PROGRAM GUIDE
2013–2014

For students enrolled in the MSE program after May 2012
This program guide was compiled in the interest of making the lives of MSE students a little easier and to assist faculty and staff with student advising, course planning, etc. It contains specific information about MSE academic policies and provides helpful information about the university and the city of Madison for those new to the area.

A checklist in the back of this guide should make it easier for students to keep track of their responsibilities and to stay on course for completing their degrees.

Students are encouraged to stop by and meet the MSE staff. You will find that a short conversation with our MSE Graduate Coordinator will usually help get a quick resolution to your questions.

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Updated on 12 September 2013
© 2013 UW–Madison Manufacturing Systems Engineering, All Rights Reserved
Welcome to the MSE Program! We’re glad you chose to become a part of the nation’s premier program in Manufacturing Systems Engineering. Ours was the first program in the United States to award an M.S. degree in the field of Manufacturing Systems Engineering. Regardless of the undergraduate background and industry experience you bring with you, your time here is certain to be challenging and rewarding.

We’re here to support you in your academic success. If you have problems or feedback—positive or negative—please communicate with us so that we can help resolve the issues involved and make your experience here more worthwhile.

You will find our office doors open to you, and we urge you to get to know us so that we can work together most effectively. One thing to keep in mind as you proceed toward your master’s degree in the MSE Program is that you are part of a team with your professors, fellow students and the university administrative staff. This collaboration provides you with a world-class education, but it also places upon your shoulders considerable responsibilities. The quality of your education depends as much on you and the way in which you view your place on this team as it does on us. We are here to help and guide you, but you must take the lead in designing and meeting your own goals and achieving your own objectives.

Our alumni have remarked that Madison is a great place to study and to live, and we hope you will find the time to enjoy the city and surrounding areas. Throughout your time here we will offer you opportunities to socialize with fellow students, faculty members and the MSE staff. We invite you to take advantage of these occasions.

Once again, welcome to the MSE Program. We wish you great success in your studies here and in your career ahead.

Sincerely,

Professor Frank E. Pfefferkorn
MSE Program Director
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Chapter One
Enrollment

ENROLLMENT
Students enroll for courses via the Web and their My UW portal. Set up your Net ID and Password prior to enrollment by going to http://my.wisc.edu. Then login to My UW and click the “Academics” tab to find a link to the “Student Center” where students can manage their schedules.

Students may enroll on or after the enrollment appointment time, which they will receive via e-mail. Newly admitted students will receive an invitation to enroll via U.S. mail that will include an access code for the enrollment process. Students in doubt about their date and time to register or who did not receive an e-mail notice or letter may call the enrollment help line at 608-262-0920 to obtain this information.

Information regarding holds on your enrollment must be directed to the party who placed it.

Timetable information is available on the home page of the Office of the Registrar (http://registrar.wisc.edu/). The timetable is updated hourly, with the most current date appearing at the bottom of the page.

In addition to enrollment, students may use the My UW-Madison system to check their e-mail, view academic and personal information, and use the calendar feature.

It is important that you keep the university informed of your current address to ensure timely receipt of registration materials. You may access your student record using My UW or via the link at the university’s home page. There are computer terminals in the Memorial Union, Union South, and in many of the COE buildings, should you need them.

⚠️ Changing your address via My UW has no effect on your payroll records. If you are on the university payroll, stop by 3182B Mechanical Engineering Building for more information on changing your address.
You should consult with a faculty advisor before choosing your courses, particularly during your first semester (see the following section).

**Faculty Advisor**

MSE students are required to get a faculty advisor soon after classes begin. You do not have to keep the same advisor throughout your time with the MSE Program, but you do need one initially to help formulate and finalize your Study Plan. If you elect to complete a thesis or independent study an advisor will also be required to do this. This advisor might not necessarily be the same person as your academic advisor and it is your responsibility to find this additional help.

Chapter Six contains a list of professors associated with the MSE Program, along with their research interests and current projects. You should use this list to find an advisor who is working on topics that interest you. This list can also help you find a faculty member to provide you with financial support.

**Study Plan**

You will receive the MSE Study Plan during orientation sessions. Use this sheet as a guideline for your journey through the MSE Program.

1. **You must have a new study plan filled out, approved by an advisor and returned to the MSE Graduate Coordinator (room 3182 ME) before you can register for the following semester’s classes.** A hold will be placed on registration for the following semester if the Study Plan is not submitted. An updated, one page resume is required to be submitted along with the study plan. A study plan form is available as Appendix A in the back of this book.

Your Study Plan may be changed at any time during your course of study by filling out a new Study Plan sheet and having your advisor approve it. If you have questions regarding this form, stop by the MSE Graduate Coordinator (room 3182 ME).

**International Student Advising**

The International Student Services office assists international students, scholars and their dependent families with non-academic issues upon arrival and throughout their stay at the university. The office provides orientation activities for newly arrived international students, including an introduction to social life and issues at the university, and essential information about immigration regulations and procedures. ISS helps students with their non-immigrant (F or J)
visa status and provides information on the benefits of that status as well as on other issues of student life.

You will find the International Student Services office at the Red Gym, 716 Langdon Street, 2nd Floor, Room 217, or you may call 608-262-2044 or e-mail iss@studentlife.wisc.edu. You also may visit the ISS Web site at http://iss.wisc.edu. Please feel free to stop by the MSE Student Services Office (room 3182 ME) first with questions or problems.

E-MAIL ACCOUNTS
After you set up your My UW account, your WiscMail account will be active.

To set up your student e-mail account, go to www.wiscmail.wisc.edu, enter your Net ID and follow the instructions. If you need help call the DoIT Help Desk at 608-264–HELP(4357) or email them at help@doit.wisc.edu.

Important information regarding events, classes, deadlines, employment opportunities, etc., is sent to your UW e-mail, so please use your account regularly.

CAE ACCOUNTS
The Computer-Aided Engineering Center (CAE) is another resource for MSE students. Students may activate their CAE accounts via any CAE computer terminal located throughout the engineering campus. The CAE main site is located at the back of 1410 Engineering Drive. If you need help with your CAE account, call a CAE consultant at 608-262-5349, or e-mail at helpdesk@cae.wisc.edu.

Instructions for activating your CAE account as well as more detailed information regarding CAE services are also available at their Web site: http://www.cae.wisc.edu/. Use only CAE/WISC accounts for UW-business. Private email services (Gmail, Hotmail, Yahoo, etc.) have risk of compromising confidential information that you might share during your stay at UW-Madison. Refer to the UW’s IT policy at: http://www.wisc.edu/policies/
Chapter Two
Curriculum Information

MSE Course Structure
Each student must take four courses from the three core course areas listed here, at least one from each of the areas. The courses listed in each area are recommended courses only. Other courses that are suitable for a given core area may be offered in future semesters. In addition to the courses from the core areas, students must also complete ISyE/ME 641, and a series of elective courses.

Course Structure Overview
1. 3 credits in each of the three core course areas plus 3 additional credits from one of the core course areas.
2. Capstone Course
3. Elective Courses

- At least 3 credits must be taken in each core course area.
- All students are required to take the Capstone Course, ISyE/ME 641: Design and Analysis of Manufacturing Systems. (See also Capstone Course, p. 13.)
- Elective Courses
- Industry Thesis or Research Thesis (optional).
- For the Industry Thesis or Course Only options, at least 15 credits included in the degree must be made up of course work from the College of Engineering.
- For the Research Thesis option, at least 12 credits in the degree must be composed of course work from the College of Engineering. Any thesis credits taken by the student under the supervision of an advisor will be counted in the department of that professor.
- Students should consult with their advisor concerning deviations from recommended courses.
PROGRAM OPTIONS
Following are the options within the MSE Program. Use these program options as a guide when completing your Study Plan. Students may also pursue an Engineering Management Specialization. Please see p. 14 for more information on how obtain the Engineering Management Specialization.

<table>
<thead>
<tr>
<th>COURSE ONLY OPTION</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four courses selected from the Core Course Areas*</td>
<td>12</td>
</tr>
<tr>
<td>Capstone Course (offered in spring semester)</td>
<td>3</td>
</tr>
<tr>
<td>Elective Courses**</td>
<td>12</td>
</tr>
<tr>
<td>Industry Thesis (Not required for courses only option)</td>
<td>3</td>
</tr>
<tr>
<td>MINIMUM TOTAL</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INDUSTRY THESIS OPTION</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four courses selected from the Core Course Areas*</td>
<td>12</td>
</tr>
<tr>
<td>Capstone Course (spring semester)</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Thesis</td>
<td>3</td>
</tr>
<tr>
<td>Elective Courses**</td>
<td>12</td>
</tr>
<tr>
<td>MINIMUM TOTAL</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESEARCH THESIS OPTION</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four courses selected from the Core Course Areas*</td>
<td>12</td>
</tr>
<tr>
<td>Capstone Course (spring semester)</td>
<td>3</td>
</tr>
<tr>
<td>Research Thesis</td>
<td>12</td>
</tr>
<tr>
<td>Elective Courses**</td>
<td>3</td>
</tr>
<tr>
<td>MINIMUM TOTAL</td>
<td>30</td>
</tr>
</tbody>
</table>

*At least one course must be selected from each of the three core areas.

