

ISyE MS RESEARCH PROGRAM PLANNING GRID/WARRANT REQUEST (DRAFT) (Spring 2019 & beyond)

STUDENT NAME: _____ CAMPUS ID#: _____ DATE: _____ Email _____

ADVISOR NAME: _____ ADVISOR SIGNATURE: _____

GRADUATION YEAR: _____ SEMESTER: Fall____ Spring____ Summer____

Cont. on for PhD? Yes No (If yes faculty advisor & department approval required)

Degree Requirements Confirmed (office use only) _____ (ISyE Graduate Chair)

<u>MS Degree Requirements:</u>				30 degree credits total	
ISyE COURSE OPTIONS (18 credits REQUIRED)					
	Term Taken	# of Credits	Grade	**50% Grad Level Course <input type="checkbox"/>	
Non- ISyE COURSE OPTIONS (Up to 12 credits maximum)					
	Term Taken	# of Credits	Grade	**50% Grad Level Course <input type="checkbox"/>	
ISyE 790 MS Research & Thesis Course (REQUIRED): At least 3 (and at most 6) credits or research credits required.					
	Term Taken	# of Credits	Grade	**50% Grad Level Course <input type="checkbox"/>	

****50% Graduate School Policy** - Graduate school requires 50% of program courses (15 credits) be of graduate level (indicated in [Course Guide](#) under each Course Description if approved as Grad 50% = Y)

- At most 3 credits of graduate co-op credits, ISyE 702, may be applied to meet the credit requirements.
- C or below grades in a course CANNOT count towards the 30-credit requirement.
- Credit for courses graded S/U (or credit/no credit) will only be permitted for ISyE 790 Research and ISyE 702 Graduate co-op courses
- ISyE 601 Special Topics in Industrial Engineering Courses must be APPROVED in advance by faculty advisor

TRANSFER COURSE INFORMATION (Students transferred from other graduate program can transfer up to 9 graduate credits to this program upon the approval of his/her academic advisor and the associate chair for graduate studies. Transfer course approval requests to be done prior to final semester of MS Research Program [ISyE online Transfer Request System](#).)

Name of Institutions:					
Sem/Yr Taken	Course #	Course Title	Credits	Grade	APPROVED BY IE DEPT
Total Credits					

FINAL SEMESTER REQUIREMENTS

- At the beginning of the final semester, students please complete the form, have it signed and approved by faculty advisor to then upload [to ISyE BOX folder system](#) for processing. Once saved to your Box file, please send confirmation email to Pam Peterson/ISyE Graduate Coordinator at prpeters@engr.wisc.edu that your approved form has been saved to your Box file to request your final warrant. An email notification will then be sent to you once your warrant has been processed and can be picked up from the Graduate Student Service office in ME 3182.
- [Apply for graduation](#) through MyUW student center.

EXIT REQUIREMENTS

In order to be eligible for graduation, a Master's student must:

- Indicate plans to graduate in MyUW center
- Have a GPA of 3.0 or higher
- Meet all ISyE [MS degree requirements](#)
- Must have all grades entered, except for the current semester. No P (Progress), Incomplete (I's) or No Report (NRs) grades can show on the student's transcript. Contact Instructor if grade change needed.
- Be enrolled in at least 2 credits the semester in which they graduate.
- Have their MS degree warrant signed and dated by the degree deadline.

JOB PLACEMENT

Engineering Career Services Office
 Suite 170, 1410 Engineering Drive (CAE)
 Madison, WI 53706
 Tel: (608) 262-3471
 FAX: (608) 262-7262
<https://www.engr.wisc.edu/academics/student-services/career-services/>

FURTHER INFORMATION

University of Wisconsin-Madison
 Industrial Engineering Department
 1513 University Avenue, Room 3270
 Madison, WI 53706-1572
 Tel: (608) 262-2686
 Email: ie-admission@engr.wisc.edu

<https://www.engr.wisc.edu/department/industrial-systems-engineering/>

Decision Science/Operations Research Area (DS/OR)

