



MASTER OF SCIENCE | MECHANICAL ENGINEERING



**SMU | LYLE**  
SCHOOL OF ENGINEERING

*To make wind power cost competitive, a government agency challenges manufacturers to develop more efficient, lower-cost turbine generators.*

*To reduce health costs, a biotech company introduces a lab on a chip that constantly monitors a wide range of indicators.*

*To profitably produce a mass-market electric car, an automaker installs robots with microscopically precise vision systems that enable them to perform with greater speed and precision.*

Structures. Transportation. Medicine. Manufacturing. In a wide range of industries, companies are increasingly in need of engineers who can take technology to the next level, who can transform ideas into hardware, into machines and devices of unprecedented capability, into tools and systems that enable their manufacture, and into imaginative organizations that create high-value jobs at home. This is the opportunity behind the master's in mechanical engineering at SMU-Lyle.

### FIND US **HERE**

P.O. Box 750335 Dallas, Texas 75275

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214-768-2002

# CONTROL SYSTEMS

# ACADEMIC PROGRAM

Requirements include the completion of ten graduate level courses (30 CH), or the completion of eight courses (24 CH) and a thesis (6 CH).

## Design and Dynamic Systems and Controls

- Frequency Domain Methods in Linear Control Systems
- Intermediate Dynamics
- Linear System Analysis
- Nonlinear Control
- Optimal and Robust Control
- Vehicle Dynamics
- Vibrations

## Mechanics and Manufacturing

- Advanced Mechanical Behavior of Materials
- Continuum Mechanics
- Finite Element Methods in Structural and Continuum Mechanics
- Introduction to Solid Mechanics
- Introduction to Structural Dynamics
- Matrix Structural Analysis
- Nontraditional Manufacturing Processes
- Optics Laser-Assisted Manufacturing
- Theory of Elasticity

## Thermal and Fluid Sciences

- Advanced Thermodynamics
- Convection Heat Transfer
- Heat Transfer in Biomedical Sciences
- Intermediate Fluid Dynamics
- Intermediate Heat Transfer
- Introduction to Computational Fluid Dynamics
- Transport Phenomena in Porous Media

## Thesis



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# SOLID MECHANICS

Mechanical engineering is inseparable from a modern world. And as new challenges arise in this world, so grows the need for engineering leaders with the technical knowledge to lead organizations—in a wide range of industries—to new technological solutions. This is the focus of our master's degree program. In this 30-hour sequence, students explore advanced developments in mechanical, thermal, and fluid sciences; dynamic systems and controls, including such cutting-edge topics as microelectromechanical systems (MEMS); and computer-integrated manufacturing. Qualified students are also encouraged to participate in faculty research projects. They emerge well-qualified for leadership in this essential field, as well as ideally positioned to further extend their studies toward a Ph.D. degree in mechanical engineering.

# THERMO-FLUIDS

The master's in mechanical engineering curriculum at SMU-Lyle is presented by a world class faculty whose own research projects—in biomechanics, flow visualization, rapid prototyping, transport in porous media, medical robotics, and more—touch every aspect of mechanical engineering's future. Courses are offered in small classes to ensure optimal opportunities for strong mentoring, teamwork, and creativity. Our goal is to enable students to achieve their highest potential for career advancement.