

Brazosport College

Syllabus for PTAC 2314 - Principles of Quality

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I. COURSE DESCRIPTION:

PTAC 2314 - Principles of Quality. CIP 4103010003

Study of the background and application of quality concepts. Topics include team skills, quality tools, and economics and continuous improvement. **Credit Hours: 3** (3 lecture, 0 lab)

Chad Abney

Allen Baragar

Ron Colwell

Gregg Curry

David Hendrix

David Hendrix

Mark Stoltenberg

Gary Hicks

Jeff Detrick

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A. Prerequisite: N/A

Required skill level: College-level reading, writing and math.

II. COURSE OBJECTIVES

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. Outline Deming's philosophy of quality.4. Outline Juran's philosophy of quality.5. Outline 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, Responsible Care 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 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. Characterize the dimensions of quality.5. Characterize the cost of quality: appraisal, internal failure, external failure and prevention.6. Characterize the cost associated with a lack of quality.7. Define economics.8. Explain competition.9. Characterize supply and demand.10. Define inflation.11. Describe risk.12. Define standard of living.13. Discuss relationship between productivity and standard of living.14. Describe downsizing.15. Explain profit and loss.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.

TQM and Economics (cont.)	<ol style="list-style-type: none"> 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. Break down 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 non-conforming production. 30. Discuss the impact of off-spec production: re-grading or re-working. Describe how substandard production in one plant affects 31. Explain the economic impact of lost opportunities due to lack of certification or production limitations.
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 business. 9. 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 various 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 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 and how to access them. 25. Describe the importance of the following as they relate to personal effectiveness: <ul style="list-style-type: none"> • Display patience. • Take initiative.

Customer Service and Personal Effectiveness (cont.)	<ul style="list-style-type: none"> • Display task-orientation. • Demonstrate flexibility. • Display the ability to adapt to change. • Express confidence. • Characterize and display a strong work ethic <p>26. Describe and demonstrate the characteristics of a lifelong learner.</p> <p>27. Describe ways to improve time management.</p>
Effective Teams	<ol style="list-style-type: none"> 1. Describe and demonstrate effective verbal and written communication skills and techniques. : 2. Explain the importance of communicating appropriately across the organization. 3. Describe the importance of terms used in plant communications; i.e., shift turnover, shift meetings, etc. 4. Discuss tools for plant communication: i.e., software applications, email, voicemail, telephone, radio, log book, documentation. 5. Discuss the importance of written communication; i.e., legible, specific, signed, recordkeeping, legalities. 6. Discuss the importance of accuracy in communication. 7. Explain the necessity for sharing information. 10. Discuss the importance of checking email and voicemail regularly. 11. Explain the need to use personal computer and other technology for communications. 12. Describe the purpose and function of teams- 13. Explain-the life cycle of teams. 14. List and describe the stages of team development. 15. Team dynamics. 16. Convert team goals and objectives into team mission and statements. 17. Identify and demonstrate effective interpersonal skills. 18. Describe the following concepts as they relate to team performance: (change the following (27 – 36) to bullet points and make #16 the last bullet.) 19. Getting over the "us" versus "them" mentality. 20. Willingness to share and participate. 21. Appreciate diversity. 22. Value others' perspectives. 23. Display resourcefulness. 24. Align individual values and subsequent actions with those of the team. 25. Recognize that many points of view are better than one. 26. Accept feedback. 27. Show a willingness to depend on others. 28. Appreciate value of "win/win" thinking.

