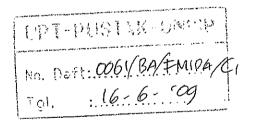


TEACHING-LEARNING CONTRACT LEARNING PROGRAM OUTLINE LEARNING UNIT PROGRAM

DATA ANALYSIS PAS 134



STATISTICS STUDY PROGRAM OF MATHEMATICS DEPARTMENT
MATHEMATICS AND SCIENCE FACULTY
DIPONEGORO UNIVERSITY
SEMARANG
2007

TEACHING-LEARNING CONTRACT

Course Title

: Data Analysis

Code

: PAS 134

Credit

: 3

Semester

: V

1. Course Advantage

Analysing data represent one of the main activitities in Statistics. This course studying about how the data can be analysed so that can be found the interesting things in it and can be taken as many as possible information of data. After following this course, the students expected to have good rationale about how data ought to be treated.

2. Course Description

Data Analysis are the course which studying about how to handling data, start from seeing the plot and its description, include the divergence of data (by diagram and also summary of data numeric), explorating to the data, so that can find things withdrawing from this, then handling of data use some certain analysis.

3. General Instructional Aim

After following this course students are expected can explore to data, making stem and leaf diagram, comparing data with diagram visually, conducting data transformation, and also analyse variance and regression.

4. Lecture Strategic

This lecturing methods are by explaining in front of class. It started with definition of concept, then given by examples related to the items given. Student will give opinion and idea whereof which implied in datas which examplize.

Besides also given the task to create data randomly by computer and asked the students to explore as many as possible to the data which, so that can seen how far their understanding to existing items.

Another task given as exercise that can be done at home and its score give contribution to the final result of this course.

5. References

- [1] Aunuddin. 1989. Analysis Data. Institute Agriculture of Bogor, Bogor.
- [2] Dra. Sri Haryatmi Kartiko, M.Sc., 1986. Analysis Statistical. Published by Karunika Jakarta, Open University. Jakarta.

6. Scoring Criteria

Criteria of scoring in this course is:

Α	4
AB	3,5
В	3
BC	2,5
C	2
CD	1,5
D	1
Е	0

Final score decision is based on this scoring indicator such as:

Quiz 20 % Midterm 40 % Final Exam 40 %

7. Lecture Schedule

Week	Material	Reference
1	Intoduction to Data Analysis	[1] 1 – 5; [2] 1.1 – 1.13
2	Single Struktural Data	[1] 6 – 23; [2] 1.14 – 1.31
3	Stem and Leaf Diagram and Data Comparing	[1] 24 – 36; [2] 2.2 – 2.15, 3.2 – 3.15
4	Divergence of Data and Transformation of Data	[1] 37 – 43; [2] 2.24 – 2.36, 3.16 – 3.32
5	Couple Data, Equation of Line of Resisten	[1] 44 – 59
6	Example of Analyse and Transformation to Linear Pattern	[1] 60 – 82; [2] 4.2 – 4.35
7	Checking of Data Divergences	[1] 84 – 107;
8	Midterm	

9	Prediction	[1] 108 – 120; [2] 5.2 – 5.12
10	Smallest Square Prediction in Regression	[1] 128 – 134
	Addition of Variable Independent to Simple	[1] 135 152
11	Regression (Double Regression Models) and	
	Plots of b Prediction Divergence	
12	Checking Errors	[1] 154 – 166
13	Regression Model Validation	[1] 167 – 172
14	Weighted Least Square Method	[1] 173 – 175
15	Robust Regression	[1] 175 – 185
16	Final Exam	

LEARNING PROGRAM OUTLINE

Course Title

: Data Analysis

Code / Credit

: PAS 134/3

Course Description

: Data Analysis are the course which studying about how to handling data, start from seeing the plot and its description, include the divergence of data (by diagram and also summary of data numeric), explorating to the data, so that can find things withdrawing from this, then handling of

data use some certain analysis.

General Instructional Aim

: After following this course students are expected can explore to data, making stem and leaf diagram, comparing data with diagram visually, conducting data transformation, and also analyse variance and regression.

