

NJIT

New Jersey's Science &
Technology University

THE EDGE IN KNOWLEDGE

Master of Science Program in Power and Energy Systems



Department of Electrical and Computer Engineering

Newark College of Engineering

New Jersey Institute of Technology

WHY STUDY POWER AND ENERGY SYSTEMS?

The society is becoming more aware than ever of the need to provide an affordable, secure, reliable, and environmentally sound energy future. Meeting the energy needs is becoming more challenging with the continuously growing global demand for conventional energy sources and an increasing awareness of the need to protect the environment. Due to infrastructure and personnel needs in the power utility industry and significant challenges to develop environmentally clean alternate energy sources, there is a substantial job market now with potentially growing demand for engineers to deal with critical needs in the future.

Exploiting renewable energy sources – sun, wind, geothermal, (wave,) hydraulic and others – presents a most urgent partial solution, and together with the task of increasing efficiency of energy use provides immense opportunities for engineering talents. To manage a complex power generation, control and distribution system, and operate it efficiently and in compliance with the maze of technical, financial, and regulatory constraints, requires a combination of management and technical skills that must be provided through an advanced degree program with a well-balanced educational and real-world learning experience.

WHY STUDY POWER AND ENERGY SYSTEMS AT NJIT?

The MS in Power and Energy Systems is a unique interdisciplinary program that draws upon the full resources of New Jersey's science and technology university, including courses from electrical and computer engineering, chemical engineering, mechanical engineering, industrial engineering, and management. The university also has established research initiatives in nanotechnology, microelectronics, solar cells, and other related areas. NJIT also has strong ties with leading power industries, such as PSE&G and ASCO Power Technologies, and will establish a collaborative synergy with prominent companies to develop and refine a program to educate future leaders and workforce in power and energy industry.

WHAT DOES THE PROGRAM COVER?

The master of science in Power and Energy Systems program involves foundation and recent advances in power systems, power control, distribution and management systems, renewable energy sources, solar-cells, fuel-cells and other advances in energy production, control and management systems.

WHAT COURSES ARE AVAILABLE?

Project/Thesis: A thesis (6 credits) or project (3 credits) is required in addition to the coursework.

Core Courses (12 credits are required)

ECE 601 Linear Systems
ECE 610 Power System Steady- State Analysis
ECE 612 Computer Methods Applied to Power Systems
ECE 616 Power Electronics

Electives: (12 credits with thesis or 15 credits with project are required; only selected courses are listed here)

ECE 611 Transients in Power Systems
ECE 613 Protection of Power Systems
ECE 660 Control Systems I
ECE 710 Economic Control of Interconnected Power Systems (new)
CHE xx1 Fuel Cell Technologies
CHE xx2 Nuclear Power Technologies
ECE 698-1 Wind Turbine Generation Technology (1 Cr.)
ECE 698-2 Deregulation of the Electric Utility (1 Cr.)
ECE 698-3 Utility Industry and Environmental Impact (1 Cr.)
ME 607 Advanced Thermodynamics
ME 610 Applied Heat Transfer
ME 611 Dynamics of Incompressible Fluids
EnE 671 Environmental Impact Analysis

Fin 624 Financial Management
Fin 634 Mergers, Acquisitions, and Restructuring
IE 614 Safety Engineering Methods
Mgmt 617 Environmental Risk Assessment
Mgmt 620 Management of Technology
Mgmt 630 Decision Analysis

IS PART TIME STUDY AVAILABLE?

Evening and weekend courses accommodate the working professional, who may pursue the degree part time.

ARE THERE OPPORTUNITIES TO PARTICIPATE IN RESEARCH?

NJIT offers extensive opportunities for students to participate in faculty research projects with more than \$75 million annually in grant support.

IS FINANCIAL AID AVAILABLE?

Financial support for full-time students in the MS program is extremely limited. Full-time domestic and international students may be eligible to receive the Provost Fellowship. For further information on financial aid, visit www.njit.edu/financialaid/graduate/index.php

NJIT students can also offset educational costs by participating in the Cooperative Education Program, which provides an opportunity to gain practical work experience in a professional environment. A co-op student works on a fulltime or part-time basis for a company that has agreed to hire, train, and pay the student during a specific co-op work cycle.

www.njit.edu/CDS/studentervices/coop.htm

FOR FURTHER INFORMATION

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TO APPLY:

Office of Graduate Admissions
1-800-925-NJIT
www.njit.edu/admissions/graduate/howtoapply/index.php