

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.*



East Grand Forks, MN - 800-451-3441 • Thief River Falls, MN - 800-959-6282
www.northlandcollege.edu/business_industry

Associate of Science Degree Manufacturing Technology

The Associate of Science Degree in Manufacturing Technology from Northland Community & Technical College is designed to help your business grow. As a whole, the Manufacturing Technology program is an integrated approach to manufacturing, giving the employer several certificate options to choose from to "customize" the degree program for their specific needs. The certificate areas to customize the coursework at this time include:

- Lean Manufacturing/Continuous Improvement
- Production and Inventory Management
- Manufacturing Principles
- Supervisory Leadership

A combination of thirty credits from these four certificate programs, and thirty credits of general education credits distributed between six areas of the Minnesota Transfer Curriculum will qualify students to receive their Associates of Science Degree in Manufacturing Technology. This associate degree is designed to seamlessly articulate with the Bachelor of Manufacturing Management degree at the University of Minnesota-Crookston campus. Currently, Northland is also working with Bemidji State University in creating an articulation agreement with a career ladder leading to a bachelors of Applied Engineering.

Lean Manufacturing/ Continuous Improvement Certificate

The Lean Manufacturing/Continuous Improvement certificate program is based on a philosophy of never-ending improvement of work processes. When this philosophy is implemented, it shortens the time between customer order and factory shipment by eliminating waste. Companies cannot afford to waste human effort, space, equipment, production time, or any other asset.

The lean approach to management alters the role of every person in the enterprise. It requires the understanding, long-term commitment, and active participation of a company's leaders. Its success depends upon a workforce that has been trained and empowered to utilize its skills, knowledge, and initiative in a cooperative and disciplined effort to continuously improve. The implementation of lean thinking is a complex process involving human socialization as well as the adoption of new techniques. The Lean Manufacturing/Continuous Improvement certificate program is designed to assist employees in becoming familiar with and able to demonstrate the competencies necessary to implement these types of waste eliminating techniques. **17 credits**

Program Requirement	Course Title	Credits
LEAN	Introduction to Cellular Manufacturing - MANF 2311	3
LEAN	Principles of Lean Manufacturing - MANF 2520	2
LEAN	Total Quality Systems and SPC in a Mfg. Environ. - MANF 2505	3
PRIM/LEAN	Value Stream Mapping -MANF 2530	2
LEAN	Principles of Supervision in a Mfg. Environ. - MANF 2550	2
LEAN/MANF PRIN	Production and Operation Management - MANF 2510	2
LEAN	Facilitating Teams in a Manf. Environ. - MANF - 2540	3
TOTAL CREDITS		17

To qualify, students must earn a grade of "C" or better in all courses within the program.

Lean Manufacturing/Continuous Improvement Certificate Course Descriptions

Introduction to Cellular Manufacturing - MANF 2311 - 3 credits

Catalog Description: This course will provide an introduction to Cellular Manufacturing Principles and Design. This course will provide information on such topics as: Introduction to Cellular Manufacturing, Continuous Improvement, Teambuilding, Theory of Constraints, Inventory Control, Cell Layout, Time and Motion Study, Setup Time Reduction, as well as in-class projects related to these topics.

Principles of Lean Manufacturing - MANF 2520 - 2 credits

Catalog Description: Adopt Lean Manufacturing as a way to reduce costs, better satisfy customers, and increase profitability. In the process of becoming lean, companies must identify and prioritize the initiatives and projects they will undertake to become lean. This course outlines a discipline for identifying and planning Lean Manufacturing initiatives, including the selection of metrics by which to evaluate and track the results of the projects. It offers a methodology for linking the goals and metrics of a project or initiative to a company's strategic goals and metrics and provides the basis for tracking the effectiveness of implementation of lean initiatives.

This course also explores the interdependency of the Five Primary Elements: organization, metrics, logistics, manufacturing flow, and process control. This course also describes a proven, applied approach to creating a lean program using these elements.

Total Quality Systems and SPC in a Manufacturing Environment - MANF 2505 - 3 credits

Catalog Description: This course is an overview of total quality systems and statistical process control. Total quality is a means for manufacturing to improve quality, productivity, and maintain a competitive position. You will utilize flowcharts, diagrams, pareto analysis, and other means of analyzing and evaluating data such as SPC. You will learn to identify quality characteristics derived from variable and attribute data the use of statistical rules for interpretation of control charts to analyze and recommend appropriate actions on factors affecting process variation.