**Up to one credit of Independent Study for an internship may count as elective credit toward the MSE degree. A written report must be approved by the advisor. This credit cannot be used toward fulfillment of the Industry Thesis or Thesis Research requirements.
**Core Course Information**

1) **Fundamentals of Processes and Technology**

Courses focus on materials processing and/or manufacturing control systems with a hands-on component as an integral part of the course. Examples of topics include metal cutting and forming, integrated circuit fabrication, welding, casting, polymer processing, and automatic control systems. *Faculty may offer new courses each semester, so if you believe that a class fits in this core category but is not listed below, please check with the MSE staff.*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBE 450</td>
<td>Process Design</td>
</tr>
<tr>
<td>CBE 470</td>
<td>Process Dynamics and Control</td>
</tr>
<tr>
<td>CBE 540</td>
<td>Polymer Science and Technology</td>
</tr>
<tr>
<td>CBE 541</td>
<td>Plastics and High Polymer Laboratory</td>
</tr>
<tr>
<td>CBE 770</td>
<td>Advanced Process Dynamics and Control</td>
</tr>
<tr>
<td>ECE 412</td>
<td>Power Electronic Circuits</td>
</tr>
<tr>
<td>ECE 453</td>
<td>Embedded Microprocessor Systems Design</td>
</tr>
<tr>
<td>ECE 462</td>
<td>Medical Instrumentation</td>
</tr>
<tr>
<td>ECE 468</td>
<td>Digital Computer Projects in Control and Instrumentation</td>
</tr>
<tr>
<td>ECE/NEEP 528</td>
<td>Plasma Processing and Technology</td>
</tr>
<tr>
<td>ECE 549</td>
<td>Integrated Circuit Fabrication Laboratory</td>
</tr>
<tr>
<td>ISyE 415</td>
<td>Introduction to Manufacturing Systems, Design and Analysis</td>
</tr>
<tr>
<td>ISyE 605</td>
<td>Computer-Integrated Manufacturing</td>
</tr>
<tr>
<td>ME 417</td>
<td>Introduction to Polymer Processing</td>
</tr>
<tr>
<td>ME 418</td>
<td>Engineering Design with Polymers</td>
</tr>
<tr>
<td>ME 419</td>
<td>Fundamentals of Injection Molding</td>
</tr>
<tr>
<td>ME 428</td>
<td>Numerical Control</td>
</tr>
<tr>
<td>ME 429</td>
<td>Metal Cutting</td>
</tr>
<tr>
<td>ME 437</td>
<td>Advanced Welding Processes and Materials Selection</td>
</tr>
<tr>
<td>ME/ECE 439</td>
<td>Introduction to Robotics</td>
</tr>
<tr>
<td>ME 446</td>
<td>Automatic Controls</td>
</tr>
<tr>
<td>ME 447</td>
<td>Computer Control of Machines and Processes</td>
</tr>
<tr>
<td>ME 469</td>
<td>Internal Combustion Engines</td>
</tr>
<tr>
<td>ME 565</td>
<td>Power Plant Technology</td>
</tr>
<tr>
<td>ME 514</td>
<td>Rapid Prototyping and Manufacturing</td>
</tr>
<tr>
<td>ME/ECE 577</td>
<td>Automatic Controls Laboratory</td>
</tr>
<tr>
<td>ME 601*</td>
<td>Fundamentals of Microfabrication</td>
</tr>
<tr>
<td>ME 601*</td>
<td>Design and Prototype Fabrication</td>
</tr>
<tr>
<td>ME 601*</td>
<td>Material Selection</td>
</tr>
<tr>
<td>ME 717</td>
<td>Advanced Polymer Processing</td>
</tr>
<tr>
<td>ME 720</td>
<td>Advanced Powder Processing and Particulate Engineering</td>
</tr>
<tr>
<td>ME 729</td>
<td>Stochastic Analysis of Machine Tool Dynamics and Control</td>
</tr>
<tr>
<td>ME/ECE 739</td>
<td>Advanced Automation and Robotics</td>
</tr>
<tr>
<td>ME 747</td>
<td>Advanced Computer Control of Machines and Processes</td>
</tr>
<tr>
<td>ME/CBE 567</td>
<td>Solar Energy Technology</td>
</tr>
<tr>
<td>MS&amp;E 434</td>
<td>Introduction to Thin-Film Deposition Processes</td>
</tr>
<tr>
<td>MS&amp;E 461</td>
<td>Advanced Metal Casting</td>
</tr>
<tr>
<td>MS&amp;E 465</td>
<td>Fundamentals of Heat Treatment</td>
</tr>
</tbody>
</table>
2) **Fundamentals of Systems Engineering and Design**

Concentration is on designing products and systems, and integrating these two areas to achieve quality, improve flow, utilization of assets and productivity. Examples of topics include CAD/CAM, computer integrated manufacturing, design for manufacturing, feature-based design methods, industrial ergonomics, and robotics, planning and control of materials and resources, models for system analysis, quality management, and facilities planning. *Faculty may offer new courses each semester, so if you believe that a class fits in this core category but is not listed below, please check with the MSE staff.*

- **CBE 430** Chemical Kinetics and Reactor Design
- **CE 498** Construction Project Management
- **CEE 370** Transportation Engineering
- **CEE 498** Construction Project Management
- **CEIV 698** Construction Engineering and Management
- **CS/ECE 755** VLSI Systems Design
- **CS/ECE 756** Computer-Aided Design for VLSI
- **ECE 427** Electric Power Systems
- **ME 418** Engineering Design with Polymers
- **ME 444** Design Problems in Electricity
- **ME 535** Computer-Aided Geometric Design
- **ME 549** Product Design
- **ME 601** Mechatronics in Control and Product Realization
- **ME 601** Design of Computer Control Systems
- **ME 601** Computer Aided Design and Analysis of Mechanical Systems
- **ME 712** Quality Product and Process Design
- **ME 735** Computer Integrated Concurrent Design
- **ME 748** Optimum Design of Mechanical Elements and Systems
- **ME/CS/ECE 780** Robot Motion Planning
- **MKT 440** Emerging Issues in Product Development
- **MKT 740** Emerging Issues in New Product Development
- **MKTG 427/727** Enterprise Systems and Supply Chain Management
- **OTM 860** Planning for New Services and Products
- **ISyE/ME 510** Facilities Planning
- **ISyE/ME 512** Inspection, Quality Control and Reliability
- **ISyE 515** Engineering Management of Continuous Process Improvement
- **ISyE 520** Quality Assurance Systems
- **ISyE/BME 564** Occupational Ergonomics and Biomechanics
- **ISyE 575** Introduction to Quality Engineering
- **ISyE 612** Information Sensing and Analysis for Manufacturing Process
Fundamentals of Systems Engineering and Design (continued)
ISyE 620 Simulation Modeling & Analysis
ISyE/ME 643 Performance Analysis of Manufacturing Systems
ISyE 655 Advanced CAD/CAM
ISyE 691* Financial Engineering in Manufacturing Enterprise Systems
OTM 654 Production Planning and Control
OTM 770 Quality and Productivity Improvement
   OTM 770 is Offered Online through Sustainable Systems Engineering (Prof. Mark Finster)
OTM 875 Reorganizing the Factory: Competing Through Cellular Manufacturing
STAT/ME 424 Statistical Experimental Design for Engineers
*This course number is used for multiple seminar classes. Please check the timetable for the correct listing.

3) Fundamentals of Business and Management
Topics studied in this area include acquiring, developing and managing technology and human competencies important to the organization’s survival and growth, the penetration of markets, and measurement of business and operational performance. Examples of topics include manufacturing and technology strategy, organization design, measurement and reward systems, motivation, and the management of change. Faculty may offer new courses each semester, so if you believe that a class fits in this core category but is not listed below, please check with the MSE staff.

ACCT 300/700 Introduction to Financial Management
ACCT 301/701 Financial Reporting
ACCT 710 Managerial Accounting
ACCT 720 Investment Theory and Practice
BUS 765 Sustainability meets Entrepreneurship
FIN 300 Introduction to Finance
FIN 757 Entrepreneurial Finance
ISyE/PSYCH 653 Organization and Job Design
MHR 700 Organizational Behavior
MHR 715 Strategic Management of Innovation
MHR 720 Organization and Management Processes
MHR 722 Entrepreneurial Management
MHR 714 Strategic Management of Innovation
MHR 765 Technology Entrepreneurship
MKTG 421 Fundamentals of Supply Chain Management
MKTG 724 Strategic Global Sourcing
MKTG 422/722 Logistics Management
OTM 365/765 Database Concepts for Operations Management
OTM 758/ISyE 658* Managing Technological and Organizational Change
OTM 861 Strategic Breakthrough Management and Quality Planning

* OTM 758 / ISyE 658 does not count as engineering credit.
**Elective Courses**
The MSE Program offers a high degree of flexibility, allowing students to explore a particular field of interest. Electives can be chosen from any of the graduate courses offered at the university, subject to the following:

- All courses must satisfy Graduate School credit requirements.
- The total set of courses on your Study Plan must fulfill the minimum criteria for the MSE degree.
- All courses must be approved by your advisor as forming a coherent program for the MSE degree.
- Students are advised to take graduate courses above 400 level.
- Students may choose a sequence of courses that allow them to specialize in an area. Sometimes such a sequence may permit the student to obtain a certificate acknowledging their expertise.

While any graduate-level course may be chosen for electives, the natural places for MSE students to look for relevant elective courses are:

- Courses listed under the three Core Course Areas (see pp. 10-13)
- Courses in the following departments/schools:
  - All Engineering Departments
  - School of Business
  - Computer Science
  - Statistics

Students may wish to seek the latest information from each department or school for courses and seminars offered during a particular semester.

The vast majority of formal graduate-level courses are not taught every semester. Generally, 400 – 600 level courses are taught once per year, either in the Spring or Fall semester. 700 level and above courses are generally taught once every three to four semesters. Therefore, it is very important to make a plan of study early and meet with your advisor. These rules do not apply to thesis research or independent study courses.

**The Capstone Course**
The only required class, ISyE/ME 641, *Design and Analysis of Manufacturing Systems*, taught by Professor Ananth Krishnamurthy, involves team projects with area firms. The course covers a broad range of concepts, techniques and tools
relevant to the design, analysis, development, implementation, operation and management of modern manufacturing systems.

*The course consists of two primary components:*

1. Lectures by the course instructor, along with related homework assignments, providing an integrated framework for approaching the design and analysis of modern manufacturing systems.

