About the program

Engineering Leadership and Innovation Program Scholar Guide

Congratulations on being selected to be a participant in the Engineering Leadership and Innovation program. We hope you find your time in the program to be both fulfilling and enlightening. The purpose of this guide is to provide an overview of the program and requirements for student scholars.

Program description

The Kansas State University Carl R. Ice College of Engineering program, Engineering Leadership and Innovation, or ELI, was developed in response to alumni feedback, corporate discussions, government initiatives and opinions of professional societies that a need exists for technical leaders with a broad understanding of how engineering is practiced in a rapidly changing business environment. The complexity of problems facing today's industries requires leaders with both technical and team management skills to solve complex problems that require careful assembly of the social, ethical, political, economic, business and engineering pieces.

The ELI program will prepare engineering students for potential leadership roles in these types of dynamic environments. Participants enter the four-semester program in their junior year, and will receive a scholarship to take leadership and business courses, learn from an industry mentor, meet with industry leaders and practice hands-on leadership within a creative inquiry team.
**Vision**

The Engineering Leadership and Innovation, or ELI, program will prepare exceptional engineering students for potential leadership roles in organizations that will flourish in a dynamic business environment operating under complex social, ethical, political, economic, business and engineering factors.

**Mission**

The ELI program will —

- equip students with the skills and confidence needed to lead real-world engineering projects;
- strengthen students’ classroom learning through a leadership practicum on a creative inquiry team;
- help students build a realistic career plan directed toward engineering management; and
- build students’ appreciation of nontechnical factors that affect technical decisions.

**Approach**

Participants learn business and leadership theory through coursework, and define a personal leadership development path through engagement with mentors. Participants will then create and implement innovative solutions on creative inquiry teams. They will document their leadership journey using standard measurement tools interpreted in collaboration with the mentors.
Primary program elements are as follows:

- Coursework in leadership and business
- Leadership practice
- Engagement with industry mentor
- Corporate partner interactions
  - On-site facility tours
  - On-campus corporate events
- Leadership portfolio
  - Leadership development plan
  - Leadership essay (senior year)
  - Reflections, photos and plans
- Evaluation of skills development
- Scholarship of $3,000 per year

ELI program timeline

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Coursework in leadership and business

Prior to entering the program, scholars must have taken LEAD 212 - Introduction to Leadership Concepts (2 credit hours), which is organized to provide students with a broad overview of leadership theories, an introduction to ethical decision making, identification of personal leadership styles and current societal issues for leaders. Approval to take LEAD 212 during the scholar’s first year in the program may be approved on a case by case basis by the ELI Program Administrator.

Scholars can then tailor their coursework by selecting two of the following seven courses:

### Leadership Studies courses

- **LEAD 350 - Culture and Context in Leadership** (3 credit hours) is organized to provide students with an opportunity to integrate the course and leadership experiences in light of contemporary issues in the study of leadership behavior across cultures and contexts. The course is based on the current research and writing that introduce and discuss the impact of culture and context on the concept of leadership and development of individuals as interculturally competent leaders. (Prerequisite: LEAD 212)

- **LEAD 405 - Leadership in Practice** (2 credit hours) provides an opportunity to practice leadership and followership in an experiential setting followed by an in-depth classroom discussion. (Prerequisites: LEAD 212, LEAD 350 and junior standing)

### Business courses

- **ACCTG 231 - Accounting for Business Operations** (3 credit hours) is an introduction to the operating activities of businesses, and the roles that accounting information plays in planning, evaluating and recording those activities. An introduction to financial statements is included. (Prerequisites: MATH 100 and GENBA 110 or sophomore standing)

- **ENTRP 340 - Introduction to Entrepreneurship** (3 credit hours) examines the entrepreneurial process. We will focus on business start-up but will also address organizational entrepreneurship or “intrapreneurship.” We will address the process of creativity and innovation and its impact on the success of business start-up. Specific topics covered include new venture planning, marketing, financing, and management. This course will serve as a strong foundation for those aspiring to own and operate their own businesses as well as a real-world heads-up course for students who acknowledge that their future in businesses could very well benefit from examining projects in an entrepreneurial way. (Prerequisite: none)

- **ENTRP 350 - Technology and Innovation Management** (3 credit hours) aims to equip students with an understanding of the main issues in the management of innovation and an appreciation of the relevant skills needed to manage innovation at both strategic and operational levels. The course focuses on four themes: (1) the source, discovery, and evaluation of innovation and opportunities; (2) the provisions of innovation (products and services) that satisfy the needs of customers; (3) the development of mechanisms to appropriate the returns from the exploitation of the innovation; and (4) the organization of efforts to innovate. (Prerequisites: ENTRP 340)

- **MANGT 420 - Management Concepts** (3 credit hours) provides an introduction to the four basic managerial functions of planning, organizing, leading and controlling and their application to today’s complex work environment. An emphasis is placed on the roles and responsibilities of managers that help them to successfully meet organizational objectives by effectively leading employees and optimizing processes. (Prerequisite: none)

- **MKTG 400 - Introduction to Marketing** (3 credit hours) is a general study of marketing principles which lead to the development of marketing strategy. A review of environmental influences and key analytical tools used in formulating marketing plans. Product or service design, distribution, pricing, and promotional programs. (Prerequisite: ECON 110 or 120)

### Action Items

- Complete LEAD 212 with a grade of C or better prior to entering the ELI program.
- Complete two of the following seven courses with a grade of C or better: LEAD 350, LEAD 405, ACCTG 231, ENTRP 340, ENTRP 350, MANGT 420, MKTG 400.
Leadership practice on a creative inquiry team

A key element of the program is for scholars to execute and then evaluate the effectiveness of leadership techniques. Scholars will practice leadership through a leadership position on a creative inquiry team or student organization. The teams and organizations will be strengthened by having trained leaders, and the ELI program scholars will learn from attempting to apply leadership theory to motivate their fellow students. ELI program scholars are expected to be a member of a creative inquiry team or student organization for at least three semesters while in the program. It is generally expected the scholar will work with the same creative inquiry team or student organization and ultimately seek a leadership position (e.g., president or treasurer).