Value Stream Mapping - MANF 2530 - 2 credits

Catalog Description: This course presents process planning establishes the mapping between the design engineer's intent and the manufacturing process requirement to produce the desired part. A process plan specifies the operations to be performed and their sequence, the associated tool and the machine, and the operations' parameters. This course also explains how Value Stream Mapping can be used to find waste in your production system. It starts by discussing the problems associated with a mass production philosophy. The three types of information needed to build a value stream map are explained along with an explanation of how the time line calculation at the bottom of the map highlights excessive inventories. The principles behind Value Stream Mapping demands that employees take an approach to dig out and eliminate problems of waste where they are assumed not to even exist.

Principles of Leadership in a Manufacturing Environment - MANF 2550 - 2 credits

Catalog Description: Study the role and responsibilities of supervisors in a manufacturing environment including; planning, organizing, leading, staffing, and managing performance. Develop improved communication and human relations skills. Learn techniques for delegation, performance appraisal, motivating, and counseling. Learn to manage employee performance by establishing expectations, identifying and providing needed training and support, monitoring performance, and providing formal and informal feedback.

Production and Operation Management - MANF 2510 - 2 credits

Catalog Description: An introduction to management techniques as they relate to a production based company. (Process selection, Facility design, JIT, Managing teams, TQM, SPC overview, etc.)

Facilitating Teams in a Manufacturing Environment - MANF 2540 - 3 credits

Catalog Description: This course is designed to assist the manufacturing audience to learn how to facilitate teams in a manufacturing environment through empowering the workforce. The audience will learn how to form teams and implement ground rules, lead team discussions and projects, set goals and objectives, facilitate change, empower their teammates and fellow workers to continuously improve their work processes, complete hands-on projects in their working environment, learn how to use metrics to document their projects results, and how to do team presentations for their co-workers and management personnel.

Production & Inventory Management Certificate

The Production and Inventory Management certificate program provides a comprehensive study of the materials management principles. Instruction covers production and inventory management, materials and capacity requirements planning, master planning, purchasing management, just-in-time/total quality management, and the management of distribution and logistics. Typical job functions would include operations management, production planning, purchasing, shop schedulers, stockroom, order entry, customer service representatives, forecast analysts, manufacturing engineering, quality control, manufacturing/assembly supervision, etc. **16 credits**

Program Requirement	Course Title	Credits
PRIM	Basic Supply Chain Management- PRIM 2500	2
PRIM	Master Planning of Resource- PRIM 2510	2
PRIM	Detailed Scheduling and Planning- PRIM 2520	2
PRIM	Execution and Control of Operation- PRIM 2530	2
PRIM	Strategic Management of Resources- PRIM 2540	2
PRIM	Technical Report Writing- ENGL 2207	2
PRIM / LEAN	Value Stream Mapping- MANF 2530	2
PRIM / LEAN	Principles of Lean Manufacturing- MANF 2520	2
	TOTAL CREDITS	16

To qualify, students must earn a grade of "C" or better in all courses within the program.

Production & Inventory Management Certificate Course Descriptions

Basic Supply Chain Management - PRIM 2500 - 2 credits

Catalog Description: Explore the basic concepts of managing the flow of materials in a supply chain. In the Basics you get a complete overview of material flow, from internal and external suppliers, to and from your organization. Topics include: Elements of the Supply Chain; Just-in-Time (JIT); Total Quality Management (TQM); Manufacturing Resources Planning (MRP II); Demand Planning; and Capacity Management.

Master Planning of Resources - PRIM 2510 - 2 credits

Catalog Description: Explore processes used to develop sales and operations plans and learn to identify and assess internal and external demand and forecasting requirements. The course focuses on the importance of producing achievable master schedules that are consistent with business policies, objectives, and resource constraints. Topics include: Demand Management; Sales and Operations Planning; Master scheduling; and Measuring the Business Plan.

