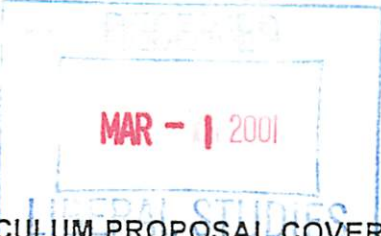


LSC Use Only  
 Number: \_\_\_\_\_  
 Submission Date: \_\_\_\_\_  
 Action-Date: \_\_\_\_\_



UWUCC USE Only  
 Number: 00-52T  
 Submission Date: \_\_\_\_\_  
 Action-Date: App 4/10/01  
Senate App 5/1/01

**CURRICULUM PROPOSAL COVER SHEET**  
 University-Wide Undergraduate Curriculum Committee

**I. CONTACT**

Contact Person Ramesh Soni/Prashanth Nagendra Phone 357-2535  
 Department Management

**II. PROPOSAL TYPE (Check All Appropriate Lines)**

**COURSE** Introduction to Quality Control  
Suggested 20 character title

**New Course\*** MGMT 234 Introduction to Quality Control  
Course Number and Full Title

**Course Revision** \_\_\_\_\_  
Course Number and Full Title

**Liberal Studies Approval +** \_\_\_\_\_  
for new or existing course Course Number and Full Title

**Course Deletion** \_\_\_\_\_  
Course Number and Full Title

**Number and/or Title Change** \_\_\_\_\_  
Old Number and/or Full Old Title  
 \_\_\_\_\_  
New Number and/or Full New Title

**Course or Catalog Description Change** \_\_\_\_\_  
Course Number and Full Title

**PROGRAM:**  Major  Minor  Track

**New Program\*** \_\_\_\_\_  
Program Name

**Program Revision\*** \_\_\_\_\_  
Program Name

**Program Deletion\*** \_\_\_\_\_  
Program Name

**Title Change** \_\_\_\_\_  
Old Program Name  
 \_\_\_\_\_  
New Program Name

**III. Approvals (signatures and date)**

Jayita Ghosh 2/1/01  
 Department Curriculum Committee

Pravita Bin 2/21/01  
 Department Chair

Jayita Ghosh 2/28/01  
 College Curriculum Committee

R. Camp 2/28/01  
 College Dean

+ Director of Liberal Studies (where applicable) \*Provost (where applicable)



*Rw*

# Syllabus of Record

## I. Catalog Description

MGMT 234 Introduction to Quality Control 3 credits  
3 lecture hours  
(3c-01-3sh)

Prerequisites: Students must be enrolled in either the Associate in Applied Science in Electro-Optics program or the Associate of Science in Electro-Optics program.

Introduces the student to (a) the principles, philosophies, and practices of Total Quality Management (TQM) and (b) the techniques of Statistical Quality Control including fundamentals of probability & statistics, control charts for variables & attributes, acceptance sampling, and reliability concepts.

## II. Course Objectives

Upon completion of this course, the student will have:

1. An understanding of the principles and practices of total quality management (TQM) including customer focus, continuous improvement, total employee involvement and process improvement.
2. The knowledge of the philosophies of quality “Gurus” such as Deming, Juran, Crosby, Taguchi, and Ishikawa.
3. Working knowledge of the tools and techniques of quality control including the widely used control charts and acceptance sampling methods.

## III Course Outline for Lectures (39 hours)

### A. Total Quality Management – Introduction and overview (4 hours)

1. History and evolution of quality control and management
2. Quality—definition and measurement
3. TQM—Leadership, Customer Satisfaction, Employee Involvement, Continuous Process Improvement, Supplier Partnership
4. Philosophies of Quality Gurus

### B. Fundamentals of Statistics (3 hours)

1. Frequency Distribution
2. Measures of Central Tendency and Dispersion
3. Population and Sample
4. The Normal Curve

### C. Fundamentals of Probability (2 hours)

1. Basic concepts in probability
2. Discrete Probability Distributions
3. Continuous Probability Distributions

### D. Tools of Quality—Old and New (3 hours)

1. Old tools including histogram, cause and effect diagrams, Pareto diagram, etc.

2. New tools including matrix diagram, affinity diagrams, etc.

E. Total Quality Management—Introduction to popular quality tools and techniques  
(3 hours)

1. Introduction to Statistical Process Control and Acceptance Sampling
2. Failure Mode and Effect Analysis
3. Total Productive Maintenance
4. Concurrent Engineering
5. Design of Experiments
6. House of quality
7. Benchmarking

F. Control Charts for Variables (6 hours)

1. Control Chart Techniques—X-bar, R and s charts
2. State of Control
3. Process Capability
4. Computer examples and practical applications

