

## Northwestern Engineering

### MS Degree in Mechanical Engineering: Energy and Sustainability Specialization

Jump-start your career with a Master of Science in Mechanical Engineering at [Northwestern University](#) with an emphasis in energy and sustainability. Intended for students with a Bachelors of Science in engineering or a related field, this program is for individuals with a desire to into the increasingly critical and dynamic fields of energy and sustainability. Dedicated, intensive, and hands-on courses provide thorough training and preparation for exciting, rewarding jobs.



The curriculum is highly interdisciplinary and includes deep, technical courses in energy and technology topics, as well as courses critical to understanding the law, policy, and economics of energy.

#### PROGRAM FEATURES

- ❖ Rigorous MS in energy science, technology, & policy
- ❖ Graduate-level courses in policy, economics, and legal issues surrounding the energy sector
- ❖ Broad-based, flexible, interdisciplinary program
- ❖ Fast-paced, course-only MS option in as short as 9 months, or an option to take courses and do a thesis
- ❖ Projects (1-3 quarters) working closely with faculty on energy application topics
- ❖ Northwestern's Evanston campus is located next to Lake Michigan and is just minutes away from Chicago's cultural hubs



### Requirements for Degree

The degree requires 12 total units, including between 9 and 11 course units and the balance in project units. ISEN 410 (Topics in Contemporary Energy and Climate Change) and at least one course from each of the topical areas listed below are required. A course can count for only one area even if qualifies for two. At the minimum 7 of the units, including projects, must be ME courses or approved superscripted courses (###<sup>c</sup>) related to energy and sustainability, and 5 units must be 400-level. Below is a sample list of courses. Other courses may also count.

Required: ISEN 410 (Topics in Contemporary Energy and Climate Change)

#### ENERGY

ME 377 (Heat Transfer)  
ME 367 (Life Cycle Analysis)  
ME 380 (Thermal Energy Systems Design)  
ME 395 (Energy Systems)  
MSE 382<sup>c</sup> (Electrochem Energy Mat & Dev)  
MSE 395 (Electronic/Thermal Prop of Mat)

#### CORE PRINCIPLES OF ENERGY SYSTEM

ME 322 (Thermodynamics II)  
ME 380 (Thermal Energy Systems Design)  
ME 414-1 (Mechanics of Composite Mat I)  
ME 414-2 (Mechanics of Composite Mat II)  
ME 445 (Micromanufacturing)  
ME 446 (Advanced Tribology)  
ME 467 (Industrial Energy Uti & Mgmt)  
MSE 381<sup>c</sup> (Energy Materials)  
MSE 382<sup>c</sup> (Electrochem Energy Mat & Dev)

#### ENVIRONMENT

ME 367 (Life Cycle Analysis)  
CEE 314 (Organic Geochemistry)  
CEE 361-2 (Public & Environmental Health)  
CEE 363 (Env. Eng. Applications: Air/Land)  
CEE 364 (Env. Eng. Applications: Water)  
CEE 368 (Sustainability: Issues and Action)  
CEE 440<sup>c</sup> (Env. Transport Processes)  
ESAM 495 (Math Modeling for Earth Sc.)

#### ECONOMICS & POLICY

ISEN 420 (NUvention: Energy)  
ME 467 (Industrial Energy Uti & Mgmt)  
CEE 303 (Environmental Law and Policy)  
CEE 395 (Environmental Justice)  
ChBE 365 (Sustainability, Tech, & Society)  
PROJMGT 443 (Sustainability Strategies)  
PROJMGT 445 (Sustainability Policy)  
PROJMGT 448 (Metrics of Sustainability)  
PROJMGT 449 (Econ of Sustainability)

ME499 (Projects in Energy Systems and Sustainability) may count as any of the areas, depending on the subject matter of the project

#### CONTACT

Dr. Manohar Kulkarni,  
MS Program Dir. and Assist. Chair

[Manohar.Kulkarni@northwestern.edu](mailto:Manohar.Kulkarni@northwestern.edu)  
847.467.6741

