

September
2004

UNIVERSITY OF WISCONSIN-STOUT

Bachelor of Science in Manufacturing Engineering (B.S. in MfgE)



STOUT
UNIVERSITY OF WISCONSIN
Manufacturing Engineering

Advising Handbook

UNIVERSITY OF WISCONSIN-STOUT

B.S. IN MFGE ADVISING HANDBOOK

University of Wisconsin-Stout
P.O. Box 790, Menomonie, WI 54751
Phone 715.232.1686 • Fax 715.232.1330
Website: www.uwstout.edu/programs/bsmfe/



STOUT
UNIVERSITY OF WISCONSIN
Manufacturing Engineering

Table of Contents

<i>Purpose of Advising Handbook</i> _____	2	<i>Minors Available to Enhance B.S. in MfgE</i> _____	16
<i>Academic Advising</i> _____	2	<i>Professional Societies</i> _____	17
College of Technology, Engineering and Management (CTEM) Expectations and Responsibilities _____	2	<i>Scholarship Opportunities</i> _____	18
Advisor Expectations _____	2	<i>Placement and Co-op Services</i> _____	18
Student Expectations _____	3		
<i>What is Manufacturing Engineering?</i> _____	3		
The Manufacturing Engineer as Strategic Planner _____	3		
21 st Century Environment and Changing Roles _____	3		
What is the 21 st Century Manufacturing Engineer? _____	4		
Manufacturing Engineering in the 21 st Century – Issues and Implications _____	6		
<i>Advising Resources</i> _____	6		
<i>Advising Resources</i> _____	7		
<i>Academic Misconduct</i> _____	8		
Academic Misconduct Subject to Disciplinary Action (UWS 14.03) _____	8		
Disciplinary sanctions (UWS 14.04) _____	9		
<i>B.S. in Manufacturing Engineering Program</i> _____	10		
Mission Statement – May 2000 to present _____	10		
Program Objectives – May 2000 to present _____	10		
B.S. in Manufacturing Engineering Curriculum Plan Sheet* - August 2004 _____	11		
B.S. in Manufacturing Engineering Curriculum Flow Chart – August 2004 _____	12		
B.S. in Manufacturing Engineering* Suggested Four Year Program Plan – August 2004 _____	13		
Accreditation Board for Engineering and Technology (ABET) Accreditation _____	14		
“Breadth and Depth” in <i>Humanities and Social Sciences</i> _____	15		
<i>Experiential Learning</i> _____	15		
Program Recommendation _____	15		
Cooperative Learning Experience _____	16		
Internship Learning Experience _____	16		

Purpose of Advising Handbook

This handbook has been created to assist you in better understanding your major and the choices available to you in planning your education and your future.

Many of the questions you may have can be answered by using this handbook. Your advisor is also available to you and will assist you in finding the most appropriate answers for your personal education needs.

MY ADVISOR IS:

Name: _____

Office: _____

Phone: _____

Email: _____

Academic Advising

College of Technology, Engineering and Management (CTEM)

Expectations and Responsibilities

The College of Technology, Engineering and Management (CTEM) believes in and practices developmental advising. This systematic advisement process is intended to aid students in achieving education, career and personal goals through their years at Stout. Developmental advisement is a collaborative process between the academic advisor and the student. While the ultimate decision regarding career goals and educational plans rests with the student, the academic advisor is available to assist students by providing information, resources, and helping them assess alternatives.

Advisor Expectations

Advisors may expect that the student:

- Recognizes that he/she bears the ultimate responsibility for the development and implementation of their academic plan of study, including meeting program and university graduation requirements.
- Respects the program director's/faculty advisor's appointment or office hours and keeps or cancels scheduled appointments.
- Will prepare for advisor appointments by bringing all necessary material as required by your program director/faculty advisor.
- Will keep his/her advisor informed when there are changes in academic plans or progress.
- Will maintain up-to-date personal records of academic progress and will resolve discrepancies on University reports, records and documents.

Student Expectations

Students may expect that program directors/faculty advisors:

- Have knowledge of the program and University curriculum requirements and are able to provide accurate information.
- Are informed about University policies, procedures, support services and resources.
- Are available for consultation by having posted office hours or appointment times.
- Have knowledge of career opportunities and appropriate graduate programs in their fields.
- Will refer the student to specialized institutional and community resources when necessary.

What is Manufacturing Engineering?

The Manufacturing Engineer as Strategic Planner

As industry has evolved from traditional mass production into flexible/lean manufacturing, then into agile manufacturing techniques, so has the manufacturing engineer evolved into a multi-disciplined strategic planner of both business and operational tactical goals and objectives. The requirement for these manufacturing engineer's roles are being fueled by:

- Increasing product and process sophistication and variability;
- Rapid and continuous advancements in technology;
- A changing focus toward total life-cycle costs by the consumer versus a singular purchase price;
- Global competition that is becoming increasingly time conscious; and
- A multitude of environmental, social, and economic pressures driven by regulatory dictates within both the domestic and international venues.

