The School of Industrial and Systems Engineering (ISYE) offers eight master’s degrees:

- Master of Science in Industrial Engineering (MS IE);
- Master of Science in Operations Research (MS OR);
- Master of Science in Supply Chain Engineering (MS SCE);
- Master of Science in Statistics (MS STAT);
- Master of Science in Health Systems (MS HS);
- Master of Science in Quantitative and Computational Finance (MS QCF);
- Master of Science in International Logistics (MS IL) that is part of the executive program; and
- Master of Science in Computational Science and Engineering (MS CSE).

Three of these programs are interdisciplinary:

- MS QCF (joint with School of Mathematics, College of Business),
- MS STAT (joint with School of Mathematics) and
- MS SCE (joint with College of Computing, School of Mathematics).

All proposed master’s degree programs require thirty semester credit hours with the exception of MS IL and MS QCF (thirty-six credit hours) and MS HS (thirty-three credit hours). None of these MS programs contains a thesis option.

A student seeking a master’s degree must have a bachelor’s degree and typically one earned in engineering, science, mathematics, or some other field that provides an adequate background for the successful completion of one of ISyE’s programs. Students having backgrounds from unaccredited degree programs or in programs that are found lacking in relative substance can expect to first take preliminary coursework in order to elevate their preparation to the level required. The prerequisite coursework for the various master’s degrees includes strong performance in probability, statistics, linear algebra, and calculus.

Every MS curriculum is based on core classes offered from the School of ISyE, as well as electives offered by ISyE and other Georgia Tech schools in engineering and science. The MS SCE, MS QCF, and MS IL are professional degree programs with separate curriculums from the other regular MS degrees.

MS Human-Integrated Systems

**Program Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISYE 6644</td>
<td>Simulation</td>
<td>3</td>
</tr>
<tr>
<td>ISYE 6650</td>
<td>Probabilistic Models and Their Applications</td>
<td>3</td>
</tr>
<tr>
<td>ISYE 6669</td>
<td>Deterministic Optimization</td>
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</table>

**Statistics and Data Science Elective**

- MATH 4261 Mathematical Statistics I 3
- ISYE 6412 Theoretical Statistics 3
- ISYE 6414 Statistical Modeling and Regression Analysis 3

**Algorithms and Computation Elective**

3

- ISYE 6013 Advanced Statistical Modeling or MATH Linear Statistical Models
- ISYE 6740 Computational Data Analysis: Learning, Mining, and Computation
- ISYE 6415 Design and Analysis of Experiments or ISYE 7 Advanced Design of Experiments
- ISYE 6401 Computational Statistics
- ISYE 6420 Introduction to Theory and Practice of Bayesian Statistics
- MATH 6262 Advanced Statistical Inference I
- MATH 6263 Testing Statistical Hypotheses

**Technical Electives (Choose 3)**

- ISYE 6230 Economic Decision Analysis
- ISYE 6307 Scheduling Theory
- ISYE 6320 Public Impact Applications of Operations Research and Management Science
- ISYE 6645 Monte Carlo Methods
- ISYE 6661 Linear Optimization
- ISYE 6662 Discrete Optimization
- ISYE 6663 Nonlinear Optimization
- ISYE 6664 Stochastic Optimization
- ISYE 6679 Computational Methods in Optimization
- ISYE 6761 Stochastic Processes I
- ISYE 6762 Stochastic Processes II
- ISYE 6832 Simulation Theory and Methods
- ISYE 7201 Production and Service Systems Engineering
- ISYE 7203 Logistics Systems Engineering
- ISYE 8813 Special Topics in Operations Research (Inventory Theory)
- ISYE 8813 Special Topics in Operations Research (Constraint Programming)
- ISYE 8813 Special Topics in Operations Research (Stochastic Programming)
- ISYE 8813 Special Topics in Operations Research (Game Theory)
- ISYE 8813 Special Topics in Operations Research (Infrastructure Optimization)

**Breadth Electives (Choose 2)**

6

- ISYE 6225 Advanced Engineering Economy
- ISYE 6201 Manufacturing Systems or ISYE 7 Production and Service Systems Engineering
- ISYE 6202 Warehousing Systems
- ISYE 6203 Transportation and Supply Chain Systems
or ISYE 7201 Logistics Systems Engineering
ISYE 8813 Special Topics in Operations Research (Inventory Theory)
ISYE 6405 Statistical Methods for Manufacturing Design and Improvement
ISYE 6402 Time Series Analysis
ISYE 6404 Nonparametric Data Analysis
ISYE 6413 Design and Analysis of Experiments or ISYE 7400 Advanced Design of Experiments
ISYE 6414 Statistical Modeling and Regression Analysis or ISYE 7400 Advanced Statistical Modeling or MATH 6266 Linear Statistical Models
ISYE 6416 Computational Statistics
ISYE 6420 Introduction to Theory and Practice of Bayesian Statistics
MATH 6263 Advanced Statistical Analysis I
MATH 6264 Introduction to Theory and Practice of Bayesian Statistics
MATH 6265 Testing Statistical Hypotheses

