

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?

Core Requirement	ECE 601	Linear Systems
2 courses	ECE 610	Power System Steady- State Analysis
Professional	ECE 611	Transients in Power Systems
Skills and	ECE 618	Renewable Energy Systems
Area Requirement	ECE 616	Power Electronics
2 courses	MGMT 620	Management of Technology
Electives:	ECE 613	Protection of Power Systems
3-5 courses	ECE 617	Economic Control of Interconnected Power Systems
	ECE 698	Special Topics: Power Generation & Distribution Systems
	ECE 698	Special Topics: Environmental and Regulatory Issues in Power and Utility Industry
	ECE 605	Discrete Event Dynamic Systems
	ECE 673	Random Signal Analysis
	ECE 683	Computer Network Design and Analysis
	ME 607	Advanced Thermodynamics
	ME 610	Applied Heat Transfer
	EnE 671	Environmental Impact Analysis
	IE614	Safety Engineering Methods
	Other Electives	Upon the approval of the Advisor

Note: Some courses may need proper pre-requisites. Please consult with the instructor and advisor.

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

For non-ECE major students, some bridge courses may be required.

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/studentservices/coop.htm

FOR FURTHER INFORMATION

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TO APPLY:

Office of Graduate Admissions,
(973) 596-3300, or apply on-line at
www.njit.edu/admissions/graduate/howtoapply.php