ENGINEERING LEADERSHIP AND INNOVATION MANAGEMENT

Graduate Program Head	David Mazyck
Program Code	ELIM
Campus(es)	University Park (M.Eng.)
Degrees Conferred	Master of Engineering (M.Eng.)
The Graduate Faculty	View (https://secure.gradsch.psu.edu/gpms/?searchType=fac&prog=ELIM)

The program is designed to develop the attributes required by today's successful engineering leaders. Specifically, these include increased technical competency, expanded professional skills, the ability to identify opportunities for improvement, and the acumen to work effectively in a globally connected engineering environment. Upon completion of the full one-year program, the successful student will have developed and demonstrated abilities enabling them to:

- Evaluate leadership and innovation management strategies for corporate innovation and identify opportunities for new products and businesses in alignment with an organization's strengths and weaknesses within an existing business structure.
- Demonstrate an understanding of cultural and international boundaries, effectively considering the implications of cultural and international business differences on project implementation.
- Employ design thinking and project management strategies to lead engineering teams in solving complex engineering problems.
- Apply project management methods including the implementation of techniques for planning, scheduling, budgeting, and controlling project performance.
- Demonstrate proficiency in oral and written communication appropriate to engineering leadership and innovation management.
- Develop self-awareness of personal leadership attributes and areas for growth in fostering cultures of innovation and creativity in engineering teams.
- Explain corporate financial documents and develop financial projections for new innovations.

These learning outcomes will be achieved through a combination of lectures by faculty, invited guest lecturers, reading of key literature, individual and team projects (including international virtual-team projects), and practical involvement in an engineering capstone design/market development project.

Admission Requirements

Applicants apply for admission to the program via the Graduate School application for admission (https://gradschool.psu.edu/graduate-admissions/how-to-apply/). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions Policies (https://gradschool.psu.edu/graduate-education-policies/).

Educational Background

The student cohort should reflect today's international engineering environment, with selective admittance. The admission requirements include:

- Applicants must hold an undergraduate degree in engineering, science, or relevant discipline. Applicants must have a 3.0 minimum undergraduate GPA (or equivalent). Exceptions to the minimum 3.0 grade-point average may be made for students with special backgrounds, abilities, and interests at the discretion of the program. Applicants will be accepted up to the number of places available for new students.
- 1 year of professional experience in an engineering position (or equivalent). Students wishing to enter the program directly from an undergraduate degree can fulfill the 1 year requirement for engineering experience through summer internships, summer employment, or co-op experiences plus additional experience within professional societies. Justification for this experience should be included in the Personal Statement during the application process.

Core Application Packet

- Completed official online Graduate School application (http://www.gradschool.psu.edu/prospective-students/how-to-apply/) and payment of nonrefundable application fee. The graduate application includes the following:
  - Personal statement: The Personal Statement should include a 2-3 page essay demonstrating your written communication skills with the following information: a) statement of purpose (career and educational goals), b) narrative describing your leadership and innovation experiences through summer internships, summer employment, co-op experiences, community engagement, professional societies, etc. and c) narrative describing your professional experience in an engineering position (or equivalent) to meet the 1 year requirement.
  - Vita or Résumé.
  - Three letters of recommendation that attest to your readiness for graduate study and document the requisite minimum of one year of work experience. Letters must be submitted through the online application. Within the online application you will be asked to enter the names and email addresses of three individuals who will be providing your recommendation. Those individuals will receive a note via email asking them to complete a brief form that will serve as your recommendation. Please inform all recommenders they must submit the form in order for your application to be complete.
  - Official transcripts from all post-secondary institutions attended (http://www.gradschool.psu.edu/prospective-students/how-to-apply/new-applicants/requirements-for-graduate-admission/).

GRE scores will not be accepted.

Applicants who are still completing their baccalaureate requirements at the time of application may be provisionally admitted to the Graduate School (http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-300/provisional-admission/) conditional on the awarding of the baccalaureate degree.

Degree Requirements
Master of Engineering (M.Eng.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-700 Professional Degree Policies (https://gradschool.psu.edu/graduate-education-policies/).

Total required credits for the ELIM program is 30 credits.

Code	Title	Credits
Required Courses		
ENGR 405	Project Management for Professionals [1]	3
ENGR 408	Leadership Principles [1]	3
ENGR 411	Entrepreneurship Business Basics [1]	3
ENGR 501	Engineering Leadership for Corporate Innovation	3
ENGR 802	Engineering Across Cultures and Nations	3
ENGR 804	Engineering Product Innovation	3
Electives [2]		
500-level elective		3
500- or 800-level elective		3
400-, 500-, or 800-level elective		3
Culminating Experience		
ENGR 805	ELIM Capstone Project [3]	3
Total Credits		**30**

[1] Students entering the program who have previously taken ENGR 405, ENGR 408 or ENGR 411 will be required to substitute alternate courses under the direction of the program director.

