

PTAC 2314 – QUALITY

Topic Name	Objectives
Course Overview	<ol style="list-style-type: none">1. Define quality.2. Trace the rebirth of quality in the United States.3. Discuss Deming's philosophy of quality.4. Discuss Juran's philosophy of quality.5. Discuss Crosby's philosophy of quality.6. Discuss other quality gurus (e.g., Shewhart, Taguchi) and their philosophies of quality.7. Discuss quality programs significant to the process industry today: ISO 9000, and Six Sigma.8. Explain the purpose and benefits of ISO 9000 certification.9. Explain what policies and procedures must be in place in order for a manufacturing facility to receive ISO 9000 certification; i.e., procedures, audits, and recordkeeping.
TQM (Total Quality Management) and Economics	<ol style="list-style-type: none">1. Discuss the philosophy, methods and elements of TQM – Total Quality Management.2. List different terms for "quality management".3. Distinguish between the "old" versus "new" philosophy of quality; e.g., Conformance to Specifications versus Maintenance of Consistency.4. Discuss the impact of quality.5. Discuss the cost of quality: appraisal, internal failure, external failure and prevention.6. Discuss the cost associated with a lack of quality.7. Define economics.8. Explain competition.9. Discuss relationship between supply and demand.10. Define inflation.11. Describe risk.12. Define standard of living.13. Discuss the concept of the operator as a stake-holder.14. Describe downsizing.15. Explain profit and loss.

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Total Quality Management and Economics (Cont'd.)	<ol style="list-style-type: none">16. Define revenue.17. Describe the "Five Factors of Production".18. Describe assets and liabilities.19. Distinguish between accounts payable and accounts receivable.20. Define income.21. Illustrate the relationship between income before taxes, taxes, and income after taxes.22. Explain fixed and variable costs.23. Discuss relationship between profitability and /operating rate as it relates to fixed and variable costs.24. Define gross profit.25. List the costs that contribute to operating expenses.26. Define depreciation.27. Discuss how productivity affects plant profits.28. Discuss how natural resources are used by the process industry.29. Discuss the impact of off-spec production: re-grading or re-working.30. Describe how substandard production in one part of the process affects the remaining parts.31. Explain the economic impact of lost opportunities due to lack of certification or production limitations.
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Customer Service and Personal Effectiveness	<ol style="list-style-type: none">1. Describe customer service.2. Differentiate between internal and external customers.3. Differentiate between customer specifications and customer requirements.4. Discuss what customers want from their providers and suppliers.5. Explain the relationship between the customer's processes and the supplier's processes.6. Describe the importance of customer visits.7. Describe the importance of responding to customer requests and comments.8. Explain why good customer relationships are important to the success of your company's business9. Explain why a "win/win" relationship must exist between customer and supplier for the business to prosper.10. Explain why the employee "is" the organization in the customer's eyes.11. Identify personal strengths and weaknesses and how they impact personal effectiveness.12. Describe the characteristics of an effective, efficient person.13. Explain the concept of a person's sphere of influence.14. Describe and practice time management skills.15. Describe and demonstrate organizational skills.16. Discuss and demonstrate planning and prioritization skills.17. Define personal productivity.18. List and discuss the factors that impact productivity.19. Describe personal accountability and examples of employee evaluation processes.20. Explain how expanded duties benefit the organization and the individual.21. Explain the importance of organizational mission, vision, and values.22. Explain the importance of aligning one's own values with those of the organization.23. Describe various organizational structures and one's place therein.24. Describe various organizational resources (i.e., training department, HR, quality assurance lab, maintenance, and engineering) and how to utilize them.
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Customer Service and Personal Effectiveness (Cont'd.)	<p>25. Describe ways to improve time management.</p> <p>26. Describe the importance of the following as they relate to personal effectiveness:</p> <ul style="list-style-type: none">• Display patience.• Take initiative.• Display task-orientation.• Demonstrate flexibility.• Display the ability to adapt to change.• Express confidence.• Characterize and display a strong work ethic. <p>27. Discuss the importance of acknowledging one's limitations, without being defensive and recognizing opportunities for growth.</p> <p>28. Explain the importance of obtaining knowledge and skills quickly and completely.</p> <p>29. Explain the importance of having a willingness to:</p> <ul style="list-style-type: none">• learn in various environments• be multi-skilled and accept additional responsibilities• share knowledge and train others• take ownership of processes and systems outside normal technical duties
Team Skills	<ol style="list-style-type: none">1. Summarize various concepts surrounding team dynamics.2. Identify and demonstrate effective interpersonal skills.3. List various personality type characteristics which can be found among a diverse group of team members.4. Explain the following effective meeting management techniques.<ul style="list-style-type: none">• Importance of meetings.• Delegating and assigning tasks.• Assessing and allocating resources.• Methods for managing conflict.• Showing respect for and courtesy toward team members• Recognize possible strengths and weaknesses of team members (including you)

