

Course	CE 45000 – Urban Transportation Planning
Type of Course	Elective for Civil Engineering Program
Catalog Description	This class is an introduction to transportation planning in urban areas. The course will cover the history of urban transportation planning, transportation data sources and surveys, fundamentals of travel demand and network modeling, financial issues, pavement and safety management systems, transportation planning and environmental issues, local and federal regulations and policies, and contemporary issues.
Credits	3
Contact Hours	3
Prerequisite Courses	CE 34500
Corequisite Courses	None
Prerequisites by Topics	Transportation Engineering
Text books	<ul style="list-style-type: none">• ITE Transportation Planning Handbook, Edited by Michael D. Meyer, Institute of Transportation Engineers, Current Edition.• C.S. Papacostas and P.D. Prevedouros, Transportation Engineering and Planning, Brooks/Cole, Current Edition.
Course Objectives	Student will understand and apply basic concepts and methods of urban transportation planning in the US. Student will learn methods of designing, conducting and administering surveys to provide the data required for transportation planning. In addition students will understand and be able to apply travel demand molding, pavement and safety management systems, project development and financing, regulations and policies, environmental related issues, land use and contemporary issues in transportation planning.
Course Outcomes	Students who successfully complete this course will be able to:

1. Design, conduct and administer surveys to provide the data required for transportation planning. [1, 2, 6]
2. Learn and understand zonal demand generation and attraction regression models. [1, 2, 6, 7]
3. Learn and understand demand distribution models (gravity models). [1, 2, 6, 7]
4. Learn and understand modal split models for mode choice analysis. [1, 2, 6, 7]
5. Develop and calibrate trip generation rates for specific types of land use developments. [2, 6, 7]
6. Estimate the traffic impact of new developments using the four-stage sequential models. [2, 6, 7]
7. Summarize pavement condition of a transportation network.
8. Develop a pavement management system using optimization techniques. [1]
9. Identify high risk locations for safety improvements. [1]
10. Develop a safety management system using optimization techniques. [1]
11. Understand transportation project planning and development. [1]
12. Understand and apply the process of financing to transportation projects [1, 2, 7]
13. Learn the federal legislation and planning regulations pertaining to transportation planning issues [1]
14. Impact of the transportation project on the land use. [1, 2, 6, 7]
15. Understand selected emerging contemporary transportation issues including congestion management and environmental mitigation. [1]
16. Make final decisions among planning alternatives that best integrate multiple objectives such as technical feasibility and cost minimization. [1, 2, 6]
17. Communicate effectively via class technical discussions and presentations. [3, 4]
18. Design transportation related project in a team of two or three students and submits a final report and conduct a presentation. [1 to 7]

Lecture Topics

1. Data collection and use of survey information
2. Travel demand forecasting models of trip generation, trip distribution, mode choice, and trip assignment.
3. Traffic impact studies.
4. Pavement management systems.
5. Safety management systems.
6. Project development.

7. Highway finance.
8. Federal legislation and planning regulations.
9. Environmental concerns and air quality conformity.
10. Land use and transportation interactions.
11. Make final decisions among planning alternatives.
12. Emerging issues and information technologies for transportation planning.

Computer Usage	Medium
Laboratory Experience	None
Design Experience	Low
Coordinator	Promotes Saha, Ph.D., P.E.
Date	11 April 2019