STUDYING CONTRACT
LEARNING PROGRAM OUTLINE
LEARNING UNIT PROGRAM

FORECASTING METHOD

COURSE CODE: PAM 414

3 SCU

SEMESTER V

MATHEMATICS STUDY PROGRAM
MATHEMATICS AND NATURAL SCIENCES FACULTY
DIPONEGORO UNIVERSITY
SEMARANG

TEACHING-LEARNING CONTRACT

COURSE TITLE	:	**FORECASTING METHODS**
CODE	:	**PAM 414**
CREDIT	:	**3 SKS**
Semester	:	**V**

1. Course Advantage

In the various sector, planning have an important role so that the true action can be done. One of the feast that useful in the effective and efficient is forecasting. The progress of knowledge resulted many event can be forecasted, the consequence is that the true forecasting method is needed to predict the future phenomenon.

2. Course Description

Forecasting Methods contain a lot of smoothing and decomposition methods to predict time series data. This methods are interesting because the developing is based empirically and easy to used. The basic of smoothing method is the simple weighting down or smoothing the series to get predict in future. In this method, the mean of residuals is calculate to get the "smooth" prediction that will have some advantage in certain condition. On the other hand, the decomposition will devide a time series data into principal sub-componen i.e seasonal, trend and cycle.

3. General Instructional Aim

After studying this course, the student are expected to be able to explain the forecasting methods to the real problem.

4. Lecture Strategic

This lecturing uses three way teaching methods, that is lecturing, discuss, and practical work. Lecturing is given to explain the basic theories and followed by discussing some examples that illustrates its applications. To enrich knowledge, practical work is done after the theory was studied.

5. References

- Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.
- Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.
- Warsito, B., 2005, *Modul Praktikum Metode Peramalan*, Jurusan Matematika FMIPA UNDIP Semarang

6. Scoring Criteria

Criteria of scoring in this course is

A	4.0
AB	3.5
B	3.0
BC	2.5
C	2.0
CD	1.5
D	1.0
E	0.0

Scoring in this course title consist of three component, that is task, quiz, and examination. Examination will be held twice, that is mid-term and final exam. Midterm exam is arranged after seventh lecturing, while final exam item is arranged after fourteenth lecturing. Tasks consist of individual task i.e task from practical work. Quiz is unscheduled programs.

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

No	Component	Percentage
1.	Quiz	10 %
2.	Task and Practical Work	20 %
3.	Midterm	30 %
4.	Final Exam	40 %
	TOTAL	**100%**

7. Lecture Schedule

Week	Material	Reference

1	Introduction, Basics concept of Quantitatif Forecasting	Makridakis, Bab 1, Bab 2.1, Abraham, Bab 1.
2	Basics Definitions and Terminology	Makridakis, Bab 2.5. Abraham, Bab 1.5
3	Moving Average Method	Makridakis, Bab 3.2,
4	Double Moving Average Method Task I	Makridakis, Bab 3.2
5	Exponential Smoothing Method	Makridakis, Bab 3.3, Abraham Bab 3.3, 3.6
6	Quiz I Another Smoothing Methods	Makridakis, Bab 3.4, Bab 3.5, Abraham Bab 3.7
7	Comparison of some Smoothing Methods	Makridakis, Bab 3.4, 3.5 Abraham Bab 3, Bab 4.
8	Midterm	
9	Practical work I : Single and Double Moving Average Method	Makridakis, Bab 3.2, Warsito, Modul 1.
10	Practical work II : Exponential Smoothing	Makridakis, Bab 3.3, Abraham Bab 3.3, 3.6, Warsito, Modul 2.
11	Practical work III : Another Smoothing Methods	Makridakis, Bab 3.4, 3.5 Abraham Bab 3.7, Warsito, Modul 3.
12	Decomposition Method, Trend Task II	Makridakis, Bab 4, Abraham Bab 4
13	Another Smoothing Methods IV : Decomposition Method	Makridakis, Bab 4, Abraham Bab 4, Warsito, Modul 4.
14	Quiz II Regression in Forecasting	Makridakis, Bab 5. Abraham Bab 3.4
15	Practical work V : Regression in Forecasting	Makridakis, Bab 5, Abraham Bab 3.4. Warsito, Modul 5.
16	Final Exam	

LEARNING PROGRAM OUTLINE
(LPO)

Course Tittle : Forecasting Method
Code / Credit : PAM 414 / 3 SKS
Course Description : Forecasting Methods contain a lot of smoothing and decomposition methods to predict time series data. This methods are interesting because the developing is based empirically and easy to used. The basic of smoothing method is the simple weighting down or smoothing the series to get predict in future. In this method, the mean of residuals is calculate to get the "smooth" prediction that will have some advantage in certain condition. On the other hand, the decomposition will devide a time series data into principal sub-componen i.e seasonal, trend and cycle.

General Instructional Aim : After studying this course, the student are expected to be able to explain the forecasting methods to the real problem.