No.	Specific Instructional Aim	Subject		Sub Subject	Duration	Reference
1.	After studying this course,	Introduction to	*	Mean of Data	120	[1] 1 - 5;
	students are expected to have	Data Analysis	=	Data =	menit	[2] 1.1 – 1.13
	ability to explain about data			Estimation +		
	meaning analysis which can			Error		
	be done to it					
2.	After studying this course,	Single Structural		Data Summary	120	[1] 6 – 23;
	students are expected to have	Data	=	Transformation	minutes	[2] 1.14 – 1.31
	ability to analyze single data,			for data		
	making stem and leaf diagram,			simetricity		
	data summary, and also can				***************************************	
	determine data transformation				And the second of the second o	
3.	After studying this course,	Box-plot and	-	Box-plot	240	[1] 24 – 43;
	students are expected to have	Data Comparing	Ħ	Data	minutes	[2] 2.2 – 2.36,
	ability to make Box-plot,	į		Comparing		3.2 - 3.32
	comparing data and do			Span		
	transformation for span			Homogeneity	-	
	homogeneity (so the data can			Transformation		
	be compared).					

4.	After studying this course,	Couple Data,	-	Resisten line	240	[1] 44 – 82;
	students are expected to have	Equation of Line		and its iteration	minutes	[2] 4.2 – 4.35
	ability to explain about couple	of Resisten	•	Some analysis		
	data and the line which			example		any community and a second
	connect (linearly) both, make		=	Transformation		A DESCRIPTION OF THE PROPERTY
	resisten line, and transform			to straight line		
	data to straighten line					
5.	After studying this course,	Checking of	-	Checking data	120	[1] 84 – 107
	students are expected to have	Data		by Box-plot	minutes	
	ability to check data	Divergences		Checking data		
	divergence assumption by			by Quantil-		
	Box-plot and Quantil-quantil	**************************************		quantil plot		
	plot					
6.	After studying this course,	Estimation	=	Mean	120	[1] 108 – 120
Annapara de Caracidades de Caracidad	students are expected to have			estimation and	minutes	[2] 5.2 – 5.12
	ability to explain and			its confidence		
	determine mean estimation			interval		
	and its confidence interval,			Some other		
	and understanding about some	THE PROPERTY OF THE PROPERTY O		mean		;
	other mean estimation.			estimation		
7.	After studying this course,	Regression		Least Square	240	[1] 128 – 152
	students are expected to have	Analysis	ŀ	Estimation	minutes	
ļ	ability to determine regression		•	Double	afterna de la companio del companio de la companio del companio de la companio della companio de la companio della companio de	
	analysis by least square			regression	- Company of the Comp	
	estimation, adding			model	mbers & remander to be to the control of the contro	
	independent variables to		•	Plots of b	Variabilitation of the Control of th	:
	simple or double regression,		ŀ	Prediction		
	and plots of b prediction			Divergence		
	divergence					
8.	After studying this course,	Checking Error	•	Standard error	240	[1] 154 – 172
	students are expected to have	and Regression	×	Extreme data	minutes	
	ability to check for error,	Model		and observation		
	extreme data and validating	Validation		Model	***************************************	
	regression model			Validation		
			L		<u> </u>	1.1

	9.	After studying this course,	Weighted least	-	Weighted least	240	[1] 173 – 185
		students are expected to have	square methods		square methods	minutes	
		ability to explain about		E	Robust		
		weighted least square methods			Regression		
		and Robust Regression					
l				l			l i

References

- [1] Aunuddin. 1989. Analysis Data. Institute Agriculture of Bogor, Bogor.
- [2] Dra. Sri Haryatmi Kartiko, M.Sc., 1986. Analysis Statistical. Published by Karunika Jakarta, Open University. Jakarta.

COURSE TITLE

: DATA ANALYSIS

CODE / CREDIT

: PAS 134/3

DURATION

: 120 MINUTES

WEEK

: 1

A. INSTRUCTIONAL AIM

1. GENERAL

: After following this course students are expected can explore to data, making stem and leaf diagram, comparing data with diagram visually, conducting data transformation, and also analyse variance and

regression.