2. Participation in a 4–6 person industry-based group project, including group visits to the company involved.

Visits to companies are done in groups and must be made using UW Fleet cars. Personal vehicles are not to be used for these visits. In order to drive a fleet car, students must first be authorized by UW Risk Management via paperwork available on the SLC website: [http://slc.engr.wisc.edu/policiesuwfleet.html](http://slc.engr.wisc.edu/policiesuwfleet.html)

The emphasis in this course is breadth of knowledge instead of covering any one topic in detail. Through lectures and projects, the course is intended to create an awareness of the wide range of issues that impact the design and operation of manufacturing systems.

The semester culminates with the student teams formally presenting their recommendations at a seminar attended by manufacturing executives from around the Midwest. The number of firms that have implemented team recommendations underscores the quality and applicability of the capstone course.

- Participating students should plan to keep Tuesday afternoons after 1 p.m. free during the semester. Industry visits, team meetings and required discussions will usually take place during this time.

**Engineering Management Specialization**

A student may elect to obtain an Engineering Management Specialization within the MSE degree. For this 30 credit, non-thesis option, the student must fulfill the basic requirements stated on p. 9. As part of the 30 credits, they must take 12 credits from the list below, of which 9 must be from the School of Business. MSE students planning to pursue the Engineering Management Specialization should have good language skills and be prepared to engage in active discussions in the classroom.
Students choosing this specialization must obtain the approval and signature of Professor Urban Wemmerlöv (3525 Grainger Hall) on their study plan each time.

Required Course

OTM 758 Managing Technological and Organizational Change

* This course and several others below, fulfill the Core Course Area requirement for Business and Management. Students are strongly urged to take OTM 758 in the fall semester of their second year.

Elective Courses

Students must take 9 elective credits from the two areas listed below, with no more than 7 credits from any one area. At least six of the credits must be from the School of Business.

**ACCOUNTING, FINANCE, AND MANAGEMENT**

ACCT 710 Managerial Accounting
FIN 300 Introduction to Finance
MHR 700 Organizational Behavior
MHR 720 Organization and Management Processes
MHR 722 Entrepreneurial Management
MHR 723 Business Strategy [non-MBA section; spring only]

**OPERATIONS AND TECHNOLOGY MANAGEMENT**

MHR 714 Strategic Management of Innovation
MHR 765 Technology Entrepreneurship
OTM 770 Quality and Productivity Improvement
OTM 860 Planning for Quality in New Services and Products [offered in alternate years]
OTM 861 Strategic Breakthrough Management and Quality Planning [offered in alternate years]
OTM 875 Reorganizing the Factory: Competing through Cellular Manufacturing
ISyE 515 Engineering Management of Continuous Process Improvement Projects
ISyE 653 Organization and Job Design

**INDUSTRY THESIS**

MSE students may choose to register for 3 credits of Industry Thesis under the supervision of a faculty member. These credits will not count towards any of the core requirements. If the Industry Thesis is in the College of Engineering, you should register using ISyE/ME 790 or any other course number approved by the MSE program. If you are registered with a faculty in the School of Business you should use Bus 790.
**Topic and Advisor**

The Industry Thesis can focus on any topic of relevance to the MSE degree and must be selected by the student in conjunction with his/her advisor. For examples, see the list of core course topics. Students are encouraged to select an advisor whose research interests match their own. Students need to select an advisor prior to conducting this study. The advisor provides periodic feedback during the course of the study to ensure that the scope of the work meets the requirement of the MSE Program.

**Problem and Problem Environment**

The Industry Thesis should focus on a problem taken from industry. Such problems can be identified in two ways:

- The problem is a current issue in a particular organization (possibly the firm from which the student is on leave).
- The problem is widely described in the literature as being of great relevance to the manufacturing industry.

**It is critical to choose a problem that can be adequately solved within the time available for the Industry Thesis.**

**Company Visits**

Although many types of interactions are possible with companies including conference calls, Skype, and email, the industry visits remain the most effective way to make progress on these projects. Please be on time for such visits and dress in business casual attire.

All company visits made for UW project purposes should be made with a fleet car and personal vehicles should not be used. In order to drive a fleet car, students must first be authorized by the UW Risk Management office. The forms for this are available available on the SLC website:

[http://slc.engr.wisc.edu/policiesuwfleet.html](http://slc.engr.wisc.edu/policiesuwfleet.html)

Please check with the SLC office (room M1002 ECB) for more information about this and other requirements of being an authorized UW driver.

**Problem-Solving Methodology**

The Industry Thesis should involve a research study of relevant literature, along with an experimental or empirical component of research. The latter should be based on a theoretical construct (hypotheses or ideas for improvement) to be
tested, and involve data collection and analysis. Alternatively, if the study is of
an exploratory nature involving a practical industry project, its outcome should
be a theoretical construct suitable for further investigation. Data can be derived
from direct experimentation in plants or laboratories (e.g., investigating tool
replacement strategies on NC equipment in the laboratory), modeling, or from
interviews and mail surveys (e.g., documenting a firm’s or industry’s adherence
to the ISO 9000 standards). Literature reviews are normally not acceptable.

Expected Results
One intention of the Industry Thesis is to expose the student to the systematic
problem-solving process: problem formulation, methodology, data analysis,
result formulation, documentation and presentation.

A second purpose of the Industry Thesis is for the student to acquire a deeper
knowledge in an area of special interest. Therefore, there is no absolute
expectation that the findings represent new and unique research results.
However, one of the study’s outcomes should be a set of recommendations
addressing the specific problem formulated for the study. It is the responsibility
of the advisor to decide whether the problem is of sufficient interest to be worthy
of a study and to convey to the student the expectations in terms of scope and
results.

Documentation and Defense
The MSE Industry Thesis requires a formal written report and a defense
presentation in front of a committee of MSE faculty. As a rule, the main body of
the report should be approximately 25 pages, single-spaced. The rest of the
information should be included in the form of appendices. Length may vary,
depending on the subject matter. Consult with your advisor if your report will
deviate substantially from the recommended number.

The Industry Thesis must then be orally presented and defended before a
committee of at least three MSE faculty members. The student should prepare a
20-25 minute presentation for defense. The defense usually lasts no longer than
an hour (including questions).

A successful defense results in the signing of the student’s warrant and receipt of
a grade, certifying eligibility to receive his/her master’s degree. (See also Final
Examination page 28.)

Copies of the report must be available to the student’s MSE Oral Committee no
later than one week before the date of the defense (see Final Examination, p. 28, and Appendix B). These pre-defense copies need not be bound, but should be clear and error-free. Check with your Industry Thesis advisor for additional instructions.

Suggested Formats
The following are suggested outlines for Industry Thesis reports. You do not have to follow them exactly; they may be modified to suit your project as based on discussions with your faculty advisor. You may also combine headings if appropriate.

TITLE PAGE You may also add an optional page of acknowledgments, thanking people from the company or others who supported your efforts during the project. For sample see Appendix C.

EXECUTIVE SUMMARY (1–2 pages) Include the company name, location and product line and a summary of the following: project motivation, project goals and duration, approach and analysis, main insights and recommendations, implementation plans, and relevant issues or challenges.

TABLE OF CONTENTS Pages preceding and including the Table of Contents are numbered i, ii, iii; pages after this are numbered 1, 2, 3 ...

COMPANY BACKGROUND

MOTIVATION FOR PROJECT

PROJECT GOALS, SCOPE AND DURATION

APPROACH or METHODOLOGY

DATA GATHERING

ANALYSIS Provide a brief summary of any relevant theory or tools used as well as any assumptions made (or include this in an appendix).

MAIN INSIGHTS AND OBSERVATIONS

MAJOR RECOMMENDATIONS This is the most important part of your report.

EXPECTED RESULTS Quantify the results of your recommendations. If relevant, provide justification, including anticipated costs and benefits (both quantitative and qualitative).
IMPLEMENTATION ISSUES

RECOMMENDED NEXT STEPS or IMPLEMENTATION PLANS

LESSONS LEARNED FROM THE PROJECT These are not recommendations relating to the project goals, but rather what you have learned during the project.

REFERENCES or BIBLIOGRAPHY

APPENDICES Include details such as company data, drawings, layouts, analyses, tables, spreadsheets, additional graphs, computer printouts for models, etc., that are too long for the main body of the report and not necessary for managerial overview. Appendices should be numbered A, B, C, and their pages should be numbered A–1, A–2, etc.

Industry Thesis Project Involving Laboratory Experiments or Surveys

TITLE PAGE (May also add optional page of acknowledgments thanking people from the company or others who supported your efforts during the project.)

EXECUTIVE SUMMARY (1–2 pages) This should include a summary of the following: project motivation, project goals and duration, approach and analysis, main insights and recommendations, implementation plans and relevant issues or challenges.

TABLE OF CONTENTS Pages preceding and including the Table of Contents should be numbered i, ii, iii ..., and afterwards 1, 2, 3 ...

MOTIVATION FOR PROJECT

PROJECT GOALS AND SCOPE

REVIEW OF LITERATURE Summary of current science in this area.

APPROACH or METHODOLOGY

DATA GATHERING
**ANALYSIS** In addition to showing the analysis, provide a brief summary of any relevant theory or tools used as well as any assumptions made (or include such details in an appendix).

**RESULTS**

**CONCLUSIONS**

**LESSONS LEARNED FROM THE PROJECT** These are not recommendations relating to the project goals, but rather what you have learned during the project.

**REFERENCES or BIBLIOGRAPHY**

**APPENDICES** Details of items such as experimental data, drawings, survey responses, tables, spreadsheets, additional graphs, computer printouts for models, etc., that are too long for the main body of the report. Appendices should be numbered A, B, C, and their pages should be numbered A-1, A-2 ... B-1, B-2 ... (if you have pages from other sources such as layouts, you may number them by hand).
**Research Thesis**

The master’s thesis may involve work with industry, empirical effort in a lab, or theoretical study of a topic relevant to the MSE degree. Using a component of research, it should extend the known results and contribute to the knowledge of that particular area of interest. The thesis topic is chosen by the student and is completed under the supervision and review of a faculty advisor. In addition to the written report, the findings are presented and defended orally. The thesis must be taken for a total of at least 12 credits (see *Program Options: 30 Credit Thesis Program*, p. 9). The documentation and defense guidelines for an MSE thesis is similar to that of the MSE Industry Thesis. The suggested format of the report is given below:

**TITLE PAGE** (may also add optional page with acknowledgements) See sample cover page in Appendix C.

**ABSTRACT** (1-2 pages) Include a brief summary of the importance of the research topic, research question being addressed, methodology and approach used, and key findings of the research.

