

CA2676: TRANSPORTATION ENGINEERING

Effective Term

Semester A 2022/23

Part I Course Overview

Course Title

Transportation Engineering

Subject Code

CA - Civil and Architectural Engineering

Course Number

2676

Academic Unit

Architecture and Civil Engineering (CA)

College/School

College of Engineering (EG)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

BC2676 Transportation Engineering

Exclusive Courses

Nil

Part II Course Details

Abstract

The course provides some general background information on transportation system. The course content is intended to equip students basic knowledge of some of the fundamental issues in transportation. The primary objective is to let students

start thinking about transportation critically linking up the engineering design knowledge in other disciplines. It also trains students modeling of simple traffic flows. The course also covers highway capacity and level of service analysis, basic traffic flow relationships, strategic transportation planning procedures, modeling parameters of a transportation network, fundamental designs of highway geometry and junction controls, and data collection methods.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if DEC-A1 app.)		DEC-A2	DEC-A3
1	Describe theory and practical aspects of basic traffic flow, speed and density relationships and level of service concept;	25	x		
2	Apply simple modeling technique and concept to handle a transportation planning problem and collect relevant input data from different traffic survey methods;	25			x
3	Design vertical and horizontal highway alignments satisfying sight distance, speed limit and safety requirements;	25		x	
4	Design simple priority junction controls and grade separated highway systems.	25		x	

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

TLAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Explain key concepts and all theories related to transportation engineering	1, 2, 3, 4	3
2	Site visit	Visiting one on-going transportation related project in Hong Kong (Large-scale)	2	4hrs in weekend
3	Traffic survey	A practical manual traffic count survey	4	3
4	Mid-term quiz	Test students' understanding on taught materials	1, 3, 4	

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Site visit report	2	15	
2	Traffic survey report	4	15	
3	Mid-term quiz	1, 3, 4	20	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

3

Additional Information for ATs

To pass a course, a student must obtain minimum marks of 30% in both coursework and examination components, and an overall mark of at least 40%.

Assessment Rubrics (AR)**Assessment Task**

Site visit report

Criterion

1. ABILITY to EXPLAIN the design methodology and engineering procedure of constructing a practical highway project

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Traffic survey report

Criterion

1. CAPACITY for SELF-DIRECTED LEARNING to understand the principles of traffic data collection

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Mid-term quiz

Criterion

1. ABILITY to UNDERSTAND the taught methodology and procedures in handling data analysis and design calculations

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Examination

Criterion

1. ABILITY to UNDERSTAND the taught methodology and procedures in applying data analysis and design calculations to solve practical problems

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information**Keyword Syllabus**

Basic concepts of traffic flow theory; transportation planning and modeling; highway system and geometric design; pavement design;; traffic surveys and data collection; intersection control and design.

Reading List**Compulsory Readings**

Title	
1	Khisty C.J. and Lall B.K. 2003, Transportation Engineering An Introduction, 3rd edition, Prentice Hall, New Jersey.
2	Papacostas, C. S. 2001, Transportation engineering and planning, 3rd edition, Prentice Hall, NJ.
3	Hong Kong Transport Department, Transport Planning and Design Manuals.
4	Hong Kong Transport Department, Annual Traffic Census

Additional Readings

Title	
1	Kutz, Myer 2011, Handbook of transportation engineering, 2nd edition, McGraw-Hill, New York.
2	Banks, James H. 1998, Introduction to transportation engineering, McGraw-Hill, Boston.