Global Engineering Leadership Certificate Course Descriptions

ENGR 6210 Leadership and Team Effectiveness (3 cr hrs)

Leadership and Team Effectiveness is fundamentally the product of the appropriate application of leadership and management at the group or team level. As such, it is about your ability to get things accomplished successfully with others regardless of your position or authority or geographic locations of team members.

Leadership is about your ability to responsibly accept, delegate, and execute any project, task, or assignment with integrity. This course is about the possibility of being an engineer who has a demonstrable proficiency in and reputation for leading and managing others to successful accomplishment. It is about gaining power and confidence in causing results in different conditions and circumstances.

ENGR 6220 Financial and Managerial Accounting for Engineers (3 cr hrs)

An overview of the basic topics in financial and managerial accounting. And a focus on helping engineers understand the meaning of the numbers in financial statements, their relationship to one another, and learning how they are used in planning, decision-making and control towards achieving the objectives of an organization.

ENGR 6230 Technology Strategy and Innovation Management (3 cr hrs)

This course provides students with a strategic perspective on management in complex, knowledge-intensive, and dynamic environments. These settings pose a different set of challenges to the identification and pursuit of competitive advantage than described in other courses. Although tradeoffs between different resource allocation policies and forms of organization remain critical, the emphasis is now on whether and when to shift from old to new sources of advantage. Importantly, these distinctions often require new tools and frameworks to consider: (a) how to evaluate highly uncertain investment proposals, (b) whether and how to capture value from intangible, knowledge-based assets, and (c) how to design organizations that assemble and organize resources to exploit existing advantages and explore new opportunities. In sum, the course considers temporal tradeoffs in addition to the functional and product-market tradeoffs emphasized in other courses.
**ISE 6801 Project Management for Engineers (3 cr hrs)**

This course is intended to provide foundational and advanced project management education in an interactive online learning environment as part of the Master of Global Engineering Leadership program. The course will focus on relevant and best practice project management topics and case studies that will prepare the students to plan, organize, engineer for success, lead/manage and participate in the multifaceted and complex conditions that arise during planning and execution of small to large projects and programs.

**ENGR 7200 Engineering Ethics and Professionalism (1 cr hr)**

The course starts with the definition of a professional, professional conduct, and competence. Consideration is given to extra high levels of competence and conduct among those with graduate degrees in engineering. Next, the notion of an ethical dilemma and decision-making strategies to solve such dilemmas is discussed. Codes of engineering ethics are overviewed and critiqued. Several moral frameworks are outlined and it is explained how they can be used in ethical analysis. The concept of engineering as social experimentation is defined and examples are given. Methods to avoid problems of social experimentation are described and case studies are provided. Assessment of safety and risk is discussed. Its impact on design, and the role of uncertainty in safety is discussed. A wide range of case studies in the impact of safety on design are covered and discussed in detail. Employer and employee rights and responsibilities are discussed. Confidentiality and conflict of interest are covered. Concepts of whistle-blowing are introduced and case studies discussed. Also, case studies of professional behavior in the workplace are discussed in detail. Next, research integrity, consulting engineers, and expert witnesses and advisors are covered. Concepts from the environment and mechanisms to harm it are discussed, as is the notion of sustainable design and sustainable development. Case studies in engineering impact on the environment are discussed. Global issues including multinational corporations, technology transfer, appropriate technology, computer ethics, and weapons engineering are discussed, and in several cases there are case studies used to illustrate key ideas. Finally, the ideas of cautious optimism and moral leadership in engineering are discussed.

**PUBAFRS 5750 The Business-Government Relationship (3 cr hrs)**

Government and Business are inextricably linked in the United States. Public Policies, including regulations, taxes, and programs, have a large influence on the economy and the environment in which business operates. Likewise, the health and productivity of business impacts the economy, government revenues, and need for government services. In turn, both government and business are substantially affected by financial institutions and services.
First, the course provides an introduction to the history and ideological foundations of capitalism and government. Second, it introduces the core needs of business and how these are affected by the public sector. Next, students consider the role of government in the business environment and economy. And finally, students look at the mechanisms that businesses use to influence public policy.

**PUBAFRS 6050 Management in Public Agencies (4 cr hrs)**

This course provides an introduction to public management -- managing public organizations and managing the public aspects of nonprofit and private sector organizations. In this course, students consider the organization as the unit of analysis. You will build from a foundation in organizational theory, and consider modern management challenges facing organizations that carry out public purposes. Focus is on traditional public sector organizations, government funded bureaus and agencies that deliver public services directly to citizens, but also considering other organizations that operate in the public sector (e.g. nonprofits, private firms under contract).

The course begins by examining the backbone of public management-- organizations and ways to evaluate and understand organizations. Students pull from organizational theory and practice to distill the core similarities and differences between organizations operating publicly, and those operating privately. You then evaluate the environment of organizations in depth, paying careful attention to identify how different environmental factors constrain and enhance the ability of managers to deliver goods and services. All organizations operate in multi---layered environments, but public sector organizations are perhaps unique in the complexity of their environmental circumstances. After looking externally, students then turn internally to examine processes and structures that define and direct organizational activity, including goals, decision making processes, and formal structure. The course concludes with a discussion of organizational reform, with particular focus on efforts to reform public and nonprofit organizations.