Team Skills	<ol style="list-style-type: none"> 1. Describe the "group process". 2. Summarize various concepts surrounding team dynamics. 3. Identify and demonstrate effective interpersonal skills. 4. List various personality type characteristics which can be found among a diverse group of team members. 5. Showing respect for and courtesy toward team members. 6. Recognizing possible strengths and weaknesses of team members. 7. Explain the following effective meeting management techniques. 8. Importance of meetings. 9. Delegating and assigning tasks. 10. Assessing and allocating resources. 11. Methods for managing conflict.
Processes and Systems, and Organizational Learning	<ol style="list-style-type: none"> 1. Explain management systems and the processes that can support those Define Process concepts. 2. Discuss the concept of Process Management: <ul style="list-style-type: none"> • Process owner • Process flow • Vertical alignment (aim: please boss) • Horizontal alignment (aim: please customer) 3. Discuss the factors which impact Process Performance: <ul style="list-style-type: none"> • Efficiency (utilization of resources) • Effectiveness (meeting customer needs) • Adaptability (responsiveness to change) • Goals • Plans • Measurements • Feedback 4. Discuss-the interdependency of units. 5. Identify the value of management systems within an organization. 6. Describe the value of having a learning environment at the workplace. 7. Describe the attributes organizations must adopt in order to form a learning organization. 8. Describe the barriers that can inhibit the creation of a learning organization. 9. Discuss the advantages learning organizations have over other traditional organizations. 10. Give examples and discuss company policies and procedures <ul style="list-style-type: none"> • Standard Operating Procedures (SOP) • Harassment Prevention • Work hours • Document retention • HSE Procedures • Intellectual properties • Emergency procedures • Etc.

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. Differentiate between common cause and special cause variation. 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) • Forms 9. Describe different types of procedures, procedure formats and information found in procedures. 10. Describe different types of policies, policy formats and information found in policies. 11. Discuss the process technician's role in following and maintaining procedures and policies. 12. Describe the concept of "best practices". 13. Illustrate how the information found within a policy relates to how business is conducted. 14. Explain how the information found within a procedure relates to the functioning of the process. 15. Explain the concept of "document control". 16. Discuss the various document retention systems found within industry. 17. Discuss the consequences of not following policies and procedures; i.e., product inconsistencies, threats to safety, health and environment. 18. Discuss and explain the importance of the following: <ul style="list-style-type: none"> • Willingness to take directions. 19. Attention to detail. 20. An appreciation for tasks that need to be completed in sequential order. 21. Motivation to perform steps as stated in procedures. 22. Discuss the value of policies and procedures. 23. Explain the importance of document control. 24. Explain the importance of keeping process documentation "evergreen". 25. Discuss the importance of recognizing when instructions given by others are in conflict with approved policies and procedures and steps taken to challenge the instructions.
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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: Present alternatives:. 6. Willingness to get involved. 7. Observant behavior. 8. Challenge the process. 9. Desire to improve upon the current state. 10. An openness to change. 11. Respect the fact that people can learn from ideas that "don't work". 12. Discuss preventive action. 13. Discuss corrective action. 14. Describe the concept of cause and effect. 15. Define non-conformance. 16. Describe the consequences of not addressing a non-conformance. 17. Ability to take action. 18. Ability to take initiative. 19. Assertiveness. 20. Willingness to share ideas in an environment where contributory behavior is not readily rewarded.
Group Problem Solving	<ol style="list-style-type: none"> 1. Discuss various processes used for problem solving. 2. Discuss various ways to generate solutions. 3. Discuss various methods used for decision making. 4. Explain Demonstrate the use of various problem solving processes. 5. Solution generation techniques. 6. Various decision making tools.
Statistical Thinking and SPC Basics 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. 6. Properties of distributions: location, spread, range. 7. Normal distribution. 8. Bi-modal distribution. 9. Define and determine mean, median and mode. 10. 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 predict 5. Explain the uses of plant data: 6. Explain how data is collected. 7. Explain you would want to use observation skills to collect data. <ul style="list-style-type: none"> • Touch • Hear • Feel • See 8. Explain how data is used to troubleshoot a process. 9. Explain how using questioning techniques (five why's) to collect data. 10. Define representative samples. 11. Explain the problems with improper sampling techniques. 12. Describe the importance of completing documentation. 13. Describe the following: <ul style="list-style-type: none"> • Consequences of falsifying records. 14. Importance of accuracy and precision. 15. Importance of attention to detail. 16. The ability to not become complacent. 17. The ability to seek clarification when unclear.
Control Charts and Data Representation Analysis	<ol style="list-style-type: none"> 1. Explain the purpose and use of control charts. 2. Explain the characteristics of control charts (upper and lower limits, average, mean, range). 3. Explain control charts for variables (continuous data): Xbar/R, X/Moving R, and Xbar/S charts. 4. Explain control charts for attributes (discrete data): p, np, c, and u charts. 5. Explain why control charts should only be used with certain types of processes (variable as opposed to fixed). 6. Calculate control limits.
Process Capability	<ol style="list-style-type: none"> 1. Interpret the data on a control chart. 1. Describe the rules for determining "out-of-control" status. 2. Explain over-controlling and under-controlling. 3. Define "process capability". 4. Define process capability limits. 5. Define Cp, Cpu, Cpl, and Cpk indices. 6. Compare and contrast potential capability (Cp) with actual capability (Cpk). 7. Explain the benefits of capability indices.
Team Project	<ol style="list-style-type: none"> 1. Apply data collection, representation, analysis, and interpretation skills in a real-world, process industry scenario.

