ENGINEERING DESIGN

Degree Requirements

Master of Engineering (M.Eng.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-700 Professional Degree Policies (https://gradschool.psu.edu/graduate-education-policies/).

The M.Eng. degree is a non-thesis professional master's degree that provides training for advanced professional practice. To receive the Master of Engineering degree in Engineering Design, a student must complete at least 32 credits beyond the baccalaureate degree, and a scholarly report based on an independent studies course (EDSGN 596), or a domestic (ENGR 595A) or international (ENGR 595I) internship experience, and an engineering design portfolio (EDSGN 585). A minimum of 18 credits must be in the 500 series.

A minimum of 32 graduate credits is required as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDSGN 581</td>
<td>Engineering Design Studio I</td>
<td>3</td>
</tr>
<tr>
<td>EDSGN 582</td>
<td>Engineering Design Studio II</td>
<td>3</td>
</tr>
<tr>
<td>EDSGN 585</td>
<td>Engineering Design Portfolio</td>
<td>1</td>
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<tr>
<td>EDSGN 590</td>
<td>Colloquium</td>
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Focus Area Electives

Students must select a minimum 12 credits of focus area electives from the following:

- EDSGN 401 Engineering Systems Design
- EDSGN 479 Human Centered Product Design and Innovation
- EDSGN 547 Designing for Human Variability
- EDSGN 548 Interaction Design
- EDSGN 549 Design Decision Making
- EDSGN 558 Systems Design

General Electives

Students must select 9 credits of general electives from the following:

- IE 418 Human/Computer Interface Design
- IE 460 Service Systems Engineering
- IE 470 Manufacturing System Design and Analysis
- IE 520 Multiple Criteria Optimization
- IE 557 Human-in-the-Loop Simulation
- IE 563 Computer-Aided Design for Manufacturing
- IST 413 Usability Engineering
- IST 520 Foundations in Human-Centered Design
- IST 521 Human-Computer Interaction: The User and Technology
- ME 561 Structural Optimization Using Variational and Numerical Methods
- ME 565 Optimal Design of Mechanical and Structural Systems
- MANGT 510 Project Management
- SYSEN 550
- SYSEN 555 Invention and Creative Design

Culminating Experience

Students must select one of the following:

- EDSGN 596 Individual Studies
- ENGR 595A Engineering Internship
- ENGR 595I International Engineering Internship

Total Credits: 32

1 Or from a list of approved courses maintained by the program.

The M.Eng. in Engineering Design requires the completion of a scholarly paper and the Engineering Design Portfolio.

Master of Science (M.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (https://gradschool.psu.edu/graduate-education-policies/)

The M.S. degree is an academic degree, which is strongly oriented toward research. To receive the Master of Science degree in Engineering Design, a student must complete at least 32 credits beyond the baccalaureate degree. At least 18 credits in the 500 and 600 series, combined, must be included in the program. A minimum of 12 credits in course work (400 and 500 series), as contrasted with research, must be completed in the major program. A thesis is required and at least 6 credits of thesis research (EDSGN 600/EDSGN 610) must be included in the program.

A minimum of 32 graduate credits is required as follows:

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</tr>
<tr>
<td>EDSGN 590</td>
<td>Colloquium</td>
<td>1</td>
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Focus Area Electives

Students must select a minimum 12 credits of focus area electives from the following:

- EDSGN 401 Engineering Systems Design
- EDSGN 479 Human Centered Product Design and Innovation
- EDSGN 547 Designing for Human Variability
- EDSGN 548 Interaction Design
- EDSGN 549 Design Decision Making
- EDSGN 558 Systems Design

General Electives

Students must select 6 credits of general electives from the following:

- IE 418 Human/Computer Interface Design
- IE 460 Service Systems Engineering
- IE 470 Manufacturing System Design and Analysis
- IE 520 Multiple Criteria Optimization
- IE 557 Human-in-the-Loop Simulation
- IE 563 Computer-Aided Design for Manufacturing
- IST 413 Usability Engineering
- IST 520 Foundations in Human-Centered Design
- IST 521 Human-Computer Interaction: The User and Technology
The M.S. in Engineering Design requires the completion of an M.S. thesis and the Engineering Design Portfolio.

1 Or from a list of approved courses maintained by the program.

<table>
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<td>Structural Optimization Using Variational and</td>
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<td></td>
<td>Numerical Methods</td>
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<tr>
<td>ME 565</td>
<td>Optimal Design of Mechanical and Structural</td>
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<td>Systems</td>
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<td>MANGT 510</td>
<td>Project Management</td>
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<tr>
<td>SYSEN 550</td>
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<tr>
<td>SYSEN 555</td>
<td>Invention and Creative Design</td>
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<tr>
<td>EDSGN 600</td>
<td>Thesis Research</td>
<td>6</td>
</tr>
<tr>
<td>or EDSGN 610</td>
<td>Thesis Research Off Campus</td>
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**Total Credits** 32