

Mechanical Engineering

What Can I Do With This Major? • Career Pathways

University of St. Thomas

Mechanical Engineering at St. Thomas is the broadest and one of the most in-demand engineering disciplines — covering the design, analysis, and manufacture of physical systems from turbines to medical devices to autonomous vehicles. Mechanical engineers apply thermodynamics, fluid mechanics, materials science, and dynamics to build the physical world. The degree's versatility means ME graduates are recruited across virtually every industry that makes, moves, or powers something.

CONVENTIONAL CAREER TRACKS

All roles below are accessible with a bachelor's degree and 0–2 years of experience (internships count).

Track	What you'll do	Sample Job Titles (BS)
Product Design & Development	Design and develop physical products — from concept through prototyping, testing, and manufacturing release.	■ Mechanical Design Engineer ■ Product Development Engineer ■ R&D; Engineer ■ CAD Engineer ■ Prototype Engineer ■ New Product Introduction (NPI) Engineer
Manufacturing & Process Engineering	Optimize the processes, tooling, and systems that produce physical products at scale.	■ Manufacturing Engineer ■ Process Engineer ■ Industrial Engineer (entry) ■ Tooling Engineer ■ Lean / Continuous Improvement Engineer ■ Quality Engineer
Thermal & Fluids Systems	Design systems that manage heat transfer, fluid flow, and thermodynamic processes.	■ HVAC Engineer ■ Thermal Systems Engineer ■ Fluid Systems Engineer ■ Heat Exchanger Designer ■ CFD Analyst (entry) ■ Energy Systems Engineer
Structural & Stress Analysis	Analyze mechanical components and assemblies for strength, fatigue, and failure under load.	■ Stress Analyst ■ FEA Engineer (entry) ■ Structural Test Engineer ■ Materials Engineer (entry) ■ Failure Analysis Engineer ■ Durability Engineer
Systems & Test Engineering	Integrate mechanical subsystems and validate that complete systems meet performance and safety requirements.	■ Systems Engineer ■ Test Engineer ■ Validation & Verification Engineer ■ Integration Engineer ■ Technical Documentation Engineer ■ Field Service Engineer

NON-CONVENTIONAL & EMERGING TRACKS

Paths that sit at unexpected intersections — often less competitive and equally rewarding.

Emerging Area	Roles You Might Not Expect
Biomedical & Medical Devices	Biomedical Mechanical Engineer • Medical Device Design Engineer • Orthopedic Implant Engineer • Surgical Robotics Engineer • Regulatory Affairs Engineer (devices)

Aerospace & Defense	Aerospace Engineer (entry) • Propulsion Systems Engineer • Structural Analyst (aerospace) • Satellite Mechanical Engineer • Defense Systems Engineer
Sustainable Energy & Climate Tech	Renewable Energy Systems Engineer • Wind Turbine Design Engineer • EV Powertrain Engineer • Hydrogen Systems Engineer • Energy Storage Engineer
Entrepreneurship & Hardware	Hardware Startup Founder • Technical Co-founder • Mechanical Product Manager • Maker / Fabrication Entrepreneur • CTO (hardware startup)

WHERE A GRADUATE DEGREE TAKES YOU

A graduate degree meaningfully expands your ceiling and opens leadership, research, and specialized roles.

P.E. License (Professional Engineer)	Licensed Mechanical Engineer — required for many public-facing and infrastructure engineering roles.	FE exam taken after graduation; PE after 4 years of experience. The P.E. expands the scope of projects you can legally lead and sign.
M.S. Mechanical Engineering	Senior ME, Principal Engineer, Research Engineer, Technical Specialist, Division Manager.	Deepens specialization in design, thermal systems, materials, or robotics — strongly preferred for senior engineering roles at top firms.
M.S. Robotics / Mechatronics	Robotics Engineer, Autonomous Systems Engineer, Controls Engineer, Mechatronics Lead.	One of the fastest-growing graduate specializations — robotics and autonomous systems are expanding across manufacturing, healthcare, and defense.
M.B.A. (Engineering Management)	Engineering Manager, Director of Product Development, VP Engineering, General Manager (manufacturing).	For MEs who want to lead organizations — pairs engineering credibility with business strategy, finance, and leadership.

STRATEGIES FOR SUCCESS

- Sit for the FE (Fundamentals of Engineering) exam before or shortly after graduation — it's required for P.E. licensure and demonstrates professional readiness.
- Develop CAD proficiency (SolidWorks, CATIA, or NX) and exposure to FEA tools (ANSYS, Abaqus) — employers expect software fluency from day one.
- Pursue internships in manufacturing, medical devices, or aerospace — 3M, Medtronic, Honeywell, and Polaris are all major Twin Cities ME employers.
- Build physical projects — a senior capstone, a personal fabrication project, or a competition team entry demonstrates hands-on ability.
- Join ASME (American Society of Mechanical Engineers) as a student — their career resources, competitions, and networking events are excellent.
- The EV and clean energy transition is creating massive ME demand — electric powertrain, battery thermal management, and sustainable manufacturing are growth areas.

This guide reflects current workforce trends and is updated annually. Licensure requirements vary by state. Visit the UST Career Development Center for personalized advising and employer connections.