Detailed Scheduling and Planning - PRIM 2520 - 2 credits

Catalog Description: Focus on the various techniques for material and capacity scheduling. The course includes detailed descriptions of material requirements planning (MRP), capacity requirements planning (CRP), inventory management practices, and procurement and supplier planning. Topics include: Recognizing Techniques and Practices of Inventory Management; Mechanics of the Detailed Material Planning Process; Planning Operations to Support the Priority Plan; Planning Procurement and External Sources of Supply.

Execution and Control of Operation - PRIM 2530 - 2 credits

Catalog Description: Focus on the areas of prioritizing and sequencing work, executing work plans and implementing controls, reporting activity results, and providing feedback on performance. The course explains techniques for scheduling and controlling production processes, the execution of quality initiatives and continuous improvement plans, and the control and handling of inventories. Topics include: Prioritizing and Sequencing Work; Executing Plans and Implementing Controls; Authorizing and Reporting Activities for Push and Pull Systems; and Evaluating Performance and Providing Feedback.

Strategic Management of Resources - PRIM 2540 - 2 credits

Catalog Description: Explore the relationship of existing and emerging processes and technologies to manufacturing strategy and supply chain-related functions. The course addresses three main topics: aligning resources with the strategic plan, configuring and integrating operating processes to support the strategic plan, and implementing change. Topics include: Competitive Market Issues; Choices Affecting Facilities, Supply Chain, Information Technology, and Organizational Design; Configuring and Integrating Internal Processes; and Evaluating and Managing Projects.

Technical Report Writing - ENGL 2207 - 2 credits

Catalog Description: Forms, procedures, and techniques of collecting and presenting data for both formal and informal reports.

Value Stream Mapping - MANF 2530 - 2 credits

Catalog Description: This course presents process planning establishes the mapping between the design engineer's intent and the manufacturing process requirement to produce the desired part. A process plan specifies the operations to be performed and their sequence, the associated tool and the machine, and the operations' parameters. This course also explains how Value Stream Mapping can be used to find waste in your production system. It starts by discussing the problems associated with a mass production philosophy. The three types of information needed to build a value stream map are explained along with an explanation of how the time line calculation at the bottom of the map highlights excessive inventories. The principles behind Value Stream Mapping demands that employees take an approach to dig out and eliminate problems of waste where they are assumed not to even exist.

Principles of Lean Manufacturing - MANF 2520 - 2 credits

Catalog Description: Adopt Lean Manufacturing as a way to reduce costs, better satisfy customers, and increase profitability. In the process of becoming lean, companies must identify and prioritize the initiatives and projects they will undertake to become lean. This course outlines a discipline for identifying and planning Lean Manufacturing initiatives, including the selection of metrics by which to evaluate and track the results of the projects. It offers a methodology for linking the goals and metrics of a project or initiative to a company's strategic goals and metrics and provides the basis for tracking the effectiveness of implementation of lean initiatives. This course also explores the interdependency of the Five Primary Elements: organization, metrics, logistics, manufacturing flow, and process control. This course also describes a proven, applied approach to creating a lean program using these elements.

Manufacturing Principles Certificate

The Manufacturing Principles certificate program has been designed to expose both new and experienced employees to foundational concepts and techniques for manufacturing no matter what their specific industry may be. Topics such as workplace organization, measuring tools, print reading, communications, quality, machine operations, and production management concepts are discussed in detail and "hands-on" activities are completed to reinforce the theory. The Manufacturing Principles certificate begins to lay the foundation for a well trained and empowered workforce to help their employer meet and exceed their goals. **12 credits**

Program Requirement	Course Title	Credits
MANF PRIN	.5S System - MANF 1500	1
MANF PRIN	.Measuring Tools - MANF 1510	2
MANF PRIN	.Print Reading - MANF 1520	2
MANF PRIN/ PLASTICS	.Organizational Communications - MANF 1540	2
MANF PRIN	.Machine Operations - MANF 1530	1
MANF PRIN	.Tools of Quality - MANF 2500	2
MANF PRIN / LEAN	.Production & Operations Management - MANF 2510	2
	TOTAL CREDITS	12

To qualify, students must earn a grade of "C" or better in all courses within the program.