**Algorithms and Computation Elective**

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<tr>
<td>ISYE 6679</td>
<td>Computational Methods in Optimization</td>
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<tr>
<td>ISYE 6740</td>
<td>Computational Data Analysis: Learning, Mining, and Computation</td>
<td>3</td>
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<tr>
<td>ISYE 8813</td>
<td>Special Topics in Operations Research (Constraint Programming)</td>
<td>3</td>
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<tr>
<td>CS 6505</td>
<td>Computability, Algorithms, and Complexity</td>
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<tr>
<td>CS 6520</td>
<td>Computational Complexity Theory</td>
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<td>CS 6550</td>
<td>Design and Analysis of Algorithms</td>
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<tr>
<td>CSE 6140</td>
<td>Computational Science and Engineering Algorithms</td>
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**Technical Electives (Choose 3)**

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<td>ISYE 6761</td>
<td>Stochastic Processes I</td>
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<td>ISYE 6762</td>
<td>Stochastic Processes II</td>
<td>3</td>
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<tr>
<td>ISYE 6832</td>
<td>Simulation Theory and Methods</td>
<td>3</td>
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<tr>
<td>ISYE 7201</td>
<td>Production and Service Systems Engineering</td>
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<td>ISYE 7203</td>
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**Breadth Electives (Choose 2)**

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<td>ISYE 6201</td>
<td>Manufacturing Systems</td>
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<td>ISYE 7201</td>
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<td>Warehousing Systems</td>
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<td>ISYE 7201</td>
<td>Production and Service Systems Engineering</td>
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</table>

**Total Credit Hours**

30
### Master of Science in Operations Research

#### ISYE 8813  Special Topics in Operations Research  
(Inventory Theory)

#### ISYE 6405  Statistical Methods for Manufacturing Design and Improvement

#### ISYE 6402  Time Series Analysis

#### ISYE 6404  Nonparametric Data Analysis

#### ISYE 6413  Design and Analysis of Experiments  
or ISYE 7400  Advanced Design of Experiments

#### ISYE 6414  Statistical Modeling and Regression Analysis  
or ISYE 7401  Advanced Statistical Modeling  
or MATH 6266  Linear Statistical Models

#### ISYE 6416  Computational Statistics

#### ISYE 6420  Introduction to Theory and Practice of Bayesian Statistics

#### ISYE 7406  Data Mining and Statistical Learning

#### ISYE 8813  Special Topics in Operations Research  
(Mathematics of Operations Research)

#### ISYE 6740  Computational Data Analysis: Learning, Mining, and Computation

#### CSE 6242  Data and Visual Analytics

#### CSE 6730  Modeling and Simulation: Foundations and Implementation

#### MATH 4317  Analysis I

#### MATH 6337  Real Analysis I

#### MATH 6338  Real Analysis II

#### MATH 6014  Graph Theory and Combinatorial Structures

#### MATH 6241  Probability I

#### MATH 6242  Probability II

#### MATH 6643  Numerical Linear Algebra

#### MATH 6262  Advanced Statistical Inference I

#### MATH 6263  Testing Statistical Hypotheses

#### CS 6236  Parallel and Distributed Simulation Systems

#### CS 6505  Computability, Algorithms, and Complexity

#### CS 6520  Computational Complexity Theory

#### CS 6550  Design and Analysis of Algorithms

#### Internship Preparation Elective  

#### ISYE 6230  Economic Decision Analysis

#### ISYE 6644  Simulation

#### ISYE 6701  Energy Technology and Policy

#### Practicum

#### COOP/INTN/ISYE Practicum

**Total Credit Hours**: 30

Up to six (6) credits of 4000-level courses may be used towards the degree, subject to the approval of the ISyE Director of Master's Programs

1 ISYE Special Topics courses, as appropriate

### BS/MS OPTION

The BSMS Option allows eligible students to double count a maximum of 6 credit hours toward undergraduate and graduate requirements while still completing all other program requirements to earn both degrees.

BS in Industrial Engineering students with a GPA of 3.5 or higher who have taken ISYE 3133 and ISYE 3232 are eligible to apply to utilize the BSMS Option. BSIE students must also graduate with a GPA of 3.5 or higher in order to utilize the BSMS Option.

It is typical for students to use 6 hours from the BSIE concentration electives to count as Core Courses or Technical Electives for the MS in Operations Research degree. Students will need to consult with an advisor to indicate which courses are sharing with the graduate degree in DegreeWorks.