

# M.S. in Power and Energy Systems

---

## Degree Requirements

### Bridge Program

Students who have earned a Bachelor of Science in Engineering Technology (B.S.E.T.) degree, or who lack an appropriate background may be admitted and be required to take selected courses in addition to the degree requirements in order to make up deficiencies. They must attain a grade of B or better in each course. At the discretion of the department, students who have taken courses equivalent to these may have their bridge programs reduced accordingly.

### Master's Program

This master's program consists of 30 credits. As a requirement for graduation, students must achieve a 3.0 cumulative GPA in graduate-level courses, not including the master's thesis or project. The project grade must be B or better.

### Master's Project/Master's Thesis

If a student chooses to do a Master's Project, the student should take 9 courses plus ECE 700B Master's Project. If a student would like to do a Master's Thesis, the student should first take 8 courses plus the 700B MS Project course, and receive a satisfactory (S) grade in 700B before taking 701B MS Thesis in the immediate following semester with the same advisor. The MS thesis topic should be continuation of the work done in 700B.

## M.S. in Power and Energy Systems

Code	Title	Credits
<b>Bridge Courses</b>		
ECE 321	Random Signals and Noise	3
ECE 232	Circuits and Systems II	3
ECE 333	Signals and Systems	3
ECE 361	Electromagnetic Fields	3
ECE 372	Electronic Circuits II	3
<b>Total Credits</b>		<b>15</b>
<b>Core Courses</b>		
ECE 601	Linear Systems	3
ECE 610	Power System Steady-State Analysis	3
<b>Specialized Courses/Electives</b>		
Select three of the following:		9
ECE 611	Transients in Power Systems	
ECE 616	Power Electronics	
ECE 618	Photovoltaic Semiconductors and Renewable Energy	
ECE 698	Selected Topics in Electrical and Computer Engineering	
MGMT 620	Strategic Management of Technological Innovation	
<b>Electives</b>		<b>15</b>
ECE 613	Protection of Power Systems	
ECE 617	Economic Control of Interconnected Power Systems	
ECE 698	Selected Topics in Electrical and Computer Engineering	
ECE 698	Selected Topics in Electrical and Computer Engineering	
ECE 605	Discrete Event Dynamic Systems	
ECE 620	Electromagnetic Field Theory	
ECE 637	Internet and Higher-Layer Protocols	
ECE 658	VLSI Design I	
ECE 661	Control System Components	
ECE 664	Applied Advanced Control Systems	
ECE 673	Random Signal Analysis	
ECE 681	High-Performance Network Function, Data Center, and Virtualization	

ECE 692	Embedded Computing Systems
ECE 788	Selected Topics in Electrical and Computer Engineering
ME 607	Advanced Thermodynamics
ME 610	Applied Heat Transfer
ENE 671	Environmental Impact Analysis <sup>1</sup>
IE 614	Safety Engineering Methods

**Total Credits****30**

<sup>1</sup> MGMT 692 Strategic Management and other business and management courses can be included as optional electives based on the student background, instructor approval and advisor approval.

Electives below are listed by specialization/track. This is not an exhaustive list of tracks.

Power Systems Track

ECE 610 Power System Steady-State Analysis

ECE 611 Transients in Power Systems

ECE 613 Protection of Power Systems

ECE 617 Economic Control of Interconnected Power Systems

Wind Power Track

ECE 616 Power Electronics

ECE651 Wind Transmission and Grid Interconnection

ECE652 HVDC Design, Operation and Maintenance

ECE654 US Offshore Renewable Energy Policy

ECE 656 Power System Dynamics

ECE670 Management Strategies in the Offshore Wind Industry

ECE671 Wind Plant Project Development

Smart Grid Track

ECE 616 Power Electronics

ECE 619 Intelligent Sensing for Smart Grid and Smart City

ECE 637 Internet and Higher-Layer Protocols

ECE 698 Smart Grid Technologies and Applications