

PTTE 434

QUALITY ASSURANCE, ORGANIZATION AND MANAGEMENT Fall 2008

CD and On-line Course Syllabus

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University of Idaho Home Page: <http://avanti.if.uidaho.edu/~wixsjr/uofihome.htm>
Wixson Value Associates, Inc. website on Value Engineering: <http://wvasolutions.com>

CDs: Course CDs will be mailed to each students address listed in their current student information area on Vandal Web. If this is outdated, or, another address is desired to send the CDs to, please contact the instructor immediately. CDs will be mailed in time to reach students by the time the semester starts.

Blackboard: Click [here](#) for the Blackboard main page.
Blackboard Help: Click [here](#) for the ITS Helpdesk

Class Dates: 8/25/2008 thru 12/19/2008

One Line meetings: Every Tuesday 8:00 - 9:30 PM. Notices and instructions to be sent out by email to entire class.

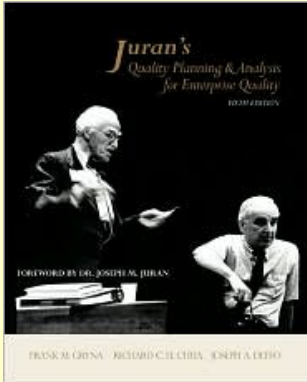
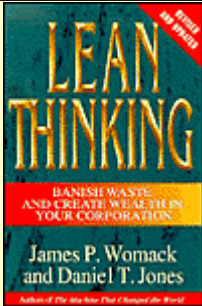

A BRIEF NOTE: This syllabus and schedule are subject to change, so, please check back on the web site frequently, at least once a week, to note any changes.

ABOUT THE ONLINE SCHEDULE: I will make the quizzes and exams available well ahead of when they are required to be taken. I would encourage everyone to work ahead and take the quizzes early. You will have two chances for each quiz. You will receive the highest score for your grade on the quizzes. You will be allowed only one attempt on the midterm and final exams and you will have 120 minutes to complete each exam once you have started it. Both the quizzes and exams are comprised of multiple choice questions. I would encourage you to work ahead of the schedule so you can spend more time on your project. Please don't hesitate to call, or [email](#) me if you are having problems. Thanks, Jim Wixson

DISABILITY SUPPORT SERVICES: Reasonable accommodations are available for students who have documented temporary or permanent disabilities. All accommodations must be approved through Disability Support Services, located in the Idaho Commons Building, Room 306. Please contact Disability Support Services as soon as possible so that you may receive accommodations in a timely manner.

- 885-6307
- email at <dss@uidaho.edu>
- website at <www.access.uidaho.edu>

Students with any disability should present a completed and signed Accommodation Checklist for the current semester available from Disability Support Services when requesting accommodations.

	<p>REQUIRED TEXTS:</p> <p>1. <u>Juran's Quality Planning and Analysis for Enterprise Quality, 5th Edition</u> Publisher: McGraw-Hill Companies, The Pub. Date: December 2005 ISBN-13: 9780072966626 Sales Rank: 378,787 704pp Series: McGraw-Hill Series in Industrial Engineering and Management Science Edition Description: REV Edition Number: 5</p>
	<p>2. <u>Lean Thinking : Banish Waste and Create Wealth in Your Corporation 2nd Edition, Revised and Updated by James Womack (Author), Daniel Jones (Author)</u></p> <p>Publisher: Simon & Schuster Adult Publishing Group ISBN: 0743249275 Format: Hardcover, 396pp Pub. Date: June 2003</p>
<p style="text-align: center;">Highly Recommended Reading</p> 	<p>3. <u>Value Engineering for the Practitioner</u></p> <ul style="list-style-type: none"> • Hardcover: 202 pages • Publisher: North Carolina State University, College of Eng'g; 2 edition (August 1989) • Language: English • ISBN-10: 1560490004 • ISBN-13: 978-1560490005 <p>(Also available from Amazon.com)</p>

COURSE OBJECTIVE:

The trademark of this course is to develop the viewpoint that the achievement of quality products and services requires the application of managerial, technological, statistical, and behavioral actions throughout all functions of an organization. Students will be presented with real-world problems that confront managers, designers, engineers, marketers, operations personnel, users, and others involved in enterprise quality. This course will challenge students to make assumptions, estimate economics, reach data-driven conclusions, and adapt themselves to the imperfect world of the practitioner.

A cornerstone of this course is the class project which can be completed either individually, or by small groups. A teaming approach is encouraged since this is the way projects of this type are accomplished in industry today. It is recognized that this may not always be possible due to the remote nature of this course. However, students are encouraged to collaborate whenever possible. It is encouraged that these projects be work related, or performed at companies, or organizations students may have some involvement with. In the past, students have accomplished some very dramatic results that serve to cement the concepts of this course and illustrate the usefulness of the techniques that are taught. These results have not only benefited the students, but, also these companies, or organizations where they were performed.

