# Energy Science and Engineering PhD Track, Environmental Science and Engineering Doctoral Program

## Department of Mechanical Engineering

### Curriculum

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### Core Courses

- ESE 6312 Energy Policy Analysis and Economic Modeling
- ESE 6314 Energy Systems Engineering
- ESE 6316 Sustainable Energy
- ESE 6318 Energy Use and Climate Change
- ESE 6320 Advanced Topics in Energy Engineering

### Environment and Energy Projects

- ESE 6306 Principles of Experimental & Engineering Design
- ESE 6307 Interdisciplinary Environmental and Energy Problem-solving

### Elective Courses

Select two-four of these or suitable alternatives with approval of the graduate coordinator

*Note: All students will take elective classes to fulfill the 60 semester hour requirement for this doctoral degree program. Only elective classes approved by the student’s committee qualify for this requirement. The list below is only a sample of course offerings.*

- MECH 5301 Mathematical Methods for Mechanical Engineers
- MECH 5302 Solid Mechanics I
- MECH 5303 Heat Transfer I
- MECH 5304 Heat Transfer II
- MECH 5305 Computational Fluid Mechanics
- MECH 5306 Fluid Mechanics
- MECH 5310 Thermodynamics
- MECH 5311 Nonlinear Finite Element Analysis
- MECH 5312 Solid Mechanics II
- MECH 5313 Mechanics of Composite Materials
- MECH 5318 Analytical Dynamics
- MECH 5334 Space System Design
- MECH 5335 Aerospace Propulsion
- MECH 5336 Aerospace Structures
- MECH 5337 Aerospace Dynamics and Control

### Research and Dissertation

- ESE 6396 Doctoral Research
- ESE 6398 Dissertation
- ESE 6399 Dissertation