III. STUDENT LEARNING OUTCOMES

1. Describe the effects of the quality movement in the United States and how it has impacted economics and customer expectations.
2. Explain the importance of everyone understanding and following procedures, policies and documentation (checklists, log books, etc.) to ensure operating consistency, reduce process variability and waste, and to prevent environmental and safety incidents.
3. Describe continuous improvement and explain how it is used to optimize processes and/or resolve operational issues.
4. Prepare, analyze, and interpret information using process data, control charts, and Quality Tools (QT).
5. Given a process scenario, use the team concept to prepare control charts, analyze data and interpret information to determine corrective and/or preventative action(s).

IV. TEXTBOOK OR COURSE MATERIAL INFORMATION

A. Textbook

1. Memory Jogger One, Ritter/Brassard 2nd Edition, Goal/QPC Publisher 1991, ISBN: 978-1-8793640-3-5
2. Process Quality – Center for the Advancement of Process Technology, Pearson Education-Prentice Hall, 11th Ed., 2011. ISBN: 978-0-13-700409-6

Required course materials are available at the Brazosport College bookstore, on campus or online at <http://www.brazosport.edu/bookstore>. A student of this institution is not under any obligation to purchase a textbook from the college bookstore. The same textbook is/may also be available from an independent retailer, including an online retailer.

For Distance Education Courses include the following: Contact the Brazosport College Bookstore with a credit card for course materials. Phone: 979.230.3651. Fax: 979.230.3653. Email: bookstore@brazosport.edu. Website: <http://www.brazosport.edu/bookstore>

Principles of Quality are one of the core courses in the Process Technology Degree. The two-year program has been created to train students for careers as Process/Laboratory Technicians in the chemical and refining process industries. This course is a foundation for all of the other courses in the PTAC program.

The Principles of Quality course provides an overview of or introduction to the field of Quality within the process industry. Within this course students will be introduced to many process product industry related quality concepts including operating consistency, continuous improvement, plant economics and statistical process control (SPC). Students will develop the knowledge and skills needed to evaluate the principles of variation and the impact on Quality Performance. They will demonstrate the process of data collection and the application of statistical methods and tools for data analysis.

B. Course Outline

This is a sample outline which may vary with individual instructors. It will also vary based on whether the course is a summer course or a fall/spring course. Students should contact their instructor for the outline of the course they are taking.

Week	Assignments – see D2L for homework specifics
1	Read syllabus and take Syllabus quiz
2	Chp 1
3	Chp 2
4	Chp 3; Major Exam 1 Chps 1-3
5	Chp 4
6	Chp 5
7	Chp 5; Major Exam 2
8	Chp 7 and 8
9	Chp 9; Major Exam 3
10	Chp 10
11	Chp 11
12	Chp 12; Major Exam 4
13	
14	Chp 13 and 14
15	Chp 15; Major Exam 5
16	Final Exam

Important Semester Dates:

Last day to Withdraw from Classes – Check BC Academic Calendar

The official semester schedule is located in Virtual Campus (a.k.a. D2L) for this course

1. Students will need to have a computer to access this online course in Virtual Campus (D2L). See additional information.
2. Must have the ability to print out any assigned problems such as tables or graphs. And to fill these out, scan and upload into D2L with the appropriately weekly assignment
3. Must have a calculator that can do higher math functions such as exponents

C. Virtual Campus/D2L

Knowing how to use Virtual Campus is an absolute must to succeed in this course. Locations of technical support information on the Virtual Campus is on the school website, the Virtual Campus login page, on the My Home page, and Course Home areas of each online course. These areas contain links to:

- technical support
- manuals & videos
- orientation to online courses
- distance learning website

Here is one of several links you can use to review and learn how to use Virtual Campus:
<http://www.brazosport.edu/distancelearning/Pages/Virtual-Campus-Support.aspx>

Check “Contents” in D2L to keep up with weekly assignments starting your first week. This is a key area in D2L.

