

## G. BUSINESS ECONOMICS

### G1. Define Terms Profit and Loss and Explain Why Profit is important

#### G1.1. Justify the need for profit.

**Performance Objective:** The student will be able to explain the relationship between profit and growth.

VALUE OF PROFITS	
Attract investment capital	Supports research and development
Rewards capital investments	Debt reduction
Incentives as employee profit sharing	Financial stability
Increase competition and quality	

#### G1.2. Identify opportunities for profit in manufacturing processes.

**Performance Objective:** After learning that profits may increase as customer satisfaction increases and as costs go down, the student will be able to identify opportunities for improving quality and cutting costs in the manufacturing processes.

PROFIT OPPORTUNITIES	
New products	Reduction of personnel
Change in materials	More efficient production systems
Improve distribution	Automation
Fewer changes	

#### G1.3. Identify possible barriers to profit in manufacturing processes.

**Performance Objective:** After studying the factors that influence profits, the student will be able to list at least eight barriers to profit and earning power.

PROFIT BARRIERS	
Economy shifts	Reduced sales margins
Slow inventory turnover	Poor labor relations
Cost of investment money	Old technology
Absenteeism	Employee turnover
Lack of employee training	Customer dissatisfaction
Lack of planning and control	

**G1.4. Identify strategies that may maximize profit potential in manufacturing processes.**

**Performance Objective:** Given an understanding of the value of profits and a desire to increase these values, the student will be able to identify and explain six strategies to create increase profit in manufacturing.

MANUFACTURING PROFIT STRATEGIES	
Implement quality improvement	Pride in workmanship
Reduce waste	Operating and profit margins
Health and safety programs	Profit sharing
Internal customer responsiveness	Reduce employee turnover
Design-build teams	Employee involvement in management
Increase skills of workforce	

**G1.5. Identify likely procedures that may increase the potential for loss to occur in manufacturing processes.**

**Performance Objective:** Given a definition of loss as expenditures for which no benefit is received, the student will be able to identify and discuss at least eight causes of loss in manufacturing processes.

FACTORS THAT INCREASE COSTS	
Repeated inspections	Poor employee morale
Waste, rework, and scraps	Poor employee attendance
Unsafe working conditions	Poor work habits
Mismanagement	Poor communications
Disrespect, lack of trust	Excessive inventory
Poor equipment and maintenance	

Quality	Safety	Production	People
Rework	Unsafe acts	Equipment	Poor morale
Repeated inspections	Unsafe conditions	Environmental regulations	Not understanding system
Inconsistent quality	Lack of training	Raw material cost increase	Disrespect; lack of trust
Lack of understanding quality	Lack of employee responsibility	Supply/demand off balance	Lack of training
		World competition	Labor pool

## G2. Discuss Impact of Customer Satisfaction on Overhead and Reputation

### G2.1. Identify the components that comprise customer satisfaction.

**Performance Objective:** After studying customer needs and expectations, the student will be able to discuss eight factors that support customer satisfaction.

CUSTOMER SATISFACTION FACTORS	
Responsiveness to customer needs and expectation	Customer-oriented front-line people
Customer-in design	Product serviceability
Clarity in communication	Product safety
Customer-friendly service systems	Product reliability
Customer specifications met	Costs
Product maintainability	

### G2.2. Identify possible actions that may lead to customer dissatisfaction.

**Performance Objective:** After studying elements of customer satisfaction (G2.1), the student will be able to list at least eight factors that produce the opposite conditions and thus customer dissatisfaction.

CUSTOMER DISSATISFACTION	
Poor communications	Poor employee customer orientations
No customer-friendly systems.	No defined service strategy
Ignore deadlines	Poor quality
Unsafe products	

### G2.3. Identify the ways that the level of customer satisfaction may alter overhead.

**Performance Objective:** After studying manufacturing overhead costs and what controls them, and the factors of customer satisfaction, the student will be able to identify and discuss the relationship between costs and customer satisfaction.

MANUFACTURING OVERHEAD COSTS	
Any time consuming activity	Heating, lighting, ventilation
Labor	Planning
Tooling	Inspection
Capital assets	Design
Buildings and equipment	Engineering
Consumable assets	Medical/dental coverage
Management	Worker's compensation
Training	Other insurance
Waste, rework, scrap	Regulatory compliance
Legal counsel	Health and safety

CONTROLLING OVERHEAD COST PRODUCES	
More predictable sales	More predictable workforce
Less warehousing of	Consistence in training
Production materials	Good safety practices
Product inventory	

**G2.4. Identify components that determine manufacturing overhead that may affect customer satisfaction.**

**Performance Objective:** Given a list of elements that affect manufacturing overhead (G2.3), the student will be able to state how each may or may not affect customer satisfaction.

