

MANAGEMENT OF OPERATIONS IN TRANSPORTATION

The transportation of people and goods via a variety of modes is designed to address specific market needs. Aircraft provide high speed access to distant destinations. Railroads efficiently move tremendous quantities. Cars and trucks provide unparalleled flexibility of mobility. Despite their differences in market or regulatory structure and infrastructure needs, many similarities exist in mission, performance metrics, and operations management. This course intends to introduce students to operations in these modes as they operate in concert to accomplish the shared goal of origin-to-destination delivery for a wide variety of customers.

Through immersion into a course-long development project, the fictitious expansion of an existing logistics hub to include air cargo integration, students will have the opportunity to practice navigating the complexities of a multimodal environment through related case studies and data analytics that include age-old problems, currently emerging topics, and unexpected twists as they arise.

Course Syllabus

1. Course Overview
 - Supply Chains and Logistics Overview
 - Measuring Transportation Accessibility and Mobility
2. Rail
 - Introduction to Railroading
 - Containerization and Transfer Operations
3. Highway
 - Basics of Freight Transportation
 - Facility Location
 - Introduction to Truck Transportation
4. Air
 - An Introduction to Aviation
 - Air Cargo vs. Passenger
 - Airports and Aircraft Performance Measurement
5. Intermodal Connections
 - Traffic Management and Control
 - Airport Planning and Land Use
 - Compatibility of Airports, Aircraft and Ground Transportation

6. Supply Chain Performance
 - Measuring Freight Fluidity
 - Capacity Measurement and Data Analysis Overview
7. Advanced Topics
 - Environmental Impact and Noise
 - Understanding Stakeholders and Their Impacts
 - Impact of Innovations and New Technology
8. Role of the Regulator
 - Regulation
 - Safety
 - Security
9. Peer Comparison Methods
 - Case Studies of Existing Facilities
 - Performance and Attractiveness Measures
10. Student Lead - Project Review and Discussions

Instructor: Laurence Audenaerd (with guest lecturers TBD)

Course Materials: Weekly readings to be posted

Course Grade:

Transportation Knowledge Assignments - 30%

In-Class Case Studies - 20%

Project Assignment - 40%

Final Presentation - 10%

Class Participation - 20%