

M.S. MECHANICAL ENGINEERING

UNIVERSITY OF THE DISTRICT OF COLUMBIA

SCHOOL OF ENGINEERING AND APPLIED SCIENCES



MASTER OF SCIENCE IN MECHANICAL ENGINEERING

We offer a world-class higher education in an interactive and interdisciplinary learning environment and prepare students to seek highly lucrative and exciting careers in national laboratories, federal organizations, and advanced industries.

About the Program

The goal is to develop graduates with a breadth of analytical, technical, and professional skills while providing an outstanding and comprehensive research experience.

Program Objectives

Graduates will provide value in their chosen career path through their analytical skills, critical thinking, innovation, and creative abilities developed in their graduate engineering education.

Graduates will utilize their analytical, technical, and communication skills, and act in a professional and ethical manner.

Graduates will demonstrate leadership, continuous evolution toward a competitive global work environment, and a commitment to ongoing professional development and lifelong learning.

Research Partners

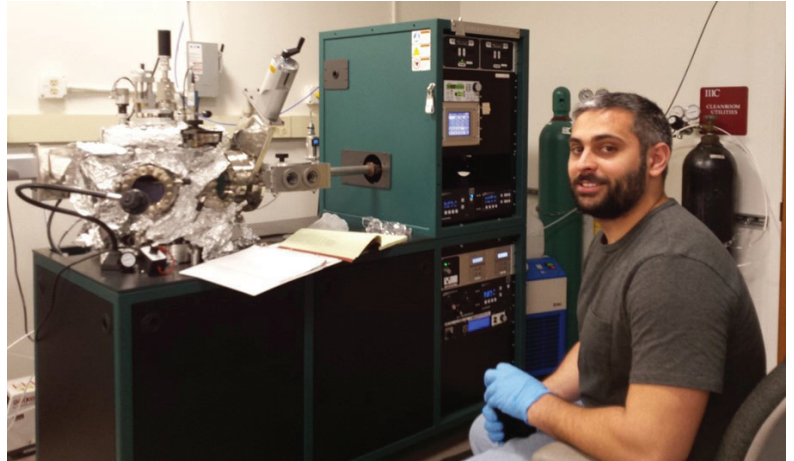
Our faculty enjoy collaboration with institutions and industries such as the National Institutes of Standards and Technology, U.S. Food and Drug Administration, National Institutes of Health, Naval Research Laboratory, Kansas City National Security Complex, Oak Ridge National Lab, Northrup Grumman, and Lockheed Martin.

MSME Course requirements

Course Category	Thesis option	Non-Thesis
Common courses	9	9
Special topics courses	6	6
Elective courses	6	9
MS Thesis	9	-
MS Project	-	6
Total Credits	30	30

Specializations

- Advanced Manufacturing/Nanotechnology
- Renewable Energy Science and Technology
- Biomedical Engineering



Grants and Funding

The Mechanical Engineering faculty have federal grants and projects to support MS studies in our department. With the support of federal funding from the National Science Foundation, Air Force Office of Sponsored Research, Department of Energy, and Department of Defense grants, we have developed advanced laboratories and courses.

Research

Faculty and students engage in innovative theoretical and experimental research projects with academic, government, and corporate partners. Graduates will be well equipped to pursue careers in research and industry.

Labs

Advanced Manufacturing Laboratory
Nanotechnology Application Laboratory
Microscopy and Device Characterization Laboratory
Center for Biomedical and Rehabilitation Engineering

Faculty

Our faculty have expertise in advanced manufacturing, biomedical engineering, nanotechnology, and renewable energy. Our focus areas continue to evolve according to technological advancements and market need.

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For more information about Mechanical Engineering visit www.udc.edu/seas or contact:

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202-274-7131, kate.klein@udc.edu*

*Program Director, Dr. Pawan Tyagi
202-274-6601, pawan.tyagi@udc.edu*

*Department Office, Ms. Veronica Williams
202-274-6286, vwilliams@udc.edu*

MSME Course requirements - 30 Credits

Common courses with Thesis option:

- BGMT 506 Management Theory and Practice
- CVEN 501 Advanced Engineering Mathematics or equivalent Math course
- ELEC 507 Probability and Random Processes OR
- MECH 500 Research Methods and Technical Communication

Common courses with Non-thesis option:

- BGMT 506 Management Theory and Practice
- CVEN 501 Advanced Engineering Mathematics or equivalent Math course
- ELEC 507 Probability and Random Processes
- MECH 500 Research Methods and Technical Communication

Elective courses:

Advanced Manufacturing Focus

MECH 501 Mechatronics System Design
MECH 505 Advanced Manufacturing
MECH 512 Advanced Mechatronics
MECH 546 Nanoscale Materials and Devices

Energy Science and Technology Focus

ELEC 510 Smart Grid Communications and Security
MECH 541 Photovoltaic Cells and Solar Thermal Energy System
MECH 542 Fuel cell and Battery Science and Technology
MECH 545 Design of Energy Systems
MECH 546 Nanoscale Materials and Devices

Graduate Courses in Mechanical Engineering

MECH 500 Research Methods and Technical Communication
MECH 501 Mechatronics System Design
MECH 505 Advanced Manufacturing
MECH 512 Advanced Mechatronics
MECH 522 Physiological System Analysis
MECH 535 Nano-to-Micro Transport Processes
MECH 541 Science of Photovoltaic Cells and Solar Thermal Energy Systems
MECH 542 Science of Fuel Cell and Batteries
MECH 545 Theory and Design of Energy Systems
MECH 546 Nanoscale Materials and Devices
MECH 547 Biomedical Imaging Systems and Signal Processing
MECH 548 Machine Learning for Medical Detection & Diagnoses
MECH 549 Biomedical Imaging Systems and Signal Processing
MECH 611 Special Topics in Mechanical Engineering
MECH 631 Mechanical Fundamentals and Design of Electronics System
MECH 643 Theory and Design of Wind Energy Systems
MECH 699 Graduate Research

Biomedical Engineering Focus

MECH 501 Mechatronics System Design
MECH 522 Physiological Systems Analysis
MECH 547 Biomedical Imaging Systems and Signal Processing
MECH 548 Machine Learning for Medical Detection & Diagnoses

ME Special Topics Courses:

MS advisor will determine the topic of this courses for the students working with them. This topic is to provide depth of knowledge in the focus area by directly working with their faculty advisor. MSME students enroll in the Special Topics I & II courses in fall and spring semesters, respectively, whereby they receive specialized instruction.

Department of Mechanical Engineering

Faculty

Our faculty value continued research, teaching, and mentoring students to become capable of solving the most challenging technological problems. MSME is supported by the following permanent faculty.

Devdas Shetty, Ph.D., P.E.

Dean, Professor of Mechanical Engineering

Ludwig Nitsche, Ph.D.

Associate Dean, Professor of Mechanical Engineering

Max Denis, Ph.D.

Assistant Professor of Mechanical Engineering

Pawan Tyagi, Ph.D.

Graduate Program Director, Associate Professor of Mechanical Engineering

Kate Klein, Ph.D. (Department Chair)

Assistant Professor of Mechanical Engineering

Lara Thompson, Ph.D.

Biomedical Engineering Program Director, Assistant Professor of Mechanical Engineering

Jiajun Xu, Ph.D., P.E.

Undergraduate Program Director, Assistant Professor of Mechanical Engineering