



**INSTITUT TEKNOLOGI SEPULUH NOPEMBER
FACULTY OF SCIENCE AND DATA ANALYTICS
DEPARTMENT OF STATISTICS
STATISTICS UNDERGRADUATE PROGRAM**

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| Course | Course Name | : Quality Design |
| | Course Code | : SS234744 |
| | Credit | : 3 SKS |
| | Semester | : VII |

COURSE DESCRIPTION

Quality Design (QD) is one of the courses in the field of industry that has the field of study of designing experiments to determine optimization. The purpose of studying QD is to know the application of statistical methods in determining the optimization of single and multi-responses through the design of experiments, both with the Taguchi method and the Response Surface methodology. To achieve this, the learning strategy used is discussion and exercises as well as presentation tasks sourced from scientific study materials or publications.

PROGRAM LEARNING OUTCOME

- PLO-6 Able to design, collect, and perform data management with the right methodology
- PLO-7 Able to use modern computing devices to solve statistical problems
- PLO-9 Able to apply statistical methods to analyze theoretical and real problems
- PLO-10 Able to apply business, industrial, economic, social, environmental or health statistical methods to real problems

COURSE LEARNING OUTCOME

- CLO.1 Able to explain the concept of quality design for optimization and process improvement
- CLO.2 Able to explain optimization procedures with Taguchi Method and Response Surface Methodology
- CLO.3 Able to apply Taguchi Method and Response Surface Methodology in Industry
- CLO.4 Able to identify, formulate, and solve statistical problems in the field of quality design
- CLO.5 Able to use the computing techniques and modern computer devices needed to solve optimization problems through experimental design

MAIN SUBJECT

1. Taguchi method, Quality Loss Function (QLF), Quality and Process Capability, and Fundamentals in experimental design
2. Orthogonal Arrays I
3. Special Design Techniques
4. SN Ratio analysis
5. Multiresponse chest case solving with Taguchi method
6. Response surface method
7. Response surface methodology for more than one response

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| PREREQUISITE |
| Design of Experiment |
| REFERENCES |
| <ol style="list-style-type: none">1. Balavendram, N. 1995. Quality by Design Taguchi Techniques for Industrial Experimentation. London : Prentice Hall Internasional.2. Montgomery. 2008. Design and Analysis of Experiments. 6th edition.3. Park, Sung H. 1996. Robust Design and analysis for Quality Engineering. Chapman Hall. |