The Hong Kong University of Science and Technology

UG Course Syllabus

Course Title: Traffic and Transportation Engineering

Course Code: CIVL 3610

Credit: 3

Pre-requisite: CIVL 2170

Term: 2026 Spring

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Course Description

For students of the Civil and Environmental Engineering Department only. Introduction to transportation systems; characteristics of transportation models; traffic flow fundamentals; geometric design of highways; travel demand analysis including trip generation, modal split and trip assignment.

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

1. Evaluate the fundamental theories and methods of traffic and transportation engineering, including traffic flow fundamentals, geometric design of highways, and transportation systems planning.

2. Utilize mathematical or quantitative methods to model components of the traffic and transportation system.

3. Apply key traffic and transportation engineering principles to the analysis, design and operation of components of the transportation system, including traffic impact analysis, highway design, and transportation demand forecasting.

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessments:

[List specific assessed tasks, exams, quizzes, their weightage, and due dates; perhaps, add a summary table as below, to precede the details for each assessment.]

Assessment Task	Contribution to Overall Course grade (%)	Due date
Tutorial Quiz	5%	Every tutorial
Homework assignments	5%	Every 3 weeks
Midterm examination	30%	In early April (following the completion of Chapters 1 to 3)
Final examination	60%	To be arranged by university

* Assessment marks for individual assessed tasks will be released within two weeks of the due date.

Mapping of Course ILOs to Assessment Tasks

[add to/delete table as appropriate]

Assessed Task	Mapped ILOs	Explanation
Tutorial Quiz	ILO1, ILO2	The tutorial quiz is designed to assess students' ability to evaluate the fundamental theories and methods of traffic and transportation engineering, including traffic flow fundamentals, geometric design of highways, and transportation systems planning (ILO 1). It also examines students' proficiency in utilizing mathematical or quantitative methods to model components of the traffic and transportation system (ILO 2).
Homework Assignments	ILO1, ILO2, ILO3	The homework assignment is designed to assess students' ability to evaluate the fundamental theories and methods of traffic and transportation engineering, including traffic flow fundamentals, geometric design of highways, and transportation systems planning (ILO 1); utilize mathematical or quantitative methods to model components of the traffic and transportation system (ILO 2); and apply key traffic and transportation engineering principles to the analysis, design, and operation of transportation system components (ILO 3)
Midterm and Final Exam	ILO1, ILO2, ILO3	The midterm and final exam are designed to assess students' ability to evaluate the fundamental theories and methods of traffic and transportation engineering, including

		traffic flow fundamentals, geometric design of highways, and transportation systems planning (ILO 1); utilize mathematical or quantitative methods to model components of the traffic and transportation system (ILO 2); and apply key traffic and transportation engineering principles to the analysis, design, and operation of transportation system components (ILO 3)

Grading Rubrics

[Detailed rubrics for each assignment will be provided. These rubrics clearly outline the criteria used for evaluation. Students can refer to these rubrics to understand how their work will be assessed.]

Final Grade Descriptors:

[As appropriate to the course and aligned with university standards]

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrates a comprehensive grasp of subject matter, expertise in problem-solving, and significant creativity in thinking. Exhibits a high capacity for scholarship and collaboration, going beyond core requirements to achieve learning goals.
B	Good Performance	Shows good knowledge and understanding of the main subject matter, competence in problem-solving, and the ability to analyze and evaluate issues. Displays high motivation to learn and the ability to work effectively with others.
C	Satisfactory Performance	Possesses adequate knowledge of core subject matter, competence in dealing with familiar problems, and some capacity for analysis and critical thinking. Shows persistence and effort to achieve broadly defined learning goals.
D	Marginal Pass	Has threshold knowledge of core subject matter, potential to achieve key professional skills, and the ability to make basic judgments. Benefits from the course and has the potential to develop in the discipline.
F	Fail	Demonstrates insufficient understanding of the subject matter and lacks the necessary problem-solving skills. Shows limited ability to think critically or analytically and exhibits minimal effort towards achieving learning goals. Does not meet the threshold requirements for professional practice or development in the discipline.

Course AI Policy

Generative artificial intelligence tools are not allowed to complete assessment tasks.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Feedback on assignments will include the mistakes made by the assignment as well as the areas for improvement. Students who have further questions about the feedback including marks should consult the instructor within five working days after the feedback is received.

Resubmission Policy

No resubmission is allowed.

Required Texts and Materials

1. Transportation Engineering: An Introduction: C.J. Khisty and B.K, Lall, Prentice Hall, 2003

2. Transportation Engineering and Planning: C.S. Papacostas & P.D. Prevedouros. Prentice Hall Inc., 2001

3. Principles of Highway Engineering and Traffic Analysis: F.L. Mannering, W.P. Kilareski and S.S. Washburn. John Wiley & Sons, 2005

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Integrity | HKUST – Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.