G. Additional SPC Techniques for Variables (3 hours)

1. Continuous and Batch Processes
2. Short-Run SPC
3. Gage Control

H. Control Charts for Attributes (6 hours)

1. Control Charts for Nonconforming Units—p and np charts
2. Control Charts for Count of Nonconformities—c and u charts
3. A Quality Rating System and computer applications

I. Lot-by-Lot Acceptance Sampling by Attributes (3 hours)

1. Fundamental Concepts
2. Statistical Aspects
3. Sampling Plan Design

J. Acceptance Sampling Systems (3 hours)

1. Lot-by-Lot Acceptance Sampling Plans for Attributes
2. Acceptance Sampling Plans for Continuous Production
3. Acceptance Sampling Plans for Variables

K. Reliability (3 hours)

1. Fundamental Aspects
2. Additional Statistical Aspects
3. Life and Reliability Testing Plans

**Remaining 5 hours for three exams—1.5 + 1.5 + 2 hours**

**IV. Evaluation Methods**

The final grade for the course will be determined as follows:  
90% and above—A; 80% to less than 90%--B; 70% to less than 80%--C; 60% to less than 70%--D; and less than 60%--F grade.

The final grade will be determined based on the followings:

75% Tests. Three tests (two during the semester and the final) consisting of solving word problems and writing short essays.

20% Quizzes and assignments.

5% Active participation in the classroom

**V. Required textbooks, supplemental books and readings**

Textbook: Besterfield, Dale H., Quality Control, Sixth Edition, Englewood Cliffs, NJ: Prentice Hall, 2001.

**VI. Special resource requirements**

None

**VII. Bibliography (Mostly classics)**

Banks, J., *Principles of Quality Control*, Wiley, 1989.

Berry, L.L., Zeithaml, V.A. and Parasuraman, P., "Quality Counts in Service, Too," *Business Horizons*, 28 (3), 1985, 44-52.

Camp, R.C. *Benchmarking*. Milwaukee: Quality Press, 1989.

Carlzon, J. *Moments of Truth*. New York: Ballinger, 1987.

Covey, S.R. *The 7 Habits of Highly Effective People*. New York: Fireside, 1989.

Crosby, P.B. *Quality is Free*. New York: McGraw-Hill, 1979.

Deming, W.E. *Out of the Crisis*. Cambridge, Mass.: MIT Center for Advanced Engineering Study, 1986.

Feigenbaum, A.V. *Total Quality Control*, New York, McGraw-Hill, 1983.

Garvin, D.A. "Competing on the Eight Dimensions of Quality,": *Harvard Business Review* (Nov.-Dec. 1987): 101-109.

Garvin, D.A. *Managing Quality: The Strategic and Competitive Edge*. New York: Free Press/McMillan, 1988.

- Grant, E.L.; Leavenworth, R.S., *Statistical Quality Control, Seventh Edition*, McGraw Hill, 1996
- Griffith, G.K., *The Quality Technician's Handbook, Fourth Edition*, Prentice Hall, 2000
- Gryna Jr., F.M., *Quality Planning and Analysis: From Product Development through Use, Fourth Edition*, McGraw Hill, 2000
- Ishikawa, K. *Guide to Quality Control*, White Plains, NY: Kraus, 1986.
- Juran, J.M. and Gryna, F.M. *Quality Planning and Analysis*, New York: McGraw-Hill, 1980.
- Kotler, P. *Marketing Management*, Englewood Cliffs, NJ: Prentice Hall, 1984.
- Monden, Y. *Toyota Production System*, Atlanta, Ga: IIE Press, 1993.
- Peters, T. *Thriving on Chaos*. New York: Knopf, 1987.
- Porter, M. *Competitive Advantage*. New York: Free Press, 1985.
- Roy, Ranjit K. *Design of Experiments Using the Taguchi Approach : 16 Steps to Product and Process Improvement*, John Wiley & Sons, 2001
- Senge, P. *The Fifth Discipline*. New York: Doubleday, 1990.
- Shingo, S. *Modern Approaches to Manufacturing Improvement*. Cambridge, Mass: Productivity Press, 1990.
- Sullivan, L.P. "Quality Function Deployment," *Quality Progress*, 19(6), 1986, 39-50.
- Zeithaml, V.A., Berry, L.L. and Parasuraman, P. *Delivering Quality Service: Balancing Customer Perceptions and Expectations*. New York: Free Press, 1990.

