

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE AND ENGINEERING
ELITE Master's Program

APS1031H1F2018 Infrastructure Planning

Course Outline

Introduction

Infrastructure enables economic and social development. It enables transportation, urbanisation and manufacturing. Yet, how do you design an oil refinery, plan the infrastructure network for a utility or craft government infrastructure development policy? While each is a specialist area of practice, all have a basis in strategic planning of infrastructure. Differing from the commitment based approach to strategic planning in a business context, strategic planning of infrastructure looks at the purpose of the infrastructure over its life and how to most efficiently realise the end state. This introductory infrastructure course looks at the concepts and tools of strategic planning for infrastructure, going into more detail around cost and risk and how to manage the financing and design processes. As the UN observed, resilience is the pre-requisite of sustainable development, and we look at how resilience can be built into our infrastructure plan. With case studies, expert guest presentations and the latest research and emerging thought, we explore how these concepts and processes are applied to cities, utilities and institutions, at home, in overseas development and in emergencies.

We will investigate infrastructure requirements identification and definition, for real communities under current challenging conditions. This will require multi-disciplinary open source research and analysis, forming the basis of your syndicate projects. As with previous years, these project findings will be shared with the respective development ministers.

When you complete this course you will have a fundamental understanding of infrastructure planning, with an awareness of the nuances in the various areas of specialization.

Course Designation

APS1031 Infrastructure Planning, starts 10 September 2018. The course will run on Mondays from 14:00 to 17:00 in MY420 (Design Studio). A foundation course of the CRCI; <http://www.crci.utoronto.ca/education/academic/infrastructure-courses>.

Contact:

Prof. Alec Hay will be available by appointment throughout the semester. Contact should be made by email.

Evaluation

One project, representing 60% of the total course marks. This is a practical survey and research project that requires a first principles approach and critical assessment of the available information. Marks will be awarded separately for the project report (60%), decision brief (20%) and presentation (20%).

There will be an individual multiple choice examination, mid-term, of 30 questions. This represents 15% of the total course marks. The examination will be closed book.

There is also a two-hour oral examination comprising 3 assigned questions to each project team. Each project syndicate will be given a question that they will have 20 minutes to prepare an answer, which will be presented and justified before the whole class. Each will be critiqued by the instructing staff. This is repeated until each syndicate has answered all three questions. This form of examination reflects the actual concept development process in practice and assesses the ability of each syndicate member to grasp the core principles and concepts and apply them to a given challenge. With the benefit of immediate feedback and learning from other syndicate presentations, this examination process is also very much part of the learning process. The oral exam represents 25% of the total course marks. The examination will be closed book.

Materials

There are no set texts for this course. Recommended readings will be circulated on Quercus through the course.

Address course questions and (correspondence) course work submissions to me at alec.hay@utoronto.ca