This course will provide a foundation and knowledge about Quality Assurance and Management. It is designed to be an interactive course that will provide students with a basic knowledge of current methodologies and management of Quality Assurance and Quality Organizations. An emphasis will be placed on industrial management principles applied to effective economic control of quality assurance activities. Methodologies such as Six Sigma, Total Quality Management, Lean Manufacturing, Value Stream Mapping, Failure Modes and Effects Analysis (FMEA), Statistical Process Control, Designing for Quality, and Value Engineering will be discussed and explored. Key principles from these methodologies will be taught. I recognize that this is an aggressive agenda. However, the goal is to become familiar with these principles so the student will be encouraged to use these in future endeavors in the workforce. The capstone of this class will be the class project where the students will tour a local company and choose tools from this "tool box" and use them to develop improvement scenarios that will be presented to the company management at the end of the course.

METHODS OF INSTRUCTION:

Lectures for this course are provided via a CD that will be mailed to students prior to the commencement of the semester. The lectures are in MS PowerPoint format and are narrated by the instructor. There are several short movies delivered via streaming video on the CDs to add emphasis to the lectures. Quizzes and exams are delivered through Blackboard which will be made available to each student. Grades will be determined on the basis of quiz scores, homework, a mini project and a final exam. Also, I encourage students to use the discussion and chat tools on blackboard.

Students will be expected to have a firm grasp of the homework problems found in the back of each reading assignment. The primary focus of the homework problems will be to be able to discuss them in class. Most of the homework problems will be worked in class and can be worked on in small groups. Then, the problem solutions will be discussed in class.

Students will be expected to complete a class project that utilizes at least 5 of the principles taught in a cohesive way that will lead to an end result, conclusions and recommendations for improvement. It will be highly encouraged that this be a group project. An economic analysis and justification of the recommendations will be required.

A BRIEF NOTE ON ACADEMIC HONESTY

In my class, most of our work will be completed by your group and presented by members selected by your group. I expect that each member of the group will pull their own weight and contribute to the group assignments. I will also assign homework assignments out of our text. These may be worked on either individually, or in your group. I believe that better results are gained from group discussion and interaction. We will discuss the homework in class and I would like each member of the group, or team to have an opportunity to present the solutions, or conclusions to the homework problems. I may also determine that a take home final is warranted. This will be the only time I expect individual work. In the case of the take home final exam, if any, the rules and expectations dealing with Academic Dishonesty as outlined in the Student Affairs Policy Chapter 2 will apply.

Learning Activities

Classroom: Each class is planned to help students learn the concepts and tools that can help them effectively

manage output quality. Thus, attendance is important for student learning.

Participation and preparation: Student preparation is important for learning. Participation in on-line/email discussions helps the student solidify their understanding and helps classmates gain another perspective. Participation is strongly encouraged. This course is designed to be non-threatening and interesting where new ideas can be explored. Questions and thoughts are always welcome. It is better to make a mistake than to withhold idea sharing.

In a continuous improvement environment it is important that all organization members contribute to management understanding of potential improvements. This class will stress continuous improvement; therefore, individual students or teams of students will be expected to make suggestions on ways to improve the system in order to increase learning efficiency and effectiveness.

Textbook, Readings, Small Cases and Assignments

The textbook, readings, small cases and assignments are purposefully organized and assigned. All the readings are important. They are not assigned evenly throughout the semester; therefore, students are encouraged to plan ahead and read future assignments during time periods when reading assignments are not as heavy.

During the semester there are a few written assignments that must be handed in. In the on-line version of this class, assignments can either be emailed, or submitted through Blackboard. Students will be supplied a CD with all of the lectures in PowerPoint format. The majority of these lectures are narrated and animated. As such, it is important that each on-line student [email](#) the instructor an address where the CD can be mailed to.

Team project/quality project: A quality improvement project is required for successful completion of this course. The intent is for this to be a live or real-time project that comes from your job, or some company/organization you are closely associated with and can get access to the management and staff to collaborate with. This is not intended to be a case study from a management, or similar text. However, some exceptions may be made depending on each individual student's circumstances.

Since this is an on-line course and students are widely dispersed, projects will most likely be worked by individuals. I would encourage each of you to collaborate as much as possible with your fellow classmates on your individual projects. If you can find a way to work the project as a team, that's great. However, recognize that each member of the team will receive the same grade for the project. Therefore, make sure that the work is spread evenly between the team members so the grade for each is representative of the effort expended.

Midterm: There will be a midterm exam consisting of 20 questions of mixed type.

Final Exam: This will be an in-class test consisting 20 questions of mixed type.