21st Century Environment and Changing Roles

The manufacturing engineer of the 21st century will be forced into a role demanding a far broader complement of skill sets. Skills that include the ability to function as:

- ***A manufacturing operations strategist***, capable of blending both the corporation and its supply base into a stable infrastructure that supports the strategic direction of the organization as it competes in increasingly dynamic markets.
- ***A business strategist***, with the capacity to quickly and effectively translate business and marketing plans into specific product, process, and facility requirements to ensure that the organization's business and market objectives are achieved within the time frames and budgetary constraints required to guarantee success.
- ***A technology visionary***, capable of accurately forecasting technological trends and implementing state-of-the-art methodologies that will keep the organization competitive in operating cost, product quality, inventory investment, and cycle time.
- ***A project manager***, with the ability to comprehend a host of multifunctional business problems, and manage the activities of multidisciplinary project teams to ensure the most time- and cost-effective problem resolutions.
- ***A team leader, as well as a team player***, with the capacity and willingness to participate in an empowered environment where decision making is driven as deep into the organizational structure as possible. No longer the

director, the new manufacturing engineer will be a people-oriented facilitator capable of listening to diverse opinions and formulating corrective actions that incorporate those views into the ultimate solution.

- ***An educator and trainer, a mentor and counselor:*** the “informal leader” who shares expertise and knowledge with others for the betterment of the entire organization.

The manufacturing environment of the 21st century will dictate the necessity for the manufacturing engineer to assume responsibilities previously within the exclusive domain of other functions, such as:

- Supplier selection, development, and certification;
- Product and process design, using concurrent engineering techniques to reduce the new product development cycle-time and associated development costs;
- Assessment of projected total product life-cycle costs and the contribution of the associated manufacturing processes to those costs;
- Organizational and core process re-engineering to reduce operational and administrative waste, reduce total cycle time, and minimize product and non-product costs;
- Identifying and consummating strategic alliances with critical suppliers, technology developers, customers, direct and indirect competitors, and market leaders;
- Isolating market and technological niches where future growth and success can be assured;
- Guiding total quality management initiatives – in production, design, procurement, customer service, administration – in short, all areas with the organization that impact the manufacturing operations;
- Implementing and participating in self-directed work teams and other employee-involvement processes;
- Using sound design-for-manufacturability, -assembly, and -maintainability techniques to ensure that all products can be manufactured within the targeted price-point range with readily available process capabilities;
- Implementing preventive, predictive, and productive maintenance methodologies to ensure that all process and manufacturing equipment, tooling, and fixtures are maintained in conformance to the manufacturer’s specifications. By so doing, the capability of producing quality products at rated operating speeds is ensured, and the shortest possible changeover cycle times are guaranteed; and
- Introducing technological advancements in both products and processes as dictated by unanticipated opportunities, market and competitive pressures.

What is the 21st Century Manufacturing Engineer?

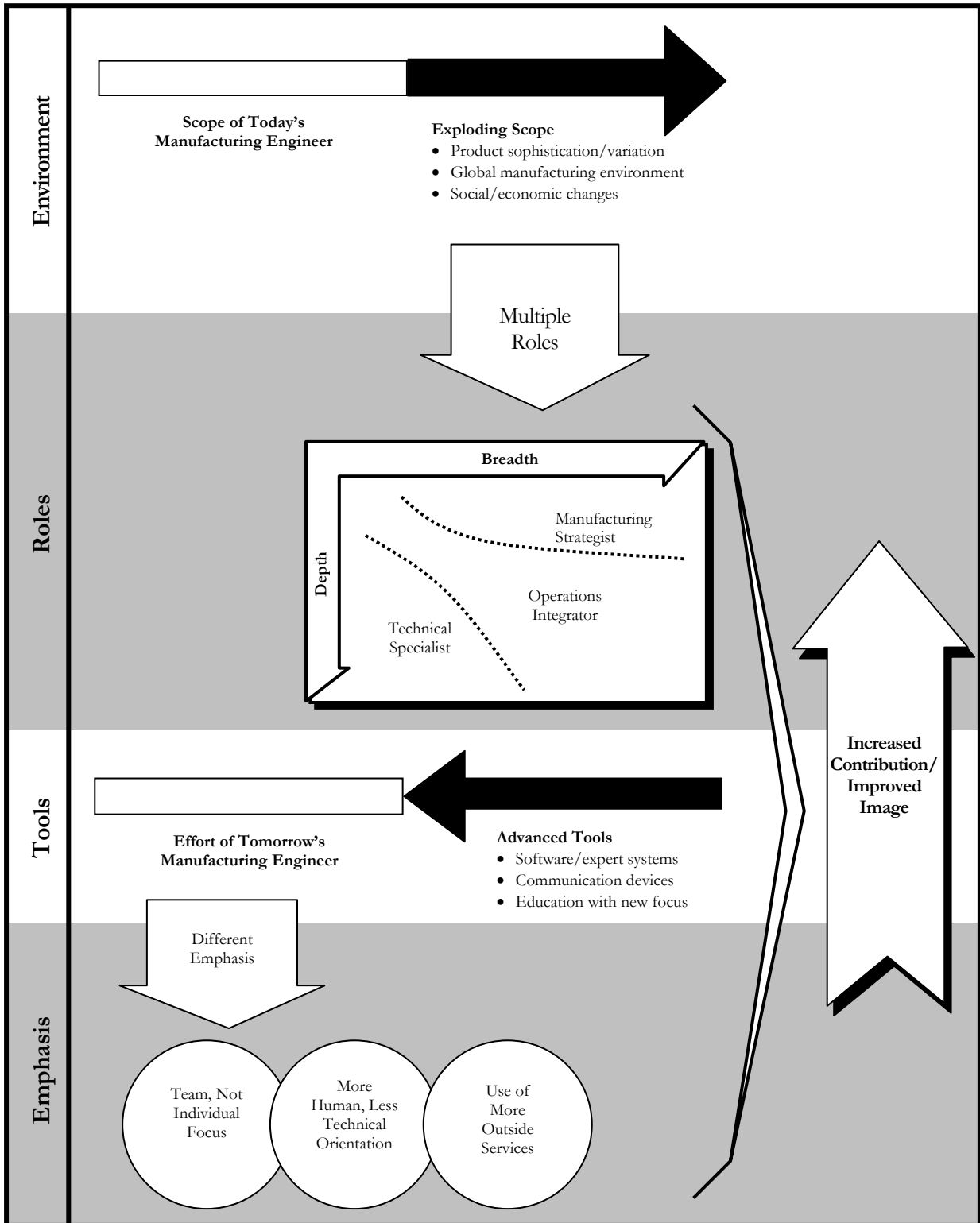
The 21st century manufacturing engineer will be a hybrid, a business strategist and an operations tactician who:

- Understands and actively participates in product design and development through the concurrent engineering process;
- Advises management on strategic issues, along with their associated technical and process risks;
- Designs material processing, assembly, and handling systems to maximize production throughput, while minimizing changeover times;
- Specifies and procures capital equipment to ensure technological advantage and competitiveness through process capability and control;
- Develops effective setup reduction strategies and preventive and predictive maintenance processes to maximize equipment uptime;

- Manages hazardous waste distribution and disposal to ensure compliance with Environmental Protection Agency (EPA) and other regulatory requirements;
- Administers workplace safety processes as defined by Occupational Safety and Health Administration (OSHA) and industry guidelines;
- Advises on product liability and life-cycle issues;
- Provides financial and performance data for monitoring operational, quality, and product cost metrics;
- Studies and analyzes global business and competitive issues to ensure the correct operational and strategic focus is maintained;
- Acts as mentor, facilitator, and educator of the work force to foster cross-training, cross-functional creativity, and teamwork;
- Advises on product and process capabilities and limitations to ensure the proper alignment between product design and process capabilities;
- Advises operations management on logistical considerations relative to their influence on cycle time, transportation damage, and product costs; and
- Oversees the production processes and the outside influences that can affect them.

Manufacturing Engineering in the 21st Century – Issues and Implications

The following diagram depicts the environment, the roles, the tools, and the emphasis of the 21st century manufacturing engineer.



Source: *Countdown to the Future: The Manufacturing Engineer in the 21st Century*, A.T. Kearney, Inc., by the Society of Manufacturing Engineers.

Advising Resources

There are many advising resources available to you as a student of Stout as well as the Manufacturing Engineering Program. The following list is intended to give you an idea of the types of resources available. It probably is not all-inclusive as there are continually new resources becoming available through the increased use of electronic media, e.g., the world wide web server.

UNDERGRADUATE BULLETIN: Contains information about the University, Admissions, Scholastic Standards, Financial Information, Student Affairs, Special Programs, Major Programs of Study, Minors, Specializations, and Course Descriptions. Available online @ www.uwstout.edu or from the *Advisement Assistance Center*.

STUDENT HANDBOOK: Contains information about Academics, Academic Misconduct, Services for Students, Campus Organizations and Activities, Racist and Discrimination Conduct, Student Rights and Responsibilities, Alcohol and Other Drug Policies, Campus Police/Security, Conduct on University Lands, and Affirmative Action. Available online @ www.uwstout.edu or from the *Advisement Assistance Center*.

CURRICULUM PLAN SHEET: The curriculum plan sheets are available from the program directors or faculty advisors. The program curricula in place at the time of your first semester of enrollment at Stout are the requirements you need to fulfill to complete your degree. If a program curriculum changes while you are at Stout, you have the option to change to the new curriculum plan. The B.S. in MfgE curriculum plan is presented in the *B.S. in Manufacturing Engineering Program* section later in this handbook.

CURRICULUM FLOW CHART: In addition to the plan sheet, the B.S. in MfgE program provides a semester-by-semester flow chart to assist in planning your program. This flow chart also indicates the prerequisite structure within the B.S. in MfgE program. The B.S. in MfgE curriculum flow chart is presented in the *B.S. in Manufacturing Engineering Program* section later in this handbook.

SUGGESTED FOUR-YEAR PLAN: Another useful scheduling tool is the Suggested Four Year Program Plan. This program plan helps answer the question, “How can I complete this program in four years?” The program is presented in a semester-by-semester sequence indicating credit load per semester. The B.S. in MfgE curriculum suggested 4 year program plan is presented in the *B.S. in Manufacturing Engineering Program* section later in this handbook.