CUSTOMER SATISFACTION DETERRENTS	
a.	High inventory accompanied by low customer response
b.	Expensive product of poor quality
c.	High operating costs
d.	Complex and extensive bureaucracy within the organization
e.	High supplier base and minimum reliability of product
f.	High risk profile and minimal entrepreneurial behavior

**G2.5. List key actions and procedures in manufacturing processes that may contribute to customer satisfaction.**

**Performance Objective:** Given the principles and tools of continuous quality improvement and their focus on customer satisfaction (Module D: Quality Assurance), the student will be able to demonstrate the application of these principles in a manufacturing environment.

MANUFACTURING AND CUSTOMER SATISFACTION	
a.	Low inventory and high customer response
b.	Low product cost and high quality of product
c.	Minimal operating cost and high training and retraining
d.	Minimal bureaucracy with high effectiveness and control
e.	Low supplier base and high reliability of supply
f.	Low risk profile and high entrepreneurial behavior

CUSTOMER SATISFACTION FACTORS	
Responsiveness to customer needs and expectation	Customer-oriented front-line people
Customer-in design	Product serviceability
Clarity in communication	Product safety
Customer-friendly service systems	Product reliability
Customer specifications met	Costs
Customer on-site inspections	

ELEMENTS OF A QUALITY IMPROVEMENT PLAN	
Internal shared mission and vision	Reward implementation
Teamwork	Customer-in
Leadership	SPC
Reward customer satisfaction	Training in all of these areas
CQI and problem-solving process	Performance assessment based on these areas
Current technology	

**G2.6. Explain the importance of business reputation.**

**Performance Objective:** Given a product from a company with an excellent reputation and the same kind of product from a company with a poor reputation, the student will be able to state and discuss which product would be chosen and how reputation influenced the choice.

**G2.7. Identify the ways that customer satisfaction influences a business reputation.**

**Performance Objective:** After studying the different factors that influence a good business reputation, including customer satisfaction, the student will be able to list eight customer factors and four non-customer factors that determine a good reputation.

BUSINESS REPUTATION FACTORS	
CUSTOMER FACTORS	OTHER FACTORS
Customer responsiveness	Supplier satisfaction
Clarity in communication	Good safety record
Customer-friendly service systems	Good regulatory compliance
Customer specifications met	Low employee turnover
On-time delivery	Capital assets
Competitive pricing	Low debt
Product serviceability	Good labor relations
Product safety	Community good neighbor
Product reliability	
Word-of-mouth advertising	
Repeat customers	

**G2.8. List possible actions that may enhance customer satisfaction.**

**Performance Objective:** After studying the different factors that influence customer satisfaction, the student will be able to list eight actions that each employee could take to enhance that satisfaction.

CUSTOMER SATISFACTION ANALYSIS	
Create and reward customer sensitivity	Prototype analysis
Identify customer needs and expectations (listen)	Analysis of data/performance
Clarify needs and expectations	Determine relative importance of features
Clarify standards/specifications	Evaluate and improve effectiveness
Collect data	Follow-up
Identify roles and responsibilities	

**G2.9. List possible actions that may lead to the development of a positive business reputation.**

**Performance Objective:** Given the need to develop a positive business reputation, the student will be able to list and discuss at least 15 elements that contribute to a positive business reputation.

ELEMENTS OF A POSITIVE BUSINESS REPUTATION	
Customer-in design	Enhancing customer satisfaction
Pride in workmanship	Customer responsiveness
Inspect-in quality	Community good neighbor
Environmentally aware	Minimal bureaucracy
Generate vertical and horizontal communications	Implement CQI internally and with suppliers and customers
Implement Statistical Process Control	Quality product, reasonable price
High reliability	Train and retrain employees
Product serviceability	Reduce operating costs
Customer specifications met	Supplier satisfaction
Competitive pricing	Good safety record
Capital assets	Good regulatory compliance
Clarity in communication	Low-debt, low-risk profile
On-time delivery	Low employee turnover
Product safety	Good labor relations
Product reliability	Word of mouth advertising

CQI EFFECTS	
Process analysis and improvement; maintain or create competitive edge	Cost saving from waste elimination; rework elimination
Create hard data - not opinions	Excessive scrap elimination
Utilize employees' knowledge and skills	Cross-functional teams
Generate creative thinking	Root cause solutions
Problem-solving process applied	

**G2.10. Identify possible actions that may be used to correct customer dissatisfaction.**

**Performance Objective:** If any or all of the preceding positive reputation elements do not exist or exist in a limited way, some customer dissatisfaction will also exist. Given a study of customer responses, the student will be able to determine which areas of reputation and quality need improvement.