**TABLE OF CONTENTS** Pages preceding and including the Table of Contents are numbered i, ii, iii; pages after this are numbered 1, 2, 3 ...

**INTRODUCTION AND THESIS OUTLINE** This chapter should provide motivation for the research question, the approach used in the thesis and provide an overview of the organization of the thesis.

**LITERATURE REVIEW** This includes a critical review of relevant research literature to help position the contribution of this research.

**RESEARCH FINDINGS** This may be split into multiple chapters, each chapter focusing on a particular aspect of the research. The chapter should describe the methodology used and findings obtained from the research.

**SUMMARY OF FINDINGS AND EXTENSIONS** (2-3 pages) This chapter should summarize key findings of the thesis and describe future extensions of this research.

**REFERENCES OR BIBLIOGRAPHY**
APPENDICES Include details such as data, drawings, layouts, analyses, tables, spreadsheets, additional graphs, computer printouts for models, etc., that are too long for the main body of the report and not necessary for managerial overview. Appendices should be numbered A, B, C, and their pages should be numbered A–1, A–2, etc.

INDUSTRY /RESEARCH THESIS GUIDELINES
Students are required to submit a bound copy of their thesis to the MSE Graduate Coordinator (room 3182 ME). The report must also be submitted electronically (check with MSE Graduate Coordinator for format of submissions), usually on a CD, USB, or pen drive. Graduation warrants are not cleared until a report is submitted. Copies of all theses are kept by MSE for students to check out and peruse.
Chapter Three

Academic Policies

Degree Requirements
There are several formal requirements that students must meet in order to be recommended for an MSE master’s degree:

✓ Candidates must satisfy all general regulations of the Graduate School pertaining to the master’s degree and the special regulations of the MSE Admissions Committee. Graduate School specifications can be found in a handbook, a copy of which is available in the MSE Student Services Office (3182 ME), or from the Graduate School.

✓ Candidates must maintain a PCGPA of 3.0 and a minimum PSGPA of 3.0 for the current semester (see next page for PCGPA and PSGPA). A course in which a grade of C or lower was earned will not be counted toward the MSE degree.

✓ At least 30 credits must be completed by a candidate for the master’s degree.

✓ Students may not transfer more than 12 graduate credits from another institution (see Transferring Credits, p. 26, for more information).

✓ For the Course Only and Industrial Thesis option, at least 15 credits included in the degree must comprise course work from an engineering college. For the Research Thesis option, at least 12 credits included in the degree must comprise course work from an engineering college.

ⓘ Engineering courses that are cross-listed with non-engineering departments can be used to fulfill this requirement if the course is taught by an Engineering Professor.

✓ Candidates for a double degree should provide each professor or department with a list of the courses to be credited toward that degree. Each list should contain department abbreviations, course numbers and titles, and the number of credits. Note that no more than 25 percent of credits of the program with the lowest credit requirement may overlap between degrees. For example with two 30 credit degrees, 7 credits could be overlapped.
**Course Load**

*Full-Time Students*
All students are admitted as full-time students, unless otherwise noted in writing prior to the beginning of their program. Full-time students are expected to take at least 8 credits of course work during all regular semesters in residence. During the summer session a graduate student must take 2 credits to maintain full-time status. For more information on this subject please see the Enrollment Requirements section of the Graduate School’s Academic Policies at: [http://www.grad.wisc.edu/education/acadpolicy/index.html](http://www.grad.wisc.edu/education/acadpolicy/index.html)

*Part-Time Students*
Students must have prior approval from the MSE Program to become part-time students. There are no special credit-load requirements imposed on approved part-time students.

**Grades**
Students must maintain a grade-point average of 3.0 (4.0 scale) in all graduate work, both for the current semester and cumulatively. A course in which a grade of C or lower is received will not be counted toward the MSE degree.

**Grade Point Average**
Courses taken while enrolled as a graduate student in the MSE Program and all other courses presented toward the degree are included in the computation of the Program Semester Grade Point Average (PSGPA), except for the following:

- Courses lower than the 300 level in any department
- Courses above the 300 level in any department that are not included in the Graduate School Bulletin

The computation of the Program Cumulative Grade Point Average (PCGPA) will follow the same conditions defined above for the PSGPA.

A PSGPA and a PCGPA of at least 3.0 are required for satisfactory academic progress. Students taking only independent-study or thesis-research credits and receiving grades of P or S will be judged to be making satisfactory academic progress.
Students admitted on probation may be required to obtain a PSGPA higher than 3.0 in the first semester, as specified in writing at the time of admission. (See Probation, below, for the relevant policy.)

SECOND MASTER’S DEGREE
To be eligible to earn a second master’s degree, students must have earned credits to satisfy requirements of both degrees. Note that no more than 25 percent of credits of the program with the lowest credit requirement may overlap between degrees. (See sample letter in Appendix D)

When you submit your study plan you should include the plans for second degree as well. Clearly indicate overlapping credits between the two programs.

TIME LIMIT
A full-time student must complete the MSE degree requirement by the end of the fourth semester of full-time graduate study in the program. Any student exceeding this time limit will be automatically placed on probation, unless the time limit has been extended by the MSE director.

No particular time limits are imposed on part-time students, as long as their graduate studies are continuous.

PROBATION
New Students
An applicant for graduate study in the MSE Program who does not meet the normal requirements for admission may be recommended for admission on probation by the Admissions Committee.

Continuing Students
Students previously admitted for graduate study in the MSE Program will be placed on probation if they fail to make satisfactory academic progress, as defined by the current MSE Degree Requirements (see p. 23).

Term of Probation
The probationary status of each student in the MSE Program will be reviewed at the end of each semester. A student placed on probation who fails to qualify for removal of probation at the next review of his/her probationary status (normally performed the following semester) will not be permitted to continue graduate studies in the MSE Program.

Removal of Probation
✓ A student admitted on probation will be removed from probation if that student (a) has met all special conditions specified in the letter from the MSE Program notifying the student of admission, and (b) is making satisfactory academic progress according to the current policy of the MSE Program.

✓ Continuing students on probation will be removed from probation if they are deemed to be making satisfactory progress according to the current MSE Program policy and if they are full-time students with a minimum GPA of 3.25 and no grades of Incomplete.

✓ A student may be removed from probation by special action of the MSE Admissions Committee. See MSE Administrative Assistant for details.

① **A student will not be recommended for a graduate degree in Manufacturing Systems Engineering while on probation.**

**Transferring Credits**

*Criteria*

✓ A maximum of 12 credits may be transferred from another institution and counted toward the MSE degree.

✓ Only courses taken in the last five years may be accepted for transfer.

✓ Students who change from Special Student status at the UW to Graduate Student status may transfer their Special Student credits. However, see p. 28 for details on this policy.

✓ Transferred courses must fit into the student’s Study Plan. Any request for transfer must first be approved by the student’s advisor and then submitted for approval to the Curriculum, Policy and Exams Committee.

✓ Each course must be the equivalent of a 3 credit-hour semester graduate course. Two courses taken under a quarter system may be counted as one semester course.

✓ The student must have earned a grade of at least a B (or equivalent) in each transferred course.
✓ No credits may be transferred in place of the following courses: Independent Study, ISyE/ME 641 Design and Analysis of Manufacturing Systems, and OTM 758 Managing Technological and Organizational Change.

Procedure
The student, after meeting the above criteria, must file a written request with the MSE Curriculum, Policy and Exams Committee for credit transfer (see Appendix E for sample letter). The request and the supporting documentation that follow should be submitted to the MSE Student Service Coordinator (see also Petition Deadlines, p. 28).

Required Documentation

✓ Description of course content and course material, i.e. syllabus

✓ Official transcripts indicating when the course was taken and the grade received

✓ Evidence of course length (number of class hours)

✓ A statement indicating similarity to existing course(s) at UW-Madison.

✓ Letter of approval from the instructor of the course here at UW-Madison that most closely matches the one taken. The letter from the UW instructor should verify the similarity of the two courses and the depth of the material covered.

✓ The signature of the student’s advisor on the cover letter of the request indicating approval of the credit transfer

Special Student Credits
If a student wishes to use any Special Student credits to meet the MSE degree requirements, these credits must be transferred to Graduate Student credits. If you are a Special Student transferring credits to the MSE Program, you must have a letter from your advisor, and you will be charged for the difference in tuition between Special Student credits and Graduate School credits. This balance must be cleared before a warrant can be issued (see Appendix F for a sample letter).
According to Graduate School requirements, Special Student credits can be transferred only in semester blocks; all credits earned during a given semester must be transferred.

**Course Substitution**
Students may choose to deviate from the recommended course list when creating their Study Plan. Students wishing to do this must file a written request with the MSE Curriculum, Policy and Exams Committee:

- Write a petition to the Committee requesting substitution of a course.
- Indicate what course you plan to take and the core area to which you would like it applied.
- Include a copy of the course description from the Bulletin.
- Get your advisor’s signature on the petition, along with yours, and submit it to the Committee via the MSE Student Services Office (room 3182 ME).

**Petition Deadlines**
Requests for credit transfers, course substitutions and other academic policies relating to the Program requirements must be submitted to the MSE Graduate Coordinator (3182 ME) on or before October 15 for a decision to be reached during the fall semester and on or before March 1 for a decision to be made during the spring semester.

