

# Industrial Engineering (MS)

## Master of Science Degree Requirements

Code	Title	Hours	Counts towards
<b>Required Course</b>		<b>10</b>	
ISE 601	Seminar		
ISE 695	Master's Thesis Research		
Select one 700-level ISE course approved in conjunction with the academic committee			
<b>Breadth Requirement Courses</b>		<b>12</b>	
See "Breadth Requirement Courses" listed below			
<b>Minor Courses</b>		<b>9</b>	
"Minor Courses" will be determined in conjunction with the academic committee			
<b>Total Hours</b>		<b>31</b>	

## Breadth Requirements

Code	Title	Hours	Counts towards
<b>Select a minimum of one course from at least three of the following groups:</b>		<b>9</b>	

### Group A : Economic & Decision Analysis

ISE 510	Applied Engineering Economy		
ISE 711	Capital Investment Economic Analysis		
ISE 712	Bayesian Decision Analysis For Engineers and Managers		
ISE 731	Multi-Attribute Decision Analysis		

### Group B: Human Factors and Ergonomics Category

ISE 540	Human Factors In Systems Design		
ISE 541	Occupational Safety Engrg		
ISE 544	Occupational Biomechanics		
ISE 744	Human Information Processing		

ISE 745	Human Performance Modeling		
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### Group C: Manufacturing Systems Category

ISE 515	Manufacturing Process Engineering		
ISE 714	Product Manufacturing Engineering for the Medical Device Industry		
ISE 716	Automated Systems Engineering		
ISE 519	Database Applications in Industrial and Systems Engineering		

### Group D: Production Systems Category

ISE 552	Design and Control of Production and Service Systems		
ISE 723	Production Planning, Scheduling and Inventory Control		
ISE 726	Theory of Activity Networks		
ISE 748	Quality Engineering		
ISE 754	Logistics Engineering		

### Group E: Systems Analytics and Optimization Category

ISE 501	Introduction to Operations Research		
OR 504	Introduction to Mathematical Programming		
ISE 505	Linear Programming		
ISE 560	Stochastic Models in Industrial Engineering		
ISE 562	Simulation Modeling		
ISE 709	Dynamic Programming		

ISE 760	Applied Stochastic Models in Industrial Engineering
ISE 761	Queues and Stochastic Service Systems
ISE 762	Computer Simulation Techniques
<b>Select one course from the following: 3</b>	
<b>Group F: Computer Science, Mathematics, and Statistics</b>	
CSC 513	Electronic Commerce Technology
CSC 520	Artificial Intelligence I
CSC 570	Computer Networks
CSC 742	Advanced Topics in Database Management Systems
MA 520	Linear Algebra
MA 580	
ST 516	Experimental Statistics For Engineers II
ST 711	Design Of Experiments

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**Total Hours** 12

## Accelerated Bachelor's/Master's Degree Requirements

The Accelerated Bachelors/Master's (ABM) degree program allows exceptional undergraduate students at NC State an opportunity to complete the requirements for both the Bachelor's and Master's degrees at an accelerated pace. These undergraduate students may double count up to 12 credits and obtain a non-thesis Master's degree in the same field within 12 months of completing the Bachelor's degree, or obtain a thesis-based Master's degree in the same field within 18 months of completing the Bachelor's degree.

This degree program also provides an opportunity for the Directors of Graduate Programs (DGPs) at NC State to recruit rising juniors in their major to their graduate programs. However, permission to pursue an ABM degree program does not guarantee admission to the Graduate School. Admission is contingent on meeting eligibility requirements at the time of entering the graduate program.

## Faculty

### Full Professors

Paul Cohen

Shu-Cherng Fang  
 Yahya Fathi  
 Ola Lars Anders Harrysson  
 Julie Simmons Ivy  
 Russell E. King  
 Yuan-Shin Lee  
 Maria Esther Mayorga  
 Chan S. Nam  
 Binil Starly  
 Julie Swann  
 Reha Uzsoy

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### Associate professors

Jingyan Dong  
 Michael G. Kay  
 Yunan Liu  
 Osman Yalin Ozaltin  
 Rohan Ajit Shirwaiker  
 Hong Wan

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### Assistant Professors

Karen Boru Chen  
 Xiaolei Fang  
 Leila Hajibabai Dizaji  
 Irem Sengul Orgut  
 Sara Shashaani  
 Xu Xu

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### Practice/Research/Teaching Professors

Steven D. Jackson  
 Semra Senem Ahiska King  
 Brandon Mark McConnell  
 Kanton Tyrone Reynolds  
 Javad Taheri  
 Harvey A. West II

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## **Emeritus Faculty**

Mahmoud A. Ayoub

Richard Harold Bernhard

Charles Thomas Culbreth Jr.

Thom Joel Hodgson

Henry Nuttle

Richard G. Pearson

Stephen Dean Roberts

Ezat Sanli

Clarence Smith Jr.

James Reed Wilson

Richard Wusk

Robert E. Young