**G2.11. Identify possible actions that may be pursued to rebuild a poor business reputation.**

**Performance Objective:** The student will be able to determine how to improve the reputation of a company that has developed a poor business reputation.

ACTIONS TO REBUILD A POOR BUSINESS REPUTATION
a. Listen to the customer's needs and expectations.
b. Define the service strategy for serving the customer, and let the customer know what this method is.
c. Develop customer-friendly systems to communicate with the customer on a regular basis.
d. Hire front-line people who are customer oriented, and train other employees in customer-service techniques.
e. Regularly evaluate the customer service program, both in-house and with the clientele, to be sure that the customers' needs and expectations are being met.
f. If expectations and needs are not being met, look for new ways to serve the customer.
g. Implement Continuous Quality Improvement.
h. Reward employees for customer satisfaction and internal problem-solving.

### G3. Understand Real and Hidden Costs of an Accident

#### G3.1. Define a safe work environment.

**Performance Objective:** The student will be able to determine whether or not a site is safe and appropriately maintained and will be able to state what training is necessary to work in that environment.

A safe work environment is one in which all employees are trained:
a) for the jobs they are performing;
b) on the machinery they are using including all safe-guarding features;
c) in the appropriate personal protective equipment they are using;
d) in the use of first aid equipment and CPR;
e) general housekeeping maintenance practices;
f) in hazard communication, including Material Safety Data Sheets;
g) to identify unsafe practices in the work environment; and
h) in workplace ergonomics.

#### G3.2. Demonstrate safe work habits.

**Performance Objective:** After studying what is necessary for a safe working environment and receiving the appropriate training, the student will be able to demonstrate the necessary safe work habits as measured by a daily checklist used by the safety monitor.

SAFE WORK HABITS
a. Employees are trained for the work being performed.
b. Written procedures explaining how the job is to be done are available on site.
c. Weekly safety meetings are held to enhance employee awareness.
d. Personal responsibility for actions on the job is cultivated.
e. The supervisor is thoughtful and open to better ways to be safe and listening to reasons for needed changes.
f. Worker safety and health committees, required by state regulations, are in place.

### G3.3. Identify immediate and real costs of an accident.

**Performance Objective:** After discussing an individual accident scenario, the student will be able to list the direct costs and at least six indirect costs associated with the accident.

ACCIDENT COSTS	
DIRECT COSTS	
Time lost due to injury	Worker's compensation
Loss of productivity	
INDIRECT COSTS	
Loss or earnings	Damaged products
Schedules interrupted	Damage to tools and equipment
Administrative reports	Equipment out of service
Lost time by fellow workers	Training a new employee
Lost time by supervisor	Potential permanent injury
Lowering of overall morale	

### G3.4. Identify methods of preventing accidents in the work place.

**Performance Objective:** After studying the shop's safety plan as the foundation for accident prevention and procedures for its implementation, the student will be able to list five elements of a good safety plan plus six topics for worker training.

SAFETY PLAN ELEMENTS	
Accident prevention plan	Regular training sessions related to:
Strong management support	Unsafe practices
Safety coordinators	Unsafe conditions:
Careful supervision; safety monitors	Maintenance, electrical and guards
Formal hazard reporting system	Hazardous materials
Tracking accident status	Fires
Regular safety meetings	Walking and working areas
Emergency evacuation	Ergonomics
Hazard communications	

### **G3.5. Discuss the impact of an accident on manufacturing process.**

**Performance Objective:** After reviewing the direct and indirect costs associated with an accident (G3.3) and assigning a dollar value to each plus an estimated cost of implementing necessary changes, the student will be able to discuss the impact (financial, personal, psychological [morale], regulatory liabilities) on the manufacturing process.

