

1	Course Code:	CIVL4100Q
2	Course Title:	Mass Rail Transit Operations and Management
3	Course Credits:	3
4	Class Quota:	30
5	Duration / Offering Term:	Fall 2023
6	Lecture/tutorial/lab hour per week	Lecture: 1*3 hours per week
7	Targeted Student Group:	3 rd or 4 th year undergraduate students
8	Instructor:	Siman Tang
9	Course Description: (within 150 words)	Mass rail transit is a crucial component and often the backbone of the public transport system supporting urban development of cities. This course focuses on operations planning for mass rail transit project as well as operations management of mass rail transit, making reference to global industrial practices. It introduces traditional and innovative railway systems, as well as mass rail transit operations planning and management. It covers operations planning for design and development of mass rail transit project, operations management of mass rail transit from the perspectives of train service as well as people, safety, stakeholders, assets, performance and incident management. It also discusses the financing of mass rail transit projects and the financial management of mass rail transit operation.
10	Tentative course structure:	This course will cover the following topics: 1. Introduction to railway systems 2. Transit Oriented Development, transportation network and modes 3. Development and design of rail transit, station and depot 4. Rail transit project testing and commissioning, operations readiness 5. Mass rail transit service 6. Operations organization and people management 7. Stakeholder management 8. Safety and security management 9. Performance and Incident management 10. Asset management and engineering works 11. Financing rail transit project, public private partnership 12. Fare and financial management
11	Intended learning outcomes (ILOs) of the course:	This course contributes to the following program learning outcomes: 1. Obtain fundamental knowledge in mathematics and science Students will learn io basic knowledge of mass rail transit operations planning and management. 5. Formulate problems and propose feasible solutions Students will learn how to identify problems in a real situation of mass rail transit operations and management, and come up options to solve the problem. 8. Obtain in-depth knowledge in at least one specialized area Students will learn in-depth knowledge mass rail transit operations management, including train service as well as people, safety, stakeholders, assets, performance and incident management. 9. Communicate ideas effectively and able to work in teams Students will work in teams to complete a group project and present their work in the last week.

		12. Stay abreast of contemporary issues Students will come across the latest innovative approach on mass rail transit operations and work on the current issues as well as the latest projects being planned by the government.
12	Rationale for introducing the course:	Safe, reliable and efficient mass rail transit system is a key component or often backbone of a sustainable public transport systems. It is therefore critical that undergraduate Civil Engineering students have a better understanding of the operations planning and management of mass rail transit systems so they can improve or support these systems when they enter the workforce. This material is not readily available in current HKUST curriculums. This course will fill the gap and introduce the basic mass rail transit operations planning and management knowledge to CIVL undergraduate students, and provide students opportunities to apply the knowledge to solve real-world problems.
13	Textbook / Reference books:	The Urban Rail Development Handbook, The World Bank, 2018
14	Grading Scheme	30% individual assignment (to be submitted by end of week 6) and 70% group project (to be submitted and presented in the last session)
15	Grading Type (PP/P/F/Letter)	Letter

Tentative Class Schedule

(Note: The actual topics to be covered in each lecture may vary depending on the actual class pace.)

Week	Lecture Topic
1	Introduction + Railway Systems
2	Transit Oriented Development, Transportation Network and Modes
3	Rail transit project operations plan and design
4	Rail transit project operations planning – station and depot
5	Rail transit project – testing and commissioning, operations readiness
6	Mass rail transit train service and customer service
7	Mass rail transit operations organization and people management
8	Mass rail transit stakeholder and safety management
9	Mass rail transit security, incident and engineering works management
10	Mass rail transit asset management
11	Railway financing
12	Mass rail transit fare and financial management
13	Group project presentation