
COURSE SYLLABUS

FOR FULL-TIME UNDERGRADUATE PROGRAMS

(Issued under Decision No.1380/QĐ-ĐHKTQĐ on 15/8/2016 by the University President)

1. COURSE NAME: Statistics for Quality Management

Code: **TKKD1106**

Total credits: **3**

2. DEPARTMENT IN CHARGE OF INSTRUCTION: Business Statistics Department

Office: Room No.401 – Block 7 – National Economics University

Office Hours: 8:00 – 17:00, from Monday to Friday

Office Telephone: 04.38693275

3. PREREQUISITES: *Theory of Statistics*

4. COURSE DESCRIPTION

Statistics for Quality Management is the subject which provides students with knowledge and skills in the application of statistical methods in the field of quality. The role of Statistics for Quality Management is evident not only in providing information for quality management in the enterprise but also as tools for macroeconomic management, as a basis for making important management decisions. With the aim of providing knowledge focused on the application of methods, statistical tools in the field of quality, content of the course focuses on such issues such as:collecting data, determining system indicators reflecting the quality of products and processes, as well as specific quality analytical methods such as statistical tests, statistical charts ...

5. COURSE OBJECTIVES

The course aims at providing students with the basic knowledge of the Statistics for Quality Management, helping them to understand the meaning of quality analysis issues through the lens of statistics. Then, students can apply the tools, statistical methods that have been provided to solve practical problems within organizations and enterprises as well as at the macro level.

6. COURSE CONTENT

TENTATIVE SCHEDULE

<i>No</i>	<i>Content</i>	<i>Total hours</i>	<i>In which</i>		<i>Notes</i>
			<i>Theory</i>	<i>Exercises, discussion, examination</i>	
1	Chapter 1	6	4	2	
2	Chapter 2	18	12	6	
3	Chapter 3	12	9	3	
4	Chapter 4	8	5	3	
	Mid-course Test	1		1	
	Total	45	30	15	

CHAPTER 1: INTRODUCTION TO STATISTICS FOR QUALITY MANAGEMENT

Quality issues and product and process quality control have always been one of the top goals of every business or organization. Therefore, statistical information used for making decision play a very important role. This chapter presents the necessity and purposes of quality statistics associated with the object and scope of the study related to the quality of products, quality of work and quality of processes. Next, the chapter compares the quality views of producers and those of consumers. Finally, this chapter presents the statistical methods used in qualitative research.

Content:

- 1.1. The necessity and purposes of studying Statistics for Quality Management
- 1.2. The research object of Statistics for Quality Management
- 1.3. The scope of Statistics for Quality Management
- 1.4. Viewpoints of product quality standards and quality standards systems
- 1.5. Research Method of Statistics for Quality Management

Texts and readings for the chapter:

1. Alan Gresti, Barbara Finley (1997), *Statistical Methods for the Social Sciences*, Prentice – Hall New Jersey.
2. David J. Sheskin (1997), *Parametric and nonparametric statistical procedures*, Western Connecticut State University, CRC press.

3. Phan Chi Anh (2002), *6 sigma – New approaches to management*, Hanoi science and technology Publishing House.

4. Vincent Giard (1999), *Applied Statistics in Management*, Youth Publishing House.

CHAPTER 2: QUALITY STATISTICAL INDICATORS SYSTEM

It is necessary to collect statistical information on the quality characteristics of the product, the work and the process so as to analyze and make decisions on quality issues. This chapter presents the system of indicators reflecting the quality of products, processes and business quality collected in production and business activities of enterprises and organizations. Besides, the evaluation, testing measurement systems are also clarified to determine a standard measuring system before being used to measure quality statistical indicators. Some statistical survey methods are used to collect information, which emphasizes the accepted sample survey; therefrom we can compute the probability of acceptance in each particular case corresponding to producers' risks and customers' risks.

Content:

2.1. Product quality measurement

2.2. Indicators System of Product Quality Measurement

2.2.1. Product quality indicators

2.2.2. Process quality indicators

2.3. Survey, checking and inspections of product quality

2.2.1. Survey, checking of product quality

2.2.2. Product quality inspections

Texts and readings for the chapter:

1. David J. Sheskin (1997), *Parametric and nonparametric statistical procedures*, Western Connecticut State University, CRC press.

2. Eugene L. Grant, Richard S. Leavenworth, *Statistical quality control*, McGraw.

3. Nguyen Dinh Phan (2012), *Quality Management Syllabus*, National Economics University Publishing House.

4. Nguyen Song Binh, Tran Thi Thu Ha (2006), *Total quality management*, Hanoi science and technology Publishing House.

5. Phan Chi Anh (2002), *6 sigma – New approaches to management*, Hanoi science and technology Publishing House.

CHAPTER 3: QUALITY STATISTICS ANALYSIS

Statistical analysis is one of the most important stages of the statistical analysis process. On the basis of statistical indicator system built, by using appropriate method, statistical quality will select specific indicators for analyzing to make judgments related to quality issues. Some methods used in the quality statistical analysis include: disaggregation, graphs, regression correlation, time series, indicators, statistical tests; thereby the methods are applied in combination with each other in order to fully analyze the phenomenon. This chapter covers the main topics of the fluctuation analyzing of quality indicators by applying combination of methods; testing to assess quality.

