Industrial Engineering, Ph.D.

Curriculum in Doctor of Philosophy – Industrial Engineering

A candidate for the Ph.D. degree with a major in industrial engineering must comply with the rules and regulations as outlined in the WVU Graduate Catalog and the specific requirements of the Statler College and the Industrial and Management Systems Engineering Department.

Program Requirements

The doctor of philosophy degree with a major in industrial engineering is administered through the college's interdisciplinary Ph.D. program. The research work for the doctoral dissertation must show a high degree of originality on the part of the student and must constitute an original contribution to the art and science of industrial engineering.

All Ph.D. degree candidates are required to perform research and follow a planned program of study. The student's research advisor, academic advisor, and the student's Advising and Examining Committee (AEC) will be responsible for determining the plan of study appropriate to the student's needs. The underlying principle of the planned program is to provide the students with the necessary support to complete their degree and prepare them for their career.

Course requirements for the Ph.D. program are determined by the student's area of concentration. The research work for the doctoral dissertation may entail a fundamental investigation or a broad and comprehensive investigation into an area of specialization.

Curriculum Requirements (BS-PhD Pathway)

Code	Title	Hours
A minimum cumulative GPA of 3.0 is required in all courses		
Course Requirements [+]		
Graduate Seminar [++]		1
IENG 796	Graduate Seminar	
Research		24
IENG 797	Research	
Foundation Courses [+++]		18
IENG 503	Additive Manufacturing Technology and Materials	
IENG 514	Design of Industrial Experiments	
IENG 542	Advanced Production Control	
IENG 551	Quality and Reliability Engineering	
IENG 553	Applied Linear Programming	
IENG 554	Applied Integer/Heuristic Programs	
IENG 564	Industrial Ergonomics	
IENG 660	Human Factors System Design	
IENG 577	Advanced Engineering Economy	
Elective Courses		12
IENG 502	Advanced Manufacturing Processes	
IENG 505	Computer Integrated Manufacturing	
IENG 506	Computer Aided Process Planning	
IENG 507	Robotics and Flexible Automation	
IENG 518	Technology Forecasting	
IENG 556	Supply Chain Management	
IENG 754	Inventory Theory	
IENG 756	Applied Stochastic Processes	
Any BIOM, BMEG, CE, CHE, CHEM, CPE, CS, EE, IENG, IH&S, MAE, MATH, MINE, PNGE, PHYS, SAFM, SENG, or STAT courses 500-795, as approved by the student's AEC		
Examinations		
Plan of Study		
Qualifying Exam		
Candidacy Exam		
Final Exam		

Dissertation	
Total Hours	55

+
Students who do not hold a baccalaureate degree in industrial engineering are required to take a set of undergraduate industrial engineering courses above and beyond the minimum coursework requirements.

++
Full-time students are required to take one seminar course each semester

+++
Foundation courses for the Ph.D. program are determined by the student's area of emphasis. All courses must be approved by the AEC and the academic advisor

Curriculum Requirements (MS-PhD Pathway)

Code	Title	Hours
A minimum cumulative GPA of 3.0 is required in all courses		
Course Requirements [*]		
Graduate Seminar [**]		1
IENG 796	Graduate Seminar	
Research		24
IENG 797	Research	
Foundation Courses [***]		12
IENG 503	Additive Manufacturing Technology and Materials	
IENG 514	Design of Industrial Experiments	
IENG 542	Advanced Production Control	
IENG 551	Quality and Reliability Engineering	
IENG 553	Applied Linear Programming	
IENG 554	Applied Integer/Heuristic Programs	
IENG 564	Industrial Ergonomics	
IENG 660	Human Factors System Design	
IENG 577	Advanced Engineering Economy	
Elective Courses		6
IENG 502	Advanced Manufacturing Processes	
IENG 505	Computer Integrated Manufacturing	
IENG 506	Computer Aided Process Planning	
IENG 507	Robotics and Flexible Automation	
IENG 518	Technology Forecasting	
IENG 556	Supply Chain Management	
IENG 754	Inventory Theory	
IENG 756	Applied Stochastic Processes	
Any BIOM, BMEG, CE, CHE, CHEM, CPE, CS, EE, IENG, IH&S, MAE, MATH, MINE, PNGE, PHYS, SAFM, SENG, or STAT courses 500-795, as approved by the student's AEC		
Examinations		
Plan of Study		
Qualifying Exam		
Candidacy Exam		
Final Exam		
Dissertation		
Total Hours		43

*****
Students who do not hold a baccalaureate degree in industrial engineering are required to take a set of undergraduate industrial engineering courses above and beyond the minimum coursework requirements.

**

Full-time Students are required to take one Seminar course each semester

***

Foundation courses for the Ph.D. program are determined by the student's area of emphasis. All courses must be approved by the AEC and the academic advisor.

Examinations

QUALIFYING EXAM

All students must take and pass a written qualifying examination. Normally, the qualifying examination is given no later than one semester after completion of eighteen credit hours toward the doctoral degree. This examination is designed to assess the basic competency of students in the industrial engineering field to determine whether or not they have sufficient knowledge to undertake independent research.

CANDIDACY EXAMINATION

In order to be admitted to candidacy, the student must pass a candidacy exam, which is designed to evaluate the student's overall ability to engage in high-level research.

A student who has successfully completed all coursework, passed the qualifying examination, and successfully defended the research proposal is defined as one who is a candidate for the Ph.D. degree.

FINAL EXAMINATION

At the completion of the dissertation research, candidates must prepare a dissertation and pass the final oral examination (defense) administered by their AEC.

In order to complete the Ph.D. requirements, a student must pass a final oral examination on the results embodied in the dissertation. This examination is open to the public and, in order to evaluate critically the student's competency, may include testing on material in related fields, as deemed necessary by the AEC. In addition, since the Ph.D. degree is primarily a research degree that embodies the results of an original research proposal and represents a significant contribution to scientific literature, the student must submit a manuscript on this research to the AEC.

Major Learning Outcomes

INDUSTRIAL ENGINEERING

1. Practice/teach Industrial Engineering and to initiate and develop leadership roles in education, business, industry and/or government.
2. Continue professional development and life-long learning.
3. Interact in society and business in a professional and ethical manner.
4. Be proficient in written and oral communication and to utilize people-oriented skills in individual and team environments.
5. Apply the skills from Industrial Engineering to be proficient in his/her chosen field.