

Learn by doing

The mechanical engineering program at South Dakota Mines has a project-based focus on product development infused throughout the four years of the curriculum. Students will be assigned team projects to conceptualize, design, prototype and demonstrate a new product that solves a real-world problem and satiates a social need.

What is a product development process?

It's a sequence of steps or activities that are followed in order to conceive, design, and commercialize a product. Our focus is on market-pull product opportunities. Market opportunities are identified and then engineering and science are employed to satisfy that market need.



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Making a better world—one design at a time.

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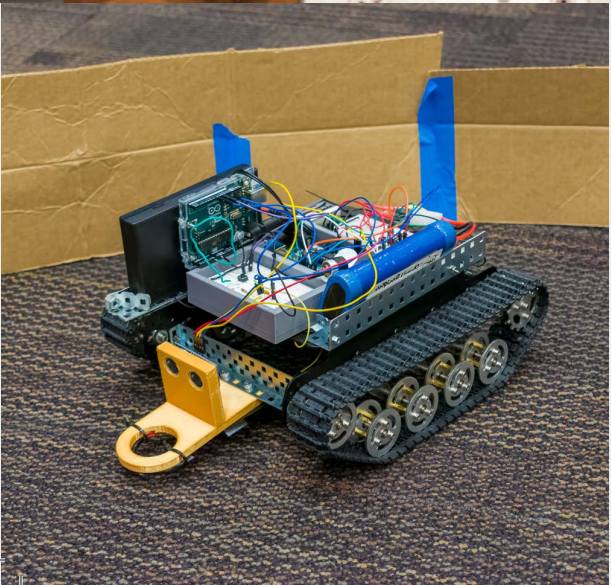


Product Development

MECHANICAL ENGINEERING PROGRAM



ME 479 & 482L



ME 479 & 482L

Courses

ME 110 // Introduction to Mechanical Engineering

A general overview of the product development process. Emphasis is placed on fundamental engineering analysis needed within the product development process along with hands-on lab/project team activities to better understand the engineering fundamental principles along with the benefits of working in a team.

ME 126L // Design for Manufacturing

Focus is on concept development, detail design, testing and refinement steps. Students will learn design software, geometric dimensioning and tolerancing, and considerations for the manufacturability of a product. The class includes use of machining, welding, 3D printing, woodworking, and plasma cutting equipment. Students learn through a student-driven design build project.

ME 265 // Product Design and Development

The course presents a typical development process for products of low to moderate complexity and introduces basic systems engineering concepts. Emphasis is placed on structured methodologies of the conceptual design phase. Students work in teams to develop a concept for a simple product and use a physical prototype to illustrate how their proposed product would look and work.

ME 351/L // Mechatronic Systems

The course presents the design process for complex products requiring multiple disciplines of engineering including mechanical, electrical, computer, and control systems engineering. Students learn basic concepts of a mechatronic system including sensors, actuators, input/output signal conditioning and interfacing, digital control systems, and user communication. The final project integrates classroom learning and laboratory experiments and applying them toward the design and implementation of a mechatronic product.

ME 477 & 481L // Mechanical Engineering Design

The first of a two-semester sequence focused on the product development process up to prototype development and testing. Teams focus on project definition, customer needs, and product requirements before diving into the preliminary design process where multiple alternatives are considered and a final conceptual design is created.

ME 479 & 482L // Advanced Product Development

The second of a two-semester sequence on product development, the focus is on detailed design and analysis to ensure the product will meet functional requirements and customer needs. Manufacturing drawings and plans are developed in order to complete a functioning prototype that is tested and evaluated by the team. Results are showcased in a design fair at the end of the semester.

