

Advance Traffic Control & Management System

Code CE 869	Credit Hours 3-0
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Course Description

This course has been designed to familiarize students with advanced signalized traffic control methods at intersections, arterials and networks. In this course the applications of mathematical optimization techniques to signal timing and coordination are also covered. The traffic simulation and optimization models for signal evaluation and design are also covered in the syllabus.

Textbook:

1. Principles of Highway Engineering and Traffic Analysis Fred L. Mannering ISBN 13: 978-0470290750 ISBN10: 0470290757
2. Transportation Engineering & Planning, C. S. Pappacostas and P.D. Prevedouros, 3rd Edition. Prentice Hall of India, 2002.

Reference Book:

1. Manual of Traffic Signal Design by Kell, J.H. and I.J. Fullerton. Second Edition. Institute of Transportation Engineers. ISBN 0- 935403-19-1. 1998.
2. Traffic Engineering Handbook, Fifth Edition by James L. Pline Editor, Institute of Transportation

Prerequisites

Nil

ASSESSMENT SYSTEM FOR THEORY

Quizzes	10-15%
Assignments	5-10%
Mid Terms	25%
ESE	40-50%
Term Project	10%

Teaching Plan

Week No	Topics	Learning Outcomes
1-2	Traffic Models and Simulation	Course outlines, objectives, teaching plan, assessment methods Traffic flow models for intersections Network flow models and control Traffic simulation
3- 5	Theory and Application of Signal Designing	Concepts in traffic signal systems control Signal timing design Signal cabinet components Signal controllers
6-7	Traffic signal theory and control	Vehicle detection technologies Communication methods Signal coordination Signal systems network.
8	Surface Transportation System	Techniques used to improve the system safety To improve the efficiency and control of surface transportation systems
9	MID SEMESTER EXAM	
10-11	Signal Timing and Operations	Timing of isolated signals Operational controls Flow, speed, parking
12-13	System Management	Principles of transportation system management/administration
14	Detection Techniques	State-of-the-art surveillance Detection devices and techniques
15-16	Incidents and Traffic Management	Emphasis on technological and operational issues of these systems and using them for incident detection Using them for traffic management through route and mode diversion.

17	Term Project and Presentations	Development of a comprehensive Traffic Control and Management System Application of course concepts to a real-world scenario Group presentations and peer review
18	END SEMESTER EXAM	