Engineering and Public Policy:
Leadership and Understanding the Implementation
of Technical Solutions to Real-world Problems

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(1) Proposal Abstract

This interdisciplinary course, Engineering and Public Policy: Understanding the Implementation of Technical Solutions to Real-world Problems, attempts to fill a void in the engineering education and satisfy the expressed interests of many USC students. An engineering or technologically fix to a problem may not in fact be the solution to the problem. Most technologically based problems are likely to have roots in a complex socio-environmental milieu, and as such it is paramount to understand how technical solutions can be developed and successfully implemented. A recent authoritative study by the National Academy of Engineering (NAE), The Engineer of 2020: Visions of Engineering in the New Century (2004), has also corroborated these contentions and its accompanying report, Educating the Engineer of 2020: Adapting Engineering Education to the New Century (2005), have also endorsed the underlying ideas of this course.

A most recent seminal report, written by Dr. James J. Duderstadt, President Emeritus and University Professor of Science and Engineering, The University of Michigan, which is entitled: Engineering for a Changing World: A Roadmap to the Future of Engineering Practice, Research, and Education [the Millennium Project, The University of Michigan, 2008] contents:

“Perhaps what is most missing in the current engineering education curriculum, crammed as it is increasingly with demanding technical content, is the opportunity for a truly liberal education, designed to enable young students to develop the deeper intellectual skills necessary to adapt to a world characterized by continual change.” (p. 56)

“... [T]he absence of engineers from either the leadership roles of business and government or the major debates over the issues of our times poses a major threat to society in an increasingly technological world. Here engineering schools [should] intentionally add to their educational programs experiences that enhance the sociability and understanding of cultural issues, augmented as well by leadership courses and internships.” [emphasis added, p. 56]

What will make this course different from other engineering course will be its innovative approach that will provide students to work in teams on interdisciplinary projects (offered by our partners in the business community, governmental institutions or civic organizations) to analyze issues related with their policy alternatives, to identify root causes, and to formulate
improvements from a systemic perspective (please refer to Section 3, *Proposed Innovation*, of this proposal for four examples of such projects)

There are four Co-PIs; two world-class mentors and two distinguished professors, who will also co-teach, in this course. Our mentors and guide in developing the content for this course are Mr. Albert Dorman and Professor Edward Wenk, Jr. Mr. Dorman is one of the most illustrious and intriguing civil engineers in the United States. He is the founding Chairman of AECOM which is one the first multinational multidisciplinary architecture/engineering firms with more than 23,000 employees around the world. He is a member of the prestigious National Academy of Engineering, a Research Professor, and a member of the Board of Councilors of the USC Viterbi School of Engineering (please see attached for a copy of his short biography). Professor Wenk, who is emeritus professor of engineering, public affairs, and social management of technology at the University of Washington in Seattle, where therein an Endowed Lectureship in Technology and Public Policy is created in his honor (please see attached for more information). In 1959 he was appointed the first Congressional science advisor; and later served as Science Advisor to Presidents Kennedy, Johnson, and Nixon.

The other Co-PIs include: USC Emeritus Professor of Policy, Planning and Development and Civil/Environmental Engineering, Dr. William Petak. He is a nationally renowned scholar with expertise in public policy, public administration, natural hazards and regulatory affairs. Dr. Raymond Rakhshani, an accomplished practicing industrial engineer in the Southern California with a USC MBA, teaches and supervises students’ senior design projects at the Daniel J. Epstein Department of Industrial and Systems Engineering (ISE).