PATHWAY TO LEARNING ENGINEERING

Engineering Research and Development

Course Overview

Students collaborate to research, design, and prototype solutions, develop business models, and apply lean design and Six Sigma to optimize manufacturing. The Capstone project culminates in a presentation to an authentic audience.

Students will:

- Research, design, and prototype engineering solutions using industry software, apply lean manufacturing and Six Sigma principles, document iterative improvements, collaborate with mentors, and present their final project and business strategy to industry professionals

Goals

Develop the skills and knowledge necessary to research, design, prototype, and optimize innovative engineering solutions, integrating industry tools, lean manufacturing principles, and business strategies:

- Apply the Engineering Design Process to research, define, and systematically develop solutions for complex engineering problems
- Utilize industry-standard tools, including NX, and TIA Portal, for design, prototyping, and process automation
- Implement lean manufacturing and statistical process control (SPC) to minimize waste, enhance efficiency, and ensure quality in production
- Communicate and defend research findings, prototypes, and business models through professional presentations, technical documentation, and data analysis

Major units

- The design process
- Basics of research
- Intellectual property
- Protecting intellectual property
- Entrepreneurship
- Lean design
- Lean manufacturing

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