EASTERN KENTUCKY UNIVERSITY
Department of Technology
INT 506 / 706

DESCRIPTION

INT 506 / 706: Total Quality Control (Credits 3-0) I. II.

Meeting times: Arranged

Prerequisites: INT 202

A study of total quality control as it relates to the integration of all functions and processes within an organization in order to achieve continuous improvement of the quality of goods and services.

Instructor:
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Office Hours:
Monday and Friday: 9:00 to 11:00 a.m.
Tuesday and Thursday: 2:00 to 3:30p.m.
Wednesday: 1:30 to 4:30 p.m.
You are welcome to stop by or make an appointment at other times as well.

Materials Fee:

There is no materials fee for this course.

Field Trips:

Any field trips for which the department incurs travel expenses will be billed separately, also through the business office. Unless otherwise notified by the instructor, students will be responsible for their own transportation on field trips.

Academic Honesty:

Academic honesty is fundamental to the activities and principles of any university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards academic dishonesty as an extremely serious matter, with consequences that range from probation to expulsion. Academic dishonesty is not only a basis for disciplinary action but is also relevant to the evaluation of the student's level of performance. Academic honesty requires that students do not cheat, or knowingly assist another to do so. Other unacceptable behavior includes plagiarism, which is the submitting of someone else's work as your own, and the unauthorized access to or changing of grades or examinations. Students should also be aware that submitting or performing essentially the same piece of work for credit in different classes is considered dishonest unless all faculty members involved have agreed in advance to allow it. When in doubt about plagiarism, paraphrasing, quoting, or collaboration, consult the course instructor.

Acknowledgement:

This syllabus is adapted from a previous INT 506 syllabus prepared by Dr. M. Lifland.

Texts:

A. Required Textbooks:

1. Ross, J. E. (1999). *Total quality management: Text, cases, and readings* (3rd edition). Boca Raton, FL: St. Lucie Press.
2. Hoerl, R., & Snee, R. D. (2002). *Statistical thinking: Improving business performance*. Pacific Grove, CA: Duxbury

B. Recommended References:

1. Covey, S. R. (1991). *Principle-centered leadership.* New York: Simon & Schuster.
2. Covey, S. R. (1994). *First things first: To live, to love, to learn, to leave a legacy.* New York: Simon & Schuster.
3. Deming, W. E. (1993). *The new economics for industry, government, education.* Cambridge, MA: Massachusetts Institute of Technology, Center for Advanced Engineering Study.
4. Deming, W. E. (1986). *Out of the crisis.* Cambridge, MA: Massachusetts Institute of Technology, Center for Advanced Engineering Study.
5. Delavigne, K. T., & Robertson, J. D. (1994). *Deming's profound changes: When will the sleeping giant awaken?* Englewood Cliffs, NJ: PTR Prentice Hall.
6. Goetsch, D. L., & Davis, S. (2000). *Introduction to total quality* (3rd *edition)* New York: Macmillan College Publishing Co., Inc.
7. Goldratt, E. M. (1999). *Theory of constraints*. Great Barrington, MA: North River Press.
8. Goldratt, E. M. & Cox, J. (1992). *The goal: A process of ongoing improvement* (2nd ed). Great Barrington, MA: North River Press.
9. Gitlow, H.S., & Gitlow, S.J. (1987). *The Deming guide to quality and competitive position.* Englewood Cliffs, NJ: Prentice-Hall.
10. Kinlaw, D. C. (1992). *Continuous improvement and measurement for total quality: A team-based approach.* San Diego, CA: Pfeiffer & Co.
11. Kume, H. (1985). *Statistical methods for quality improvement.* Tokyo, Japan: The Association for Overseas Technical Scholarship.
12. Scherkenbach, W. W. (1991). *The Deming route to quality and productivity: road maps and roadblocks.* Milwaukee, WI: ASQC Quality Press.
13. Scholtes, P. R. Joiner, B. L., & Streibel, B. J. (1996). *The team handbook* (2nd ed.). Madison, WI: Joiner.
14. Tornatzky, L. G., Batts, Y., McCrea, N. E., Lewis, M. S., & Quittman, L. M. (1996). *The art & craft of technology business incubation*. Athens, OH: National Business Incubation Association.

Recommended Periodicals

While this list is not intended to be exhaustive, it does represent a cross section of today's management journals.

