

Summer 2024

FINA 7374: Midstream Energy Finance

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Course Description

This course aims to provide students with an insight into the Midstream sector of the oil and gas industry by studying real projects and strategies executed in the midstream sector. The content of the course will include an overview of the midstream business in the natural gas, crude oil, petroleum products and natural gas liquids sectors as they have developed over the past several decades. The course will include an overview of how this sector has developed and the entities that have come to the forefront of this sector, including Publicly Traded (C Corp) entities, Master Limited Partnerships (MLPs), Private Equity funded independent companies and regulated Pipelines and Utilities. At the core of this course will be the emphasis on commercial and strategic thought as it relates to the development of new infrastructure across the energy spectrum, and to the development and control of assets from natural gas and crude oil gathering, processing, transmission, treating, refining, fractionation and marketing of the products produced in these processes. The course will also include the exploration of the financial risks, structures and investment strategies and the drivers to investment in the midstream industry, along with discussion of the regulatory and environmental issues faced by these companies related to market power and the environment.

To achieve the course objectives we will utilize presentation materials, lectures and class discussion, case studies and presentations by guest lecturers from the midstream sector. Course presentation materials will include an overview of the midstream business in the crude oil, petroleum products, natural gas and natural gas liquids segments of the industry, and will show how these sectors are independent in operation, but linked in many ways.

As stated, the primary objective of the course is to provide an overview of the midstream business in order to influence or encourage “commercial thought processes” in the context of the oil and natural gas business among class participants and future executives in this dynamic sector of the energy industry. The course will be taught in three modules or sections; an Overview and History of the Midstream Industry, Commercial Considerations for Infrastructure Development and How Deals Get Done.

Grading

Exam - 60%

Group Project – 30%

Homework: 5%

Class Participation – 5%

Class Session Topics:

1. Introductory Overview of the Midstream Industry
 - a. Crude and petroleum products
 - b. Natural gas
 - c. Natural gas liquids
 - d. Commodity interconnectivity
 - e. History with a focus on the last 15 years
 - f. Economics of the industry
 - g. Pricing dynamics, basis, and the impact of gas takeaway
 - h. Midstream natural gas value drivers
2. Detailed Review of Crude Infrastructure (Gathering, transportation and Products)
 - a. Regulation and the development of the crude oil market
 - b. How the infrastructure was developed?
 - c. Getting the product to market: Transportation alternatives and competition
 - i. Gathering
 1. Types and modes of gathering
 2. Practicalities of each mode
 - ii. Modes of transportation
 1. Pipelines
 2. Rail
 3. Trucks
 4. Ships
 - d. Crude oil quality considerations
 - e. Storage and blending
 - f. Crude oil disposition (refining, exports)
 - g. Refining overview
 - h. Products (gasoline, diesel, jet)
 - i. The trend toward consolidation and integration
 - j. Major operators and commercial considerations
3. Detailed Review of Natural Gas Infrastructure

- a. Regulatory evolution in the natural gas industry
- b. End-use sectors (residential/commercial/industrial/power)
- c. Natgas Value Chain
 - i. Gathering
 - ii. Processing
 - iii. Pipelines (intrastate/interstate)
 - iv. LNG/Compressed Natural Gas
- d. Major operators and commercial considerations
- 4. Natural Gas Liquids (NGL) Infrastructure Overview
 - a. Global and North American structure of the NGL markets
 - i. Mont Belvieu, Conway
 - ii. imports, exports
 - b. Uses of NGLs
 - c. NGL transportation
 - i. Pipelines
 - ii. Barges
 - iii. Trucks
 - iv. Ships
 - d. Product pipelines
- 5. Energy Transition Projects
 - a. Government incentives
 - b. Practical hurdles
 - c. Overview of major sectors of development including existing and planned assets
 - i. Renewable diesel, sustainable aviation fuel
 - ii. Carbon dioxide
 - iii. Hydrogen
 - iv. Certified natural gas
- 6. Who are the investors in Midstream projects?
 - a. Regulated Utilities/Pipelines
 - b. Publicly Traded Companies
 - c. Private Equity funded firms
 - d. Master Limited Partnerships (MLP)
- 7. Value Proposition
 - a. Where is value created?
 - b. How is value extracted?
 - c. How do different investors view value?
 - d. Assessing Value of a Midstream Project (How is a midstream project developed?)
 - e. Targeting areas for strategic value
 - f. What is the value proposition?

- g. How to test the potential value of a project
- h. Probability of success?
- i. What are the factors that make a project successful?

CASE Study: Comprehensive Development Case

If we have time:

- 8. Commercial and Competitive Considerations
 - a. Who is the competition?
 - b. What are my strategic advantages?
 - c. What are my competitors' advantages (strategically, financially, etc)
 - d. Joint Ventures and Alliances
 - e. Is there a timing advantage for any competitor?
 - f. Is there an infrastructure advantage for any competitor?
 - i. Risks
 - ii. Threats
 - iii. Opportunities
- 9. What are the Drivers of value?
 - a. Are there deal structures that create or remove drivers?
 - b. How are drivers assessed?
 - c. What are the assumptions related to the perceived value?
 - d. Developing a Midstream Project
 - e. The idea
 - f. The vetting process
 - g. Deal Structures and how they impact project economics and value
 - h. Equity
 - i. Debt
 - j. Bonds

EXAM - - Take home exam to be due one week after the last evening session.

Case Study presentations will be determined based on available technology.