PROGRAM WEBSITE: The Manufacturing Engineering Program maintains a program website at: www.uwstout.edu/programs/bsmfe/. There is much information available there as well as links to other useful manufacturing engineering resources. Of particular interest to you the student is a section of “Advising FAQs”. This is a collection of issues the faculty advisors deal with on a repetitive basis. Check this handbook or the website first for your answers.

ACCESS STOUT: ACCESS STOUT is the query source that allows students and faculty access to the DATATEL information system. You will utilize this system to access Registration and Records to view your schedule, view/print an unofficial transcript, view your Degree Audit Report, view/print your schedule for the

semester, add or drop a class, and view your GPA. You will also utilize this system to view any of your personal financial information. A personal identification number (PIN) allows you access to your records.

DEGREE AUDIT REPORT (DAR): A DAR is a report generated by the Stout DATATEL information system. The DAR keeps track of your progress to your program requirements. It lists the courses you complete within the individual University or Program requirements. Once you have completed a requirement, the DAR will list it as complete. The DAR is available online utilizing the ACCESS STOUT query system. As indicated above, ACCESS STOUT requires your own unique PIN to be able to access your information.

ADVISEMENT DAY: Advisement Day is an academic day of the semester. There are no classes scheduled that day from 8:00 am to 5:00 pm. All students are required to attend a group meeting with the B.S. in MfgE program director and faculty advisors. Important announcements and other information are presented at these meetings. In addition, all program requirements are reviewed for student clarity. ***If you fail to attend this meeting, an “Advisement Hold” will be placed on your records. This hold will prevent you from registering until you meet with your advisor and have it removed late in the registration cycle.***

Academic Misconduct

Academic misconduct is a serious matter. The education you are receiving is for your betterment. The experiences, knowledge gained, and professional skills obtained while attending an academic institution are your own. The following procedures define academic misconduct and the disciplinary actions that can result. If you observe academic misconduct, it is also your responsibility to report it. Faculty members in the Manufacturing Engineering Program take this issue very seriously. Most will automatically fail a student or students involved in an incidence of academic misconduct. There may possibly be other sanctions beyond just the course of infringement.

The procedures and definitions are contained in the *Faculty / Academic Staff / Limited Appointees Handbook*. The entire Student Academic Disciplinary Procedures can be viewed at: www.uwstout.edu/hr/unclass_handbk/IV_instruct.pdf. This is an important document as the entire disciplinary procedure is defined, especially the faculty and student responsibilities and actions throughout the process.

Above all, do not get involved in any form of academic misconduct as the repercussions can be very severe and career damaging. ***TURN IN YOUR OWN WORK!***

The Following two sections are reprinted from the *Faculty / Academic Staff / Limited Appointees Handbook*.

Academic Misconduct Subject to Disciplinary Action

1. Academic misconduct is an act in which a student:
 - a. Seeks to claim credit for the work or efforts of another without authorization or citation;
 - b. Uses unauthorized materials or fabricated data in any academic exercise;
 - c. Forges or falsifies academic documents or records;

- d. Intentionally impedes or damages the academic work of others;
 - e. Engages in conduct aimed at making false representation of a student's academic performance; or
 - f. Assists other students in any of these acts.
2. Examples of academic misconduct include, but are not limited to: cheating on an examination, collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignments as one's work when a part or all of the paper or assignment is the work of another; submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas; stealing examinations or course materials; submitting, if contrary to the rules of a course, work previously presented in another course; tampering with the laboratory experiment or computer program of another student; knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student whose name the work is submitted or performed.

Disciplinary sanctions

1. The following are the disciplinary sanctions that may be imposed for academic misconduct in accordance with the procedures of s. UWS 14.05, 14.06 or 14.07:
- a. An oral reprimand;
 - b. A written reprimand presented only to the student;
 - c. An assignment to repeat the work, to be graded on its merits;
 - d. A lower or failing grade on the particular assignment or test;
 - e. A lower grade in the course;
 - f. A failing grade in the course;
 - g. Removal of the student from the course in progress;
 - h. A written reprimand to be included in the student's disciplinary file;
 - i. Disciplinary probation; or
 - j. Suspension or expulsion from the university.
2. One or more of the disciplinary sanctions listed in sub. (1) may be imposed for an incident of academic misconduct.

B.S. in Manufacturing Engineering Program

Mission Statement – *May 2000 to present*

The Manufacturing Engineering Program prepares pragmatic manufacturing engineers who will respond aggressively to the changing needs of the global marketplace, apply research and theory in the development of marketable products and efficient processes, and design with an awareness of the realities of manufacturing and the needs of society. This preparation is enhanced through extensive hands-on laboratory learning experiences.

Program Objectives – *May 2000 to present*

Students of the B.S. in MfgE Program will:

- Apply the principles of mathematics and science to the solution of practical problems.
- Perform engineering analyses by designing and conducting experiments and analyzing results.
- Design products and manufacturing systems using contemporary methods.
- Communicate effectively.
- Function effectively in team or group settings.
- Integrate sound management principles into the engineering process.
- Practice his or her profession at the highest ethical standards.
- Implement technology with an awareness of important societal issues.
- Recognize the need for and have the ability to engage in life-long learning.
- Understand global and cultural issues.

