

Course Title	Oil and Gas Transmission System				
Course Code	MOG681				
Course Type	Major Elective				
Level	BSc/1st Cycle				
Year / Semester	4 th /7 th				
Teacher's Name	Dr Fotis Moustakis				
ECTS	7.5	Lectures / week	3 hours	Laboratories / week	
Course Purpose and Objectives	The main objectives of the course are to: • Introduce students to onshore oil and gas transmission networks and right-of-way issues • Learn the prominent pipeline codes, specifications and standards • Present the fundamental principles governing pipeline hydraulics • Familiarize attendees with the technical characteristics of pumping and compressor stations and coolers • Outline the most common pipeline defect mechanisms • Explain the major cleaning, monitoring and maintenance techniques • Detail the operational hazards, safety, and physical security issues and cyberattacks risks				
Learning Outcomes	After completion of the course students are expected to: • Learn about the economic and technical issues of pipeline networks • Familiarize themselves with right-of-way and access to pipeline systems • Be aware of the important pipeline codes, specs, standards & regulations • Apply the fundamental flow equations and understand the physics of gaseous and liquid flow in conduits • Acquaint themselves with the technical matters pertaining to liquid flow pumping and compressor stations and coolers • Understand the most frequent pipeline defects mechanisms including crack formation, corrosion, and erosion • Know the most common internal oil & gas pipeline cleaning methods, flow and pressure monitoring and maintenance methods • Be aware of the operational hazards of pipeline, safety, physical security issues and cyber-attacks				
Prerequisites		Required			

Course Content	• Technical, business and economic issues of oil & gas trunklines, transmission, and distribution networks • Pipeline codes, specifications, international standards and regulations • Pump and compressor types including reciprocating and centrifugal systems, prime movers such as electric motors, internal combustion engines, gas turbines • Bernoulli equation, laminar and turbulent flow, equations of flow: mass conservation and Navier-Stokes • Frictional losses, pressure drop, flow rate and velocity measurements and valves • Engineering aspects of liquid fuel pumps, gas compressor stations and cooling machinery • Pipeline material defects and protection techniques such as corrosion protection and erosion mitigation • Most popular internal oil & gas pipeline cleaning methods, flow and pressure monitoring techniques and maintenance strategies • Vibration issues, flow instabilities, cavitation issues, fire hazards, physical security and protection and cyber-threads
Teaching Methodology	Lectures, Discussion, Project
Bibliography	Liu Henry Pipeline Engineering Lewis Publishers 2003 0587161400 Dickenson, C. T. Valves, Piping and Pipelines Handbook Elsevier 2007 185617252
Assessment	Final Exams 60% Assignment/Group Project 20% Mid term 20%
Language	English