Action Items
- Participate on a creative inquiry team or student organization for at least three semesters during the program.
- Seek a leadership position within the team or organization.

Mentor group

Scholars will be assigned to a mentor group comprised of an industry mentor from one of the K-State Carl R. Ice College of Engineering’s corporate partners and ELI scholars. The group will serve as the connection point of mentors and mentees. Mentors will interact with their mentees via email, K-State Online, phone, video chat or face-to-face meetings. The focus of the mentor group will be on leadership, through the completion of three assignments (i.e., leadership report, leadership development plan and leadership thesis) and a series of assessments.

Leadership development plan

Scholars will document their career goals and plan leadership activities throughout the program. During the first semester, scholars will meet with their mentor group to prepare a set of goals and planned activities such as running for office on a creative inquiry team or student organization. At the start of each subsequent semester, scholars will highlight successes and respond to challenges during the previous semester. Scholars’ leadership development plans will then be updated for the coming semester. Mentors will advise scholars in setting goals and evaluate their progress toward these goals.

Action Items
- Create leadership development plan (fall semester, junior year).
- Revise leadership development plan, taking into consideration the successes and challenges during the previous semester (spring semester junior year, fall and spring semester senior year).
Evaluation of skills development – Student Leadership Practices Inventory

The Student Leadership Practices Inventory, or Student LPI, is a commercial tool sold by Wiley under the Leadership Challenge brand. “Applying the proven principles of Kouzes and Posner’s acclaimed Practices of Exemplary Leadership® model, the Student LPI enables individuals and organizations to measure their leadership competencies and act on their discoveries. Leaders will gain deep insight into how they see themselves as leaders, how others view them, and what actions they can take to improve their effectiveness” [LPI Overview]. This helps students determine actions that will improve their leadership skills. Measurement is made against the Five Practices leadership model, which says leaders will —

- Model the Way
- Inspire a Shared Vision
- Challenge the Process
- Enable Others to Act
- Encourage the Heart

Students will use the Student LPI in two ways —

- Self-assessment in which the ELI scholar answers a set of questions about her or his own interests and attitudes.
- 360° assessment in which the ELI scholar answers a set of questions about his or her own interests and attitudes, and can select team members, mentors, instructors, etc. to answer the same questions. The survey consists of self and observer questionnaires and can be used by unlimited observers, in order to get rich and useful feedback on the frequency of one’s leadership behaviors.

Each ELI scholar will take the self-assessment at the start of the program and at the start of the second year. After taking each self-assessment, the scholar will write a response to the assessment and share both the report and response with their mentor. Mentors will provide feedback and coach the scholars as they respond to the leadership assessment reports. The role of the mentor will be to help mentees face candid evaluation while challenging them to undertake constructive personal reflection.

Scholars will take the full 360° assessment in the last semester of the program. Mentors (and mentor group members) will receive an email with a link to each scholar’s 360° assessment. Mentors will then answer the 30 question assessment for each scholar in their mentor group. Once all of the assessments have been submitted, the Program Administrator will provide a copy of the 360° individual feedback report and a reassessment report that compares the scholar’s most recent 360° scores with the scores from their previous self-assessments.

**Action Items**

- Complete self-assessment (fall semester, junior and senior year).
- Write response to the self-assessment report (fall semester, junior and senior year).
- Identify team/group members for 360° assessment (spring semester, senior year).
- Complete 360° assessment (spring semester, senior year).
Leadership essay
The culmination of the program is the leadership essay. Scholars will work with their mentor groups to summarize and interpret their leadership activities throughout the ELI program to develop a five-page leadership essay. As one component, scholars will respond to the Student LPI 360° assessment performed within their creative inquiry teams or student organizations.

Action Item
☐ Write a five-page leadership essay that summarizes and interprets leadership activities and development throughout the ELI program (spring semester, senior year).

ePortfolio
Scholars will use the ePortfolio module in K-State Online to document their leadership journey. Scholars will post their leadership report, leadership development plan, leadership essay, Student LPI reports, reflections, photos and plans throughout the ELI program into their ePortfolio. Mentors will have access to each scholar’s ePortfolio and will be able to provide comments directly onto the ePortfolio website.

Action Items – Upload the following upon completion of each item:
☐ Leadership development plan
☐ Student LPI reports and responses to the reports
☐ Leadership essay

Corporate partner interactions
Scholars in their junior year will visit and meet with industry executives to take part in tours at corporate partner facilities during a one-day trip. The corporate partner tour will allow scholars to gain knowledge on employer expectations, which will help scholars prepare for an engineering career. Throughout the program, ELI scholars will meet with representatives from our corporate partners while they are on campus for ELI program events.

Action Items
☐ Attend corporate partner tours.
☐ Meet with company representatives during on-campus ELI program events (each semester).

Scholarship
Each scholar will receive a $1,500 scholarship for each semester of satisfactory participation, for up to four semesters.

Questions or comments
If you have questions or comments concerning the Engineering Leadership and Innovation program, please contact Lane Swanson at 785-532-5472 or eliprogram@k-state.edu.