Curriculum Plan Sheet – *August 2004 to present*

The Curriculum Plan Sheet presented on the following page is in effect from August 2004 to present. If you entered Stout from this date on, these are your program requirements. If the program changes through the formal Stout curriculum change process, you will be notified and will have the *option* to enter the new program.

Curriculum Flow Chart – *August 2004 to present*

The Curriculum Flow Chart is presented on the page following the Curriculum Plan Sheet. This is a visual method to view the program curriculum requirements. This flow chart also indicates the prerequisite structure to the courses within the B.S. in Manufacturing Engineering Program. Please heed the prerequisite requirements when scheduling your classes. A student prerequisite check will be performed for all MfgE courses prior to the start of each semester. ***Any student not meeting the prerequisite requirement(s) for a course will be removed from the course roster.*** This could result in a reduction in credits, possibly affecting financial aid or full-time student status, and/or difficulty in scheduling a replacement course.

Suggested Four-Year Program Plan – August 2004 to present

A Suggested 4-Year Program Plan is presented on the page following the Curriculum Flow Chart. This is yet another tool to assist you in planning your program. This tool provides an added feature of indicating where Humanities and Social Science courses as well as other University required courses could be filled into your sequence.

B.S. in Manufacturing Engineering Curriculum Plan Sheet*-August 2004



*Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

111 Market Place, Suite 1050, Baltimore, MD 21202-4012, 410/347-7700

Communication Skills

ENGL-101	Freshman English Composition	3
ENGL-102	Freshman English Reading and Writing	3
SPCOM-100	Fundamentals of Speech	2

Name Date

Analytical Reasoning Skills

MATH-153	Calculus I	4
MATH-154	Calculus II	4

Advisor Date

Health Enhancement and Physical Well - Being

<i>From Approved General Education Course List</i>		2
--	--	---

Program Director Date

Humanities and Social Sciences

Minimum of five (5) different areas and depth in one (1) of these five from the following general education approved listings:

- **Humanities and the Arts** [minimum two (2) subject areas] 9
- **Social and Behavioral Sciences** [minimum two (2) subject areas] 9

Advisor Notes:
T = Transfer Course
W = Waived Course/Credits
S = Substitute Course

Natural Sciences

CHEM-135	College Chemistry I	5
PHYS-281	University Physics I	5
PHYS-282	University Physics II	5

Technology

<i>From Approved General Education Course List</i>		2
--	--	---

Mathematics and Basic Sciences

CHEM-341	Chemistry of Materials	4
STAT-330	Probability & Statistics	3
MATH-250	Differential Equations/Linear Algebra	3

Engineering Core

MFGT-150	Introduction to Engineering Materials	3
MECH-293	Engineering Mechanics	3
MECH-294	Mechanics of Materials	3
ELEC-290	Circuits & Devices	4
MFGE-275	Thermodynamics and Heat Transfer	2

Process, Assembly, and Product Engineering

CADD-112	Engineering Drawing I	3
CADD-436	CAD Problems (solid modeling)	3
MFGE-441	Design of Jigs, Fixtures, and Tooling	3
MFGE-405	Capstone I: Product Design by Concurrent Engineering	3

Materials and Manufacturing Processes

MFGT-251	Polymer & Composite Processes	3
MFGT-252	Material Removal & Forming Processes	3
MFGT-253	Casting & Joining Processes	3
MFGE-351	Manufacturing Process Engineering I	3
MFGE-352	Manufacturing Process Engineering II	3

Manufacturing Integration Methods and System Design

MFGE-325	Computer Aided Manufacturing	3
MFGE-363	Controls & Instrumentation	4
MFGE-391	Fluid Mechanics	2
MFGE-415	Industrial Robotics	2
MFGE-410	Capstone II: Manufacturing Systems Design	3
MFGE-440	Design & Simulation of Manufacturing Systems	3

Manufacturing Competitiveness

INMGT-300	Engineering Economy	2
INMGT-422	Quality Engineering	3
INMGT-335	Lean Manufacturing Systems	4