**Final Examination for Thesis**

*Examination Committee*

The examination is oral and administered by a committee of three faculty members: two MSE faculty members (including one MSE Executive Committee member other than the student’s advisor for the Research/Industry Thesis), and a third member who may be a university faculty member at large.

The student and his/her advisor should work together to select the other two committee members. However, it is the student’s responsibility to secure the participation of each committee member and to identify an agreeable date and time for the oral examination.

Copies of the final report should be given to Examination Committee members at least one week in advance of the student’s defense date.
Your Research/Industry Thesis advisor may need to review this document and you check with them about their expectations regarding a timeline for review.

Warrant
The warrant is generated only after a Petition to Graduate has been completed by the student, submitted to the MSE Graduate Coordinator (3182 ME) and approved by the Graduate School (see Appendix E for further details). It is the student’s responsibility to pick up his/her warrant from the MSE Program administrative assistant prior to the examination, bring it to the examination, and then return it to the MSE Graduate Coordinator after the examination. Please update the MSE Graduate Coordinator on your progress towards graduation at least once a month during your final semester to ensure that graduation deadlines and requirements are met satisfactorily.

Examination Format
The first 30 minutes of the examination will be devoted to the student’s presentation of his/her project work. The balance of the examination will consist of a question-and-answer period regarding the presentation topic, relevant related topics, and a discussion of the student’s overall academic program and experience.

Exam Room
To reserve a room in ECB, please send an e-mail with the date and time you need to: ecb-room-request@engr.wisc.edu. To reserve a room in ME, please stop by the MSE Student Services Office (3182 ME). Because space fills quickly toward the end of the semester, make your reservation as early as possible. Be sure to make clear the number of people you expect, and ask if the room you are getting has any AV equipment. Once you have made your reservation, please inform the MSE Graduate Coordinator.
**Graduation Procedures**
At the beginning of each semester, you will receive an e-mail notification from the MSE Graduate Coordinator confirming your intent to graduate based on the anticipated graduation date listed on your MSE Study Plan.

A mandatory meeting for graduates will be held approximately four weeks into the semester. Countdown to Commencement is designed to guide graduates through the many procedures and deadlines associated with commencement. Contact the MSE administrative assistant immediately if you intend to graduate at the end of the semester and have not been notified.

**Commencement Ceremony**
MSE students may participate in commencement activities, held in May and December. For details, call 608-262-9076. The ceremony is organized by the secretary of the faculty office in 133 Bascom Hall 608-262-3956. For further information visit [http://www.secfac.wisc.edu/commence/](http://www.secfac.wisc.edu/commence/)
Chapter Four

Financial Aid

Fellowships and Scholarships

Financial aid, in the form of research and teaching assistantships, is available on a competitive basis from the MSE Program. Faculty associated with the MSE Program may also be contacted directly regarding funding opportunities. The Graduate School offers aid in the form of fellowships and grants for which students are nominated by their department. Students should contact the Graduate School for a complete listing of fellowships, which can include comprehensive health insurance and remission of the out-of-state portion of tuition.

The Graduate School, 217 Bascom Hall, has information regarding fellowships at: http://uwofr.wordpress.com/

The McBurney Center, 1305 Linden Drive, Room 258, administers a variety of scholarships intended to assist the educational advancement of people with disabilities. Call 608-263-2741 or visit the Web site: www.mcburney.wisc.edu

UW-Madison Continuing Studies Adult & Student Services, located at 21 Park Street 7th floor, provides information about various financial aid resources for returning adult students. Call 608-263-6960 or visit the Web site: www.dcs.wisc.edu/info

The Office of Student Financial Aid, 333 East Campus Mall #9701, has applications for graduate student loans and information about student employment opportunities. Call 608-262-3060 or visit the Web site: www.finaid.wisc.edu

The Grants Information Collection in the Reference Department of Memorial Library (Room 262) has reference books and other publications about fellowships and scholarships. Call 608-262-6431 or visit the Web site: http://grants.library.wisc.edu

International students are eligible for consideration for Graduate School fellowships only if their undergraduate institution’s language of instruction is English or if they have completed, at the time of nomination, the equivalent of at least two semesters of full-time study at an institution in the United States.
Occasionally the International Student and Scholars Services receives information about scholarships available to international students (see International Student Advising, p. 6).

HELPFUL PUBLICATIONS
Following is a list of publications available from libraries, UW-Madison, or directly from an organization. The list is by no means comprehensive, but should provide you with a good start.

The Annual Register of Grant Support. Published by the National Register Publishing Company, this is one of the largest collections of funding sources. Find the Register in the Grants Information Collection and in the Graduate School’s Office of Fellowships and Minority Programs.


Grants for Graduate Study (3rd Edition). Compiled by the Graduate School of the University of Massachusetts at Amherst, this publication is available through Peterson’s Guide, P.O. Box 2123, Princeton, NJ 08543–2123. Phone: 609-243-9111.

FINANCIAL SUPPORT
Funding is available on a competitive basis through the MSE Program. Students seeking financial support, Research Assistantships (RA), Project Assistantships (PA), or Teaching Assistantships (TA), are encouraged to speak directly to professors affiliated with the program. MSE students who receive financial support (RAs and TAs) administered by the MSE Program must remain MSE degree candidates to have their financial support continued by the program.
Chapter Five
Services and General Information

The MSE Program receives numerous announcements of job opportunities and semester or summer internships for students and graduates. Check your e-mail regularly for them.

For this reason an updated copy of your resume is required every time you submit a new study plan to the MSE Graduate Coordinator (3182 ME).

Engineering Career Services (ECS)
Engineering Career Services (ECS) is a department within the College of Engineering that helps students and recent graduates find jobs in their field. They sponsor a career fair, usually the 2nd week, each semester. You’ll find the office in M1002 ECB, 1550 Engineering Drive, or you may call 608-262-3471 or see www.ecs.engr.wisc.edu. ECS provides:

- On-campus contact with 300–500 employers each year
- 8,000–10,000 on-campus interviews annually
- Software for résumé/CIF (College Interview Form)
- Pre-Selection Program allowing employers to review CIFs and pre-select 50% of interviewed students
- Students are strongly encouraged to seek help from ECS with résumé writing, interviewing skills, proactive job search, follow up and mock interviews
- Individual career advising and résumé review
- Salary statistics for UW-Madison and national grads

The MSE Program strongly encourages its students to register for the ECS Pre-Selection Program, through which information about you, in the form of a CIF, is sent to employers nationwide. Employers then have the opportunity to pre-select you
as one of the individuals they will interview when they visit campus, in which case you are eligible for preferential interview sign-up. (The first day of sign-ups is reserved for pre-selected students.)

The MSE Program has also made special arrangements with ECS for those MSE students who plan to finish the program in a year. To be included in the Pre-Select Program, they must register with ECS by August 15. Students who completed their undergraduate work at the University of Wisconsin-Madison are expected to meet the regular (spring) deadline for pre-selection. If you do not fit the category of students who plan to finish in a year, you must register for pre-select the spring prior to the year you plan to graduate.

Even if you are not signed up for pre-selection, you must register with ECS if you intend to interview on campus. You can do this after Sept. 1 of the academic year you plan to graduate.

**Emergencies**

Friends and family may use the MSE Program Director’s office phone number, 608-263-2668, as an emergency number only. Other emergency numbers are:

*Dane County 911 service—in case of emergency dial 9-1-1*

Dean of Students, 109 Bascom Hall, 608-263–5700

University Counseling Services, 608-262–1744

Acute Psychiatric Service, 608-263–6140

Mental Health Center of Dane County, 608-280–2600 (24–hour crisis line)

UW Hospital Emergency Room, 608-262-2398

Meriter Emergency Room, 608-267-6000
ATHLETIC FACILITIES
There are several athletic facilities available to students. Call each for specific building hours and available equipment or visit the following Web site to find links to each facility and more information on university recreation: www.recsports.wisc.edu.

Camp Randall Memorial Sports Center ("The Shell")
Hotline/Building Hours 608-263-4753
Front Desk 263-6566

Natatorium
Reservations 608-262-3742
Hotline/Building Hours 262-3742

Nielsen Tennis Stadium
Reservations 608-262-0410

Southeast Recreational Facilities (SERF)
Reservations/Office 608-262-8244
Hotline/Building Hours 608-262-4756

Intramural Programs
608-262-4976

Club Sports
608-262-9696

Banking Services
There are many financial institutions close to the engineering campus. Please consult the Madison area phone directory for a complete list.

Health Insurance
Affordable comprehensive medical coverage is available for registered students and their families, provided through UW-Madison by Physicians Plus Insurance Corporation.

The Student Health Insurance Plan (SHIP) is designed for international students, visiting scholars and their families. SHIP is also available to U.S. students opting for a university-sponsored health-insurance plan.
This is a comprehensive HMO-type plan covering emergency treatment, hospitalization and pre-existing conditions. In compliance with university policy and federal regulations, all international students will have to purchase SHIP coverage for themselves and their dependents residing in the United States unless they can provide proof of continuous enrollment in a health-insurance plan with comparable benefits. For more information about coverage and eligibility, contact:

University Health Service (www.uhs.wisc.edu)
333 East Campus Mall
Madison, WI 53715-1382
608-265-5600
SHIP Program (7th floor)
608-265-5232
ship@www.uhs.wisc.edu

Students who have received Research Assistant (RA), Project Assistant (PA) or Teaching Assistant (TA) appointments should see the financial assistant in the department where they received the appointment (e.g., ME, ISyE, etc.) within the first two weeks of their appointment for details about health insurance.

HOUSING
Apartments farther from campus tend to be more affordable than those closer to campus. Most leases are for one year and begin in mid-August. The Campus Assistance Center at the Red Gym, 716 Langdon St., 608-263-2400, maintains fairly comprehensive and current lists of available housing. Please also see the center’s Web site, which allows you to do an online search for available housing: www.housing.wisc.edu.