No.	Specific Instructional Aim	Subject	Sub Subject	Duration	References
1.	After studying this subject, students are expected to have ability to: explain some basics definitions and terminology of time series forecasting	Basic of Quantitative Forecasting	• Introduction, Basics of Quantitative Forecasting • Terminology of Time Series Forecasting	150 minutes	[1] 11 – 56 [2] 1 – 4
2.	After studying this subject, students are expected to have ability to: explain some basics measure and relative measure of time series forecasting	Measure in forecasting	• Standar d Measure & Relatif Masure • Statistik-u from Theil	150 minutes	[1] 57 – 69 [2] 5 – 7

3.	After studying this subject the student are expected to be able to calculate forecasting with use the moving average method	Moving Average Method	• Single MA Method • Double MA Method	420 minutes	[1] 79 – 100 [3] 1 – 5
4.	After studying this subject the student are expected to be able to calculate forecasting with use the Exponential Smoothing method	Smoothing Method	• Exponential Smoothing • Another Smoothing Method	720 minutes	[1] 101 – 138 [2] 85 – 94; 101 – 119; [3] 6 – 15;
5.	After studying this subject the student are expected to be able to calculate the forecasting with use decomposition method	Decomposition Method	• Classical Decomposition Method • Seasonal Decomposition Method	210 minutes	[1] 150 – 200 [2] 120 –124; 135 –181 [3] 16 – 19
6.	After studying this subject the student are expected to be able to calculate the regression on forecasting	Regression in forecasting	• Regression in forecasting	210 minutes	[1] 205 – 240 [2] 95 – 100 [3] 20 – 24

After studying this subject the student are expected to be able to calculate the forecasting with use decomposition method

References :

1. Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.
2. Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.
3. Warsito, B., 2005, *Modul Praktikum Metode Peramalan*, Jurusan Matematika FMIPA UNDIP Semarang

LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS

CODE / CREDIT : PAM 414 / 3 SKS

DURATION : 150 MINUTES

WEEK : 1

A. INSTRUCTIONAL AIM :

1. GENERAL : After studying this course, the student are expected to be able to explain the forecasting methods to the real problem.

2. SPECIFIC : After studying this subject, students are expected to have ability to: explain some basics definitions and terminology of time series forecasting.

B. SUBJECT : Basics of Quantitative Forecasting

C. SUB SUBJECT : Introduction, Basics of Quantitative Forecasting

D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the first meeting • Describing about general and specific objectives competence • Explaining definition and concept of Quantitative Forecasting	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	• Explaining about the use of forecasting, time series data trend and descriptive statistics that be useful • Giving examples as a study case and solving together	Observing, asking, taking notes	OHP, transparancy, white board, reference book, and paper
CLOSING	• Discussion • Giving description about matter on the next meeting	Discuss, asking, observing,	white board and paper

		taking notes	

E. ASSESSMENT : *Giving problems to the students.*

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.

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LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS

CODE / CREDIT : PAM 414 / 3 SKS

DURATION : 150 MINUTES

WEEK : 2

A. INSTRUCTIONAL AIM :

1. GENERAL : After studying this course, the student are expected to be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject, students are expected to have ability to explain some basics definitions and terminology of time series forecasting.

B. SUBJECT : Basics of Quantitative Forecasting

C. SUB SUBJECT : Some Basics Definitions and Terminology of Time Series Forecasting

D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 2nd meeting • Describing about general and specific objectives competence ▪ Explaining some basics definitions and terminology of time series forecasting	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the Standard Statistical Measure, Relatif Measure and Statistic-U from Theil ▪ Giving examples as a study case and solving together	Observing, asking, taking notes	OHP, transparancy, white board, reference book, and paper
CLOSING	• Discussion • Giving description about matter on the next meeting	Discuss, asking, observing, taking notes	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.

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LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 3

A. INSTRUCTIONAL AIM :

1. GENERAL : *After studying this course, the student are expected to* be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject the student are expected to be able to calculate forecasting with use the single moving average method

B. SUBJECT : Moving Average Method
C. SUB SUBJECT : Single Moving Average
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 3rd meeting • Describing about general and specific objectives competence ▪ Explaining some basics concept of the single moving average method	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the way to calculate the forecasting with single moving average method and give the illustration ▪ Giving examples as a study case and solving together	*Observing*, asking, taking notes	*OHP, transparancy*, white board, reference book, and paper
CLOSING	• Discussion • Giving description about matter on the next meeting	Discuss, asking, observing, taking notes	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.

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LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 4

A. INSTRUCTIONAL AIM :

1. GENERAL : *After studying this course, the student are expected to* be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject the student are expected to be able to calculate forecasting with use the double moving average method

B. SUBJECT : Moving Average Method
C. SUB SUBJECT : Double Moving Average
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 4th meeting • Describing about general and specific objectives competence ▪ Explaining the difference of single and double moving average	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the way to calculate the forecasting with use single moving average method and give the illustration ▪ Giving examples as a study case and solving together	Observing, asking, taking notes	OHP, transparancy, white board, reference book, and paper
CLOSING	• Discussion • Giving description about matter on the *next meeting*	Discuss, asking, observing, *taking notes*	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.