- *Academy of Management Review*
- *Business Week*
- *Fortune*
- *Harvard Business Review*
- *Human Resource Management*
- *Human Resource Development Quarterly*
- *Journal of European Industrial Training*
- *Journal of Industrial Teacher Education*
- *Journal of Industrial Technology*
- *Journal of Quality Assurance*
- *Performance and Instruction Journal*
- *Performance Improvement Quarterly*
- *Quality Digest*
- *Quality Progress*
- *Technical and Skills Training*
- *Technology Review*
- *Training*
- *Training and Development Journal*

Other Resources

Check the INT 506 course listing in Blackboard for additional information concerning course topics. We will be adding web sites, suggested references, etc. as the course progresses. Note that graduate students enrolled in INT 706 should log into the INT 506 Blackboard site for course materials and postings. This site is cross-listed for both graduate (INT 706) and undergraduate students (INT 506).

Introduction

Speed and quality are (almost) everything, particularly among high technology companies. The present marketplace is knowledge-based, global, hyper-competitive, and fundamentally different from past economic environments (Tornatzky, Batts, McCrea, Lewis, & Quittman, 1996). How fast one can develop, transfer, and commercialize advanced technology products often determines the difference between success and failure. There has been a significant shift in the nature of competitive advantage over the past two decades and it is biased toward those organizations that are most effectively able to accelerate these processes and compress the timeframe needed to deliver [quality] products to market (Tornatzky et al., 1996).

Purpose

The purpose of this course is to develop students' awareness as to the need for business improvement, the relationship between statistical thinking and total quality management, and the potential issues and approaches to accomplish a total quality transformation in an organization.

Course Outline

The course may, at various times, encompass reading assignments, written assignments, outside speakers, audio-visual presentations, industrial visitations, small group and class discussion, and objective tests. Assignments should be prepared in a careful manner. All written work must be completed using a word processor. In all cases where direct quotations, major ideas, or facts are used, the student is to give the proper reference citations according to APA (5th edition) format. In such cases, a proper reference or bibliography must be included.

NOTE: Material covered in reading assignments from the text may be on exams, even if not covered during class periods. Students are expected to complete readings before the topic is covered in class, so that all students are able to participate in class discussions.

Course Objectives

The instructional goals for INT 506 / 706 are presented as terminal performance competencies. Upon successfully completing this course, the student will be able to:

1. Explain the origins and current role of TQC in manufacturing and service environments.
2. Interpret management principles advocated by leaders in the quality revolution (e.g., Deming, Juran, Crosby, etc.).
3. Compare and contrast TQC with international quality management standards.
4. Critique arguments for and against TQC principles and practices.
5. Identify and explain basic data gathering and analysis tools as they relate to problem solving and process improvement strategies.
6. Identify and discuss organization-wide TQ characteristics in terms of Baldrige criteria.
7. Outline organization-wide TQ implementation requirements, strategy, and process.
8. Apply statistical thinking to business performance issues.
9. Identify appropriate personnel development components related to TQC education and training.

Course Assessment

Assessment activities include self-motivated quality participation in class discussions, examinations, projects (graduate students), and weekly research activities with student facilitated discussions. Each student must be punctual in getting in his or her assigned work. ***Spelling, grammar, and punctuation are integral components of written work; these elements will play a role with respect to the grade assigned to your work.*** Final course grades are based on the weights listed below according to student enrollment in INT 506 or INT 706, but it should be noted that, if projects are team-based, a student's peer-member team evaluation will affect his or her Final Project grade.

INT 506:

A. Participation/Quality related to Discussion Questions 20%
B. Mid-Term 25%
C. Final 25%
D. Research Assignments/Presentation 25%
E. Attendance 5%

Total 100%

INT 706:

A. Participation/Quality related to Discussion Questions 15%
B. Mid-Term 20%
C. Final 20%
D. Final Project 25%
E. Research Assignments/Presentations 15%
F. Attendance 5%

Total 100%

Grade	**% Points**
A	90 ≤ points
B	80 ≤ points < 90
C	70 ≤ points < 80
D	60 ≤ points < 70
F	0 ≤ points < 60

Note: Examination scores may be "curved" to adjust for variations in the difficulties of exams, but the % points required for the various grade will not be higher than those shown to the left. Students should also be aware that extra credit assignments are not an option.

