

## JCR1000Y An Interdisciplinary Approach to Addressing Global Challenges

2020-21 Challenge: Covid-19

### Course Instructors

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### Course Schedule and Format

Format: Synchronous/On line

Schedule: Fridays 9 am to noon; first class September 18, 2020

Exceptions: To accommodate speaker schedules, there will be a few classes outside of the scheduled time

### Course Description

Global challenges are complex and require interdisciplinary teams to fully address issues around problem structuration, and the development, implementation and evaluation of solution systems. Students typically only get the perspective of their own discipline; this course will cultivate the interdisciplinary skills (e.g. learning one another's vocabularies, perspectives, and methods) that are needed to work together effectively to address globally significant challenges.

The final deliverable for the course is a proposal for an integrative innovative solution to address the challenge. In a process that models real life, students will acquire the knowledge and skills required to work towards the final deliverable through a combination of interdisciplinary modules by the course faculty, guest lectures from experts in the challenge focus, guided in-class discussions, team meetings with stakeholders and faculty.

### Course Goals

1. To provide a structured place for students to understand their roles working collaboratively with other disciplines and/or sectors, in the innovation chain, and within a global context.
2. To develop insight and understanding with respect to effective, integrative design strategies for solutions to real-world global challenges – including the effective and ethical use of technology.
3. To develop skills in critical reflective practice on issues of ethics, power, and privilege inherent in global partnerships.
4. To develop a joint proposal for an integrated innovation to address a real- world global challenge.

### Learning Objectives

On completion of this course, students should be able to

1. Critically evaluate policy, design, and management techniques from different perspectives and disciplines.
2. Interpret vocabulary used in the fields of engineering, public health, business management, and public policy for the purpose of joint dialogue and integration of various knowledge sets.
3. Establish well-informed links between theory and practice within various disciplines, contexts, and as applied to the innovation process.
4. Produce relevant documentation for an innovative integrative design proposal.

## Challenge for 2020-21: Covid-19

The Covid-19 pandemic is unprecedented. The spread of Covid is truly global in scope, encompassing every corner of the world. The economic impact is extraordinary, given the degree of global economic integration today, from supply chains to human migration to integrated markets. Rich and poor countries alike have been adversely affected. Low and middle-income countries are especially vulnerable, as they lack the fiscal capacity and productivity to quickly recover. The politics of the Covid-19 pandemic have undermined efforts in global collaboration and cooperation. International organizations have been exposed for their inability to coordinate sovereign countries to formulate an international response to the pandemic. Policymakers, confronted with a classic “wicked problem,” are struggling to develop sound and implementable policies in the absence of a political and scientific consensus, as well as evolving scientific knowledge, around the spread and containment of Covid-19.

From a public health perspective, authorities have scrambled to devise and implement globally accepted protocols and behavior change models. Consistent, evidence-based and clear communications are critical to flattening the curve and ensuring a safe recovery and reopening, and yet authoritative, consensus-based communication and information sharing have been conspicuously absent. The use of technology is essential for effective contact tracing, but raises questions of privacy and the potential risk of state surveillance. Scientists are working round the clock to develop faster and more accurate testing methods, new and innovative medicines, with the promise of a vaccine in the future, but with little coordination in terms of eventual vaccine distribution. Companies in the private sector are stepping up as well, adapting their production lines to meet the demand for ventilators and PPE, both at home and around the world. Scientists and engineers are also working to design and manufacture lower cost ventilators, make medical oxygen broadly available, and develop sanitation methods so PPE’s can be reused. And yet political calculations have stymied their efforts to ensure PPEs and ventilators – and eventually vaccines and therapies, are shared sensibly and equitably.

Covid-19 has exposed two important truths. First, given the science of viral transmission, everyone in the world is vulnerable to the coronavirus. Second, vulnerability is not equally distributed. Race, gender, occupation, income, and citizenship, determine one’s vulnerability to contracting the virus and the likelihood of one’s recovery. In other words, for societies, economies and polities to be resilient in the face of Covid, innovative interventions to address the many facets of the pandemic have to be both efficient *and* equitable.

In this course, we will explore the Covid-19 pandemic – its causes, spread, responses, implications and the effects on the post-covid world – from a variety of points of view, drawing from expert presentations, readings, and peer-to-peer discussions. The key deliverable for the course will be student-designed innovations that address such (but not limited to) challenges as:

- Reducing inequality and inequity, and social determinants therein
- Ensuring access to solutions (e.g. vaccines, ventilators, medical oxygen, PPEs manufacturing/safe re-use, economic resources)
- Vaccine development (i.e. science) and distribution (i.e. business, policy)
- Compelling compliance (e.g. how to “market” mask wearing) without coercion
- Enabling contact tracing without compromising privacy
- Health systems reform to ensure resilience
- Fostering multilevel governance and collaboration

The JCR 1000 course provides a unique opportunity for students and faculty to explore all facets of the Covid-19 pandemic from a wide variety of disciplinary lenses and experiences. The aim of the course is to facilitate interdisciplinary enquiry, problem definition, research and collaboration, and ultimately the development of a viable and innovative response or solution to an aspect or aspects of the Covid-19 pandemic. Through this course, students will appreciate how any intervention or solution – whether it is anchored in STEM, the social sciences, public health or management – demand multi-, inter- and even transdisciplinary exploration and collaboration.