CA2676: TRANSPORTATION ENGINEERING

Effective Term
Semester A 2024/25

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 app.)	DEC-A1	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.

Learning and Teaching Activities (LTAs)

	LTAs	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	Mid-term quiz	Test students' understanding on taught materials	1, 3, 4	
3	Group Presentation	Test students' ability to design geometric alignment	2, 3, 4	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Presentation	2, 3, 4	15	
2	Individual report	4	10	
3	Mid-term quiz	1, 3, 4	25	

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

Group Presentation

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

Individual report

Criterion

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

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.