

EL 1302 – Intro to Engineering Design and Leadership (Design Nature)

1. 3 Student Credit Hours, 4 Contact Hours

2. Instructor: Roger Gonzalez, Ph.D., P.E.

3. Texts:

Leadership: Theory and Practice, 7th Ed. P.G. Northouse, Sage Publishing, 2016.

Good to Great, Jim Collins

What Every Engineer Should Know about Accounting and Finance, JK Shim and N Henteleff, CRC Press, 1994.

Overcoming the Five Dysfunctions of a Team, A Field Guide, by P Lencoini ISBN 07879-7637-7.

4. Specific course information

- a. Catalog Description: This course focuses on engineering design and engineering project management with emphases on the techniques and skills needed for leadership within this domain. Topics include innovation and creativity, continuous quality improvement, and sustainability.
- b. Prerequisites: (MATH 1411 w/‘C’ or better) OR (MATH 1312 w/‘C’ or better) OR (MATH 2313 w/‘C’ or better) OR (MATH 2326 w/‘C’ or better) OR (MATH 1411A w/‘C’ or better AND MATH 1411B w/‘C’ or better AND MATH 1411C w/‘C’ or better)
- c. EL 1302 is a required course in the BS in Engineering Leadership Curriculum.

5. Specific goals for the course

- a. Specific outcomes of instruction
 - Learn elements of and management of an engineering design process with an emphasis on taking ideas through to functional prototypes.
 - Experience the excitement, breadth, and power of engineering design.
 - Learn methods supporting common design activities such as generation, evaluation, and selection.
- b. ExplicitS Outcomes listed in Criterion 2, 5, & 9.
 - An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
 - An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
 - An ability to recognize the need for and to apply business acumen in an engineering context

6. Brief list of topics to be covered:

- Biomimicry
- Prototyping
- Simulation
- Rapid Prototypes
- Design Iteration
- Design Iteration Refinement
- Technical Presentations
- Target Audience Research
- Brainstorming
- Company Images/Physics
- Packaging/Game Instructions
- Marketing Plan
- Game Building