The University Housing Office in Slichter Hall, 625 Babcock Dr., provides assistance with university-owned housing. Call 608-262-2522 or see the Web site: www.housing.wisc.edu

Rental listings can also be found in local newspapers such as The Isthmus, The Capital Times and The Wisconsin State Journal as well as UW’s campus newspapers. Inexpensive semester sublets often are advertised on bulletin boards, kiosks and telephone poles.
LIBRARY SERVICES
The University of Wisconsin library system consists of Memorial Library, 728 State Street, 608-262-3193, as well as several departmental libraries. The library for the College of Engineering and the departments of Computer Sciences and Statistics is Kurt F. Wendt Engineering Library, 608-262-3493, located on the corner of Randall and Johnson streets next to Union South. It contains nearly 300,000 books, 1.5 million reports and government documents, and all U.S. patents, while currently receiving approximately 3,000 journals and serials. Here students may also access computers, the campus electronic library databases and reserve materials.

WRITING CENTER
The UW Writing Center offers short classes (one or two sessions in most cases) on how to become more effective at writing all kinds of documents, including academic papers, résumés and cover letters as well as other items. Classes are free to UW students. If you would like some guidance with writing (particularly if English is not your first language), check out all of the resources at www.wisc.edu/writing or visit the Writing Center at 6171 Helen C. White Hall.

FAX
A fax machine is located in the Student Services Office (room 3182 ME). Students are permitted to use this machine for class, employment and research-related communications. This fax machine may not be used to transmit or receive personal faxes.

OFFICE STAFF
The MSE Graduate Coordinator (room 3182 ME) is your all-purpose resource. Please feel free to stop by with any problems or questions. Keep in mind that as a graduate student you will deal with the Graduate School, the Registrar’s Office, Bursar’s Office, Parking and Transportation, etc. Although these are your responsibilities, we offer assistance and advocacy with all university offices.

PARKING
Parking on the UW-Madison campus can be challenging. Students may apply for a Lot 60 parking permit at the Transportation Services Office, 124 WARF, 608-263-6666. Applications for the following year become available after the third week in August. Parking permits are usually granted only to students who are commuting from outside of Madison. Check with the Transportation Services Office for current prices of parking permits and campus bus passes.
POST OFFICE
Stamps can be purchased at the Post office on Lake Street.

UNIVERSITY ACTIVITIES
Because you are a student, you are entitled to student discounts at athletic events and musical/theatrical performances sponsored by the university. You need only show your valid student ID. Other local organizations and businesses also frequently offer student discounts. The Division of Information Technology (DoIT) on campus also offers substantial student discounts on new computers and other hardware.

UNIVERSITY VEHICLES
In order to use university vehicles, each MSE student must complete a Student Driver Authorization Form and sign a Vehicle User Agreement Form, available from the SLC website: http://slc.engr.wisc.edu/policiesuwfleet.html
If approved, a Driver Authorization Card will be issued. You are required to carry this card with you whenever you drive a university vehicle.

A student must have at least two years of licensed driving experience in order to be eligible for the Driver Authorization Card. There are no exceptions to this rule. The MSE Program and UW Risk Management reserve the right to deny any student a Driver Authorization Card or an appeal.
Chapter Six
Faculty and Their Research

Gregory A. DeCroix
Associate Professor, Wisconsin School of Business
Wisconsin Naming Partnership Professorship
Adjunct Appointment: Nelson Institute for Environmental Studies
Room 5293 Grainger Hall, Telephone: 608-265-6083
E-mail: gdecroix@bus.wisc.edu

Research Interests: Supply chain management; sustainability issues in supply chain management; coordination and decentralized decision making in supply chains; managing supply chain disruption risk; inventory optimization; product recovery and remanufacturing; value of information in supply chains.

Current Projects: Mitigating disruption or defect risks in complex multi-tier, multi-component supply chains; strategies for capacity planning and allocation of shared components; value of information in multi-product supply chains; product recovery and remanufacturing in distribution systems.

Neil Duffie
Professor, Mechanical Engineering
2254 Mechanical Engineering, Telephone: 608-262-9457
E-mail: duffie@engr.wisc.edu

Research Interests: Computer control of machines and processes; manufacturing systems; production logistics; robotics

Current Projects: Automation and robotics for manufacturing and space applications; nonhierarchical manufacturing system control; highly distributed real-time decision making; control-theoretic approaches to distributed autonomous logistics control in production networks

Roxann Engelstad
Professor and Chair, Mechanical Engineering
Room 3065B Mechanical Engineering, Telephone: 608-262-5745
E-mail: engelsta@engr.wisc.edu

Research Interests: Structural dynamics; vibrations; modeling; design; nanolithography

Current Projects: Mechanical modeling of lithographic processes
Mark P. Finster
Professor, School of Business, College of Engineering
Room 4250D Grainger Hall, Telephone: 608-262-1998
E-mail: mfinster@bus.wisc.edu

Other department/center affiliations: Center for Quality and Productivity Improvement, Consortium for Global Electronic Commerce, Center for Quick Response Manufacturing, Gaylord Nelson Institute for Environmental Studies, Center for Operations and Technology Management.

Research Interests: Improvement of complex systems; customer-focused improvement management; creativity and innovation; new service and product development; strategic management; electronic commerce; improvement of quality, cost and response time; environmental sustainability; learning organizations and knowledge management; process improvement; quality function deployment; quality planning; quality and productivity improvement

Current Projects: Networking health care facilities to improve clinician care, public health and health research; sustainable design of business systems in developing countries, improvement of organizational systems to improve customer value.

Ananth Krishnamurthy
Associate Professor, Department of Industrial and Systems Engineering
Director, Center for Quick Response Manufacturing
3258 ME, 1513 University Avenue, Madison, WI 53706
Phone: 608-890-2236, Fax: 608-262-8454
Email: ananth@engr.wisc.edu

Research Interests: Lead time reduction and Quick Response Manufacturing; performance analysis of manufacturing systems and supply chains; queuing theory and stochastic models; optimization and simulation

Current Projects: Production inventory control strategies for systems with product variety; analysis of multi-product fabrication/assembly systems; design and analysis of integrated production control strategies; design of warehouses with autonomous storage/retrieval devices; analysis of semi-process and process industries

Rafael Lazimy
Professor, School of Business
Room 4284G Grainger Hall, Telephone: 608-262-3950
E–mail: rlazimy@bus.wisc.edu

Research Interests: Information Systems (IS) and Information Technologies (IT); applications of IS/IT to manufacturing; decision support systems; knowledge-based systems; intelligent modeling support; object-oriented analysis and design; simulation modeling; optimization and mathematical programming; simulation and optimization
Jingshan Li
Associate Professor, Industrial and Systems Engineering
Room 3222 Mechanical Engineering Building, Telephone: 608-890-3780
E-mail: jingshan@engr.wisc.edu

Research Interests: Modeling, analysis, design, control and continuous improvement of production, service and health care systems.

Current Projects: Performance analysis and continuous improvement of complex manufacturing systems; quantitative methods for lean production system design; integrated production system design for high productivity and quality; resilient manufacturing enterprise network; energy efficient and environment friendly manufacturing systems; quality management in electrical vehicle battery manufacturing; modeling and simulation of emergency, pharmacy, and oncology departments; modeling and analysis of acute care delivery process; analysis of patient flow in hospitals; analysis of information flow to reduce financial losses.

Miron Livny
Professor, Computer Science
Room 4367 Computer Science and Statistics, Telephone: 608-262-0856
E-mail: miron@cs.wisc.edu

Research Interests: Scheduling and performance evaluation of processing and data management systems including real-time DBMS; experiment management systems; discrete event simulation

Current Projects: Condor-batch processing on a cluster of UNIX workstations; ZOO—an experiment management system

Robert Lorenz
Professor, Mechanical Engineering, Electrical and Computer Engineering
Room 2025 Mechanical Engineering Building, Telephone: 608-262-5343
E-mail: lorenz@engr.wisc.edu

Other department/center affiliations: Consolidated Papers Foundation Professor of Controls Engineering; Co-Director of WEMPEC- Wisconsin Electrical Machines and Power Electronics Consortium

Research Interests: Multi-physics integration in sensing and control; model-based estimation; electromagnetic and electro-static actuators; AC drive controls; precision motion control; physics-based nonlinear multivariable control; electro-optic, electro-magnetic, and electro-static sensor integration

Current Projects: Self-sensing torque and motion control of rotary and linear actuators; integrated multi-physics design methodologies for power modules and motor drives for both sensing and control; active thermal mechanical strain control in power modules for controlled reliability and full capacity utilization; multi-axis motion control methodologies based on integration of sensing and model-based estimation
Ella Mae Matsumura
Professor, School of Business
Room 4250D Grainger Hall, Telephone: 608-262-9731
E-mail: ematsumura@bus.wisc.edu

Research Interests: Interface of cost management, activity-based costing, and quality improvement; customer profitability analysis; sustainability and corporate social responsibility; game theoretic modeling

Current Projects: Firm value and voluntarily disclosed carbon emissions; customer satisfaction measures and executive compensation; game-theoretic modeling of litigation and out-of-court settlements; financial and nonfinancial performance measures linked to compensation

John J. Moskwa
Professor, Mechanical Engineering
Director, Powertrain Control Research Laboratory
2250 Mechanical Engineering Building, Telephone: 608-263-2423
E-mail: moskwa@engr.wisc.edu

Research Interests: Vehicle powertrain modeling and analysis; nonlinear engine diagnostics and powertrain control; vehicle dynamics, multivariable and nonlinear system control

Current Projects: Dynamic engine and powertrain system modeling for simulation; diagnostics and multivariable control; engine diagnostic techniques and algorithms for improved combustion quality monitoring; engine emissions controls, diagnostics and after-treatment system modeling; high-bandwidth hydrostatic dynamometer system development and hardware-in-the-loop control

Michael Oliva
Professor, Civil and Environmental Engineering
Room 2212 Engineering Hall, Telephone: 608-262-7241, 608-262-7204
E-mail: oliva@engr.wisc.edu

Research Interests: Manufactured pre-fabricated concrete building systems for EQ resistance

Tim A. Osswald
Professor, Mechanical Engineering
Room 1059 Mechanical Engineering Building, Telephone: 608-263-9538
E-mail: osswald@engr.wisc.edu

Research Interests: Polymer processing; composites and rheology; simulations of polymer processes, polymers derived from renewable resources.

