

Engineering Leadership Courses

Courses

EL 1301. Eng Innovation and Leadership.

Engineering Innovation and Leadership: Through the Engineering Innovation and Leadership course, students will gain engineering foundational knowledge of innovation, technological and leadership advancement in modern society, develop principles of personal, professional and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

Department: Engineering Leadership

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 0311 w/C or better) AND (2TSM score between 950 and 990) OR (2TDM score of 6 AND 2TSM score between 910 and 949)

EL 1402. Fund of Lead, Design & Graph.

Fundamentals of Leadership, Design & Graphics: This course focuses on engineering design using graphics and engineering project management with emphases on the techniques and skills needed for leadership within this domain. Topics include innovation and creativity, graphic design, continuous quality improvement, and sustainability.

Department: Engineering Leadership

4 Credit Hours

4 Total Contact Hours

0 Lab Hours

4 Lecture Hours

0 Other Hours

Prerequisite(s): (EL 1301 w/C or better AND MATH 1508 w/C or better)

EL 2301. Modeling and Simulation.

Modeling and Simulation: This course introduces the use of difference and differential equations in the modeling of systems with examples drawn from the life and natural sciences, engineering, and business. Computer simulations are developed using programming Matlab. Topics also include leadership theories and practices.

Department: Engineering Leadership

3 Credit Hours

5 Total Contact Hours

3 Lab Hours

2 Lecture Hours

0 Other Hours

Prerequisite(s): (EL 1402 w/C or better AND MATH 1411 w/C or better)

Corequisite(s): CS 1320

EL 3003. Professional Practice I.

Professional Practice I This practice-based course in the field where the skills of leadership engineering are practiced and improved. The course emphasizes accountability and responsibility.

Department: Engineering Leadership

0 Credit Hours

NaN Total Contact Hours

0 Lab Hours

0 Lecture Hours

80-300 Other Hours

EL 3005. Professional Practice II.

Professional Practice II This practice-based course occurs in the field where the skills of leadership engineering are practiced and improved. The course emphasizes accountability and responsibility.

Department: Engineering Leadership

0 Credit Hours

NaN Total Contact Hours

0 Lab Hours

0 Lecture Hours

80-300 Other Hours

Prerequisite(s): (EL 3003)

EL 3302. Engineering Measurements.

In this course, students learn some of the basic tools for making physical measurements and conducting experiments with electric circuits. Topics include the fundamental laws that govern the operation of electric circuits along with formal techniques associated with the analysis and design of electric circuits. Professional communication skills are developed via formal laboratory reporting. Readings on leadership character and integrity are included.

Department: Engineering Leadership

3 Credit Hours

5 Total Contact Hours

3 Lab Hours

2 Lecture Hours

0 Other Hours

Prerequisite(s): (EL 2301 w/C or better) AND (MATH 1312 w/C or better)

EL 3303. Professional Practice I.

Professional Practice I This practice-based course in the field where the skills of leadership engineering are practiced and improved. The course emphasizes accountability and responsibility.

Department: Engineering Leadership

0 Credit Hours

NaN Total Contact Hours

0 Lab Hours

0 Lecture Hours

80-300 Other Hours

Major Restrictions:

Restricted to majors of EL

Classification Restrictions:

Restricted to class of JR,SR

EL 3304. Engr Design:Products to People.

This course focuses on leadership engineering as a complex integration of opportunity, limitations, constraints, and consequences. Topics include principles of assessment and evaluation, and applications of engineering in contemporary issues. This course requires departmental approval if prerequisites are not met.

Department: Engineering Leadership

3 Credit Hours

5 Total Contact Hours

3 Lab Hours

2 Lecture Hours

0 Other Hours

Prerequisite(s): (EL 3331 w/C or better) AND (PHYS 2421 w/D or better) OR (PHYS 2121 w/D or better AND PHYS 2321 w/D or better) AND (MATH 2326 w/D or better)

EL 3320. Finance Mgmt for the Engineer.

