



**Master of Science in Engineering**  
*The University of Alabama in Huntsville*  
Department of Industrial & Systems Engineering  
and Engineering Management  
Technology Hall, Room N138, Huntsville, AL 35899  
Ph: (256) 824-6976, Fax: (256) 824-6608

### **Modeling & Simulation Concentration**

The Modeling and Simulation concentration develops the scientific and engineering skills in students who are interested in the development of large-scale simulation models. This is accomplished by providing students with a broad understanding of the systems engineering process and specific subject matter that develops skills in discrete event simulation, Monte Carlo simulation, and the conception and development of integrated models for systems design and analysis.

**Major Courses:**  
(12 hours)  
ISE 627 Introduction to Systems Engineering  
ISE 647 Advanced System Simulation<sup>1</sup>  
*ISE 637 Introduction to Systems Analysis & Modeling (New Course)*  
*ISE 687 Integrated Model Development (New Course)*

**1<sup>st</sup> Minor – Option 1:**  
(6 hours)  
Control Systems  
EE 505 Introduction to Control and Robotic Systems  
EE 701 Advanced Linear Control Theory

**1<sup>st</sup> Minor – Option 2:**  
Graphics and Visualization  
CS 645 Computer Graphics<sup>2</sup>  
CS 646 Computer Geometry Modeling<sup>2</sup>

**1<sup>st</sup> Minor-Option 3:**  
Operations Research  
ISE 626 Introduction to Operations Research  
ISE 726 Systems Modeling

**2<sup>nd</sup> Minor:**  
(6 hrs)  
Statistics (required)  
ISE 690 Statistical Methods for Engineers  
ISE 526 Design and Analysis of Experiments

**Prerequisites:**  
<sup>1</sup>ISE 547 Introduction to System Simulation  
<sup>2</sup>ISE 545 Introduction to Computer Graphics  
(Prerequisites maybe used as electives)

**Options:**  
**Plan I - Thesis:** Thesis – ISE 699 (6-9 hours)  
**Plan II – Capstone:** Electives (9 hrs) and ISE 697: Approval of Committee  
**Plan II – Modified:** Electives (12 hrs): Approval of Committee

**Further Information:**  
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## Master of Science in Engineering

### I. Admission

#### Unconditional Admission

1) ABET-accredited B.S. degree in engineering; 2) GPA of 3.0 or better\*; 3) GRE score of 400 or better on the Verbal, 500 or better on the Quantitative, and a combined score of 1000 or better; 4) GRE Analytical Writing score of 4.0 or better; 5) an undergraduate Probability and Statistics course or equivalent; and 6) an undergraduate Engineering Economy course or equivalent.

The GRE can be waived for students who have practiced engineering for five years past the BS degree, whose resume shows significant career progression, and who meet the first two requirements stated above.

Students seeking admittance to the Engineering Management or Systems Engineering concentrations for full-time study must have a minimum of two years of work experience in an engineering position past the BS degree. Students seeking admittance to these concentrations for part-time study must be employed as an engineer in a U.S.-based organization. The work requirements do not apply to the Industrial Engineering concentration.

#### Conditional Admission

Conditional admission may be granted to students meeting all requirements above except 5) and 6). However, students must successfully complete the undergraduate equivalent of these courses within the first year of admission.

### II. Program of Study Options

#### Plan I - Thesis

A minimum of 24 semester hours of coursework and a thesis (6 hrs) must be completed. Exit exam is over the student's thesis.

#### Plan II - Capstone

A minimum of 33 hours of coursework and a final project paper (3 hrs) must be completed. Exit exam is over the student's capstone paper.

#### Plan II - Modified

A minimum of 36 hours of coursework must be completed. Exit exam is over the student's coursework.

### III. Degree Requirements

1. Average grade on Program of Study courses numbered 600 or above cannot be less than "B".
2. Courses numbered between 500 and 599 may be taken for graduate credit; however, a minimum grade of "B" must be attained in each 500 level course on the Program of Study.
3. All courses on the Program of Study are selected by the student with the counsel of an advisor and are subject to the usual approvals at the Department, College and Graduate School levels. Additional coursework may be required to correct any deficiencies in undergraduate studies and for students who have English as a second language. Refer to the UAH catalog for details.

\* MSE-seeking students who do not meet the GPA requirement stated above have an opportunity to begin graduate coursework as a Non-Degree student in order to establish a record of successful performance in graduate coursework in the first 12 hours. Only 12 hours of coursework taken as a Non-Degree student can be applied to a degree program. See the Graduate Catalog for more information.