

## ASSOCIATE DEGREE Courses

### General Education

30 credits of General Education required from the MN transfer curriculum from a minimum of these six areas:

#### Area 1- Communications

##### Curriculum (9 credits minimum)

Composition I- ENGL 1111 (Req) . . . . .	3
Composition II- ENGL 1112 (Req) . . . . .	3
Public Speaking- SPCH 1101 . . . . .	3
Interpersonal- SPCH 1103 . . . . .	3
Small Group Comm.- SPCH 1111 . . . . .	3

#### Area 2- Critical Thinking

##### Curriculum (3 credits minimum)

Composition I- ENGL 1111 . . . . .	3
Composition II- ENGL 1112 . . . . .	3
Technical Report Writing- ENGL 2207 . . . . .	3
Intro to Humanities - HUMA 1101 . . . . .	3
Contemporary Math - MATH 1102 . . . . .	3
Intro to Philosophy- PHIL 1101 . . . . .	3
Business Ethics- PHIL 2240 . . . . .	3
Public Speaking- SPCH 1101 . . . . .	3
Interpersonal Comm.- SPCH 1103 . . . . .	3

#### Area 3- Natural Science

##### Curriculum (6 credits minimum)

Biological Principles I- BIOL 1111 . . . . .	4
Biological Principles II- BIOL 1112 . . . . .	4
Human Biology- BIOL 1120 . . . . .	4
Nutrition- BIOL 2131 . . . . .	3
Microbiology- BIOL 2221 . . . . .	3
Anatomy/ Physiology I- BIOL 2252 . . . . .	3
Anatomy/ Physiology II- BIOL 2254 . . . . .	3
Advanced Physiology- BIOL 2256 . . . . .	2
Intro to Chemistry- CHEM 1020 . . . . .	4
Forensic Chemistry- CHEM 1105 . . . . .	4
General Chemistry I- CHEM 1121 . . . . .	5
General Chemistry II- CHEM 1122 . . . . .	5
Survey of Chemistry- CHEM 2205 . . . . .	3
Organic Chemistry I- CHEM 2211 . . . . .	5
Organic Chemistry II- CHEM 2212 . . . . .	5
Geology- NSCI 1103 . . . . .	4
Astronomy- NSCI 1123 . . . . .	4
Environmental Problem- NSCI 2203 . . . . .	4
Physics- PHYS 1010 . . . . .	3
General Physics I- PHYS 1111 . . . . .	4
General Physics II- PHYS 1112 . . . . .	4
Engineering Physics I- PHYS 2211 . . . . .	5
Engineering Physics II- PHYS 2212 . . . . .	5

#### Area 4- Math & Logic Curriculum

##### (3 credits minimum)

Contemporary Math- MATH 1102 . . . . .	3
Finite Math- MATH 1104 . . . . .	3
Trigonometry- MATH 1106 . . . . .	3
College Algebra- MATH 1110 . . . . .	4
Pre-Calculus- MATH 1113 . . . . .	5
Statistics- MATH 2203 . . . . .	4
Calculus I- MATH 2231 . . . . .	5
Calculus II- MATH 2232 . . . . .	5
Calculus II -MATH 2233 . . . . .	4
Applied Calc- MATH 1131 . . . . .	3

#### Area 5- History & Social Sciences

##### Curriculum (9 credits minimum)

Physical Anthropology- ANTH 2201 . . . . .	3
Cultural Anthropology- ANTH 2202 . . . . .	3
Prin. of Economics- ECON 1110 . . . . .	3
Microeconomics- ECON 2201 . . . . .	3
Macroeconomics- ECON 2202 . . . . .	3
Physical Geology- GEOG 2241 . . . . .	3
Western Civilization I- HIST 1101 . . . . .	4
Western Civilization II- HIST 1102 . . . . .	4
U.S. History I- HIST 2201 . . . . .	4
U.S. History II- HIST 2202 . . . . .	4
Minnesota History- HIST 2210 . . . . .	3
Civil War/ Reconstruction- HIST 2213 . . . . .	3
American Indian Studies- HIST 2215 . . . . .	3
History of Constitution- HIST 2221 . . . . .	3
U.S. Women's History- HIST 2231 . . . . .	3
American Minorities- HIST 2250 . . . . .	3
Intro. to Political Science- PLSC 1101 . . . . .	3
American Government- PLSC 1102 . . . . .	3
State/Local Government- PLSC 1103 . . . . .	3
International Relations- PLSC 2202 . . . . .	3
Comp. Governments- PLSC 2204 . . . . .	3
Intro to Psychology- PSYC 1105 . . . . .	3
Develop. Psychology- PSYC 2201 . . . . .	3
Abnormal Psychology- PSYC 2215 . . . . .	3
Intro. to Sociology- SOCI 1101 . . . . .	3
Social Problems- SOCI 1102 . . . . .	3
Sex, Gender, Society- SOCI 2212 . . . . .	3
Criminology- SOCI 2215 . . . . .	3
Intimacy, Family, Div- SOCI 2220 . . . . .	3

#### Area 9- Ethical/ Civic

##### Responsibility Curriculum

##### (3 credits minimum)

Civil Liberties- HIST 2221 . . . . .	3
Mass Communications- JOUR 1101 . . . . .	3
Ethics- PHIL 1102 . . . . .	3
Morals & Medicine- PHIL 2210 . . . . .	3
Business Ethics- PHIL 2240 . . . . .	3
American Government- PLSC 1102 . . . . .	3
State/ Local Government- PLSC 1103 . . . . .	3
Criminology- SOCI 2215 . . . . .	3

**Associate of Science Degree in Manufacturing Technology - 60 credits**

## Career Advising Portfolio Manufacturing Career Ladder

### BACHELORS DEGREE Courses

#### Bachelors of Manufacturing Management

To complete the requirements of the BMM degree, students in this program must complete the A.S. degree in Manufacturing Technology; 20 additional manufacturing core credits from the 4 certificate programs defined in the brochure; plus 40 credits of upper division (3000 & 4000) credits with at least 30 from the University of Minnesota.