IMPACT OF AN ACCIDENT ON PROCESSES
a. Re-engineering of equipment may be necessary to prevent further injury.
b. Changes in the production process may need to occur.
c. Different or increased training may need to be offered to employees doing that job.
d. Additional safety measures may need to be instituted.
e. Different or increased staffing may be needed.

### **G4. Define Term Value Added**

#### **G4.1. Define the term value added.**

**Performance Objective:** Given a list of a variety of activities and task that may be observed in the workplace, the student will be able to place them into one of two columns titled "value added" and "non-value added."

#### **G4.2. Explain how the value-added concept related to specific manufacturing processes.**

**Performance Objective:** Given a process flowchart of a manufacturing process, the student will be able to determine which tasks or items in the process are value added and which are non-value added and suggest how the non-value added can be eliminated.

### **G5. Understand Impact of Learning Curve on Costing and Pricing of Products**

#### **G5.1. Explain the relationship between costing and pricing of products.**

**Performance Objective:** After studying the costs involved in bringing a product to the market and how prices are determined, the student will be able to state the relationship between the two.

**G5.2. Explain how various positions on the learning curve relate to costing of a product.**

**Performance Objective:** After studying the costs involved in the process of learning how to do a new series of tasks, learning how to operate a new piece of equipment, or the implementation of a new system, the student will be able to identify the various levels of learning in the process and how costs diminish as learning increases.

**G5.3. Explain why cost factors are not constant.**

**Performance Objective:** After reviewing the various costs involved in getting a product to the market, the student will be able to identify and discuss how each can change over time.

GENERAL OVERHEAD COST	
Management	Heating, lighting, ventilation
Loan interest	Medical/dental coverage
Taxes	Workers' compensation
Capital assets	Other insurance
Buildings and equipment	Regulatory compliance and reporting
Consumable assets	Health and safety
Transportation	Legal counsel
Training/learning	

**G6. Name Factors to Consider When Determining Unit Cost and Unit Price**

**G6.1. Identify steps within manufacturing processes that determine unit cost.**

**Performance Objective:** After studying the overall manufacturing process, the student will be able to list ten steps in the process that contribute to the unit cost of the product.

STEPS IN MANUFACTURING THAT DETERMINE COST	
Materials acquisition	Fabrication
Tooling	Assembly
Planning	Management
Inspection	Units in a production run
Design	Duration of the run
Engineering	Customer variations in the run
Training	

## **G6.2. Calculate unit cost for manufacturing processes.**

**Performance Objective:** Given all the costs involved in a particular manufacturing process, the student will be able to calculate what those costs add to the unit cost of a product.

## **G6.3. Determine factors to be considered when establishing unit price.**

**Performance Objective:** After determining the total cost of manufacturing a product, the student will be able to list the variables to be considered when establishing the unit price.

FACTORS INVOLVED IN ESTABLISHING UNIT PRICES	
Distribution - wholesaler	Market demand
Advertising	Geography - market location
Marketing	Transportation
Competition	Season
Customers	Return on investment
Financing	Inventory turnover
Novelty	Amortization of capital assets
Cost of production	

## **G6.4. Calculate unit price for specific manufacturing processes.**

**Performance Objective:** After studying variations among different manufacturing processes, the student will be able to state why different processes and products have different cost-to-price ratios.

**Performance Objective:** Given a particular product and manufacturing processes and a desire for a particular cost-to-price ratio, the student will be able to calculate the appropriate unit price for the product.

## **G7. Describe How Profits are Distributed**

### **G7.1. Define the term profit.**

**Performance Objective:** Given a particular product and manufacturing process, the student will be able to define profits by stating the difference between costs and revenues and calculate profits.

### **G7.2. List methods of distributing profits.**

**Performance Objective:** The student will be able to list the methods of distributing profits and discuss the benefits of each.

DISTRIBUTION OF PROFITS	
Profit sharing	Research investments
Return on investments	Capital assets
Financial investments	Stock options
Additional worker skill building	Physical expansion
Bonus/profit sharing	

## G8. Name Factors to be Considered in Make or Buy Decisions

### G8.1. List factors that would favor a make decision.

**Performance Objective:** Given the need to add a part, project, or service to an existing product or service, the student will be able to identify the factors that should be considered when determining whether to do the work in-house.