Grading will be based on:

1. Quizzes - 900 pts
 2. Homework - 400 pts
 3. Midterm - 200 pts
 4. Project Proposal – 50 Pts
 5. Project - 250 pts
 6. Final Exam - 200 pts
- Total points possible - 2,000

Extra Credit Options- 200 pts Possible. One only per person. **Please get the instructor s approval in advance for your extra credit project.**

TERM PROJECT:

The emphasis of this project is quality, or process improvement. Ideally, this will be a value-engineering study for improvement of a product, process, or service. The project can also be based on lean principles, six-sigma, or any combination of these or other improvement methodologies. The project should include an estimate of the cost and benefits gained, both tangible and intangible, from implementation of the project. A FAST Model of a product, process, or service with an accompanying cost/function matrix (could be based on hours also) should be completed as part of the project. The final project will be in the form of a PowerPoint management presentation. This presentation will be given to the class via WebCT, or other suitable group internet meeting tool.

Examples:

1. A Value Engineering/Analysis study of project, or of a suitable problem at work, home, or elsewhere. Could be from a case study.
2. Application of Lean Management including a Value Stream Map of some process showing identifying the waste in the system, the value added activities, and ratio of value added to waste, and an estimate in hours, or dollars of the opportunity for improvement.
3. A root cause analysis study to determine the cause of defects in a product, process, or service and an action plan for improvement including estimated costs, schedule, and identified roles and responsibilities for accomplishment of the action plan.
4. Any other suitable proposal for process/product improvement analysis approved by the professor.

To receive full credit, the analysis must include:

- a. An explanation of the problem.
- b. An explanation of the process used to analyze the problem and how it was used to analyze the problem.
- c. The results of the analysis.
- d. Recommendations that could be derived from the analysis.

Requirements for a A:

1,800 pts or more

Requirements for a B:

1,600 - 1,799 pts

Requirements for an C:

1,400 - 1,599 pts

Course Schedule

Class	Week Of	Topic	Activities & Reading Assignments
1	8/25	INTRODUCTION: Topics: Purposes Expectations Questions Course syllabus and requirements Lecture 1: Overview of various quality	Acquire the text books Get acquainted with class and instructor Discuss class goals and expectations Gryna - Ch 1 - 3,

		<p>methodologies</p> <p>Video: Carving a Career in Quality by Philip Crosby</p> <p>Basic Concepts Company wide Assessment of Quality Quality Improvement and Cost Reduction</p>	<p>Homework Assignment #1: CH 1: 1, 2, & 4 CH 2: 1, 4, & 5 CH 3: 2, 3, 5, & 6</p>
2	9/1	<p>LECTURE 2: ORGANIZATION FOR QUALITY</p> <p>Topics: Organization for Quality - Ch 8 Developing a Quality Culture - Ch 9. Understanding Customer Needs - Ch 12.</p> <p>QUIZ 1 - 100pts</p>	<p>Reading: Gryna - Ch 8 - 9, 10</p> <p>Homework Assignment #2: CH 8: 2, 3, & 5 CH 9: 3, 5 & 7 CH 10: 2, 3, 6, & 7</p>
3	9/8	<p>LECTURE 3: QUALITY CONTROL, PROCESS MANAGEMENT, INTRODUCTION TO SIX SIGMA</p> <p>QUIZ 2- 100pts</p> <p>Video: Manufacturing Insights: Six Sigma, Society of Manufacturing Engineers, Dearborn, MI - 30 min.</p> <p>This program explains what Six Sigma is and shows how companies are using the methods to find permanent solutions to difficult problems.</p> <p>Gretag Imaging (Chicopee, MA), used Six Sigma to improve customer satisfaction by solving a difficult logistical problem.</p> <p>Ortho Clinical Diagnostics (Rochester, NY), applied Six Sigma problem solving techniques to discover a measurement discrepancy in an air compressor. This information helped redesign a new compressor that operated within specifications.</p> <p>Lockheed Martin (Moorestown, NJ), has applied Six Sigma concepts throughout its entire organization being careful to align projects to the strategic goals of the organization.</p>	<p>Reading: Gryna - Ch 5 - 6</p>