#### Bachelors of Manufacturing Management Degree (BMM)

Upper Division 40 credits

Program Core Requirements		Semester	
Acct	2101	Principles of Accounting . . . . .	.3 credits . . . . .FS
BM	3012	Applied Engineering Principles . . . . .	.3 credits . . . . .F
BM	4034	Quality Standards . . . . .	.3 credits . . . . .S
Comp	3303	Writing in Your Profession . . . . .	.3 credits . . . . .FS
Mgmt	3100	Managerial Finance . . . . .	.3 credits . . . . .FS
Mgmt	3200	Principles of Management . . . . .	.3 credits . . . . .FS
Mgmt	3210	Supervision and Leadership . . . . .	.3 credits . . . . .FS
Mgmt	3250	Operations Management . . . . .	.3 credits . . . . .S
Mktg	3300	Principles of Marketing . . . . .	.3 credits . . . . .FS
Spch	3431	Persuasion . . . . .	.3 credits . . . . .S

Select 13 Upper Division Level Credits

#### University of Minnesota Crookston

At least 30 from the University of Minnesota

Total= 120 Credits for BMM Degree

This program is offered in partnership with University of Minnesota- Crookston.

Last updated October 15, 2009



# Manufacturing Career Ladder

## Center for Outreach & Innovation

**Corporate Learning Division  
Customized Training Division**

Developing your employees  
at your location through educational investments  
that accomplish your business goals.



A Member of the Minnesota State Colleges & Universities

# Career Advising Portfolio Manufacturing Career Ladder

## CERTIFICATE PROGRAMS Courses

### Lean Manufacturing/Continuous Improvement 17 Credit Certificate

Introduction to Cellular Manufacturing - MANF 2311	3 credits
Principles of Lean Manufacturing - MANF 2520	2 credits
Total Quality Systems and SPC in a Mfg Environment - MANF 2505	3 credits
Value Stream Mapping -MANF 2530	2 credits
Production and Operation Management - MANF 2510	2 credits
Facilitating Teams in a Manf. Environ. - MANF - 2540	3 credits

#### Elective Courses (choose one of the following)

Principles of Supervision in a Manufacturing Environment - MANF 2550	2 credits
Introduction to Computer Technology - CPTR 1104	3 credits

### Production and Inventory Management 17 Credit Certificate

Basic Supply Chain Management- PRIM 2500	2 credits
Master Planning of Resource- PRIM 2510	2 credits
Detailed Scheduling and Planning- PRIM 2520	2 credits
Execution and Control of Operation- PRIM 2530	2 credits
Strategic Management of Resources- PRIM 2540	2 credits
Technical Writing- ENGL 2207	3 credits
Value Stream Mapping- MANF 2530	2 credits
Principles of Lean Manufacturing- MANF 2520	2 credits

### Manufacturing Principles 12 Credit Certificate

5S System - MANF 1500	1 credit
Measuring Tools - MANF 1510	2 credits
Print Reading - MANF 1520	2 credits
Organizational Communications - MANF 1540	2 credits
Machine Operations - MANF 1530	1 credit
Tools of Quality - MANF 2500	2 credits
Production & Operations Management - MANF 2510	2 credits

### Supervisory Leadership 18 Credit Certificate

Business Communications- BUSN 1140	3 credits
Principles of Management- BUSN 2210	3 credits
Supervision- MKTG 2210	3 credits
Interpersonal Communications- SPCH 1103	3 credits

#### Elective Courses (choose two of the following)

Human Relations- SSCI 1101	3 credits
Leadership- BUSN 2231	3 credits
Legal Environment of Business- BUSN 2218	3 credits
Global Business- MKTG 2220	3 credits

## ASSOCIATE OF SCIENCE DEGREE

### Manufacturing Emphasis

30 credits required from 2 or more Certificate programs

Lean Manufacturing/Continuous Improvement	17 credits
Production and Inventory Management	17 credits
Manufacturing Principles	12 credits
Supervisory Leadership	18 credits

## GENERAL EDUCATION

30 credits of General Education required from the MN transfer curriculum from a minimum of these six areas:

Area 1 - Communications (9 cr)	Area 4 - Math & Logic (3 cr)
Area 2 - Critical Thinking (3 cr)	Area 5 - History & Soc. Science (9 cr)
Area 3 - Natural Science (6 cr)	Area 9 - Ethical/Civic Respon. (3 cr)



# Manufacturing Career Ladder

### CHOOSE FROM:

- A combination of 30 credits from the four certificate programs, and 30 credits of general education credits distributed between the six areas of the Minnesota Transfer Curriculum will qualify students to earn an Associate of Science in Manufacturing Technology.
- The graduate of the AS Manufacturing Technology must complete the

requirements of at least two certificate programs and 30 credits of general education to continue in the Bachelors in Manufacturing at University of Minnesota-Crookston.

### WHO'S ELIGIBLE:

- All Full-time Polaris employees can enroll in this credit-based certificate and degree program.

### WHAT'S REQUIRED OF ME:

- Complete all courses in the program
- Participate in and complete all classwork
- Earn a grade of "C" or better for Polaris to sponsor tuition reimbursement.

