

TRSS 301: Introduction to Transportation Systems

Fall 2014, MW 10:00 AM – 11:20 AM, CBEIS 251

Instructor	Dr. Celeste Chavis	Office Hours	Monday: 1:00-2:00, 3:30-4:30
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Overview

This is an introductory course of transportation systems. It will discuss the basic concepts and strategies in the study of systems, key issues pertaining to the different areas of transportation including planning, engineering, management, and logistics. The historical, physical, economic, social, and environmental aspects of transportation will be covered.

Course Description

Transportation systems is the collective reference to the infrastructure (roads, bridges, rail lines, equipment, power systems, control, communication, etc.), vehicles, and fuel in the internal physical domain; and the government, financial institutions, supply industries, the general public, stakeholders and customers in the external domain. This course examines the history and development of transportation systems (both traveler transport and freight), their contribution to and impact on society, the institutions and practices that govern their planning, design, construction, operation, maintenance, and sometimes retirement from service, the policy and managerial challenges that they pose, and the tools and techniques available for addressing them.

Various aspects of transportation systems are presented including transportation modes, transportation planning, traffic engineering, operation and policy. Also covered are the physical, economic, social, and environmental aspects of the urban transportation systems. Recognizing the multidimensional nature of performance of these systems, resource constraints, technological innovations and institutional factors, a fundamental understanding of the approaches to systems operations, management, and applications of available tools and technologies are presented. Though the required text largely focuses on cities in the United States, comparisons with peer countries will also be presented. Students will also be introduced to the special challenges facing transportation professionals.

Course Objectives

The primary objective of this course is to make students familiar with the various transportation systems, enabling them to have a clear idea of the diverse field of transportation and the challenges facing today's transportation professionals.

Specifically, the objectives of this course are to:

1. Create an understanding of transportation systems in a global context.
2. Understand differences between the planning, design and operations and procedures used for the different modes.
3. Establish and utilize measurable criteria to evaluate how well the multimodal transportation system is operating.
4. Identify current challenges and innovative technologies in the transportation industry.

Learning Outcomes

- Develop knowledge of local and global crosscutting issues and challenges in the transportation profession
- Understand the impact of solutions in a global and societal context
- Ability to communicate effectively and function on multi-disciplinary teams

These learning outcomes reflect the following ABET outcomes:

- (g) Communicate effectively
- (h) Understand the impact of solutions on society and in a global context
- (j) Develop knowledge of contemporary issues

Teaching Methods

This course will consist primarily of lectures (via PowerPoint and board), classroom discussions on current issues and case studies. Assignments, a class project, in-class exercises/quizzes, and examinations will be given to measure progress.

Course Requirements and Student Evaluation

Successful completion of the class will depend on regular class attendance, timely completion of homework and projects, in-class participation, and exams. Unless previously arranged with the instructor (i.e. prior to the due date), late homework will not be accepted.

Class participation is fundamental to the course and attendance will be taken. In addition, students are encouraged to discuss current events with the class and credit will be given for providing relevant articles and current event to the instructor's attention.

- Midterm Exam 20%
- Final Exam 25%
- Homework 20%
- Case Studies 25%
- **Class Participation & Discussion 10%**

The grade distribution is as follows:

- A 90 – 100%
- B 75 – 89%
- C 65 – 74%
- F Below 65%

Academic Honesty

Students *currently* taking this class can work together to conceptualize general approaches to assignments. However, unless otherwise specified for a particular assignment, the work you submit should be done completely on your own. This includes text, numerical calculations, mathematical derivations, diagrams, graphs, computer programs and output.

Plagiarism, according to the policy of Morgan State University, is not tolerated and students will be disciplined. The exact words or approximate words, or ideas of another person must be quoted and attributed. Students who fail to observe this rule will receive an “F” for the course.

Courtesy

Please silence cell phones and restrict use during class. Computers are available as a class aide and thus should only be used for class related activities.

Accommodations

Please seek the instructor immediately if special accommodations are necessary. These include but are not limited to disabilities and personal emergencies.

Recommended Textbook

Sussman, Joseph (2000): *Introduction to Transportation Systems*, Artech House, (Boston, London). ISBN: 1-58053-141-5

Other articles and readings will be assigned throughout the semester and posted on blackboard.

Course Schedule

Week	Dates	Topic	Readings
Introduction & Concepts			
1	8/25 8/27	Introduction: CLIOS Transportation Systems Components	Ch. 1 Ch. 2-3
2	9/1 9/3	Labor Day - NO SCHOOL Transportation Key Points	Ch. 6-9
3	9/8 9/10	Transportation Key Points Writing and Library Resources	Ch. 6-9
Traveler Transportation			
4	9/15 9/17	Traveler Transportation: Introduction, History, Stats <i>Video</i>	Ch. 21 - 22
5	9/22 9/24	Surface & Urban Public Transportation. Non-motorized Transportation & Multimodal Framework	Ch. 28
6	9/29 10/1	Taxis and E-Taxi Apps Intercity Transportation	Ch. 29-30
7	10/6 10/8	Case Study 1: Local Transportation Issue Midterm Review	
8	10/13	MIDTERM	
Planning, Operations, Forecasting			
8	10/15	Traveler LOS	Ch. 23, Ch. 4
9	10/20 10/22	Demand/Mode Choice Urban Transportation Planning Process	Ch. 4 Ch. 25
10	10/27 10/29	Intersections and Queuing Queuing and Transit Operations	Ch. 26 Ch. 27 & 28
11	11/3 11/5	Intelligent Transportation Systems Case Study 2 : Future of Transportation in the US	Ch. 24
Freight & Logistics			
13	11/10 11/12	History of Freight Transportation, Intro to Rail Railroads	Ch. 14 - 16, 18
14	11/17 11/19	Trucking Maritime	Ch. 19 Ch. 20
15	11/24 11/26	Logistics and LOS/JIT Transportation Catch up / Special Topic	Ch. 12-13
16	12/1 12/3	Case Study 3 - ITS and Freight Review	
	TBD	FINAL EXAM	

* Additional articles will be given to supplement the readings from the course textbook. The schedule is tentative.