

Energy Engineering

M.S. in Energy Engineering (<https://catalog.und.edu/graduateacademicinformation/departmentalcoursesprograms/engineering/sustainableenergyengineering/e-se-ms/>)

M.Engr. in Energy Engineering (<https://catalog.und.edu/graduateacademicinformation/departmentalcoursesprograms/engineering/sustainableenergyengineering/e-se-meng/>)

Ph.D. in Energy Engineering (<https://catalog.und.edu/graduateacademicinformation/departmentalcoursesprograms/engineering/sustainableenergyengineering/e-se-phd/>)

Graduate Certificate in Energy Dynamics, Policy and Strategy (<https://catalog.und.edu/graduateacademicinformation/departmentalcoursesprograms/engineering/sustainableenergyengineering/cert-edps/>)

Graduate Certificate in Energy Storage Systems (<https://catalog.und.edu/graduateacademicinformation/departmentalcoursesprograms/engineering/sustainableenergyengineering/cert-ess/>)

Graduate Certificate in Energy Systems and Optimization (<https://catalog.und.edu/graduateacademicinformation/departmentalcoursesprograms/engineering/sustainableenergyengineering/cert-eso/>)

Energy Engineering

ENE 501. Managing Energy Resources and Policy. 3 Credits.

In the face constantly increasing uncertainty within energy(oil and gas) sector, reduced oil prices and increasing demand for energy, it should come as no surprise that Sustainable use of energy resources is the only way out. Sustainable use of energy resources is at the forefront of strategic plans for businesses, public sector/government organizations and individuals as well. All the modules of this course will extensively explore all the tools available for energy systems modeling that can influence efficient energy policies for the policy makers. Prerequisite: College of Engineering and Mines Graduate students or consent of instructor. S.

ENE 510. Energy Systems Engineering I. 3 Credits.

Provides the framework to perform high level designs of various energy systems and develop a comparative analysis of various energy conversion systems including cost, social acceptability, and environmental consequences. This course is one of a two part series with ENE 511 that can be taken in either order. Prerequisite: College of Engineering and Mines graduate student or instructor consent. S.

ENE 511. Energy Systems Engineering II. 3 Credits.

Provides the framework to perform basic design and integration of various energy systems and how to develop the comparative analysis of various energy conversion systems. This course is one of a two part series with ENE 510 that can be taken in either order. Prerequisite: College of Engineering and Mines graduate student or instructor consent. F.

ENE 512. Energy Systems Optimization. 3 Credits.

This course will introduce deterministic, numerical optimization and troubleshooting methods used for finding feasible and optimal solutions to energy systems challenges. Prerequisite: ENE 510 or ENE 511, or instructor consent. On demand.

ENE 522. Energy Storage Systems I. 3 Credits.

This course is designed to focus mainly on Energy Storage systems with focus on Lithium Ion Batteries technologies.(LiFePO₄/G and NMC/G) technology Cells. The course will look at why they are so valuable in the energy storage and E-mobility technology. Prerequisite: ENE 510 or ENE 511, or instructor consent.

ENE 523. Energy Storage Systems II. 3 Credits.

This course is the concluding part of ENE 522. It's designed to focus mainly on the logistics and commercial part of Energy Storage systems looking mainly on Lithium Ion Batteries technologies.(LiFePO₄/G and NMC/G) costs as a whole. Prerequisite: ENE 522 or instructor consent. S.

ENE 530. Applied Engineering Business Analysis. 3 Credits.

This course is an interdisciplinary Engineering Business Analysis course utilizing case studies to illustrate Global standards for Engineering Business Analysis. This will allow students to practice using real-world examples to help understand what drives change, how to define business needs and the effective ways to design solutions that will bring about the desired changes. Students will have the background and training required for certification through the International Institute for Business Analysis. Prerequisite: College of Engineering and Mines graduate student or instructor consent. F.

ENE 533. Project Dynamics & Strategy Modeling. 3 Credits.

The course is designed to help understand the dynamic behavior of engineering projects. The focus here is to help project managers and sponsors adapt to the realities of the complexity, uncertainty and the significant risks that can arise from unclear scope, compressed schedules and changing political situations using the application of system dynamics. Prerequisite: ENGR 554 and ENGR 556, or instructor consent. S.

ENE 590. Special Topics in Energy Engineering. 1-6 Credits.

Investigation of special topics in energy engineering directed by student and faculty interests. Prerequisite: Consent of Instructor. Repeatable to 18.00 credits. F,S,SS.

ENE 591. Research in Energy Engineering. 1-15 Credits.

Independent research work in energy engineering. Prerequisite: Consent of Instructor. Repeatable. S/U grading. F,S,SS.

ENE 996. Continuing Enrollment. 1-6 Credits.

Provides additional time for student to meet graduation requirements. Prerequisite: Consent of Instructor. Repeatable to 18.00 credits. S/U grading. F,S,SS.

ENE 997. Independent Study Report. 2 Credits.

Comprehensive report culminating independent project work performed to fulfill requirements of non-thesis master's degree. Prerequisite: Consent of Instructor. F,S,SS.

ENE 998. Thesis in Energy Engineering. 1-9 Credits.

Development and documentation of scholarly activity demonstrating proficiency in Energy Engineering at the master's level. Prerequisite: Consent of Instructor. Repeatable to 9.00 credits. S/U grading. F,S,SS.

ENE 999. Dissertation in Energy Engineering. 1-18 Credits.

Development and documentation of scholarly activity demonstrating proficiency in Energy Engineering at the doctoral level. Prerequisite: Consent of Instructor. Repeatable to 18.00 credits. S/U grading. F,S,SS.

Sustainable Energy Engineering

SEE 510. Process Design & Feasibility Assessment of Sustainable Technologies. 3 Credits.

The research-to-commercialization life cycle and evaluation methods are examined in depth using sustainable energy technologies as specific case studies.

SEE 590. Special Topics in Sustainable Energy Engineering. 1-6 Credits.

Investigations of special topics in sustainable energy engineering dictated by students and faculty interests. Repeatable. Prerequisite: Consent of instructor. Repeatable.