

# 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:

Code	Title	Credits
<b>Required Courses</b>		
EDSGN 581	Engineering Design Studio I	3
EDSGN 582	Multi-disciplinary Studio	3
EDSGN 585	Engineering Design Portfolio	1
EDSGN 590	Colloquium	1
<b>Focus Area Electives</b>		
Students must select a minimum 12 credits of focus area electives from the following:		12
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	
<b>General Electives</b>		
Students must select 9 credits of general electives from the following: <sup>1</sup>		9
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	
<b>Culminating Experience</b>		

Students must select one of the following:		3
EDSGN 596	Individual Studies	
ENGR 595A	Engineering Internship	
ENGR 595I	International Engineering Internship	
<b>Total Credits</b>		<b>32</b>

<sup>1</sup> 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:

Code	Title	Credits
<b>Required Courses</b>		
EDSGN 581	Engineering Design Studio I	3
EDSGN 582	Multi-disciplinary Studio	3
EDSGN 585	Engineering Design Portfolio	1
EDSGN 590	Colloquium	1
<b>Focus Area Electives</b>		
Students must select a minimum 12 credits of focus area electives from the following:		12
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	
<b>General Electives</b>		
Students must select 6 credits of general electives from the following: <sup>1</sup>		6
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	

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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	
<b>Culminating Experience</b>		
EDSGN 600	Thesis Research	6
or EDSGN 610	Thesis Research Off Campus	
<b>Total Credits</b>		<b>32</b>

<sup>1</sup> Or from a list of approved courses maintained by the program.

The M.S. in Engineering Design requires the completion of an M.S. thesis and the Engineering Design Portfolio.