[2] These electives (course options list available) will be chosen by the student, in consultation with their company (if they are associated with a sponsoring company) and the ELIM program director. Electives should be chosen to meet the needs and interests of the student and can be selected from across the university. The electives can utilize existing courses within the graduate curricula of the College of Engineering, as well as any courses that are open to students from across the university such as the Smeal College of Business, Psychology, or Organization Development and Change and Workforce Education and Development within the College of Education, allowing the student to expand his/her knowledge in a technical, business or psychology focus area. Students may also pursue a graduate certificate or minor through the completion of these elective credits. A list of recommended courses and potential certificates/minors that may be of interest to our students is maintained by the program office.

[3] The Capstone course provides an opportunity to apply and integrate the knowledge and skills that were gained throughout the ELIM program with strategic management concepts. Capstone projects will target real world opportunities, problems, and challenges of an existing organization. Students who successfully complete this course will be able to:
- identify and assess the impact of opportunities and threats in a company's external environment, including its industry and its set of competitors;
- identify and assess a company's internal strengths and weaknesses, and match them with its opportunities and threats to suggest alternative strategies;
- define the business-level strategies of a company;
- define competitors, competitive rivalry, competitive behavior, and competitive dynamics;
- and describe corporate-level strategy of the company as it relates to the capstone project.

Minor

Requirements listed here are in addition to requirements for minors in Graduate Council policies listed under GCAC-600 Research Degree Policies (https://gradschool.psu.edu/graduate-education-policies/) and GCAC-700 Professional Degree Policies (https://gradschool.psu.edu/graduate-education-policies/).

Successful engineers and technical experts are expected to be well versed not only in technical skills but also in professional skills such as communication, ethics, entrepreneurial thinking, and professionalism. These areas of leadership and innovation set technical experts apart and prepare them to be future global business leaders. This graduate minor is highly relevant to numerous graduate degrees associated with engineering, business, technical, or science related programs. This graduate minor consists of four 3-credit courses (12 credits) for master's students and five 3-credit courses (15 credits) for doctoral students.

Admission Requirements

- Applicants must hold an undergraduate degree in engineering, science, or relevant discipline.
- Applicants must have a 3.0 minimum undergraduate GPA (or equivalent). Exceptions to the minimum 3.0 grade-point average may be made for students with special backgrounds, abilities, and interests, at the discretion of the program.
- Applicants must be accepted and/or currently enrolled in a graduate program at Penn State. Official requests to add a minor to a doctoral candidate's academic record must be submitted to Graduate Enrollment Services prior to establishment of the dissertation committee and prior to scheduling the comprehensive examination.
- Applicants to the Engineering Leadership and Innovation Management (ELIM) minor must submit a Request to Add Graduate Minor form (http://gradschool.psu.edu/forms-and-documents/ges-owned-forms-and-documents/addgrminorpdf/).

Minor Requirements

In accordance with Graduate Council policy, a representative from the Graduate Faculty in Engineering Leadership and Innovation Management must be appointed to the dissertation committee of each student enrolled in the doctoral minor in Engineering Leadership and Innovation Management (ELIM).

Master's Minor

The Engineering Leadership and Innovation Management (ELIM) minor (12-credits) is comprised of four courses:

Code	Title	Credits
ENGR 501	Engineering Leadership for Corporate Innovation	3
ENGR 802	Engineering Across Cultures and Nations	3
ENGR 804	Engineering Product Innovation	3
ENGR 405	Project Management for Professionals [1]	3
Total Credits		**12**

[1] Related courses may be substituted for ENGR 405. Petitions for substitution may be made to the ELIM program office.

Doctoral Minor

The Engineering Leadership and Innovation Management (ELIM) doctoral minor (15-credits) is comprised of five courses:

Code	Title	Credits
ENGR 501	Engineering Leadership for Corporate Innovation	3
ENGR 802	Engineering Across Cultures and Nations	3
ENGR 804	Engineering Product Innovation	3
ENGR 405	Project Management for Professionals [1]	3
500-level elective in a related field [2]		3
Total Credits		**15**

[1] Related courses may be substituted for ENGR 405. Petitions for substitution may be made to the ELIM program office.

[2] For a doctoral minor a 500-level elective in a related field is required. Students must obtain approval for the elective course from their ELIM advisor in advance of registering.

Student Aid

Refer to the Tuition & Funding (https://gradschool.psu.edu/graduate-funding/) section of The Graduate School's website. Students in this program are not eligible for graduate assistantships.

Courses

Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.

Engineering (ENGR) Course List (https://bulletins.psu.edu/university-course-descriptions/graduate/engr/)

Contact

Campus	University Park
Graduate Program Head	David William Mazyck
Director of Graduate Studies (DGS) or Professor-in-Charge (PIC)	Dena Lang
Program Contact	Mariah L Germello 307 Engineering Design and Innovation Building University Park PA 16802 mld5449@psu.edu (814) 865-2771
Program Website	View (http://www.sedtapp.psu.edu/eld/graduate-degrees.aspx)