Learning to evaluate financial performance through interpretation of income statements, balance sheets, cash flow statements, and project reports is critical an engineering project manager's success as well as the success of a business. This course teaches the engineering design professional how to read and interpret the income statement, including such components as gross revenue, net revenue, direct and reimbursable expenses, indirect expenses, net profit before taxes, depreciation, gross profit and net profit after taxes. It examines the primary benchmarks of performance.

Department: Engineering Leadership

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (EL 3302 w/C or better AND MATH 2326 w/C or better)

EL 3330. Eng Leadership Development.

This course divides into two main components. The first deals with individual leadership development by providing a framework for understanding the elements of an organization's leader development system. The second part focuses on collective leadership capacity in organizations. This course ties together and integrates many initiatives stemming from different areas of expertise with the primary goal to be to present knowledge in a way that students can use in their efforts to create leadership development experiences.

Department: Engineering Leadership

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (EL 3302 w/C or better)

EL 3331. Engr Design: People to Products.

This course covers all basic concepts of systems engineering. The objective is to provide the basic knowledge and tools for transforming an operational need into a well-defined system configuration, through an iterative design process of issue formulation, analysis, optimization, design synthesis, system integration, and testing. If you do not meet the prerequisites please seek departmental approval.

Department: Engineering Leadership

3 Credit Hours

5 Total Contact Hours

3 Lab Hours

2 Lecture Hours

0 Other Hours

Prerequisite(s): (EL 3302 w/C or better) AND (PHYS 2421 w/D or better) OR (PHYS 2121 w/D or better AND PHYS 2321 w/D or better)

EL 3332. Engr Entr: Products to People.

This course is the second in a two-course sequence on developing innovative start-ups. It is intended to give students an opportunity to experience the human-centered commercialization process from start to finish in a single semester. In teams, students will go from a functional prototype to a business model that prepares them for a go/no-go decision. It requires students to conduct empirical experimental through interviews with people in the start-up's ecosystem, to recognize the impacts of the start-up on the ecosystem, and to function effectively on teams.

Department: Engineering Leadership

3 Credit Hours

NaN Total Contact Hours

0-3 Lab Hours

0-2 Lecture Hours

0 Other Hours

Prerequisite(s): (EL 3331 w/C or better)

EL 3373. Eng Prob. & Statistical Models.

This course introduces the concepts of discrete and continuous random variables, distribution and density functions, moments, statistical dependence and independence, hypothesis testing and regression analysis. Emphasis is placed on the creation proper utilization of statistical decision models for engineering analysis and design.

Department: Engineering Leadership

3 Credit Hours

6 Total Contact Hours

3 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 2313 w/C or better) OR (MATH 2326 w/C or better)

EL 4171. Eng Ed and Lead Problems.

Engineering Education and Leadership Problems Original investigation of special problems in the Engineering Education and Leadership field of study. May be repeated for credit when topic varies. Prerequisite: Department Approval Required.

Department: Engineering Leadership

1 Credit Hour

1 Total Contact Hour

0 Lab Hours

0 Lecture Hours

1 Other Hour

Classification Restrictions:

Restricted to class of JR,SO,SR

EL 4191. Independent Studies.

Independent Studies Individual variable credit research, design, or analysis on engineering education and leadership problems conducted under the direct supervision of a faculty member.

Department: Engineering Leadership

1 Credit Hour

1 Total Contact Hour

0 Lab Hours

0 Lecture Hours

1 Other Hour

EL 4271. Eng Ed and Lead Problems.

Engineering Education and Leadership Problems Original investigation of special problems in the Engineering Education and Leadership field of study. May be repeated for credit when topic varies. Prerequisite: Departmental Approval Required.

Department: Engineering Leadership

2 Credit Hours

2 Total Contact Hours

0 Lab Hours

0 Lecture Hours

2 Other Hours

Classification Restrictions:

Restricted to class of JR,SO,SR

EL 4291. Independent Studies.

Independent Studies Individual variable credit research, design, or analysis on engineering education and leadership problems conducted under the direct supervision of a faculty member. Prerequisites: Departmental approval.