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Effective Teams	<ol style="list-style-type: none">1. Explain the importance of communicating appropriately across the organization.2. Describe the importance of terms used in plant communications; i.e., shift turnover, shift meetings, plant jargon, etc.3. Discuss tools for plant communication: i.e., software applications, email, voicemail, telephone, radio, log book, documentation.4. Discuss the importance of written communication; i.e., legible, specific, signed, recordkeeping, legalities.5. Discuss the importance of accuracy in communication.6. Describe and demonstrate effective verbal and written communication skills and techniques.7. Explain the necessity for sharing information.8. Discuss the importance of checking email and voicemail regularly.9. Describe the purpose and function of teams.10. Explain the life cycle of teams.11. List and describe the stages of team development.12. Convert team goals and objectives into team mission statements.13. Identify and demonstrate effective interpersonal skills.14. Describe the following concepts as they relate to team performance:<ul style="list-style-type: none">• Getting over the "us" versus "them" mentality.• Willingness to share and participate.• Appreciate diversity.• Value others' perspectives.• Display resourcefulness.• Align individual values and subsequent actions with those of the team.• Recognize that many points of view are better than one.• Accept feedback.• Show a willingness to depend on others.• Appreciate value of "win/win" thinking.• Team dynamics
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Variance and Operating Consistency	<ol style="list-style-type: none">1. Define variation.2. List variables that affect processes.3. Summarize the various causes of variation.4. Explain the difference between common cause and special cause variation. Examples:<ul style="list-style-type: none">• Common cause variation: an air-conditioned room the temperature varies as a result of common causes such as body heat, thermostat control settings, etc.• Special cause variation: opening a window, compressor failure, etc.5. Discuss the concept of operating consistency.6. Outline the Standardize/Do/Check/Act (SDCA) process for process standardization and continuous improvement.7. Explain the importance of documentation in maintaining operating consistency (i.e., why is documentation necessary: ISO 9000, customer requirements, best management practices, PSM compliance, etc.).8. List the different levels of documentation found in the process industry today:<ul style="list-style-type: none">• Policies• General Procedures• Specific Procedures (or Job Instructions)• Forms9. Define variation.10. List variables that affect processes.11. Summarize the various causes of variation.12. Discuss the concept of operating consistency.13. Outline the Standardize/Do/Check/Act (SDCA) process for process standardization and continuous improvement.
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**Variance and
Operating
Consistency
(Cont'd.)**

14. Explain the importance of documentation in maintaining operating consistency (i.e., why is documentation necessary: ISO 9000, customer requirements, best management practices, PSM compliance, etc.).
15. List the different levels of documentation found in the process industry today:
 - Policies
 - General Procedures
 - Specific Procedures (or Job Instructions)
 - Forms
16. Describe different types of procedures, procedure formats and information found in procedures.
17. Describe different types of policies, policy formats and information found in policies.
18. Discuss the process technician's role in following and maintaining procedures and policies.
19. Describe the concept of "best practices".
20. Illustrate how the information found within a policy relates to how business is conducted.
21. Explain how the information found within a procedure relates to the functioning of the process.
22. Explain the concept of "document control"
23. Explain the importance of document control
24. Discuss document retention policies found within industry.
25. Explain the importance of keeping process documentation "evergreen".
26. Discuss the consequences of not following policies and procedures; i.e., product inconsistencies, threats to safety, health and environment.
27. Discuss and explain the importance of the following:
 - Willingness to take directions.
 - Attention to detail.
 - Completing tasks in sequential order.
 - Motivation to perform steps as stated in procedures.
28. Discuss the value of policies and procedures.
29. Discuss the importance of recognizing when instructions given by others are in conflict with approved policies and procedures and discuss steps taken to resolve the conflict.

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Continuous Improvement and Corrective/Preventive Action	<ol style="list-style-type: none">1. Define continuous improvement.2. Differentiate between chronic and sporadic process problems.3. List the various strategies companies engage in to improve their processes.4. Discuss various management approaches to process improvement.5. Discuss the following as they relate to continuous improvement:<ul style="list-style-type: none">• Considering alternatives• Willing to get involved• Practicing observant behavior• Challenging the process• Desiring to improve upon the current state• Ability to take action.• Ability to take initiative.• Assertiveness.• Willingness to share ideas in an environment where contributory behavior is not readily rewarded• Displaying an openness to change.• Respecting the fact that people can learn from ideas that "don't work".6. Discuss preventive action.7. Discuss corrective action.8. Describe the concept of cause and effect.9. Define non-conformance.<ul style="list-style-type: none">• Describe the consequences of not addressing a non-conformance.
Group Problem Solving	<ol style="list-style-type: none">1. Explain the use of various:<ul style="list-style-type: none">• Problem solving processes• Solution generation techniques• Decision making tools

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Basics of SPC (Statistical Process Control)	<ol style="list-style-type: none">1. Explain why statistics are necessary for process control.2. Define SPC – statistical process control.3. Discuss the foundation for SPC.4. Explain the need for a SPC control system.5. Discuss the following as they relate to SPC.<ul style="list-style-type: none">• Properties of distributions: location, spread, range.• Normal distribution.• Bi-modal distribution.6. Define and determine mean, median and mode.7. Explain standard deviation.
Data Collection and Control Charts	<ol style="list-style-type: none">1. Illustrate how plant data represents the process.2. Identify various types of data process technicians would collect.3. Explain the value of plant data.4. Explain the purposes for collection data:<ul style="list-style-type: none">• To describe• To infer• To predict5. Explain the uses of plant data:6. Explain how data is collected.7. Explain how you would use observation skills to collect data:<ul style="list-style-type: none">• Touch• Hear• Feel• See8. Explain how data is used to troubleshoot a process.<ul style="list-style-type: none">• inconsistent data• irreconcilable data9. Explain how questioning techniques (five why's) are used to collect data.