- **Deadlines are not flexible. There are only negotiable due to emergencies/event out of your control, and with written excuse from employer, doctor, etc.**
- Students must use D2L to keep up with announcements, assignments, etc. Success can occur if you logon more than weekly and complete all homework, quizzes and exams by deadlines.
- I'd highly recommend forwarding your D2L email to whatever email account you check regularly. This way, you won't miss communications from me in a timely manner.
- Several elements of D2L may be used including Dropbox, Discussions, Contents, Quizzes and more.
- The assignments and quizzes should all appear in “Contents”. Contents are a key area for you to check. But also check in Quizzes to make sure.

D. Weekly Homework

Is **due every Sunday night by 11:59 p.m.** You may work ahead of schedule if you desire. The link to submit homework can be found in “Content” (see top menu bar) and the associated week folder. Make sure and read the homework description and instructions in each Content Week. Some of the homework requires charts/graphs so you must have the capability of printing out blank charts, filling them out, scanning and resubmitting into drop box as part of your homework document. Submit the assignment into Dropbox in a Word document (created and saved on your PC or flashdrive) with title as Week 1 HW.doc (Note: include all chapters and problems for that week's assignment in one document. Please type questions and answers and make sure numbering matches textbook and a separate line for each question answer). See the HW format example document at top of “Content” section for a guideline to format your HW. Points will be deducted if homework not submitted in ONE weekly document. Points also deducted for not typing questions AND answers and for any missed answers. Homework will be graded within 7 days of submission.

E. Major Exams:

Are assigned per schedule in Content. These can only be taken using Respondus Browser. *You must download this software onto your home computer* so I would advise doing this right away in case you need to get the Help Desk involved. I have provided a practice Respondus exam to ensure you get the system working before the first major exam is due. The other option is to take the exam at Learning Services on campus (these must be scheduled and I must be notified AHEAD of time). For information on Respondus, try this link:
<http://www.brazosport.edu/BOnline/Pages/RespondusLDB.aspx>

Exams are automatically graded in D2L. You can review scores upon submission or in Assessment/Grades section of D2L. You may work ahead of schedule if you desire. Note: Make sure you get confirmation that your quiz was submitted properly. No excuses will be accepted because you later find out the quiz did not get saved and submitted.

F. Final Exam:

Is required to be proctored by Learning Services. I will communicate the date later in the semester and it will be your responsibility to call Learning Services asap in order to secure an appointment. Their appointment spots are limited, so you will need to not delay in scheduling once I communicate the Final date.

G. Misc.

The schedule will vary from semester to semester. In summer sessions the schedule will be adjusted to have more contact hours per week to accommodate the shorter semester.

H. Communications with Instructor

- Mostly all of my communications with students will be using D2L email.
- Please send any emails to me through D2L or at edie.myer@brazosport.edu. The Brazosport policy is for students nor faculty to communicate via personal email or texting unless urgent/emergency.
- Make sure and identify which course and section you are in because I instruct more than one course/section and need this information to locate your information online.
- I'd highly recommend forwarding your D2L email to whatever email account you check regularly. This way, you won't miss communications from me in a timely manner. ***But be aware, the D2L system will not let you reply to my emails from those emails you have forwarded to your personal email. You have to log in to D2L to reply to my messages.***
- I would also recommend using the D2L notifications feature to remind you of upcoming assignments and other available topics.

V. STUDENTS WITH DISABILITIES

Brazosport College is committed to providing equal education opportunities to every student. Brazosport College offers services for individuals with special needs and capabilities including counseling, tutoring, equipment, and software to assist students with special needs. Please contact the Special Populations Counselor, 979.230.3236, for further information.

