Course Title Natural Gas Compression Systems	ECTS Credits 6
Department Engineering	Semester Fall, Spring	Prerequisites OGEE-420
Type of Course Elective	Field Oil & Gas Engineering	Language of Instruction English
Level of Course 1 st Cycle	Year of Study 4 th	Lecturer(s) Dr Constantinos Hadjistassou
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The main objectives of the course are to:

- Introduce the basic compression process and the available existing alternatives.
- Demonstrate the necessity for compression and explain the standard practice
- Describe the mathematical background and provide analytic tools for the calculation of the efficiency of the compression design.
- Provide basic understanding of natural gas logistics.

Learning Outcomes:

After completion of the course students are expected to:

- Discuss the main types of processors and their application to natural gas compression systems.
- Explain the process of natural gas compression and its main parameters.
- Analyze the compression procedures and understand the compressor design process alternatives.
- Discuss safety and environmental aspects of natural gas compression.

Course Contents:

- Introduction to compressors and specifically gas compressors.
- Fundamentals of natural gas compression.
- Thermodynamics of compression and multistaging.
- Real Gas Behavior and Equations of State
- Compression Ratio.
- Compression Design.
- Natural gas compressors efficiencies.
- Types of natural gas compressors and their characteristics.
- Capacity and Power Calculations
- Comparison of Reciprocating and Centrifugal

- Safety and environmental consideration.

Learning Activities and Teaching Methods:

Lectures, in-class examples, discussion

Assessment Methods:

Homework, project assignments, tests, final exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
A. J. Kidnay, W. R. Parrish, D. G. McCartney	Fundamentals of Natural Gas Processing	CRC Press	2011	9781420085198

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
K. H. Lüdtke	Process Centrifugal Compressors	Springer	2004	9783540404279
S. Mokhatab, W. A. Poe	Handbook of Natural Gas Transmission and Processing	Gulf Professional Publishing	2012	9780123869142