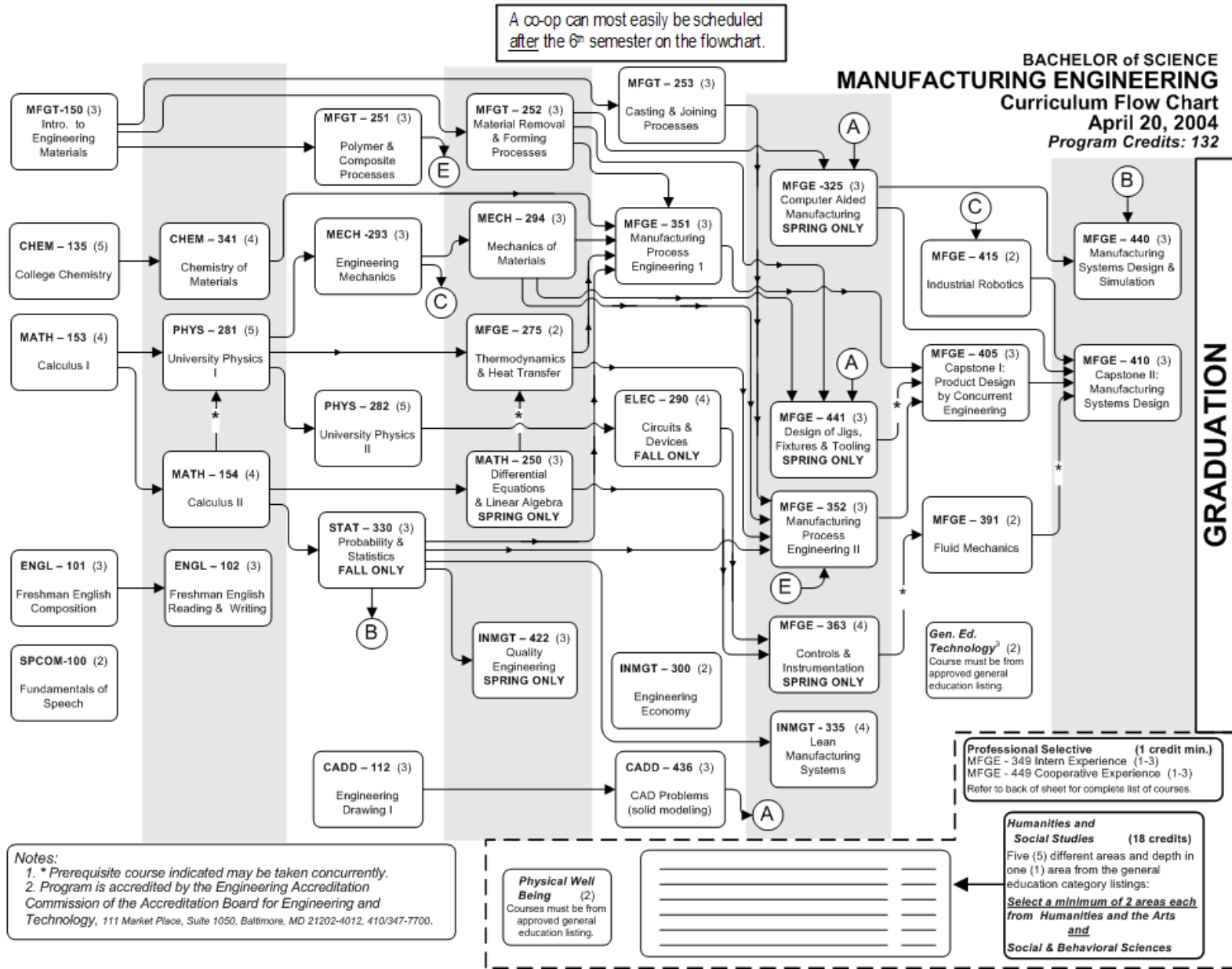
Professional Selective (1 credit minimum) _____ 1

TOTAL CREDIT HOURS: 132

Professional Selective Course List

MFGE-349	Internship (limit 3 occur.)	1-3
MFGE-449	Cooperative Experience	1-3
RC-381	Safety & Loss Control	2
PKG-335	Packaging Machinery	3
MECH-332	Mechanical Design	4
CHEM-325	Chemistry of Polymers	4
INMGT-410	Six Sigma Tools	3
CADD-466	Computer Modeling & Rendering	3
INMGT-305	Production and Inventory Control	3
INMGT-365	Project Management	2
INMGT-400	Organizational Leadership	3
ENGL-415	Technical Writing	3

B.S. in Manufacturing Engineering Curriculum Flow Chart – August 2004



B.S. in Manufacturing Engineering* Suggested Four Year Program Plan – August 2004

(To be used in conjunction with August 2004 Program Flowchart and Plan Sheet)

Total Program Credits: 132

FRESHMAN YEAR

<i>1st Semester</i>		<i>2nd Semester</i>			
MFGT-150	Introduction to Mfg. Engineering	3	CHEM-341	Chemistry of Materials	4
CHEM-135	College Chemistry I	5	PHYS-281	University Physics I	5
MATH-153	Calculus I	4	MATH-154	Calculus II	4
ENGL-101	Freshman Composition	3	ENGL-102	Freshman Reading & Writing	3
SPCOM-101	Fundamentals of Speech	2			
	<i>Total</i>	<i>17</i>		<i>Total</i>	<i>16</i>

SOPHOMORE YEAR

<i>1st Semester</i>		<i>2nd Semester</i>			
MECH-293	Engineering Mechanics	3	MECH-294	Mechanics of Materials	3
PHYS-282	University Physics II	5	MFGE-275	Thermodynamics & Heat Transfer	2
STAT-330	Probability & Statistics	3	MATH-250	Diff. Equations & Linear Algebra	3
CADD-112	Engineering Drawing I	3	MFGT-252	Material Removal & Forming Proc.	3
MFGT-251	Polymer & Composite Processes	3	INMGT-422	Quality Engineering	3
	<i>Total</i>	<i>17</i>		<i>Humanities/Soc. Science Elec.</i>	<i>3</i>
				<i>Total</i>	<i>17</i>