Content:

3.1. Analyzing the change of quality indicators

- 3.1.1. Selecting indicators
- 3.1.2. Volatility rules of product and process quality indicators
- 3.1.3. Level of volatility of product and process quality indicators
- 3.1.4. Analyzing the factors affecting product quality
- 3.1.5 Analyzing the impact of quality

3.2. Hypothesis testing for product quality

- 3.2.1. General principles
- 3.2.2. Test of hypothesis for means
- 3.2.3. Test of hypothesis for proportions
- 3.2.4. Test of hypothesis for variances

Texts and readings for the chapter:

1. David J. Sheskin (1997), *Parametric and nonparametric statistical procedures*, Western Connecticut State University, CRC press.
2. George H. Weinberg, John A. Schumaker, Debra Oltman (1981), *Statistics an Intuitive Approach*, New York.
3. Nguyen Dinh Phan (2012), *Quality Management*, National Economics University Publishing House.
4. John A. Ingram, Joseph G. Monks (1992), *Statistics for Business and Economics*, The Dryden Press.
5. John E. Freund (1988), *Modern Elementary Statistics*, Prentice – Hall International Editions.
6. Paul Newbold (1991), *Statistics for Business and Economics*, Prentice – Hall International, Inc.

CHAPTER 4: USING CHARTS IN QUALITY STATISTICS RESEARCH

The use of statistical tools to better control the quality of work, process and product quality has always been an important issue, and inevitably faced by businesses and organizations. Using charts in quality statistics research is the use of statistical charts to describe the quality process, find out reasons leading to quality deterioration thereby making improvements, remediate and control process perfectly. The contents of this chapter will present the issues related to the construction of charts and analysis of quality charts.

Content:

4.1. The basics of quality statistics charts

4.2. Types of statistical charts

- 4.2.1. Flowchart
- 4.2.2. Distribution chart
- 4.2.3. Pareto chart
- 4.2.4. Control chart
- 4.2.5. Cause and effect chart
- 4.2.6. Scatter plot

Texts and readings for the chapter:

1. David J. Sheskin (1997), *Parametric and nonparametric statistical procedures*, Western Connecticut State University, CRC press.
2. Nguyen Dinh Phan (2012), *Quality Management Syllabus*, National Economics University Publishing House.
3. Nguyen Song Binh, Tran Thi Thu Ha (2006), *Total quality management*, Hanoi science and technology Publishing House.
4. Phan Chi Anh (2002), *6 sigma – New approaches to management*, Hanoi science and technology Publishing House.

7. REQUIRED TEXTBOOK & COURSE MATERIALS

Phan Cong Nghia (2009), *Statistics for Quality Management*, National Economics University Publishing House.

8. RECOMMENDED TEXTS & OTHER READINGS

1. Alan Gresti, Barbara Finley (1997), *Statistical Methods for the Social Sciences*, Prentice – Hall New Jersey.
2. David J. Sheskin (1997), *Parametric and nonparametric statistical procedures*, Western Connecticut State University, CRC Press.

3. Eugene L. Grant, Richard S. Leavenworth, *Statistical quality control*, McGraw.
4. George H. Weinberg, John A. Schumaker, Debra Oltman (1981), *Statistics an Intuitive Approach*, New York.
5. Nguyen Dinh Phan (2012), *Quality Management Syllabus*, National Economics University Publishing House.
6. John A. Ingram, Joseph G. Monks (1992), *Statistics for Business and Economics*, The Dryden Press.
7. John E. Freund (1988), *Modern Elementary Statistics*, Prentice – Hall International Editions.
8. Nguyen Song Binh, Tran Thi Thu Ha (2006), *Total quality management*, Hanoi science and technology Publishing House.
9. Paul Newbold (1991), *Statistics for Business and Economics*, Prentice – Hall International, Inc.
10. Phan Chi Anh (2002), *6 sigma – New approaches to management*, Hanoi science and technology Publishing House.
11. R. Lyman Ott, Cynthia Rexroat, Richard Larson, William Mandenhall (1992), *Statistics a tool for the social sciences*, Boston.
12. Vincent Giard (1999), *Applied Statistics in Management*, Youth Publishing House.

9. ASSESSMENT & GRADING POLICY:

Comply with the current regulations of the National Economics University.

- Teachers' evaluation: 10%
- Mid-course test: 30%
- Final examination: 60%

(Students are eligible to sit the final test if: the evaluation of teachers is at least 5, the minimum mid-term test score is 3)

HEAD OF DEPARTMENT

(signed)

MSc. Do Van Huan

Hanoi, 2016

PRESIDENT

(signed)

Prof.Dr. Tran Tho Dat