FACTORS FAVORING A MAKE DECISION	
Man-power on hand with little hiring	Cheaper to do in-house than to contract out.
Skills, knowledge and training on hand	Physical facilities available
Equipment/technology on hand	Control of inventory
Scheduling acceptable	Control of transportation
Long term need	Availability outside
Related to or an addition to business core competencies	Proprietary process

### G8.2. List factors that would favor a buy decision.

**Performance Objective:** Given the need to add a part, project, or service to an existing product or service, the student will be able to identify the factors that should be considered when contracting with an outside supplier.

FACTORS FAVORING A BUY DECISION	
Man-power not readily available	More expensive to build
Skills, knowledge and training not readily available	Physical facilities not readily available
Equipment/technology not readily available	Not critical to business core competencies
Just-in-time delivery available	Availability outside
Short term need	Supplier reputation and quality
Transfer liability	Establish supplier partnership
Patents and copyrights	No research and development

### G8.3. Contrast make factors with buy factors for manufacturing processes.

**Performance Objective:** Given the need for a particular part in a product assembly, the student will be able to compare and contrast the two methods and to decide which is cost effective for that manufacturing process.

## **G9. List Types of Employee Benefits Commonly Provided by Industry**

### **G9.1. List benefits that are employer paid or provided.**

**Performance Objective:** The student will be able to list benefits paid by the typical employer and how they affect company costs.

BENEFITS PAID BY EMPLOYER	
Health care insurance	Social security
Life insurance	Workers compensation
Unemployment insurance	Retirement plan

### **G9.2. List benefits that are offered to employees for their optional participation.**

**Performance Objective:** The student will be able to list benefits offered to employees for optional participation.

POSSIBLE OPTIONAL BENEFITS	
Investment - 401K	Continuing education
Stock options	Social clubs and associations
Professional memberships	

## **G10. Understand Cost and How Collection and Reporting Systems are Structured**

### **G10.1. Identify various collection terms and programs.**

**Performance Objective:** Given the need to negotiate payments with a distributor or retailer, the student will be able to list a variety of options and benefits.

FINANCING AND COLLECTION TERMS FOR SALES
30, 60, 90 days plus interest points based on time
Discount points for payments in a shorter periods of time
Short term and long term financing of major capital investments

**G10.2. Identify processes that assure compliance with various federal and /or state reporting requirements.**

**Performance Objective:** Given the need to ensure employee safety and to protect the environment, the student will be able to identify the need for periodic reporting processes that ensure compliance with state and federal regulations.

REPORTING PROCESSES	
FEDERAL	STATE
Superfund Amendments and Reauthorization Act (SARA Title III) - Hazardous materials storage, location, uses - community right-to-know	WISHA - State illness and injury reporting
Toxic Substance Control Act (TSCA) - reporting of chemical exposure illness or injury	State and local Uniform Fire Code
Resource Conservation and Reclamation Act (RCRA) - reporting of transfer, storage, disposal and emergency release of hazardous materials	Agency audits
Agency audits	

**G11. Define Overhead and List Elements that can be Included**

**G11.1. List the procedures and processes that may be considered a part of overhead.**

**Performance Objective:** After studying the various overhead costs, the student will be able to list particular procedures and processes that may be considered part the general overhead of any manufacturing operation.

PROCEDURE & PROCESS OVERHEAD	
Site health and safety training and reporting	Heating, lighting, ventilation
Transportation	Regulatory compliance and reporting
Related management	Hazardous materials handling

**G11.2. Calculate the overhead for specific manufacturing processes.**

**Performance Objective:** Given an estimate of a range of overhead costs, the student will be able to calculate these costs for a specific manufacturing process.

GENERAL OVERHEAD COST INCLUDING PROCEDURE AND PROCESS OVERHEAD	
Management	Heating, lighting, ventilation
Loan interest	Medical/dental coverage
Taxes	Workman compensation
Capital assets	Other insurance
Buildings and equipment	Regulatory compliance and reporting
Consumable assets	Site health and safety
Transportation	Legal counsel
General training	

**G11.3. Explain how overhead may vary over a wide range with only minimal changes in a contributing variable.**

**Performance Objective:** Given a variety of overhead costs and factors that can influence those costs, the student will be able to explain how overhead costs may vary widely with only minimal changes in total costs.

FACTORS INFLUENCING OVERHEAD COST	
Geography	Negotiated benefits
Weather	State and local regulations
Make-buy	Tax bases
Loan interest and capital assets	Tax incentives