5	9/15	<p>LECTURE 4: LEAN THINKING/LEAN MANUFACTURING</p> <p>Topics: Muda 5 Principles of Lean: Value, Value Stream, Flow, Pull, Perfection Value Stream Mapping Value Stream Management Push vs. Pull Kaisen Continuous Improvement</p> <p>HOMEWORK ASSIGN #1 DUE - 100 pts QUIZ 3 - 100pts</p>	<p>Lean Thinking - pp 1 - 98</p> <p>(Hint - read in advance)</p>
6	9/22	<p>LECTURE 5: VALUE ENGINEERING OVERVIEW</p> <p>Film: Principles of Value Analysis/Value Engineering, N.C. State University, Raleigh, N.C. - 34 min</p> <p>Function Analysis Overview and Practice, Link Function Analysis to Root Cause Analysis</p> <p>Root Cause Analysis: Never Stop Asking "Why"</p> <p>Work on Proposals for Class Project Start Information Gathering, Function Analysis, and Root Cause Evaluation on Class Projects - Use Brainstorming, and other Facilitation techniques to gather information, analyze functions, and categorize causal factors.</p> <p>QUIZ 4 - 100pts</p>	<p>Reading:</p> <p>Reading Assignment: The Development of an ES&H Action Plan using Management Oversight and Risk Tree Analysis and Function Analysis Systems Technique , J. R. Wixson, 1992 SAVE International Conference Proceedings, Pgs 29 -36</p> <p>Value Managed Failure Analysis and Product/Process Improvement, J. R. Wixson, 1997 SAVE International Conference Proceedings, p 276 - 283</p> <p>Functional Analysis and Decomposition using Function Analysis Systems Technique, J. R. Wixson, International Council on Systems Engineering (INCOSE) 1999 Annual Symposium, Brighton, England, 1999 Conference Proceedings, p. 963 968</p> <p>CREATING VALUE WITH LEAN THINKING AND VALUE ENGINEERING Charles L. Cell Boris Arratia Headquarters, U.S. Army Joint Munitions Command Rock Island Arsenal Rock Island, IL, 61299-6000, USA</p>
7	9/29	<p>LECTURE 6: BASIC CONCEPTS OF STATISTICS AND PROBABILITY</p> <p>Statistical Tools for Analyzing Data Measuring Project Sigma: How Close Are You to Perfection? Continue Developing Class Project in Groups</p> <p>Proposals for Class Project Due</p> <p>HOMEWORK ASSIGN #2 DUE - 100 pts. QUIZ 5 - Value Analysis/Value Engineering - 100 pts</p>	<p>Gryna - Ch 17 - 18</p> <p>Homework Assignment #3: Gryna Chapter 17: 2, 5, 6, 8, &11</p> <p>Homework Assignment #4: Gryna Chapter 18: 1, 2, 8, 9, & 14</p>

8	10/6	<p>LECTURE 7: STATISTICAL PROCESS CONTROL - INTRODUCTION</p> <p>Statistical Tools for Analyzing Data Measuring Project Sigma: How Close Are You to Perfection?</p> <p>QUIZ 6, BASIC CONCEPTS OF STATISTICS AND PROBABILITY - 100 pts</p>	<p>Reading:</p> <p>Gryna - Ch 20</p>
9	10/13	<p><u>MIDTERM ON EVERYTHING WE HAVE DISCUSSED TO THIS POINT</u></p>	
10 <u>TOP</u>	10/20	<p><u>Work on project</u> - Gather Information & Define the Problem</p> <ul style="list-style-type: none"> • Answer the 3 questions • Identify requirements • Identify constraints (sacred cows) • Develop selection criteria. <p>CH 10 AND 11 STATISTICS HOMEWORK DUE - 200 PTS</p> <p>QUIZ 7, Statistical Process Control - 100 pts</p>	
11	10/27	<p>LECTURE 8: ECONOMIC ANALYSIS OF ALTERNATIVES</p> <p><i>Net Present Value and Internal Return on Investment Calculations</i></p> <p><u>Work on project</u> -</p> <ul style="list-style-type: none"> • Complete Function Analysis, Process Flow, or Value Stream Map (VSM). • Dimension FAST Model, or identify inefficiencies in Process Flow/VSM 	
12	11/3	<p>LECTURE 9: DESIGNING FOR QUALITY</p> <p>Designing for Quality - Quality Function Deployment</p> <p>See: http://www.npd-solutions.com/qfd.html</p>	<p>Reading:</p> <p>Gryna - Ch 11</p>

		<u>Work on project -</u> <ul style="list-style-type: none"> • Brainstorm Improvements to Functions, or process steps. • Combine ideas to develop improvement scenarios. • Score and evaluate ideas. 	
13	11/10	LECTURE 10 - DECISION ANALYSIS Selecting Solutions That Drive Sigma Performance Develop Selection Criteria for Comparison of Alternatives Pair wise Comparison of Criteria Rank and Rate Alternatives using weighted criteria Work on project - <ul style="list-style-type: none"> • Select best idea/ideas • Determine implementation plan and costs (if possible) • Put together PowerPoint report • Get ready for dry run with instructor. Quiz #8 - Economic Analysis	
14	11/17	Work on project – <ul style="list-style-type: none"> • Incorporate instructor comments and improvements 	
15	11/24	FALL RECESS	
	11/30	Quiz 9 – Designing for Quality & Quality Function Deployment	
16	12/1	SUBMIT PROJECT PRESENTATION ON MS POWERPOINT – 250 pts	
17	12/10 – 12/18	Final Exam 20 questions - 200 pts	
	12/19	Grades Due	