

**Department of Civil and Environmental Engineering
The Hong Kong University of Science and Technology
Spring Semester, 2025**

Course code	CIVL 2170
Title of course	Infrastructure Systems Engineering and Management
Instructors	Hai Yang (cehyang@ust.hk ; Room 3597) Xueqing Zhang (zhangxq@ust.hk ; Room 3571)
Prerequisites	MATH 2111
Exclusion	IELM 3010, IELM 3020
Credits	[3-1-0:3]
Description	This course will cover basic principles and techniques for analyzing engineering systems. It will entail an introduction to linear programs, network analysis, critical path method, benefit-cost and present value analyses of engineering projects.
Course objectives	At the end of this course, students will be able to: <ol style="list-style-type: none"> 1. Identify and formulate engineering optimization problems, 2. Solve engineering optimization problems with the quantitative technique of linear programs and network analysis, 3. Conduct engineering economic feasibility study and analysis, 4. Conduct project planning and scheduling of engineering systems, 5. Appreciate the breadth of engineering problems.
Topics	The following topics are covered in this course: <ul style="list-style-type: none"> • Introduction to systems engineering and management • Introduction to linear programs and their properties • Formulation and solving of linear programs • Formulation and solving of network problems • Project planning, work breakdown structure, and work sequencing • Critical path method (CPM) and PERT networks • Time value of money • Economic appraisal and analysis of engineering systems
Textbook(s) and/or other materials	ReVelle, C. S., Whitlatch, E. E., and Wright, J. R. (2003). <i>Civil and Environmental Systems Engineering</i> , Prentice Hall, New Jersey, USA.
Computer usage	Microsoft Excel
Laboratory projects	No lab work required