

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 |
|---|---|---------|
| Required Courses | | |
| EDSGN 581 | Engineering Design Studio I | 3 |
| EDSGN 582 | Multi-disciplinary Studio | 3 |
| EDSGN 585 | Engineering Design Portfolio | 1 |
| EDSGN 590 | Colloquium | 1 |
| Focus Area Electives | | |
| 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 | |
| General Electives | | |
| Students must select 9 credits of general electives from the following: ¹ | | 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 | |
| Culminating Experience | | |

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| Students must select one of the following: | | 3 |
| 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:

| Code | Title | Credits |
|---|---|---------|
| Required Courses | | |
| EDSGN 581 | Engineering Design Studio I | 3 |
| EDSGN 582 | Multi-disciplinary Studio | 3 |
| EDSGN 585 | Engineering Design Portfolio | 1 |
| EDSGN 590 | Colloquium | 1 |
| Focus Area Electives | | |
| 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 | |
| General Electives | | |
| Students must select 6 credits of general electives from the following: ¹ | | 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 | |
| Culminating Experience | | |
| EDSGN 600 | Thesis Research | 6 |
| or EDSGN 610 | Thesis Research Off Campus | |
| Total Credits | | 32 |

¹ 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.