# **Course Analysis Questionnaire**

## **MGMT 234      Statistical Quality Control**

### **Section A: Details of the Course**

- A1    This course is a requirement for the proposed degree Associate in Applied Science in Electro-Optics (A.A.S.E.O.) and as a choice of 2 out of 3 courses for the proposed degree Associate in Science in Electro-Optics (A.S.E.O.). This course is not intended for inclusion in the Liberal Studies program.
- A2    This course does not require changes in any other courses in the department. The Applied Physics program will have an additional track associated with the A.S.E.O. degree and this course will be part of the choices for that track.
- A3    This course has not been offered on a trial basis at IUP.
- A4    This course is not intended to be dual level.
- A5    This course is not to be taken for variable credit.
- A6    Similar courses are offered at these institutions:
1. Central Carolina Community College; Lillington, NC (ISC 221 Statistical Quality Control)
  2. Indian Hills Community College; Ottumwa, Iowa (EL 145V Quality Management)
  3. Northcentral Technical College; Wausau, Wisconsin (623-102 Statistical Quality Control)
  4. Texas State Technical College; Waco, Texas (SMT 104 Statistical Process and Control)
- A7    As far as we know, the contents or skills of this proposed course are not recommended or required by a professional society, accrediting authority, law or other external agency. The content and/or skills of this course cannot be incorporated into an existing course. The material is not covered by any of the existing courses.

### **Section B: Interdisciplinary Implications**

- B1    This course will be taught by one instructor.
- B2    This course does not overlap with any course offered by any other department at the University. MGMT 334 covers some of the topics covered in MGMT 234. However, MGMT 334 takes a more managerial approach while MGMT 234 takes a more technical approach.
- B3    One seat in each section of this course will be reserved for a student in the School of Continuing Education.

### **Section C: Implementation**

C1 The faculty resources are not adequate. In order to teach the Associate in Applied Science in Electro-Optics (A.A.S.E.O.) program there is a need for .25 FTE for the first year of the program and .25 FTE in the second year and following years.

C2 Other Resources

**a. Space**

It is anticipated that a new building will be constructed at the North Pointe (Slate Lick) site before this program starts in the Fall of 2002. This building will house the Electro-Optics program. If the building is not ready by Fall of 2002 the program will be housed in the Electro-Optics Center (EOC) located in the West Hills.

IUP has received a budget allocation of \$2.88 Million from SSHE towards the construction of a new building in Slate Lick that would house the Electro-Optics program. It is estimated that this is enough for about half of the construction cost. The building may be ready by the opening of classes in the Fall of 2002. If this building is not ready at this time there is a back-up plan. The EOC has promised to provide laboratory space and a lecture room for the electro-optics courses. They will provide for any renovations that are necessary to convert the present space into lab areas and classrooms.

**b. Equipment**

There is no additional equipment needed for this course.

**c. Laboratory Supplies and other Consumable Goods**

None needed.

**d. Library Materials**

It will be desirable that we increase our holdings in the area of Statistical Quality Control.

**e. Travel Funds**

This is hard to estimate; depends on how far each faculty member must drive to North Pointe.

C3 No grant funds are associated with the maintenance of this course.

C4 This course will be offered once a year.

C5 One section of this course will be offered at a time.

C6 The number of students that can be accommodated in this course is 25 (ideal), especially given the nature of the course.

C7 There is no professional society that recommends enrollment limits or parameters for a course of this nature.

**Section D: Miscellaneous**

No additional information is necessary.

**Dennis Whitson**

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**From:** Pat Scott <patscott@grove.iup.edu>  
**To:** Mark Staszkiwicz <mjstat@grove.iup.edu>  
**Cc:** Dennis Whitson <WHITSON@grove.iup.edu>; Cyndy L. Strittmatter <clstritt@grove.iup.edu>; Harold (Pete) Goldsmith <goldsmth@grove.iup.edu>; Jan Parker <jan\_parker@grove.iup.edu>; Mark J. Piwinsky <mpiwinsk@grove.iup.edu>  
**Sent:** Monday, April 02, 2001 10:34 AM  
**Subject:** Re: Problem with E-O Proposal

I agree.  
 Pat

Patricia D. Scott  
 Dean, Armstrong Campus  
 Indiana University of Pennsylvania  
 704 North McKean Street  
 Kittanning, Pennsylvania 16201  
 724.543.1078  
 724.545.3384 (FAX)  
[patscott@grove.iup.edu](mailto:patscott@grove.iup.edu)

----- Original Message -----

**From:** "Mark Staszkiwicz" <mjstat@grove.iup.edu>  
**To:** "Pat Scott" <PATSCOTT@grove.iup.edu>  
**Cc:** "Dennis Whitson" <WHITSON@grove.iup.edu>; "Cyndy L. Strittmatter" <clstritt@grove.iup.edu>; "Harold (Pete) Goldsmith" <goldsmth@grove.iup.edu>; "Jan Parker" <jan\_parker@grove.iup.edu>; "Mark J. Piwinsky" <mpiwinsk@grove.iup.edu>  
**Sent:** Friday, March 30, 2001 11:03 PM  
**Subject:** Fw: Problem with E-O Proposal

> Pat, as I understand it, this should not be a problem since we're on the  
 > budget model that will allow you to purchase the personnel time needed..  
 is

> that the way you see it?