VI. ACADEMIC HONESTY

Brazosport College assumes that students eligible to perform on the college level are familiar with the ordinary rules governing proper conduct including academic honesty. The principle of academic honesty is that all work presented by you is yours alone. Academic dishonesty including, but not limited to, cheating, plagiarism, and collusion shall be treated appropriately. Please refer to the Brazosport College Student Guide for more information. This is available online at <http://www.brazosport.edu>. Click on the CATALOGS AND SCHEDULES link under STUDENTS.

Academic dishonesty violates both the policies of this course and the Student Code of Conduct. In this class, any occurrence of academic dishonesty will be referred to the Dean of Student Services for prompt adjudication. Sanctions may be imposed beyond your grade in this course by the Dean of Student Services.

VII. ATTENDANCE AND WITHDRAWAL POLICIES

Class attendance contributes to your final grade, but you must attend class to successfully complete the course. If you are unable to complete this course, you must complete and submit a withdrawal form with the registrar's office. If the student decides to drop out of the class it is the responsibility of the student to initiate a withdrawal before the withdrawal deadline in order to get a "W" on their transcript. If this is not done the student will receive a grade based on test grades and class grades earned during their attendance and absence (i.e. zeros on all missed materials, exams, skills tests, and final exam).

VIII. COURSE REQUIREMENTS AND GRADING POLICY TESTING MAKE-UP POLICY

Grade and Grade Points

The grading system used at Brazosport College and the grade points assigned are as follows:

Grade	Description	Grade Points per Semester Hour	
A	Excellent	4	<div style="border: 1px solid black; padding: 5px;"> I Incomplete W Withdrew AU Audit P Pass CR Credit NC No Credit Grades of I, W, AU, P, CR, and NC do not affect grade point averages </div>
B	Good	3	
C	Average	2	
D	Passing (local)	1	
F	Failing	0	

Grade point averages can be calculated by dividing the total number of grade points by the total number of semester hours attempted.

A. Grading:

Exams	30%	Assigned in D2L
Homework	40%	Per instructions in D2L Content section
Final Exam	30%	Must be taken at Learning Services on campus
Total	100%	

Grades are assigned as follows:

Grade	Final Average
A	90-100
B	80-89
C	70-79
D	60-69
F	Below 60

IX. STUDENT RESPONSIBILITIES

Students are expected to fully participate in this course. The following criteria are intended to assist you in being successful in this course:

1. Understand the syllabus requirements
2. Use appropriate time management skills
3. Communicate with the instructor
4. Complete course work on time, and
5. Utilize online components (such as Desire2Learn) as required.

X. OTHER STUDENT SERVICES INFORMATION

Information about the Library is available at <http://www.brazosport.edu/library> or by calling [979.230.3310](tel:979.230.3310).

For assistance with online courses, an open computer lab, online and make-up testing, audio/visual services, and study skills, visit Learning Services next to the Library, call 979.230.3253, or visit <http://www.brazosport.edu/learningservices>.

For drop-in math tutoring, the writing center, supplemental instruction and other tutoring including e-tutoring, visit the Student Success Center, call 979.230.3527, or visit <http://www.brazosport.edu/studentsuccesscenter>.

To contact the Physical Sciences and Process Technology Department call 979-230-3618.

The Student Services provides assistance in the following:

Counseling and Advising	979.230.3040
Financial Aid	979.230.3294
Student Life	979.230.3355

To reach the Information Technology Department for computer, email, or other technical assistance call the Helpdesk at 979.230.3266.



Get the information you need – when you need it. Click <http://geni.us/BRAZO> to install **BC Connect** on your mobile device to receive reminders, explore careers, map your educational plan, be in the know about events, find out about scholarships, achieve your goals and much more.

****Submit acknowledgement of having read this syllabus per instructions. This is a grade.**

Read and Sign Syllabus and submit in D2L Week 1 Dropbox for grade

PTAC 2314 I have read this syllabus and understand the course content and expectations of my instructor for this class.

Print (Type) Name:

Date:

Note: Submit **this page only** as a Word document and place in dropbox for homework grade.