ISyE 412 Fundamentals of Industrial Data Analytics
ISyE 425 Introduction to Combinatorial Optimization
ISyE 512 Inspection, Quality Control, and Reliability
ISyE 513 Analysis of Capital Investments
ISyE 516 Introduction to Decision Analysis
ISyE 517 Decision Making in Health Care
ISyE 524 Introduction to Optimization
ISyE 525 Linear Programming Methods
ISyE 575* Introduction to Quality Engineering
ISyE 620 Simulation Modeling and Analysis
ISyE 624 Stochastic Modeling Techniques
ISyE 632 Introduction to Stochastic Modeling
ISyE 633 Queuing Theory and Stochastic Modeling
ISyE 643 Performance Analysis of Manufacturing Systems
ISyE 645 Engineering Models for Supply Chains
ISyE 719 Stochastic Programming
ISyE 723 Dynamic Programming and Associated Topics
ISyE 726 Nonlinear Programming Theory and Applications
ISyE 727 Convex Analysis
ISyE 728 Integer Optimization
ISyE 730 Nonlinear Programming Algorithms
Stat 424* Statistical Experimental Design for Engineers

TECHNICAL ELECTIVE COURSES (12 credits; six credits must be ISyE courses or cross-listed with ISyE)
All Electives must be approved by the advisor; must be 400 level or above

*Only one of ISyE 575 and Stat 424 may count toward the MS degree.

Manufacturing & Production Systems Area (MPS)

ISyE 510 Facilities Planning
ISyE 512 Inspection, Quality Control, and Reliability
ISyE 516 Introduction to Decision Analysis
ISyE 524 Introduction to Optimization
ISyE 525 Linear Programming Methods
ISyE 575* Introduction to Quality Engineering
ISyE 605 Computer Integrated Manufacturing
ISyE 615 Production Systems Control
ISyE 620 Simulation Modeling and Analysis
ISyE 624 Stochastic Modeling Techniques
ISyE 632 Introduction to Stochastic Modeling
ISyE 643 Performance Analysis of Manufacturing Systems
ISyE 645 Engineering Models for Supply Chains
STAT 424* Statistical Experimental Design for Engineers

TECHNICAL ELECTIVE COURSES (12 credits; six credits must be ISyE courses or cross-listed with ISyE)
All Electives must be approved by the advisor; must be 400 level or above

*Only one of ISyE 575 and Stat 424 may count toward the MS degree.

Health Systems Engineering Research Area (HSE)

ISyE 513 Capital Investment Analysis
ISyE 515 Engr Management
ISyE 516 Introduction to Decision Analysis
ISyE 517 Decision Making in Health Care
ISyE 555 Human Performance and Accident Causation
ISyE 559 Patient Safety and Error Reduction in Healthcare
ISyE 575* Introduction to Quality Engineering
ISyE 601 ** Special Topics in ISyE (topics vary by semester)
ISyE 601 Fundamentals of Industrial Data Analytics
ISyE 608 Safety and Quality in the Medication Use System
ISyE 615 Production Systems Control
ISyE 617 Health Information Systems
ISyE 620 Discrete Event Simulation
ISyE 624 Stochastic Modeling
ISyE 633 Queuing Theory
ISyE 643 Performance Analysis of Manufacturing Systems
ISyE 652 Sociotechnical Systems
ISyE 653 Job and Organizational Design
ISyE 662 Design and Human Disability and Aging
ISyE 671 E-Business: Technologies, Strategies and Applications
ISyE 703 Quality of Health Care: Evaluation and Assurance
ISyE 723 Dynamic Programming
ISyE 729 Behavioral Analysis of Management Decision Making
ISyE 816 Special Topics in Ind Engr (1)
ISyE 854 Safety Theory (offered occasionally)
Quality and Safety: ISyE 555 or 559 or 608 or 703
BMI 576 Introduction to Bioinformatics
BMI 773 Clinical Research Informatics
BMI 776 Advanced Bioinformatics
Ed Psych 711 Hierarchical Linear Modeling
Ed Psych 862 Multivariate Analysis
Nurs 761 Health Program Planning, Eval & Quality Improvement
OTM 753 Health Care Management Operations
PHS 797 Introduction to Epidemiology
PHS 875 Assessment of Medical Technologies – MUST BE approved IN ADVANCE by advisor
Psych 610 Statistical Analysis of Psychological Experiments
Psych 710 Multiple Regression
PHS 876 Measuring Health Outcomes
Stat 333 Applied Regression Analysis
Stat 424* Statistical Experimental Design for Engineers
Stat 571 Statistics for Biosciences
Stat 641 Statistical methods for clinical trials
Stat 701 Applied Time Series Analysis, Forecasting & Control I

ELECTIVES (6 Credits): Any of the courses in the concentration areas. Other courses MUST be approved (in writing) in advance by the student's advisor

*Only one of ISyE 575 and Stat 424 may count toward the MS degree.