>

> Others on the CC list.. is this correct?

>

>

> ----- Original Message -----

> **From:** "Dennis Whitson" <whitson@grove.iup.edu>  
 > **To:** "Mark Staszkiwicz" <MJSTAT@grove.iup.edu>  
 > **Cc:** "Dennis Whitson" <whitson@grove.iup.edu>  
 > **Sent:** Friday, March 30, 2001 4:54 PM  
 > **Subject:** Problem with E-O Proposal

>

>

>> Mark:



>> There's a hold-up with the MGMT 234 course, which is part of the E-O  
 >> proposal. The problem statement is in the "Course Analysis  
 Questionnaire"  
 >> section C1:  
 >>  
 >> C1 The faculty resources are not adequate. In order to teach the  
 >> A.A.S.E.O. program there is a need for .25 FTE for the first year of the  
 >> program and .25 FTE in the second year and following years.  
 >>  
 >> Note: It should be .125 FTE and not .25 FTE since the course is taught  
 > only  
 >> once a year for the E-O program and the calculation is  $3/24 = .125$  FTE.  
 >>  
 >> The wording is probably mine since I gave them a pretty complete  
 Syllabus  
 >> for the course, which they revamped. I thought it was reasonable at the  
 >> time and that the issue would have been resolved before now.  
 >> Dennis  
 >>  
 >> ----- Original Message -----  
 >> From: Mary Sadler <[msadler@grove.iup.edu](mailto:msadler@grove.iup.edu)>  
 >> To: Dennis Whitson <[whitson@grove.iup.edu](mailto:whitson@grove.iup.edu)>  
 >> Sent: Friday, March 30, 2001 10:25 AM  
 >> Subject: Fw: SC #3  
 >>  
 >>  
 >>> Dennis --I'm forwarding communication we received about the MGT  
 course  
 >>> proposal. Some reasonable answer to the resource issue must be given  
 or  
 >>> approval of the course will be tabled until the issue is addressed. I  
 >> don't  
 >>> want this holding up your proposal so can you see what needs to be  
 done  
 > to  
 >>> answer the resource question about faculty to teach the MGT course and  
 > get  
 >>> back to us?  
 >>> Ignore the last part of the forwarded email --it relates to other  
 >> management  
 >>> proposals.  
 >>>  
 >>> Mary  
 >>> ----- Original Message -----  
 >>> From: "Kustim Wibowo" <[kwibowo@adelphia.net](mailto:kwibowo@adelphia.net)>  
 >>> To: "Mary Sadler" <[msadler@grove.iup.edu](mailto:msadler@grove.iup.edu)>  
 >>> Cc: "Wibowo, Kustim" <[kwibowo@grove.iup.edu](mailto:kwibowo@grove.iup.edu)>; "Orchard, Christopher R"  
 >>> <[corchard@grove.iup.edu](mailto:corchard@grove.iup.edu)>; "Laura K. Cramer" <[nflh@grove.iup.edu](mailto:nflh@grove.iup.edu)>  
 >>> Sent: Wednesday, March 28, 2001 11:19 PM  
 >>> Subject: Re: SC #3

**Dennis Whitson**

---

**From:** Jerry Buriok <jburiok@grove.iup.edu>  
**To:** Dennis Whitson <whitson@grove.iup.edu>  
**Cc:** Jerry Buriok <jburiok@grove.iup.edu>; John Zhang <zhang@grove.iup.edu>; Fred Morgan <fwmorgan@grove.iup.edu>; Doug Frank <fnbb@grove.iup.edu>; Caroline Anderson <ciander@grove.iup.edu>; <rgsoni@grove.iup.edu>; <msadler@grove.iup.edu>  
**Sent:** Tuesday, April 24, 2001 11:25 AM  
**Subject:** New Course Proposal MGMT 234

Representatives of the Statistics Curriculum Committee of the Mathematics Department met with Dr. Dennis Whitson and Dr. Ramesh Soni on April 24, 2001 to discuss the course proposal for MGMT 234 Statistical Quality Control. It was agreed the Mathematics Department would withdraw its objections and support the approval of MGMT 234, contingent upon the following: The name of the course should be changed to "Introduction to Quality Control"; The prerequisite for the course should be changed to " Students must be enrolled in either the Associate in Applied Science in Electro-Optics or the Associate of Science in Electro-Optics program".

It was also agreed by those present that qualified faculty members of the Mathematics Department are available to teach MGMT 234, and may petition to do so or be invited by the Management Department to do so.

Gerald Buriok, Chairman  
Mathematics Department