

COLLEGE OF ENGINEERING ADMINISTRATED PROGRAMS

Graduates of engineering and applied science degree programs are often elevated to leadership positions early in their careers. Gallogly College of Engineering offers two Undergraduate Certificates in Engineering Leadership, and Engineering Leadership: Sustainability, which allow students wishing to further develop their leadership skills a tangible and intensive format for doing so. The certificates are available to undergraduate students enrolled in degree programs within the Gallogly College of Engineering or the Mewbourne College of Earth and Energy.

The Engineering Leadership and Management, Master of Science will enable students to successfully establish, lead, manage and work in multidisciplinary teams to solve complex real-world problems effectively and efficiently. Graduates of this program will be able to grow intellectually through practicing the skills and knowledge of Engineering Leadership and management, continue to be lifelong learners, and focus on self-improvement through professional development.

Courses

ELM 5123 Strategic Communication for Engineering Leaders 3 Credit Hours

Prerequisite: Graduate standing. The goal of this course is to impart effective communication abilities to engineers. The course will teach Engineers at all stages of their career skills for effective communication with teammates, clients, and employees and/or pursuing the next level of leadership opportunities. Students will learn to create and deliver powerful presentations and documents. (F, Sp, Su)

ELM 5213 Data Science and Analytics for Engineering Management Decisions 3 Credit Hours

Prerequisite: Graduate standing. It covers various tools that can be applied to data to extract the knowledge that can be applied for engineering management decision-making. The main objective is to understand the world of data science and analytics, including descriptive, predictive, and prescriptive analytics as a tool for informed decision-making. (F, Sp, Su)

ELM 5293 Cost Engineering 3 Credit Hours

(Crosslisted with ISE 5293) Prerequisite: Graduate Standing. This course will discuss the application of scientific principles and techniques to problems of cost estimating, cost control, business planning, profitability analysis, project management, and planning and scheduling. It will provide an understanding of both the tools and models that can be used throughout the design, development, and support phases, and examine the trade-offs between system performance and life-cycle cost. (Su)

ELM 5313 Systems Thinking 3 Credit Hours

Prerequisite: Graduate standing. In this course, you will learn that engineering systems are made of complex interconnections of interrelated subsystems. You will learn how to recognize these subsystems and understand their relationships to build efficient engineering systems. You will learn to use and develop optimization models, understand systems engineering life-cycle, and model-based systems thinking. (F, Sp, Su)

ELM 5323 Leading Creative Teams 3 Credit Hours

Prerequisite: Graduate Standing. In this course, you will learn to assemble the skills, talents, and resources of individuals and groups in effective and efficient ways to best solve the engineering problem at hand. You will learn inter-personnel management skills and tools for creating positive and supportive team cultures and incorporating and supporting diversity in teams. (F, Sp, Su)

ELM 5423 Negotiating Skills for Technical Leaders 3 Credit Hours

Prerequisite: Graduate Standing. In this course, you will learn the underlying principles of negotiation and influence skills that can be effectively employed with supervisors, peers, and team members in engineering environments. Concepts such as the zone of possible agreements, the best alternative to negotiated agreements, and sources of influence are put into practice. (F, Sp, Su)

ELM 5523 Capstone Project 3 Credit Hours

Prerequisite: Graduate Standing. In this capstone course, students work on a team-based multi-disciplinary project that addresses an industry-based engineering management problem. It is meant to integrate the many tools utilized by engineering managers as taught in the course work of the engineering management and leadership program. Students are required to produce a written report and give an oral presentation. (F, Sp, Su)

ELM 5543 Decision Analysis 3 Credit Hours

(Crosslisted with ISE 5543) Prerequisite: Graduate standing. This course provides the fundamentals of decision analysis and explores how analyzing risk can be incorporated into good decision-making. Normative and prescriptive approaches to making decisions when uncertainty exists are central to this course. Topics covered include structuring decision problems, developing alternatives, single and multiple objectives, utility theory, risk tolerance, data-driven, and subjective probability, and psychological pitfalls, among others. (F, Sp, Su)

ELM 5773 Systems Requirements and Architecting 3 Credit Hours

(Crosslisted with ISE 5773) Prerequisite: Graduate Standing. This course provides the fundamentals of systems engineering by offering an overview of the discipline and then focusing on the management of system requirements and developing how a system will meet them. We will discuss the definition of systems, the system development life cycle, and the systems engineering method. Topics include Detail design, requirement analysis and decomposition, and system architecting. (F, Sp, Su)