Manufacturing Principles Certificate Course Descriptions

5S System - MANF 1500 - 1 credit

Catalog Description: A systematic approach to organizational cleanliness. It is the foundational base for quality, safety, productivity and employee involvement in all areas of a company. The 5S System promotes continuous improvement in the manufacturing environment and empowers employees to take a proactive approach to obstacles encountered in their daily work activities. Each element of The 5S System is thoroughly examined for specific application to a myriad of work place issues. Intensive "hands on" approach is utilized to complement classroom instruction.

Measuring Tools - MANF 1510 - 2 credits

Catalog Description: This course will be composed of understanding basic elements utilized in a total quality environment in business and industry. The students will examine all aspects of basic measuring concepts and procedures including: The review of basic arithmetic operations (including whole numbers, common fractions, decimal fractions); Measuring features and units of measurement; Theory of precision and accuracy; Reading and understanding basic tolerancing; Conversion of measurement from the English System to the Metric System and visa-versa; Reading and understanding precision measuring tools such as dial caliper, vernier caliper, dial indicator, micrometer, precision gauge blocks, scaled rules, depth gauge, optical comparator, etc; The basic principles of angular measurement; Orientation of CMM's; Introduction to SPC (charting/graphing). The course will also introduce the student to the use of PPM including the understanding of how to calculate PPM. The student will have the opportunity to apply the knowledge acquired through a variety of in-class/laboratory activities utilizing the tools and methods discussed in a "hands on" approach to measuring.

Print Reading - MANF 1520 - 2 credits

Catalog Description: This course will orient the student in the basic skills and abilities required for understanding prints utilized in a manufacturing/industrial environment. Emphasis will be on interpretation of Geometric Dimensioning and Tolerancing symbols/principles; Alphabet of lines; Multi-view drawing (including Orthographic Projection, Isometric Views and Perspective Drawing); Title blocks; Revision systems; Identification of general/local notes; Dimensions and tolerances; Basic principles of math/geometry in relation to mechanical print reading; Interpretation of basic weld symbols; Techniques of basic shop sketching and interpretation of three- dimensional drawings, will be also discussed. Each student will have the opportunity to apply the knowledge acquired through a variety of in-class activities and external assignments.

Organizational Communications - MANF 1540 - 2 credits

Catalog Description: Learn how to communicate effectively in a manufacturing environment and work as a team in a production setting. Emphasis will be placed on recognizing/demonstrating key attributes that promote healthy interaction between management, production employees, office personnel and the customer base. Team Member; Listening; Honesty and Integrity; Responsibility; Time management; Importance of plant-wide communication; Expressing ideas; Conflict Resolution and Safety issues in communication are some of the topics that will be explored. Students will have the opportunity to apply the knowledge acquired through a variety of in-class, group based activities as well as one-on-one assignments designed to assess core competencies and demonstrated ability of the subject matter.

Machine Operations - MANF 1530 - 1 credit

Catalog Description: Demonstrate and discuss current tooling, machines, and production operations used at manufacturing facilities to produce high quality products. (Turning, Milling, Drilling, Welding, Punch presses, etc.)

Tools of Quality - MANF 2500 - 2 credits

Catalog Description: This unit will cover basic quality fundamentals as well as introduce students to advanced charting and controlling techniques. (TQM concepts, Flow charts, Process charts, Histograms, SPC overview, etc.)

Production and Operations Management - MANF 2510 - 2 credits

Catalog Description: An introduction to management techniques as they relate to a production based company. (Process selection, Facility design, JIT, Managing teams, TQM, SPC overview, etc.)

Supervisory Leadership Certificate

The Supervisory Leadership certificate program is for individuals who want to assume more authority at their place of work but need further education to perform those duties properly. The objective of the program is to prepare individuals to supervise people in work environments where active participation in decision-making is required of all employees. The program includes five courses: Interpersonal Communications, Supervision, Leadership, Business Communications, and Human Relations. Communications using digital methods will be emphasized. Some of the courses will be offered online only. **18 credits**

Program Requirement	Course Title	Credits
	Business Communications- BUSN 1140	3
	Principles of Management- BUSN 2210	3
	Supervision- MKTG 2210	3
	Interpersonal Communications- SPCH 1103	3
Elective Courses (<i>Choose two of the following</i>):		
	Human Relations- SSCI 2101	3
	Leadership- BUSN 2231	3
	Legal Environment of Business- BUSN 2218	3
	Global Business- MKTG 2220	3
	TOTAL CREDITS	18

To qualify, students must earn a grade of "C" or better in all courses within the program.