Current Projects: Shrinkage and warpage of fiber-reinforced thermoset parts; inertial effects during flow of low viscosity polymers; development of a boundary element simulation of the non-isothermal, non-newtonian flow of polymer melts laser-assisted friction stir welding,
processability of polymers derived from renewable resources, recycling, ethics in engineering. The goal is to develop and apply a science-based understanding of the whole processes (heat transfer, materials science, mechanics, etc.) in order to increase performance and offer new manufacturing tools to industry.

Frank E. Pfefferkorn
Associate Professor, Department of Mechanical Engineering
**Director, Manufacturing Systems Engineering Program**
Room 1031 Mechanical Engineering Building, Telephone: 608-263-2668
E-mail: pfefferk@engr.wisc.edu

**Research Interests:** Metal cutting; micro end milling; modulation-assisted machining; ultrathin coatings for micro-mechanical cutting tools; friction stir welding (FSW); closed-loop control of FSW temperature and forces; In-situ FSW flaw detection; thermally-assisted (hybrid) manufacturing methods; heat transfer; pulsed laser polishing; laser-based manufacturing; energy efficiency quantification in manufacturing processes; temperature measurement methods.

**Current Projects:** Pulsed laser polishing of metal alloys; Characterization of ultrathin coatings on micro end mills; Tool wear and tool life in micro end mills; Modulation assisted micro drilling with nanocrystalline diamond coated tools; Energy efficiency of friction stir welding; In-situ flaw detection in friction stir welding.

Robert G. Radwin
Professor, Industrial and Systems Engineering and Biomedical Engineering
Director, Ergonomics Analysis and Design Consortium
Room 2128 Engineering Centers Building, Telephone: 608-263-6596, 608-263-4660
E-mail: radwin@engr.wisc.edu

**Research Interests:** Ergonomics; human factors; biomechanics

**Current Projects:** Recognition, causes and control of musculoskeletal disorders in manual work; measurement and analytical methods for assessing exposure to physical stress in the workplace; understanding ergonomics aspects of the design, selection, installation and use of manually operated equipment including hand tools

Bin Ran
Associate Professor, Civil and Environmental Engineering
Director of Wisconsin Traffic Lab
Room 1212 Engineering Hall, Telephone: 608-262-0052
E-mail: bran@engr.wisc.edu

**Research Interests:** Intelligent transportation systems; dynamic transportation network models; traffic simulation and control; dynamic traffic prediction; Internet; wireless technology; telematics; GIS
Current Projects: Evaluation of intelligent transportation systems; dynamic transportation network models; traffic simulation; intelligent vehicles; development of telematics systems; dynamic route guidance system; Internet-based GIS

Bob Rowlands
Professor, Mechanical Engineering
Room 3348 Engineering Hall, Telephone: 608-262-3205
E-mail: rowlands@engr.wisc.edu

Research Interests: Composite and advanced materials; experimental mechanics; stress analysis; wood engineering; paper physics and polymers

Current Projects: Thermographic stress analysis; fracture of composites; structural analysis of composites; cellulosic composites, optimization, and hybrid stress analysis

Jeffrey S. Russell
Professor, Civil and Environmental Engineering
Room 2304 Engineering Hall, Telephone: 608-262-7244
E-mail: russell@engr.wisc.edu

Research Interests: Construction contractor evaluation; constructability, construction productivity; construction management systems; computer automation/robotics; expert systems; knowledge engineering; robotics construction automation; construction technology and methods

Current Projects: Design and constructability for maintainability; quantification of change order impacts on construction labor productivity — a micro and macro approach; improved contracting methods for highway construction projects; quantification of risks in surety contract bonds; data flow identification in the construction industry

Leyuan Shi
Professor, Industrial and Systems Engineering
Room 3250F Mechanical Engineering Building, Telephone: 608-265-5969
E-mail: leyuan@engr.wisc.edu

Research Interests: Simulation modeling and large-scale optimization with applications to enterprise systems planning and scheduling, supply chain management and health care systems.

Current Projects: Supply chain optimization; advanced planning and scheduling; optimal resource allocation under uncertainty.

Donald S. Stone
Professor, Materials Science and Engineering
Room 246 Materials Science and Engineering, Telephone: 608-262-8791, 608-262-1478
E-mail: stone@engr.wisc.edu

Research Interests: Deformation, fracture and fatigue of solids; property measurement;
property-structure relationships; constitutive models; thin films; solders; alloys

Current Projects: Relationship between microstructures and mechanical properties of refractory metal coatings (principally Mo, Ta, and Ta-N alloys as model systems); includes using the world's first nanoindenter capable of operating throughout a range of temperatures necessary to explore strengthening mechanisms in thin films, strengthening mechanisms in nanolayer composites, specially super-high strength laminate composites, creep and creep-fatigue of the lead-tin eutectic — how deformation mechanisms in solders impact fatigue behavior.

**Krishnan Suresh**
Associate Professor, Mechanical Engineering
Room 2059 Mechanical Engineering Building, Telephone: 608-262-3594
E-mail: suresh@engr.wisc.edu

Research Interests: Geometric modeling, CAD/CAE, computational mechanics, shape optimization, finite element analysis, and bio-mechanics.

Current Projects: Shape optimization of geometrically complex artifacts, context-dependent simplified models for virtual assembly, feature sensitivity theory and modeling, cancer tumor detection and growth modeling, hemodynamic models.

**Lih-Sheng (Tom) Turng**
Professor, Mechanical Engineering
Co-Director, Polymer Engineering Center
Room 1051 Mechanical Engineering Building, Telephone: 608-262-0586
E-mail: turng@engr.wisc.edu

Research Interests: Injection molding and innovative plastics manufacturing processes; Computer-Aided Engineering (CAE), nanocomposites; microchip encapsulation; material characterization for plastics and metals; net-shape die casting using semi-solid alloys; internet-based collaboration for design and manufacturing.

Current Projects: Process development and material characterization of microcellular co-injection molding; microcellular injection molding with nanocomposites; computer-aided process and design optimization tools; Web-based distributed manufacturing knowledge management systems.

**Raj Veeramani**
Professor, College of Engineering and School of Business
Robert A. Ratner Undergraduate Chair and Professor
Director, UW E-Business Consortium
Room 4101 Mechanical Engineering Building, Telephone: 608-262-0861
E-mail: raj@ie.engr.wisc.edu

Research Interests: Radio frequency identification (RFID) technology and applications; E-business strategy; Supply chain management; Quick response quoting and manufacturing
Current Projects: RFID applications in health care; Partnership for innovation in Wisconsin’s packaging and printing industry; Quick response in office operations

Urban Wemmerlöv
Professor, School of Business
Kress Family Professor of Productivity and Quality

Executive Director, Erdman Center for Operations and Technology Management
Room 3525 Grainger Hall, Telephone: 608-262-0305
E-mail: uwemmerlov@bus.wisc.edu

Research Interests: Managing technological and organizational change; Healthcare operations; Cellular/Lean Manufacturing; Focused Factories

Current Projects: Lean thinking and Focused Factories in healthcare

Shiyu Zhou
Professor, Industrial and Systems Engineering
Room 3254 Mechanical Engineering Building, Telephone: 608-262-9534
E-mail: szhou@engr.wisc.edu

Research Interests: Modeling and analysis of large, complex manufacturing systems; process control for productivity and quality improvement; information technology for diagnosis of manufacturing system

Current Projects: Monitoring and diagnosis of surface defects of hot rolling processes; modeling, analysis and control of variation propagation in manufacturing processes; design, fabrication and application of distributed micro sensors embedded in metal tooling
Emeritus Faculty

Marvin DeVries
Professor Emeritus, Mechanical Engineering
2274 Mechanical Engineering Building, Telephone: 608-262-2557
E-mail: devries@engr.wisc.edu

Research Interests: Metal-cutting; manufacturing systems engineering

Current Projects: None; Professor DeVries is considering retirement and no longer is active in any current research projects.

Frank Fronczak
Professor, Mechanical Engineering
Room 3047 Mechanical Engineering Building, Telephone: 608-262-1993
E-mail: fronczak@engr.wisc.edu

Research Interests: Machine design; fluid power; product design, biomedical assistive product design

Wayne D. Milestone
Professor Emeritus, Mechanical Engineering
Room 2067 Mechanical Engineering, Telephone: 608-262-0023
E-mail: milestone@engr.wisc.edu

Research Interests: Mechanical engineering; mechanical engineering design and product development; creativity and design methodology; intellectual property; mechanical failure modes and analysis

Harold J. Steudel
Professor Emeritus, Industrial and Systems Engineering
Emerson Electric Professor in Total Quality Emeritus
Room 3011 Mechanical Engineering Building, Telephone: 608-262-9927
E-mail: steudel@ie.engr.wisc.edu

Research Interests: Design of integrated management systems based on ISO 9001-2000 and ISO 14001; process improvement based on Six-Sigma methodologies; development of experimental design techniques for robust product and process design; and change management strategies and models

Current Projects: Development of guidelines for integrated management systems; development of statistical experimental design techniques that will provide more information with less experimental effort applied to robust product design; and the modeling characterization, control and improvement of part defects related to cosmetic criteria
Rajan Suri  
Professor Emeritus, Industrial and Systems Engineering  
3166 Engineering Centers Building  
E-mail: suri@engr.wisc.edu

Research Interests: Lead time reduction and quick response manufacturing; POLCA and other alternatives to Kanban for material control; queuing network models for manufacturing systems analysis

John J. Uicker  
Professor Emeritus, Mechanical Engineering  
Room 2067 Mechanical Engineering Building, Telephone: 608-262-0225  
E-mail: uicker@engr.wisc.edu

Research Interests: Kinematics and dynamics of mechanical systems; CAD/CAM/CAE; solid geometric modeling; computational geometry

Current Projects: Simulation of motions reconstructed from accelerometer signals measured from automotive dummies during barrier crash events
2013-2014 Executive Committee

Ananth Krishnamurthy
Industrial and Systems Engineering

Neil Duffie
Mechanical Engineering

Roxann Engelstad
Mechanical Engineering

Mark Finster
School of Business

Jingshan Li
Industrial and Systems Engineering

Ella Mae Matsumura
School of Business

Tim Osswald
Mechanical Engineering

Frank Pfefferkorn, MSE Program Director
Mechanical Engineering

Robert Radwin
Industrial and Systems Engineering

Leyuan Shi
Industrial and Systems Engineering

Lih Sheng (Tom) Turng
Mechanical Engineering

Raj Veeramani
Industrial and Systems Engineering

Urban Wemmerlöv
School of Business

Shiyu Zhou
Industrial and Systems Engineering
Appendicies

Appendix A: Study Plan

The MSE study plan should be turned by the end of the 4th week of classes along with an updated copy of your résumé. The study plan can be updated as frequently as you desire during the course of the semester.

