

COURSE OVERVIEW

Strategy, analysis and management for the delivery of medium to large-scale urban infrastructure projects. Project life cycle. Project delivery modes: features, strengths and weaknesses. Project governance. Project profiling including identification of stakeholders and participant value systems to assist in determining functional requirements and inform decision making. Economic modeling and foreseeability, project financing, sensitivity & risk analysis.

LEARNING OBJECTIVES

By the end of the course, students will be able to:

1. Model and analyze the life cycle of medium to large scale infrastructure projects from multiple perspectives to support strategic-level decision-making.
 2. Identify project stakeholders, their interests and value systems.
 3. Select and tailor project delivery modes and financing options to achieve value and other project objectives.
 4. Apply principles of engineering economics and finance to the modeling, valuation, and analysis of infrastructure projects and assess the sensitivity of economic performance to changes in market/technical/policy parameters and variables.
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COURSE STRUCTURE AND OPERATION

Course Format. Course content is delivered through lectures, readings, and assignments. Course assignments deal with characterizing the strengths and weaknesses of procurement modes and their match with different project types, and the economic/financial modeling of projects including the formulation of public policy and treatment of other public sector initiatives to achieve specific objectives (e.g. affordability, sustainability).

Context. The course is a required course within the urban systems pillar (infrastructure management stream) of the Applied Science Professional Master's Program.

Prerequisites/Co-requisites: Previous course in engineering economics and preferably some exposure to probability and statistics.

COURSE MATERIALS & REQUIREMENTS

Provided via Connect are:

- Selected course notes
- Reference material
- Assigned readings

No course text is assigned.

A rudimentary knowledge of engineering economics or equivalent is expected.

ASSESSMENT

The course is graded on a numeric (percentage) basis. There is no final examination. An essential part of all assignments is crisp, in-class presentations of key findings.

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| <p>1. Reading assignments – several reading assignments are involved including literature searches. Required are write-ups that address key take away points and defence of their selection.</p> | <p>Approx. 30%</p> |
| <p>2. Assignments: Much of the course is centered on two major term assignments, with lectures, readings, and in-class discussions relating directly to the assigned tasks. The first major assignment is focused on making the case for and against two procurement modes for a given project type/scenario. The second major assignment is focused on developing a comprehensive life cycle cash flow model for a ‘full scale’ project scenario capable of measuring several dimensions of value from different perspectives given changes in market, design, operating and policy parameters and variables.</p> | <p>Approx. 70%</p> |
| <p><i>Total</i></p> | <p><i>100%</i></p> |

CLASS SCHEDULE

A tentative outline for the course is as follows:

<i>Module</i>	<i>Topics</i>
<p>Module 1 (6 hours).</p>	<p>Profiling infrastructure projects and their stakeholder:</p> <ul style="list-style-type: none"> • Characterization of infrastructure projects from multiple perspectives; static and dynamic characteristics; public vs. private sector perspectives. • Project life cycle • Identification and classification of project participants and stakeholders, stakeholder management, participant value systems and conflicts in participant/regulatory value systems; • Functional requirements; prescriptive vs. performance based; theory vs. practice.
<p>Module 2 (15 hours)</p>	<p>Project delivery:</p> <ul style="list-style-type: none"> • Characteristics of alternative project delivery modes, including public-private partnerships and integrated project delivery, • Consequences of different procurement systems for projects and implications for public vs. private projects. • In-depth evaluation of value with respect to multiple stakeholders’ perspectives.
<p>Module 3 (15 hours)</p>	<p>Applications of economic modeling:</p> <ul style="list-style-type: none"> • Cash flow modeling of infrastructure project expenditures, financing, revenues

DRAFT Course Outline
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	<p>and operating expenditures.</p> <ul style="list-style-type: none"> • Sensitivity analysis with an introduction to risk management. • Project financing, financing alternatives, terms, and agreements. • Application of economic modeling to project strategy, decision-making and public policy formulation.
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ATTENDANCE

Students are expected to attend all class sessions and engage in discussion.

ACADEMIC INTEGRITY

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President’s Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

A more detailed description of academic integrity, including the University’s policies and procedures, may be found in the Academic Calendar at

<http://calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,0>.

COURSE INFORMATION

Division: School of Community & Regional Planning

Period: 2018-2019 Winter Term 1

Instructor: Alan Russell

Course dates: TBA

Email: alandrussell@civil.ubc.ca

Final exam: None

Class meeting times: TBA

Office hours: By appointment (CEME 2038)

Class location: TBA