Supervisory Leadership Certificate Course Descriptions

Required Courses:

Business Communications- BUSN 1140 - 3 credits

Catalog Description: The study of typical communication situations in business, with extensive work on the writing of good business letters. Both oral and written communications will be covered. Other topics will include employment-related communications, intercultural communications, and application of business technology to communication.

Principles of Management- BUSN 2210 - 3 credits

Catalog Description: This course is designed to expose the student to a variety of concepts presented within the framework of the traditional functions of management. The various approaches to planning, decision making, organizing, motivation, leadership, communications, and controlling are explored.

Supervision- MKTG 2210 - 3 credits

Catalog Description: The methods and techniques of leadership and supervision and their applications are emphasized in this course. The content covers such topics as delegation, motivation, orienting, evaluating, and effectively increasing productivity.

Interpersonal Communications- SPCH 1103 - 3 credits

Catalog Description: This course is designed to assist learners in developing their own leadership characteristics. Course topics include: communications- leadership models, styles, theories and characteristics; power types; authority; personality; attitude; decision-making methodology and personal assessment.

(Choose two of the following elective courses to complete certificate requirements)

Elective Courses:

Human Relations- SSCI 1101 - 2 credits

Catalog Description: An applied human relations course designed to allow students to gain an awareness and understanding of human behavior. It is a study of self-awareness, personal relationships, and relations in the workplace. Emphasis will be placed on personal development of communication skills and character, human sexuality, cultural diversity, and team building.

Leadership- BUSN 2231 - 3 credits

Catalog Description: This course is designed to assist the learner in developing their own leadership characteristics. Some of the course objectives are to: maintain a positive attitude, understand the "Leadership Strategic Model," study the components of good communication, utilize the power of influence, determine decision making methodology, understand multiple leadership styles, as well as to determine how to maximize one's own leadership style.

Legal Environment of Business- BUSN 2218 - 3 credits

Catalog Description: This course is an introduction to the principles of law as they apply to citizens and businesses. Topics include the court system, legal system, contract, negotiable instruments, agency and employer/employee relationship.

Global Business- MKTG 2220 - 3 credits

Catalog Description: Students will learn the importance of advertising in the marketing function, study buying motives, research media selection, budgets, ad copy and layout. The course will create an understanding of social/economic efforts and global challenges in advertising. The students will gain an understanding of promotional events and techniques. Prerequisite(s): BUSN 2210, MKTG 1100, or instructor permission.

General Education Curriculum

Credits earned in the General Education program from Northland Community and Technical College are integral components in the Manufacturing Career Ladder program. The program combines the 30 credits of General Education from a minimum of these six areas along with thirty credits from five Certificate Programs to qualify the student to receive their Associates of Science Degree in Manufacturing Technology.

Area 1 - Communications	9
Area 2 - Critical Thinking	3
Area 3 - Natural Science	6
Area 4 - Math & Logic	3
Area 5 - History & Social Sciences	9
Area 9 - Ethical/Civic Responsibility	3
TOTAL CREDITS	30

To qualify, students must earn a grade of "C" or better in all courses within the program.

General Education Courses

Area 1- Communications Curriculum (9 credits minimum)

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

Area 2- Critical Thinking Curriculum (3 credits minimum)

Composition I- ENGL 1111 .....	.3 credits
Composition II- ENGL 1112 .....	.3 credits
Technical Report Writing- ENGL 2207 .....	.2 credits
Intro to Humanities - HUMA 1101 .....	.3 credits
Contemporary Math - MATH 1102 .....	.3 credits
Intro to Philosophy- PHIL 1101 .....	.3 credits
Morals & Medicine- PHIL 2210 .....	.3 credits
Business Ethics- PHIL 2240 .....	.3 credits
Public Speaking- SPCH 1101 .....	.3 credits

Area 3- Natural Science Curriculum (6 credits minimum)