JUNIOR YEAR

<i>1st Semester</i>		<i>2nd Semester</i>			
MFGT-253	Casting & Joining Processes	3	MFGE-352	Manufacturing Proc. Engineering II	3
MFGE-351	Manufacturing Proc. Engineering I	3	MFGE-441	Design of Jigs, Fixtures & Tooling	3
INMGT-300	Engineering Economy	2	MFGE-325	Computer Aided Manufacturing	3
CADD-436	CAD Problems (solid modeling)	3	INMGT-335	Lean Manufacturing Systems	4
ELEC-290	Circuits & Devices	4	MFGE-363	Controls & Instrumentation	4
	<i>Physical Well Being Elective</i>	<i>1</i>			
	<i>Total</i>	<i>16</i>		<i>Total</i>	<i>17</i>

SENIOR YEAR

<i>1st Semester</i>		<i>2nd Semester</i>			
MFGE-405	Capstone I: Product Design by Concurrent Engineering	3	MFGE-410	Capstone II: Manufacturing Systems Design	3
MFGE-415	Industrial Robotics	2	MFGE-440	Manufacturing Systems Design & Simulation	3
MFGE-391	Fluid Mechanics	2		<i>Humanities/Soc. Science Elec.</i>	<i>3</i>
	<i>Humanities/Soc. Science Elec.</i>	<i>3</i>		<i>Humanities/Soc. Science Elec.</i>	<i>3</i>
	<i>Gen. Ed. Technology Elective</i>	<i>2</i>		<i>Humanities/Soc. Science Elec.</i>	<i>3</i>
	<i>Physical Well Being Elective</i>	<i>1</i>		<i>Total</i>	<i>15</i>
	<i>Total</i>	<i>16</i>			

<p><i>Professional Selective 1 credit minimum</i> Refer to curriculum plan sheet for list of courses</p>
--

Accreditation Board for Engineering and Technology (ABET) Accreditation

The B.S. in Manufacturing Engineering Program is accredited by the Engineering Accreditation Committee (EAC) of the Accreditation Board for Engineering and Technology (ABET). This agency is responsible for engineering programs in the United States. Since program inception, ABET accreditation criteria have been used as guidelines in the development of the program curriculum. ABET accreditation is a significant milestone for the Manufacturing Engineering Program. This significant accreditation is a non-governmental, peer review process that verifies that a program meets the engineering criteria, ensuring a quality educational experience. Accreditation helps many people make important decisions about education including:

- Students choosing an educational program
- Parents seeking assurance of a quality education
- Institutions seeking to improve the education provided by their programs
- Employers recruiting well-prepared graduates
- State registration, licensure and certification boards screening applicants for entry into professional practice
- Industry seeking to voice educational needs to institutions

The official EAC-ABET Accreditation action occurred during the annual meeting of the ABET Engineering Accreditation Commission in July 1999. The accreditation began with the May 1998 graduating class.

"Breadth and Depth" in *Humanities and Social Sciences*

Depth Requirement Depth in *Humanities and Social Sciences* is an ABET requirement. You must take two courses out of the same subject area within the two Stout "categories" of *Humanities and the Arts* or *Social and Behavioral Sciences*. As an example, you could take:

- HIST-120 (Early US History) **and** HIST-121 (Modern US History)

or

- ECON-210 (Princ. of Economics I) **and** ECON-121 (Princ. of Economics II)

or

- LIT-203 (American Poets) **and** LIT-273 (American Multicultural Literature)

The combinations are limitless. See the [General Education](#) listings for all possible courses to select from.

Breadth Requirement Breadth in *Humanities and Social Sciences* is an ABET requirement. Due to the "depth" requirement within our engineering program, you will select from two subject categories within one of the *Humanities and the Arts* or *Social and Behavioral Sciences* Gen Ed categories. In the remaining category, e.g., the one you have not taken "depth" in, you will need to select your three (3) breadth course in this category from three (3) different subject areas. Here are several examples of this:

- You took depth in HIST (History) and have another course in LIT (Literature). You would need to select your remaining three courses in *Social and Behavioral Sciences* in three different subjects: ANTH (Anthropology), ECON (Economics), GEOG (Geography), POLS (Political Science), PSYC (Psychology), or SOC (Sociology).

or

- You took two courses (depth) in ANTH (Anthropology) and have another course in POLS (Political Science). You will need to select your remaining three courses in *Humanities and the Arts* in three different subjects: ARTMUS (Art History/Music Appreciation), CRPRF (Creative/Performing Arts), HIST (History), LIT (Literature), or PHIL (Philosophy).

The combinations are limitless. See the [General Education](#) listings for all possible courses to select from.

Experiential Learning

Program Recommendation

The B.S. in MfgE Program does not require either a formal cooperative (co-op) or internship experience. However, the program director and faculty advisors strongly encourage students to get manufacturing engineering work experience as a co-op or intern. The experience will be an extremely valuable one. First, you will gain real world work experience as a manufacturing engineer. This experience can help you develop a deeper understanding of the engineering profession, as well as in depth experience working on projects for an employer. Second, the experience gained will create an opportunity for you to showcase your skills and abilities for future employment opportunities upon graduation. In today's highly competitive job market, these are experiences that can set you ahead of the rest of the pack.