Department: Engineering Leadership

2 Credit Hours

2 Total Contact Hours

0 Lab Hours

0 Lecture Hours

2 Other Hours

EL 4330. Innovation in Technology.

This course develops design skills for advanced students in engineering and computer science, building on students' technical knowledge to help them identify and find novel solutions for difficult design problems. To do this, the course enables students to improve their innovation skills and to understand the role of innovation in technology-based enterprises. Working with the innovation techniques of Liberating Structures as a central theme, the course integrates improvisation and story-telling to build creativity. Students will apply these techniques to develop computer-game scenarios, and mobile applications.

Department: Engineering Leadership

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

EL 4331. Intellectual Property Law.

This course introduces students to intellectual property law with particular attention to topics of interest for the fields of engineering and computing. The course focuses on the constitutional provisions, laws and court decisions that create and define rights in intellectual property, with primary attention to patents and copyrights, and with secondary attention to trade secrets. Students will gain basic skills in critical thinking, reading, understanding and explaining statutes and cases relating to intellectual property.

Department: Engineering Leadership

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

EL 4332. Law and Commercialization.

This course introduces students to the technology commercialization process, with particular attention to topics of interest for the fields of engineering, science, and business. The course focuses on the practical aspects of invention disclosure, patent protection, marketing, and licensing, and technology start-up formation and fundraising. Students will gain skills of intervention triaging, patent claim amendments, drafting patent marketing materials, and negotiating commercialization related contracts.

Department: Engineering Leadership

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

EL 4334. Eng Ethics & Professionalism.

This course is designed to introduce undergraduate engineering students to the concepts, Theory and practice of engineering ethics. Society places a great deal of responsibility on the engineering professional and requires engineers practice according to a code of ethics. Students will study real world case studies that help them to become informed of issues, roles and responsibilities of engineering professions.

Department: Engineering Leadership

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (EL 3302 w/C or better AND MATH 2326 w/C or better)

EL 4371. Eng Ed and Lead Problems.

Engineering Education and Leadership Problems Original investigation of special problems in the Engineering Education and Leadership field of study. May be repeated for credit when topic varies. Prerequisite: Departmental Approval.

Department: Engineering Leadership

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

0 Lecture Hours

3 Other Hours

Classification Restrictions:

Restricted to class of JR,SO,SR

EL 4391. Independent Studies.

Independent Studies Independent Studies Individual variable credit research, design, or analysis on engineering education and leadership problems conducted under the supervision of a faculty member Prerequisites: Departmental approval

Department: Engineering Leadership

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

0 Lecture Hours

3 Other Hours

EL 4393. Special Topics in Eng and Lead.

Special Topics in Engineering and Leadership Selected topics of current interest in Engineering Education and Leadership. May repeated for credit when topic varies. Prerequisite: Sophomore and Senior Standing in Engineering.

Department: Engineering Leadership

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Classification Restrictions:

Restricted to class of JR,SO

EL 4395. CD I: Definition & Exploration.

Capstone Design I: Definition and Exploration (2-3) This course is the first semester of a two-semester capstone course in engineering leadership. The course particularly focuses on preparing and implementing a project design. Engineering leadership skills are applied to build a cohesive team and to successfully execute a real world project.

Department: Engineering Leadership

3 Credit Hours

5 Total Contact Hours

3 Lab Hours

2 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 2326 w/C or better) AND (EL 3332 w/C or better) AND (PHYS 2421 w/D or better) OR (PHYS 2121 w/D or better AND PHYS 2321 w/D or better) AND (CE 2326 w/C or better)

EL 4396. CD II: Develop & Evaluation.

Capstone Design II: Develop & Evaluation (0-3) This course is the second semester of a two-semester capstone course. Engineering Leadership skills are applied to execute a successful real world project.

Department: Engineering Leadership

3 Credit Hours

7 Total Contact Hours

6 Lab Hours

1 Lecture Hour

0 Other Hours

Prerequisite(s): (EL 4395 w/C or better)