2. SPECIFIC

: After studying this course, students are expected to have ability to explain about data meaning analysis

which can be done to it

B. SUBJECT

: Introduction to Data Analysis

C. SUB SUBJECT

: - Mean of Data

- Data = Estimation + Error

STAGE	LECTURER ACTIVITIES	STUDENT	LEARNING
STAGE	LECTORER ACTIVITIES	ACTIVITIES	MEDIA
INTRODUCTION	■ Describing about matter at	Observing	White board
	the first meeting	and taking	e e e e e e e e e e e e e e e e e e e
	 Describing about general and 	notes	el Andréin i mar de la companya de l
	specific objectives		
	competences		
PRESENTATION	Explaining about data	Observing,	White board
	meaning and its analysis.	asking, taking	and paper
	■ Giving examples as a study	notes	A Company of the Comp
	case and solving together		
CLOSING	■ Discussion	Discuss,	White board
PAPER DE LA CALLANTA	■ Giving some exercise to try	observing,	and paper
	at home	asking, taking	

■ Giving description about	notes.	
matter on the next meeting		

: Giving problems to the students

F. REFERENCE

: Aunuddin. 1989. Analysis Data. Institute Agriculture of

Bogor, Bogor.

Dra. Sri Haryatmi Kartiko, M.Sc., 1986. *Analysis Statistical*. Published by Karunika Jakarta, Open

COURSE TITLE

: DATA ANALYSIS

CODE / CREDIT

: PAS 134/3

DURATION

: 120 MINUTES

WEEK

: 2

A. INSTRUCTIONAL AIM

1. GENERAL

: After following this course students are expected can explore to data, making stem and leaf diagram, comparing data with diagram visually, conducting data transformation, and also analyse variance and

regression.

2. SPECIFIC

: After studying this course, students are expected to have ability to analyze single data, making stem and leaf diagram, data summary, and also can determine

data transformation

B. SUBJECT

: Single Structural Data

C. SUB SUBJECT

: - Data Summary

- Transformation for data simetricity

STAGE	LECTURER ACTIVITIES	STUDENT	LEARNING
		ACTIVITIES	MEDIA
INTRODUCTION	 Describing about matter at 	Observing	White board
	the 2 nd meeting		
	 Explaining about data 		
	summary		
PRESENTATION	Explaining about stem and	Observing,	White board and
	leaf diagram meaning and	asking, taking	paper
	how to make it,	notes	
	transformation for data		
	simetricity		
	Giving examples as a study		
	case and solving together		

CLOSING	Discussion	Discuss,	White board and
	■ Giving some exercise to	asking, taking	paper
	try at home	notes,	
	■ Giving description about	observing	
	matter on the next meeting		

: Giving problems to the students

F. REFERENCE

: Aunuddin. 1989. *Analysis Data*. Institute Agriculture of Bogor, Bogor.

Dra. Sri Haryatmi Kartiko, M.Sc., 1986. *Analysis Statistical*. Published by Karunika Jakarta, Open University. Jakarta.

COURSE TITLE

: DATA ANALYSIS

CODE / CREDIT

: PAS 134/3

DURATION

: 240 MINUTES

WEEK

: 3 and 4

A. INSTRUCTIONAL AIM

1. GENERAL

: After following this course students are expected can explore to data, making stem and leaf diagram, comparing data with diagram visually, conducting data transformation, and also analyse variance and

regression.

2. SPECIFIC

: After studying this course, students are expected to have ability to make Box-plot, comparing data and do transformation for span homogeneity (so the data can

be compared).

B. SUBJECT

: Box-plot and Data Comparing

C. SUB SUBJECT

: - Box-plot

- Data Comparing

- Span Homogeneity Transformation

STAGE	LECTURER ACTIVITIES	STUDENT	LEARNING
		ACTIVITIES	MEDIA
INTRODUCTION	■ Describing about matter at	Observing	OHP,
	the 3 rd and 4 th meeting		transparancy
	■ Describing about general		
	and specific objectives		
	competences		
PRESENTATION	Explaining about Box-plot	Observing,	White board,
	and how to compare some	asking, taking	paper
	data by the diagram, and	notes	
	also explain about		
	transformasion for span		

	homogeneity Giving examples as a study case and solving together		
CLOSING	 Discussion Giving description about matter on the next meeting 	Asking, discuss, observing	White board, paper

: Giving problems to the students

F. REFERENCE

: Aunuddin. 1989. Analysis Data. Institute Agriculture of

Bogor, Bogor.

Dra. Sri Haryatmi Kartiko, M.Sc., 1986. Analysis Statistical. Published by Karunika Jakarta, Open

COURSE TITLE

: DATA ANALYSIS

CODE / CREDIT

: PAS 134/3

DURATION

: 240 MINUTES

WEEK

: 5 and 6

A. INSTRUCTIONAL AIM

1. GENERAL

: After following this course students are expected can explore to data, making stem and leaf diagram, comparing data with diagram visually, conducting data transformation, and also analyse variance and

regression.