Cooperative Learning Experience

A cooperative learning experience is one that is structured by the employer and you the student. The structure will include goals you will achieve and experiences the employer will provide for you. A coop is generally 6 months in duration and encompasses one summer and one academic semester. Students are paid as an employee of the company and will work on meaningful projects within their discipline. You provide status reports to a manufacturing engineering coop program coordinator. A final report detailing your experience and a presentation to a class are also required. The coop experience is generally taken by the student for 1 credit and will appear on your academic transcript. A coop experience keeps you registered as a full time student during the semester you are absent from Stout. This could be an important issue for insurance from your parents' by maintaining your fulltime student status. It could also be an issue for students who have student loans. If you do not remain registered as a full time student, your grace period could begin to be eaten up during the three months you are absent from school.

Internship Learning Experience

A summer internship is another structured work experience in the student's discipline. It is generally not as extensive as the longer cooperative experience, but it is an important experience and is helpful in building a resume as well as experiencing the manufacturing engineering profession. Summer internships are not a requirement of the program. The only advantage to setting the internship up as a credit internship is to have it appear on your transcript. If you are away for the summer, you are still considered to be a full time student so there is no necessity to enroll for credit from the point of view of parental insurance coverage or financial aid grace period. It is advised that you seek the assistance of your faculty adviser or program director in helping to structure the internship to ensure a positive experience.

Minors Available to Enhance B.S. in MfgE

There are many minors available to students here at Stout. The following list includes some of the minors that have been popular with students during the past several years. To receive more information about these minors, contact the Advisement Assistance Center, locate the minor in the Undergraduate Bulletin www.uwstout.edu/ugbulletin/ug_minors.html, or contact the Minor Coordinator.

- Materials Minor
- Chemistry Minor
- Business Administration Minor
- Non-teaching Mathematics Minor
- Quality Minor
- Technical Writing Minor

Professional Societies

Many student chapters of professional societies are active on the UW-Stout campus. These student organizations provide many opportunities to you. Membership in a student chapter of the professional society allows you access to all of the benefits of a full professional member, including yearly engineering journals, professional development workshops, and certification credentialing. In addition to all of these professional benefits, the student organizations get involved in national competitions of their parent societies as well as access to these societies scholarship opportunities. There are two other reasons for getting involved in these societies. These reasons are for personal development of your resume. Your involvement in a professional society can be on any level you wish. However, employers look for demonstrated leadership in potential employees. Student chapters of professional societies can provide these leadership opportunities.

The following student chapters are available to you. Their faculty advisors are listed with them.

SOCIETY OF MANUFACTURING ENGINEERS (SME):	Gary Godfrey
SOCIETY OF AUTOMOTIVE ENGINEERS (SAE):	Ed Hughes
AMERICAN SOCIETY OF MECHANICAL ENGINEERING (ASME):	Scott Springer
SOCIETY OF WOMEN ENGINEERS (SWE):	Brenda Puck
AMERICAN FOUNDRY SOCIETY (AFS):	Rajiv Asthana
AMERICAN PRODUCTION & INVENTORY CONTROL SOCIETY (APICS):	Tom Lacksonen

This is a partial listing of the benefits that can be realized through your involvement in a student organization.

- Participation in national design competitions.
- Access to professional society scholarships.
- Opportunities to practice leadership by getting involved in the boards or lead positions.
- Industrial exposure as most groups schedule professional speakers for meetings as well as tours to area facilities.
- Access to the parent professional organization's training and workshops at student rates or even free.
- Professional journals and magazines from the parent organization.
- Build your resume.
- Realization of life-long access to the parent professional organizations opportunities and materials.

It is imperative you get involved in professional societies while at Stout. Again, get involved for your professional development as well as the necessity to build a successful resume filled with meaningful experiences.

Scholarship Opportunities

Many scholarship opportunities are available to students of the Manufacturing Engineering Program. Most of the scholarships are not need based but are awarded on your ability demonstrated in class work, community involvement, professional society involvement (not just membership) and recommendations. All scholarships must be applied for and therefore have their own unique deadlines. Most all of the previously mentioned professional societies have scholarship opportunities. Not all of them require membership in their organization, but membership is strongly encouraged if you are applying to them. In addition to these opportunities, the Stout Foundation provides many scholarships, some of which are uniquely set up for Manufacturing Engineering Program or College of Technology, Engineering, and Management students. The Stout Foundation deadline is usually March 1 for the upcoming year, and the professional societies usually have a February 1 deadline. Do not miss out on scholarship opportunities by starting the application process too late. You will most likely need to include with your application items such as instructor or employer recommendations. Be sure to allow enough time (a few weeks minimum) for your recommendations to be written. There are thousands of dollars given to our students every year, so take advantage of these scholarships and apply. You can apply for more than one scholarship.

Placement and Co-op Services

The Placement and Co-op Services office provides services to undergraduate and graduate students, employers and alumni. Their office is located in 103 Administration. This group offers services for full-time employment for graduating students as well as alumni and cooperative and intern services to continuing students. The Placement and Co-op Services office maintains extensive contacts with employers. These employers come to campus to actively recruit students. There is an Annual Career Conference held in October. During the Career Conference, students have the opportunity to learn about employers in an informal open house setting. Other services are interview scheduling and online resume referral as well as a host of other career-oriented activities. Go to the Placement and Co-op Services website for a complete listing of all their services and access to related information @ <http://www.uwstout.edu/place/> or stop in and see the staff in 103 Administration.