

Course	CE 45100 – Traffic Engineering
Type of Course	Elective for Civil Engineering Program
Catalog Description	Introduction to traffic engineering analysis, operation and control including traffic capacity analysis, introduction to traffic studies, basics of traffic signal design and phase timing, analysis and design of pre-timed and actuated signalized intersections, signal coordination for arterials, and traffic modeling, including computer applications.
Credits	3
Contact Hours	3
Prerequisite Courses	CE 34500
Corequisite Courses	None
Prerequisites by Topics	Transportation Engineering
Textbook	R. P. Roess, E. S. Prassas, and W. R. Mc-Shane, <i>Traffic Engineering</i> , Prentice Hall, Inc., Current Edition.
Course Objectives	To introduce fundamental knowledge of traffic engineering so that students can understand and be able to deal with traffic issues including safety, planning, design, operation and control. Students will learn and be able to use software such as Highway Capacity Software and Synchro in traffic engineering projects.
Course Outcomes	Students who successfully complete this course will be able to: <ol style="list-style-type: none">1. Use statistical concepts and applications in traffic engineering. [1, 2, 6, 7]2. Identify traffic stream characteristics. [1, 2, 6, 7]3. Understand elements of highway safety and approaches to accident Studies. [1]4. Design a pre-timed signalized intersection, and determine the signal splits. [2]5. Design an actuated signalized intersection. [2]

6. Identify level of services for arterials. [1, 2, 6, 7]
7. Utilize modern software tools (HCS and Syncro) for network representation and traffic simulation. [7]
8. Utilize modern software tools to estimate traffic measures such as delay and LOS for signalized and unsignalized intersections. [7]
9. Understand, conduct and interpret data for traffic simulation experiments. [1, 6]
10. Understand the contemporary issues related to the use of advanced technology in traffic modeling and control. [1]
11. Design transportation related project in a team of two or three students and submits a final report. [1 to 7]
12. Understand Warrants and ability to use them to evaluate intersections. [1,2]

Lecture Topics

1. Components and characteristics of Traffic System
2. Statistical Applications in Traffic Engineering
3. Introduction to Traffic Studies
4. Basic Principles of Intersection Design, Control, and Signalization
5. Fundamentals of Signal Design and Timing
6. Signal Coordination for Arterials and Networks
7. Arterial Analysis, Planning and Design
8. Analysis of Unsignalized Intersections
9. Developing Traffic Impact Studies
10. Traffic Operations and Planning for Urban Street Networks

Computer Usage

High

Laboratory Experience

None

Design Experience

High

Coordinator

Promotes Saha, Ph.D.

Date

August 8, 2018