


SYLLABUS

TLI 553 Statistik Lingkungan Lanjut (Advanced Environmental Statistics)

Lecturers:

Prof. Vera Surtia Bachtiar, Ph.D

**MASTER STUDY PROGRAM OF ENVIRONMENTAL ENGINEERING
FACULTY OF ENGINEERING
UNIVERSITAS ANDALAS
2020**

	SYLLABUS SEMESTER	No.Dok :
	(TLI 563 Advanced Environmental Statistics)	Revisi :
		Tanggal : June 2020
		Halaman:
Completed by:	Checked by:	Approved by:
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Lecturer	Head of QC	Head of Master Study Program
SYLLABUS		
1. Lecture Information		
Study Program Name : Environmental Sanitation Infrastructure		
Lecture Name : Advanced Environmental Statistics		
Lecture Code : TLI 563		
Category : Elective		
Unit : 2 units		

Year	: Year 1
Semester	: 1 (one)
Prasyarat	: -
Status (required/elective)	: Required
Lecturers	: Prof. Vera Surtia Bachtiar, Ph.D

2. Description of Lecture

The lecture discusses the review of basic statistics, sampling and estimation, hypothesis testing, Chi-squared Test and Regression, Analysis of variance, Design of Experiments, Analyze the Statistic Data, Application of Statistics in Research, Time Series Analysis, Goodness of Fit (Chi Square Test & Kolmogorov Smirnov), Statistical Quality Control, Validity and reliability of research data

3. Learning Achievement of Study Program

1. able to deepen or expand knowledge in the field of design, operation and maintenance of engineering systems and environmental management to make original and tested contributions through independent research;
2. able to formulate new ideas (new research questions) from the results of research carried out for the development of technology and environmental management systems.

4. Learning Achievement of Lecture

1. Introduction, Probability, Estimation, Hypotesis
2. Chi-squared Test and Regression
3. Analysis of variance
4. Design of Experiments
5. Analyze the Statistic Data
6. Application of Statistics in Research
7. Time Series Analysis
8. Goodness of Fit (Chi Square Test & Kolmogorov Smirnov)
9. Statistical Quality Control
10. Validity and reliability of research data

5. Description of Lesson Plan

Week	Indicator of Learning Achievements of Subjects	Topics	Method of Learning	Course Time	Assignment and evaluation	Reference
1	to be able to explain about descriptive statistics by practical application	Introduction, Probability, Estimation, Hypotesis	Lecture and discussion	3x50 minutes	work individual	Devore, Jay L. (2009) Probability and Statistics for Engineering and the Sciences,
2	to be able to explain knowledge about Chi-squared Test and Regression	Chi-squared Test and Regression	Lecture and discussion	3x50 minutes	work individual and / in groups	Montgomery, D.C., and Runger, G. C., (2018) Applied statistics and probability for engineers
3	to be able to explain knowledge about Analysis of variance	Analysis of variance	Lecture and discussion	3x50 minutes	work individual and / in groups	Montgomery, D.C., and Runger, G. C., (2018) Applied statistics and probability for engineers
4	to be able to explain knowledge about Design of Experiments	Design of Experiments	Lecture and discussion	3x50 minutes	work individual and / in groups	Montgomery, D.C., and Runger, G. C., (2018) Applied statistics and probability for engineers
5	to be able to calculate and analyze the Statistic Data using Excel and SPSS	Analyze the Statistic Data	Lecture and Individual/Group Presentation	3x50 minutes	Work individual	De Coursey, W.J. (2003) Statistics and Probability for Engineering

						Applications With Microsoft® Excel
6	to be able to interpret Statistical output	Application of Statistics in Research	Individual, problem solving activities	3x50 minutes	Work individual	International Journals
7	to be able to interpret Statistical output	Application of Statistics in Research	Individual, problem solving activities	3x50 minutes	Work individual	International Journals
8	Mid-term Examination					
9	to be able to calculate and analyze the time series analysis	Time Series Analysis	Lecture and discussion	3x50 minutes	work individual and / in groups	Scheaffer, R.L., Mulekar, M.S., McClave, J.T. (2011) Probability and Statistics for Engineers. Brooks/Cole, Cengage Learning
10	to be able to solve the problems with the time series analysis	Time Series Analysis (application)	Individual, problem solving activities	3x50 minutes	Work individual	Real data from an industry or a company

11	to be able to calculate and analyze the goodness of fit	Goodness of Fit (Chi Square Test & Kolmogorov Smirnov)	Lecture and discussion	3x50 minutes	work individual and / in groups	Scheaffer, R.L., Mulekar, M.S., McClave, J.T. (2011) Probability and Statistics for Engineers. Brooks/Cole, Cengage Learning
12	to be able to solve the problems with the goodness of fit	Goodness of Fit (Aplikasi Chi Square Test & Kolmogorov Smirnov)	Individual, problem solving activities	3x50 minutes	Work individual	Real data from an industry or a company
13	to be able to calculate and analyze statistical quality control	Statistical Quality Control	Lecture and discussion	3x50 minutes	work individual and / in groups	Navidi, W. (2010). Principles of Statistics. Mc Graw Hill
14	to be able to solve the problems with statistical quality control	Statistical Quality Control (Aplikasi)	Individual, problem solving activities	3x50 minutes	Work individual	Real data from an industry or a company

15	to be able to calculate and analyze validity and reliability of research data	Validity and reliability of research data	Lecture and discussion	3x50 minutes	work individual and / in groups	Statistika Untuk Penelitian (Sugiyono)
16	Final Examination					

6. References

1. Devore, Jay L. (2009) Probability and Statistics for Engineering and the Sciences,
2. Montgomery, D.C., and Runger, G. C., (2018), Applied statistics and probability for engineers
3. De Coursey, W.J. (2003) Statistics and Probability for Engineering Applications With Microsoft® Excel
4. Scheaffer, R.L., Mulekar, M.S., McClave, J.T. (2011) Probability and Statistics for Engineers. Brooks/Cole, Cengage Learning
5. Navidi, W. (2010). Principles of Statistics. Mc Graw Hill
6. Another reference related to Statistics

7. Annex

Scoring Instrument: Mid-term examination : 25%; Final Examination: 30%; Assignment: 20%; Report 25%