2. SPECIFIC

: After studying this course, students are expected to have ability to explain about couple data and the line which connect (linearly) both, make resisten line, and

transform data to straighten line.

B. SUBJECT

: Couple Data, Equation of Line of Resisten

C. SUB SUBJECT

: - Resisten line and its iteration

- Some analysis example

- Transformation to straight line

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	 Describing about matter at the 5th and 6th meeting Describing about general and specific objectives competences 	Observing	White board
PRESENTATION	 Explaining about couple data and the line which connect (linearly) both, resisten line and transform data to straighten line. 	Observing, asking, taking notes	White board, paper

	Giving examples as a study case and solving together		
CLOSING	 Discussion Giving description about matter on the next meeting 	Discuss, observing, taking notes	White board, paper

: Giving problems to the students

F. REFERENCE

: Aunuddin. 1989. *Analysis Data*. Institute Agriculture of Bogor, Bogor.

Dra. Sri Haryatmi Kartiko, M.Sc., 1986. *Analysis Statistical*. Published by Karunika Jakarta, Open University. Jakarta.

COURSE TITLE

: DATA ANALYSIS

CODE / CREDIT

: PAS 134/3

DURATION

: 120 MINUTES

WEEK

: 7

A. INSTRUCTIONAL AIM

1. GENERAL

: After following this course students are expected can explore to data, making stem and leaf diagram, comparing data with diagram visually, conducting data transformation, and also analyse variance and

regression.

2. SPECIFIC

: After studying this course, students are expected to have ability to check data divergence assumption by

Box-plot and Quantil-quantil plot

B. SUBJECT

: Checking of Data Divergences

C. SUB SUBJECT

: - Checking data by Box-plot

- Checking data by Quantil-quantil plot

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	 Describing about matter at the 7th meeting Explaining about divergence data assumption Describing about general and specific objectives competences 	Observing	White board
PRESENTATION	 Menjelaskan cara pemerik- saan asumsi sebaran data dengan diagram kotak- garis dan plot kuantil- kuantil 	Observing, asking, taking notes	White board, paper

	■ Giving examples as a study	, 	
	case and solving together		
CLOSING	■ Giving some exercise to try	Taking notes,	White board,
	at home	observing	paper
	■ Giving description about		
	matter on the next meeting		

: Giving problems to the students

F. REFERENCE

: Aunuddin. 1989. Analysis Data. Institute Agriculture of

Bogor, Bogor.

Dra. Sri Haryatmi Kartiko, M.Sc., 1986. *Analysis Statistical*. Published by Karunika Jakarta, Open

COURSE TITLE

: DATA ANALYSIS

CODE / CREDIT

: PAS 134/3

DURATION

: 120 MINUTES

WEEK

: 9

A. INSTRUCTIONAL AIM

1. GENERAL

: After following this course students are expected can explore to data, making stem and leaf diagram, comparing data with diagram visually, conducting data transformation, and also analyse variance and

regression.

2. SPECIFIC

: After studying this course, students are expected to have ability to explain and determine mean estimation and its confidence interval, and understanding about some other mean estimation.

B. SUBJECT : Estimation

C. SUB SUBJECT

: - Mean estimation and its confidence interval

- Some other mean estimation

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	 Describing about matter at the 9th meeting Describing about general and specific objectives competences 	Observing	OHP, tranparancy
PRESENTATION	 Explaining about mean estimation and its confidence interval, and other mean estimation. Giving examples as a study case and solving together 	Observing, asking, taking notes	OHP, tranparancy, white board, paper

CLOSING	■ Discussion	Observing,	White board
	Giving some exercise to try	discuss, taking	and paper
	at home	notes	

: Giving problems to the students

F. REFERENCE

: Aunuddin. 1989. Analysis Data. Institute Agriculture of

Bogor, Bogor.

Dra. Sri Haryatmi Kartiko, M.Sc., 1986. *Analysis Statistical*. Published by Karunika Jakarta, Open

COURSE TITLE

: DATA ANALYSIS

CODE / CREDIT

: PAS 134/3

DURATION

: 240 MINUTES

WEEK

: 10 and 11

A. INSTRUCTIONAL AIM

1. GENERAL

: After following this course students are expected can explore to data, making stem and leaf diagram, comparing data with diagram visually, conducting data transformation, and also analyse variance and

regression.