If you are completing more than one degree please include a separate study plan for the other program you are pursuing as well and indicate which of the credits you intend double count. For example if you are enrolled in the 30 credit MSE Program and doing an ISyE degree for 30 credits you may overlap 7 credits.
Study Plan - Manufacturing Systems Engineering

<table>
<thead>
<tr>
<th>Semester 1 –</th>
<th>Semester 2 –</th>
<th>Semester 3 –</th>
<th>Semester 4 –</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Dept. &amp; Number</td>
<td>Course Name</td>
<td>Credits</td>
<td>Core Category</td>
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</tbody>
</table>

Summary: Total Number of Credits: Total Number of Engineering Credits:

Approval of Advisor: Date:

____________________________________________  ____________

Eng. Management Specialization Approved: Date:

____________________________________________________  ____________

Please submit approved copy to the MSE Graduate Coordinator, 3182 ME.
Attach a copy of your résumé with this study plan.
APPENDIX B: INDUSTRY/RESEARCH THESIS TIMELINE

1. First semester in the Program: Student chooses a potential advisor from list of MSE faculty.

2. Second semester in the program student drafts a list of potential thesis topics: Student and advisor meet, determine whether advisor’s research interests and current projects coincide with student’s potential thesis topics. If there is not a match, student reviews MSE Program Guide and contacts another potential advisor. If there is a match, student and advisor choose one or two topics upon which to focus discussion.

3. By the end of the second semester in the Program: Decide on thesis topic. The student and advisor should either narrow or broaden the scope to meet the requirements of a thesis. Is this to be a lab research project or a project with a company? Is the final project report to be an Industry Thesis or a Research Thesis? (See Industry Thesis, p. 15, and Research Thesis Requirements, p. 19, for more information.)

4. By the end of the second semester in the Program: Student and advisor develop an outline of the process required to solve the defined problem.

5. Beginning of the third semester in the Program: Based on initial research, student modifies topic to address initial findings or experiences (i.e. availability of research material). At this point, the student also registers for at least 3 credits of Research Thesis with the advisor (see pg. 8, Manufacturing Systems Engineering Course Structure).

OR

6. Beginning of the third semester in the Program: Student and advisor meet with sponsoring company for project, make any modifications to the topic or problem, and clearly define the goal of the project. The student registers at this time for at least 3 credits of Industry Thesis with advisor.
7. Beginning of the final semester of the Program: Student must submit to the MSE office a packet of graduation materials. The MSE office sends out an e-mail announcing the deadline for these documents at least four weeks before they are due.

8. Beginning of the final semester of Program: Student presents advisor with an outline of the final independent study/thesis report.

9. Eight weeks before student plans to defend: Student presents advisor with a first draft of the thesis for initial feedback and edits. At this point, they jointly select the potential thesis defense committee, and the student approaches these professors with potential defense dates. (See Final Examination, p. 25.)

   ① At this point, the student is required to submit the necessary forms to the MSE Graduate Coordinator (room 3182 ME) and consult with staff about the defense date and chosen committee.

10. At least one week prior to defense date: Student distributes to the defense committee members an advisor–approved final draft of thesis report.

11. At the date selected, the student defends the thesis before a committee of three faculty members. See p. 25 of the MSE Handbook for specific requirements regarding this committee.

12. After completing edits required by the defense committee, the student brings one bound copy of the report to the MSE Graduate Coordinator. Students are responsible for creating and distributing final copies for thesis advisor and/or other committee members. If the thesis was conducted at a QRM company, the student will need to submit to the MSE Graduate Coordinator one bound copy, one unbound copy and the electronic file.

① Industry/Research Thesis process often lasts 2–3 semesters from the date of your first meeting with the professor advising you. It is essential that you plan for this lead time in order to deal with contingencies such as changes in schedule or project goals, additional research and numerous other factors.

App - B
Reducing Manufacturing Lead-Times by Implementing Cells in a High Mix Environment

at

XYZ Corporation
Any Town, Wisconsin

An Industry/Research Thesis for the Manufacturing Systems Engineering Program, University of Wisconsin - Madison

Submitted by
John Doe

Advised by
Professor Tom Cruise

May 2012

Manufacturing Systems Engineering Program
University of Wisconsin-Madison
1513 University Ave, 3182 ME
Madison, WI 53706
Tel: 608-263-3955
Fax: 608-890-2204
http://msepweb.engr.wisc.edu/
APPENDIX D: SECOND MASTER’S DEGREE LETTER

March 8, 2011

Ms. Alexandra Walter  
Graduate Coordinator  
The Graduate School  
217 Bascom Hall  
500 Lincoln Drive  
Madison, WI 53706

Re: Course credits for 2nd degree in MSE

Dear Ms. Hsu:

Below is a list of the courses I would like to count toward my M.S. in Manufacturing Systems Engineering. If you have questions, please contact me.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 512</td>
<td>Inspection, Quality Control &amp; Reliability</td>
<td>3 credits</td>
</tr>
<tr>
<td>BUS 703</td>
<td>Organizational Behavior</td>
<td>3 credits</td>
</tr>
<tr>
<td>ISyE 699</td>
<td>Electronics</td>
<td>3 credits</td>
</tr>
<tr>
<td>ME 429</td>
<td>Metal Cutting *</td>
<td>3 credits</td>
</tr>
<tr>
<td>ISyE 691</td>
<td>CIM</td>
<td>3 credits</td>
</tr>
<tr>
<td>ISyE 691</td>
<td>Quality Engineering</td>
<td>3 credits</td>
</tr>
<tr>
<td>ISyE 575</td>
<td>Intro—Quality Engineering</td>
<td>3 credits</td>
</tr>
<tr>
<td>ME 641</td>
<td>Design/Analysis of Manufacturing Systems *</td>
<td>3 credits</td>
</tr>
<tr>
<td>ISyE 790</td>
<td>Independent Study</td>
<td>3 credits</td>
</tr>
<tr>
<td>ME 446</td>
<td>Automatic Controls</td>
<td>3 credits</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>30 credits</strong></td>
</tr>
</tbody>
</table>

Thank you for your help.

Sincerely,

Benjamin R. Student

(*Course counts toward both M.S. in MSE and M.S. in ME.  
Note: The maximum a student can double-count is 25 percent of credits for a degree with fewer credits.)
APPENDIX E: CREDIT TRANSFER LETTER

March 8, 2011

MSE Curriculum, Policy and Exams Committee
Manufacturing Systems Engineering Program
3182 Mechanical Engineering Building
1513 University Avenue
Madison, WI 53706

Re: Transfer of credits for course substitution

Dear Committee Members:

I am writing to request transfer of the course ME 867 Manufacturing Stuffits that I took at the University of Somewhere, State, in fall 2011, toward the MSE degree. The course description, statement of similarity to a course offered at UW-Madison and transcripts verifying my grade for the course are attached.

Please accept this course as a substitute for ME 555 Manufacturing Widgets that is in the Core Course Area of Manufacturing Processes and Control.

Sincerely,

Joseph P. Student

Joseph P. Student
(ID 875 678 5678)

I support this request.

Advisor Name ____________________________________________________________

Signature _______________________________  Date __________________________
March 8, 2011

Ms. Elena Hsu  
Graduate Coordinator  
The Graduate School  
217 Bascom Hall  
500 Lincoln Drive  
Madison, WI 53706

Re: Transfer credits for MS in MSE degree

Dear Ms. Hsu:

I am writing to request that the 6 credits of graduate level work completed by my student, Jennifer A. Student (ID 900 567 7890), during the fall 2010 and spring 2011 semesters be transferred and counted toward her degree requirements. Ms. Student will complete her master’s in the Manufacturing Systems Engineering Program in May 2012 and needs these credits to satisfy the degree requirements for graduation.

Thank you.

Sincerely,

John A. Advisor  
Professor of Industrial and Systems Engineering
APPENDIX G: CHECKLIST FOR SUCCESSFUL PROGRESS IN THE MSE PROGRAM

Before Arriving at the University of Wisconsin-Madison:

- Activate your My UW student account
- Enroll in classes through the My-UW Madison portal

Arrived at UW, Attending Classes:

- Open a CAE e-mail account
- Register with ECS
- Select an advisor
- Fill out your MSE Study Plan, have it approved by advisor and return it to MSE Graduate Coordinator (room 3182 ME) by the eighth week of class
- File a current copy of your résumé with the MSE office
- Check your mailbox regularly for important announcements
- Before taking the capstone course (ISyE 641), fill out a Driver’s Authorization form and submit it to the SLC (room M1002 ECB)
- The spring prior to the year of your graduation, sign up for the ECS Pre-Selection Program. If you plan to finish in a year, sign up by August 15 of the summer prior to starting the Program