Biological Principles I- BIOL 1111 .....	.4 credits
Biological Principles II- BIOL 1112 .....	.4 credits
Human Biology- BIOL 1120 .....	.4 credits
Nutrition- BIOL 2131 .....	.3 credits
Microbiology- BIOL 2221 .....	.3 credits
Anatomy/ Physiology I- BIOL 2252 .....	.3 credits
Anatomy/ Physiology II- BIOL 2254 .....	.3 credits
Advanced Physiology- BIOL 2256 .....	.2 credits
Intro to Chemistry- CHEM 1020 .....	.4 credits
Forensic Chemistry- CHEM 1105 .....	.4 credits
General Chemistry I- CHEM 1121 .....	.5 credits
General Chemistry II- CHEM 1122 .....	.5 credits
Survey of Chemistry- CHEM 2205 .....	.3 credits
Organic Chemistry I- CHEM 2211 .....	.5 credits
Organic Chemistry II- CHEM 2212 .....	.5 credits
Geology- NSCI 1103 .....	.4 credits
Astronomy- NSCI 1123 .....	.4 credits
Environmental Problem- NSCI 2203 .....	.4 credits
Physics- PHYS 1010 .....	.3 credits
Phys Environment- PHYS 1101 .....	.3 credits
General Physics I- PHYS 1111 .....	.4 credits
General Physics II- PHYS 1112 .....	.4 credits
Engineering Physics I- PHYS 2211 .....	.5 credits
Engineering Physics II- PHYS 2212 .....	.5 credits

Area 4- Math & Logic Curriculum (3 credits minimum)

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

General Education Courses

Area 5- History & Social Sciences Curriculum (9 credits minimum)

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

Area 9- Ethical/ Civic Responsibility Curriculum (3 credits minimum)

History of Constitution- HIST 2221	3 credits
Mass Communications- JOUR 1101	3 credits
Ethics- PHIL 1102	3 credits
Morals & Medicine- PHIL 2210	3 credits
Business Ethics- PHIL 2240	3 credits
American Government- PLSC 1102	3 credits
State/ Local Government- PLSC 1103	3 credits
Criminology- SOCI 2215	3 credits

Delivery Options

- **On Site** - College faculty provide course instruction at your facility.
- **On Line** - College faculty provide course instruction to your employees, on-line with Desire2 Learn Software.
- **Hybrid** - College faculty combine on-site instruction with on-line instruction.

All courses include company-specific experimental learning projects to maximize return-on-investment for the business, and to make learning just-in-time for the working adult.

Contract Costing Structure Examples

The following costing structure is an illustration of how the Center for Outreach & Innovation at Northland College charges employers for credit-based instruction for cohorts within the company.

- **Maximum class size:** 20 employees per class
- **Cost per credit:** \$2,700 (this rate may change slightly at any time, it is given as a rough estimate for planning purposes)
- **Based on a full class of 20 employees:**
Each credit is roughly *15 hours of class time* or *30 hours of lab time*

Example for One Company Participating:

- Principles of Lean Manufacturing - 2 Credits
- Cost of instruction: \$5,400 (\$2700 per credit x 2 credits; this rate may change slightly at any time, it is given as a rough estimate for planning purposes)
- The cost per employee (based on 20) for approximately 30 hours of instruction is \$270 per employee or \$9 per instructional hour.
- Books & Instructor mileage/travel costs are additional expenses.

Example for Two Companies Participating: (50/50 Model)

- Principles of Lean Manufacturing - 2 Credits
- Cost of instruction: \$5,400 (\$2700 per credit x 2 credits; this rate may change slightly at any time, it is given as a rough estimate for planning purposes)
- 20 employees maximum (10 per company)
- Each company would pay \$2,700
- Cost per employee for approximately 30 hours of instruction is \$270 per employee or \$9 per instructional hour.
- Books & Instructor mileage/travel costs are additional expenses.

Example for One Company Participating- Not a Full Class:

- Principles of Lean Manufacturing - 2 Credits
- Cost of instruction: \$5,400 (\$2700 per credit x 2 credits; this rate may change slightly at any time, it is given as a rough estimate for planning purposes)
- Only have 14 employees enrolled.
- Cost per employee for approximately 30 hours of instruction is only \$386 per employee or \$13 per instructional hour.
- Books & Instructor mileage/travel costs are additional expenses.

* Project-based learning assignments focused on employment experiences will be shared during the course.