2. SPECIFIC

: After studying this course, students are expected to have ability to determine regression analysis by least square estimation, adding independent variables to simple or double regression, and plots of b prediction

divergence

B. SUBJECT

: Regression Analysis

C. SUB SUBJECT

: - Least Square Estimation

- Double regression model

- Plots of b Prediction Divergence

STAGE	LECTURER ACTIVITIES	STUDENT	LEARNING
STAGE	LECTORER ACTIVITIES	ACTIVITIES	MEDIA
INTRODUCTION	 Describing about matter at 	Observing	ОНР,
	the 10 th and 11 th meeting		transparancy
	■ Explaining about		
	regression analysis concept		
	■ Describing about general		
	and specific objectives		
	competences		
PRESENTATION	Explain about how to	Observing,	OHP,
	determine regression	taking notes,	transparancy,

***************************************	analysis by least square	asking	white board,
	estimation, adding		paper
	independent variables to		
	simple or double		
	regression, and plots of b		
	prediction divergence		
	Giving examples as a study		
	case and solving together		
CLOSING	Discussion	Taking notes,	White board,
	Giving some exercise to try	observing,	paper
	at home	discuss	
	 Giving description about 		
	matter on the next meeting		

: Giving problems to the students

F. REFERENCE

: Aunuddin. 1989. Analysis Data. Institute Agriculture of

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COURSE TITLE

: DATA ANALYSIS

CODE / CREDIT

: PAS 134/3

DURATION

: 240 MINUTES

WEEK

: 12 and 13

A. INSTRUCTIONAL AIM

1. GENERAL

: After following this course students are expected can explore to data, making stem and leaf diagram, comparing data with diagram visually, conducting data transformation, and also analyse variance and

regression.

2. SPECIFIC

: After studying this course, students are expected to have ability to check for error, extreme data and

validating regression model

B. SUBJECT

: Checking Error and Regression Model Validation

C. SUB SUBJECT

: - Standard error

- Extreme data and observation

- Model Validation

STAGE	LECTURER ACTIVITIES	STUDENT	LEARNING
STAGE	EECTORER ACTIVITIES	ACTIVITIES	MEDIA
INTRODUCTION	■ Describing about matter at	Observing	OHP,
	the 12 th and 13 th meeting		transparancy,
	 Describing about general 		white board
	and specific objectives		
	competences		
PRESENTATION	Explaining extreme data,	Observing,	White board,
	validating regression model	asking, taking	paper
	Giving examples as a study	notes	
	case and solving together		
CLOSING	■ Discussion	Taking notes,	White board,
	Giving some exercise to try	observing	paper

 at home	***************************************	1,000,000
■ Giving description about		
matter on the next meeting		

: Giving problems to the students

F. REFERENCE

: Aunuddin. 1989. Analysis Data. Institute Agriculture of

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Dra. Sri Haryatmi Kartiko, M.Sc., 1986. *Analysis Statistical*. Published by Karunika Jakarta, Open

COURSE TITLE

: DATA ANALYSIS

CODE / CREDIT

: PAS 134/3

DURATION

: 240 MINUTES

WEEK

: 14 and 15

A. INSTRUCTIONAL AIM

1. GENERAL

: After following this course students are expected can explore to data, making stem and leaf diagram, comparing data with diagram visually, conducting data transformation, and also analyse variance and

regression.

2. SPECIFIC

: After studying this course, students are expected to have ability to explain about weighted least square

methods and Robust Regression

B. SUBJECT

: Weighted least square methods

C. SUB SUBJECT

: - Weighted least square methods

- Robust Regression

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	 Describing about matter at 	Observing	OHP,
	the 14 th and 15 th meeting		transparancy,
	■ Describing about general		white board
	and specific objectives		
	competences		
PRESENTATION	■ Explaining about weighted	Observing,	White board,
	least square methods and	asking, taking	kertas
	Robust Regression	notes	to de la companya de
	Giving examples as a		tonari tonano o co
	study case and solving		
	together		
CLOSING	■ Discussion	Discuss,	White board,

■ Giving some exercise to	observing,	paper
try at home	taking notes	
Giving description about		
final exams materials	The state of the s	

: Giving problems to the students and solve together

F. REFERENCE

: Aunuddin. 1989. *Analysis Data*. Institute Agriculture of Bogor, Bogor.

Dra. Sri Haryatmi Kartiko, M.Sc., 1986. *Analysis Statistical*. Published by Karunika Jakarta, Open University. Jakarta.