The tentative test schedule and due dates for assignments are listed in the syllabus, but any changes will be confirmed well beforehand. All assignments are due on that date. Late work will not be graded, however students may claim a "bye" for one week and that week's assignments (excluding tests or projects) will be eliminated from course grade calculations. This assures that students who conscientiously plan and complete their work will be acknowledged, while allowing for the occasional emergency. At the discretion of the instructor, work can be marked "not late" if arrangements have been made with the instructor before the due date. ***The last day to turn in any work for grading will be Friday, May 05, 2006 at 5:00 p.m.***

Institutional Expectations

- Upper Division Courses (such as INT 506): Minimum of three hours of outside preparation for every hour of lecture.
- Graduate Level Courses (such as INT 706): Minimum of four hours of outside preparation for every hour of lecture.

Student Progress

The instructor will provide the students with mid-term grade information (via Blackboard or e-mail) on their progress in the course no later than ***Thursday, March 02, 2006***.

Attendance Policy:

Unless otherwise noted, the Department of Technology Class Attendance Policy will apply. Students are expected to attend all classes.

Provision for Individual Needs:

If you are registered with the Office of Services for Individuals with Disabilities, please make an appointment with the course instructor to discuss any academic accommodations you need. If you need academic accommodations and are not registered with the Office of Services for Individuals with Disabilities, please contact the Office directly either in person on the first floor of the Turley House or by telephone at (859) 622-1500 V/TTY. Upon individual request, this syllabus can be made available in alternative forms.

Required Activities and Assignments:

1. Students should complete all assigned readings prior to the class. As this class deals primarily with the philosophical underpinnings of Statistical Thinking and Total Quality Management, students will be evaluated weekly on their contributions to class discussion postings on Blackboard. These discussions will center primarily, but not exclusively, on the discussion questions at the end of the assigned reading and reflections related to materials student uncover on their own (see bulleted item #2). Students should review all potential discussion questions and prepare themselves to make meaningful contributions.
2. Additionally, all students will engage in some outside research and reading related to the topic that will be discussed on any given topic. Students are to identify a journal or newspaper article, or web site related to the topic, and provide a critical written evaluation and reflection regarding the material (one and one-half to two pages single spaced maximum). Each student will then briefly document the material and relevant discussion questions on Blackboard for his or her chosen material. The article and at least a sample of the web site will be copied or downloaded and submitted to the instructor, along with the student's evaluation/reflection. The article or web site will be referenced in the student's evaluation/reflection according to APA format (5^{th} ed.)
3. Assignments will be evaluated according to their completeness, neatness, organization, legibility, and use of proper forms and format. All mathematical calculations will be shown when and if applicable.
4. Assignments are to be turned in on time. To accommodate the occasional difficulty in meeting a deadline, one discussion and one research assignment/presentation grade will be eliminated from final grade calculations.

5. Make-up arrangement for assignments and tests must be made with the instructor prior to you missing a class and contact the instructor your first day back in class if excused by instructor. If arrangements are not made it will be assumed you do not intend to make the assignment or test up and a score of zero will be recorded. Test must be made up within one week of the day of the original date given.
6. In addition to Mid-Term and Final Examinations, each **GRADUATE STUDENT** will identify a project, design and conduct the study, evaluate the results, make recommendations, submit a written report, and make an oral presentation covering project work. The student will be expected to demonstrate his or her grasp of the course content by applying the various tools and techniques to meet project objectives, and by documenting and reflecting on the problem solving activities employed during this process in a written report. The documentation will be completed according to appropriate format and content requirements as agreed upon with the instructor. Two examples of format and content are indicated below. Not all elements may be appropriate in all cases; however, it is expected that each of the sections would include a written narrative describing the data and events included as well. Alternatively, a graduate student may propose and, with instructor approval, complete a research paper related to a course topic as a final project.

Score	Maximum	**Contents**
	2	1. Cover page (topic, team number, team members, and date)
	2	2. Table of contents (include page number for each section)
	5	3. Project definition
	8	4. QFD related to Customer Requirements
	8	5. Understand the Process: Flowchart
	10	6. Identify Potential Root Causes affecting Requirements
	10	7. Collect Data on Key Input, Process, and Output Measures
	5	8. Document a Problem
	10	9. Proposed Action (with selection criteria/justification)
	10	10. Implement and Test Recommended Course of Action
	5	11. Assess Process Capability and Stability
	5	12. Document any Special-Cause Variability
	5	13. Customer Feedback
	5	14. Analyze Common-Cause Variability
	5	15. Meeting notes (use standard format)
	5	16. Summary

INT 706 FINAL PROJECT REPORT WRITING GUIDE[1]

Students are to use a word processor to type the report. Include the name of the project, your name, and the date on a cover sheet. The report will include sections listed below.

Title Page (3 pts)
Include the report title, student name, and the date. This title page serves as a cover sheet for the report.