**ISyE 601 Topic MUST BE approved IN ADVANCE by advisor

Quality Engineering Research Area (QE)

ISyE 412 Fundamental Industrial Data Analytics
ISyE 417 Health Systems Engineering
ISyE/ME 512 (or ISyE 612) Inspection, Quality Control, and Reliability
ISyE/ME 513 Analysis of Capital Investments
ISyE 515 Engineering Mgmt of Cont Process Improvement
ISyE 520 Quality Assurance Systems
ISyE 575* Introduction to Quality Engineering
ISyE 601** Special Topics in ISYE (Advisor consent required)
ISyE 610 Design of Program Evaluation Systems
ISyE 612 Information Sensing & Data Analysis for
ISyE/OTM 620 Simulation Modeling & Analysis
ISyE 641 Design & Analysis of Mfg Systems (Double count)
ISyE/Psych 652 Sociotechnical Systems
ISyE/Psych 653 Organization and Job Design
ISyE 658/OTM 758 Managing Technological Change in Mfg Systems
ISyE 854 Special Topics in Organizational Design
ED PSYCH 862 Multivariate Analysis
MHR 700 Organizational Behavior
OTM 770 Intro to Quality & Prod Improv (Double count)
STAT 333 Applied Regression Analysis
STAT 349 Introduction to Time Series
STAT 411 Introduction to Sample Survey Theory and
STAT 421 Applied Categorical Data Analysis
STAT 701 Applied Time Series Analysis - Forecasting and
STAT 803 Experimental Design I
STAT 849 Theory and Appl of Regression & Analysis of

BUSINESS ELECTIVES (3 cr min)

ISyE 699 INDEPENDENT STUDY (3 cr required)

Three independent study credits approved in advance by the student's advisor are required. Independent study or an actual quality improvement project from an industrial, health, or service area is required for the 3 credits.

**ISyE 601 Topic MUST BE approved IN ADVANCE by advisor

Human Factors Engineering (HFE)

ISyE 552 Human Factors Design
ISyE 555 Human Performance & Accident Causation
ISyE 556 Occupational Safety & Health Engineering
ISyE/Med Phys 559 Patient Safety & Error Reduction
ISyE/BME 564 Occupational Ergonomics and Biomechanics
ISyE 601** Special Topics in ISyE (1)
ISyE 610 Design of Program Evaluation Systems
ISyE/Psych 652 Sociotechnical Systems
ISyE/Psych 653 Organization & Job Design
ISyE 662 Design for Human Disability & Aging
ISyE 699 Advanced Independent Study
ISyE 854/859/961
CEE 679 Advanced Topics in Transportation Safety
Engineering

- ISYE 349 Introduction to Human Factors or equivalent is required. It is a prerequisite for all other Human Factors courses (required, but does not count toward the 30credits).
- 9 credits of foundation courses. Take one course in physical ergonomics (P), cognitive ergonomics (C), and macroergonomics (M). Courses are listed under multiple areas can be counted toward only one area.
- 9-12 credits of human factors and ergonomic electives beyond those taken as foundation courses.
- 6 credits of Tools and Methods.
- 3-6 credits of MS Project or Thesis.
- At least 15 of the 30 credits must be within the Industrial & Systems Engineering Department.
- You may count multiple IE 816, 854, 859 and 961 graduate seminars toward satisfying the MS Degree Requirements.

Your advisor will determine if a seminar counts toward a human factors/ergonomic elective or Tools/Methods.

TOOLS AND METHODS (6 cr)

On a yearly basis, the HFE faculty group will update the list of Tools and Methods courses. Advisors will decide which set of Tools and Methods courses is appropriate for the students. Following are categories of Tools and Methods courses.

MS PROJECT or THESIS (3-6 cr)

All human factors graduate students are required to satisfactorily complete at least three credit hours devoted to directed research, design, development, or application, and prepare a written report covering this work. Students expecting to continue for the Ph.D. degree are encouraged to write a Master's Thesis. The choice of writing a formal thesis or a research report is made between each student and their advisor.

**ISyE 601 Topic MUST BE approved IN ADVANCE by advisor