Executive Summary (15 pts)
Include a concise, one-paragraph summary of the key points of the project: Objectives, methods, results, conclusions, recommendations and benefits. Make sure that specific numbers are included with the results, recommendations and benefits. This section should be approached as if it were written for a top executive who doesn't have the time to read the whole report, but who is interested in what was done (methods, results, conclusions) and why it was done (problem, expected benefits).

Introduction (7 pts)
Include a problem description; that is, background information describing problem. Address the expected benefits of the project (What potential applications may result? What are potential benefits resulting from the project?).

Objectives (3 pts)
Include a statement explicitly addressing the specific objectives of the study (for what reason(s) was the study undertaken?).

Methods (7 pts)
Include a short sequential list of steps (written in paragraph form) that were taken to solve the problem. Document any assumptions or limitation on methods. List any equipment used, characteristics of subjects (if any employed). Provide diagrams or layouts as needed to help clarify the descriptions.

Results (30 pts)
Report all key findings that were generated in meeting objectives. Note: Data are typically best presented as summaries in Tables or Figures, but if Tables and Figures are used, they must be mentioned in the text. They must have headings—above the table for tables and below the figure for figures—and must be mentioned and described in text. Tables and Figures should be placed beneath, or on the page immediately following, the point at which they are first described in the text. Tables and Figures go in this section; raw data should be included, as needed, in an appendix. Include a discussion of the data with regard to trends. Compare results between different methods, etc.; but do not draw conclusions in this section.

Discussion (15 pts)
Discuss the significance of the results as related to the objectives. Indicate any quantitative and subjective implications of the results. Give specific recommendations, improvements in methods and specifications for the design. Provide suggestions for further study.

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1 Adapted from Penn State University IE 327 Lab Report Writing Guide. Retrieved January 7, 2005 from http://www.ie.psu.edu/courses/ie327/labguide.htm

Conclusions and Recommendations (10 pts)
Present the important conclusions that drawn from the results. Note that the conclusions may be presented as a numbered list; however, care should be taken to make sure that the conclusions relate to the problem and objectives previously documented.

Overall Quality (10 pts)
The project report is to have a professional appearance with visual-appealing printed text, good graphical output for figures, and no spelling or typographical errors.

Additional Graduate Student Requirements
As a requirement for the course, each graduate student must:

1. Make a 25-minute presentation to the class describing the project and reporting the results.
2. Present one bound hardcopy and one zip or floppy disk with an electronic file of the project to the instructor at the conclusion of the semester.

Tentative Schedule:

	DATE	TOPIC	READING
1	Jan 18	Syllabus review & Course expectations Blackboard Introduction & Overview: TQM & Statistical Thinking	Handouts: ASQ Fortune History
2	Jan 25	The Need for Business Improvement The Overall Statistical Thinking Approach **Assignment 01 Due**	H&S 1 H&S 2
3	Feb 01	Introduction to TQM **Assignment 02 Due**	Ross 1
4	Feb 08	Leadership Strategic Planning **Assignment 03 Due**	Ross 2 Ross 4
5	Feb 15	Information and Analysis Customer and Market Focus More on Surveys **Assignment 04 Due**	Ross 3 Ross 7 H&S App. C

6	Feb 22	Human Resource Focus Effective Teamwork **Assignment 05 Due**	Ross 5 H&S App. A
7	Mar 01	Understanding Business Processes Process Management **Assignment 06 Due**	H&S 3 Ross 6
8	Mar 08	Process Improvement & Problem-Solving Strategies Process Improvement & Problem-Solving Tools **Hand out Mid-Term Exam** **Assignment 07 Due**	H&S 4 H&S 5
9	Mar 15	***Spring Break***	
10	Mar 22	**Mid-Term Exam Due** Summary and Path Forward Presentations and Report Writing	H&S 10 H&S App. B
11	Mar 29	Benchmarking **Assignment 08 Due**	Ross 8
12	Apr 05	Organizing for Total Quality Management **Assignment 09 Due**	Ross 9
13	Apr 12	Productivity, Quality, and Reengineering More on the 6σ Improvement Approach Process Design (Reengineering) **Assignment 10 Due**	Ross 10 H&S App. D H&S App. H
14	Apr 19	The Cost of Quality **Assignment 11 Due**	Ross 11
15	Apr 26	ISO 9000 and ISO 14000 **Assignment 12 Due**	Ross 12
16	May 03	Theory of Constraints **Hand out Final Exam**	Ross 13
17	May 10	**Final Exam Due** **Graduate Presentations**	