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LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 5

A. INSTRUCTIONAL AIM :

1. GENERAL : *After studying this course, the student are expected to* be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject the student are expected to be able to calculate forecasting with use the Exponential Smoothing method

B. SUBJECT : Smoothing Method
C. SUB SUBJECT : Exponential Smoothing
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 5th meeting • Describing about general and specific objectives competence ▪ Explaining the difference of moving average and exponential smoothing method	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the way to calculate the forecasting with use single and double exponential method ▪ *Giving examples as a* study case and solving together	Observing, asking, taking notes	OHP, transparancy, white board, reference book, and paper
CLOSING	• Discussion • Giving description about matter on the next meeting	Discuss, asking, observing, taking notes	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.

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LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 6

A. INSTRUCTIONAL AIM :

1. GENERAL : *After studying this course, the student are expected to* be able to explain the forecasting methods to the real problem.

2. SPECIFIC : After studying this subject, the student are expected to be able to calculate forecasting with use another smoothing method i.e Chow, Brown and Winter

B. SUBJECT : Smoothing Method
C. SUB SUBJECT : Another Smoothing Method
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 6th meeting • Describing about general and specific objectives competence ▪ Explaining the superiority and the lack of exponential method	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Exolaining the way to calculate forecasting with use another smoothing method i.e Chow, Brown and Winter ▪ Giving examples as a *study case and solving* together	Observing, asking, taking notes	OHP, transparancy, white board, reference book, and paper
CLOSING	• Discussion • Giving description about matter on the next	Discuss, asking, observing,	white board and paper

	meeting	taking notes	

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.

Warsito, B., 2005, *Modul Praktikum Metode Peramalan*, Jurusan Matematika FMIPA UNDIP

Semarangito, B., 2005, *Modul Praktikum Metode Peramalan*, Jurusan Matematika FMIPA UNDIP Semarang

LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 7

A. INSTRUCTIONAL AIM :

1. GENERAL : After studying this course, the student are expected to be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject, the student are expected to be able to compare the exponential method with another smoothing method

B. SUBJECT : Smoothing Method
C. SUB SUBJECT : Comparison of Some Smoothing Method
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 7th meeting • Describing about general and specific objectives competence ▪ Explaining the difference of exponential smoothing method with another smoothing method theoritically	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the difference of exponential smoothing method with another smoothing method with applied at the real problem ▪ Giving examples as a study case and solving together	Observing, asking, taking notes	OHP, transparancy, white board, reference book, and paper
CLOSING	• Discussion • Giving description about matter on the next meeting	Discuss, asking, observing, taking notes	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.

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LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 8

A. INSTRUCTIONAL AIM :

1. GENERAL : *After studying this course, the student are expected to* be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject, the student are expected to be able to apply the moving average method with use the SPSS package and analyze the output

B. SUBJECT : Practical Work of Moving Average Method
C. SUB SUBJECT : Practical Work of Moving Average Method
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 8th meeting • Describing about general and specific objectives competence	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the use of SPSS to apply the Moving Average method at the real problem ▪ Giving examples as a study case and solving together	Observing, practical work, asking, taking notes	OHP, transparancy, white board, reference book, and paper
CLOSING	• Discussion • Giving description about matter on the next meeting	Discuss, asking, observing, taking notes	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.

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LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 10

A. INSTRUCTIONAL AIM :

1. GENERAL : After studying this course, the student are expected to be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject, the student are expected to be able to apply the exponential smoothing method with use the SPSS package and analyze the output

B. SUBJECT : Practical Work of Exponential Smoothing Method
C. SUB SUBJECT : Practical Work of Exponential Smoothing Method
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 10th meeting • Describing about general and specific objectives competence	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the use of SPSS to apply the Exponential Smoothing method at the real problem ▪ Giving examples as a study case and solving together	Observing, practical work, asking, taking notes	OHP, transparancy, white board, reference book, computer and paper
CLOSING	• Discussion • Giving description about matter on the next meeting	Discuss, asking, observing, taking notes	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

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LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 11

A. INSTRUCTIONAL AIM :

1. GENERAL : *After studying this course, the student are expected to* be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject, the student are expected to be able to apply another smoothing method i.e Brown and Winter with use the SPSS package and analyze the output

B. SUBJECT : Practical Work of Another Smoothing Method
C. SUB SUBJECT : Practical Work of Another Smoothing Method
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 11th meeting • Describing about general and specific objectives competence	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the use of SPSS to apply another Smoothing method i.e Brown and Winter at the real problem ▪ Giving examples as a study case and solving together	Observing, practical work, asking, taking notes	OHP, transparancy, white board, reference book, computer and paper
CLOSING	• Discussion • Giving description about matter on the next meeting	Discuss, asking, observing, taking notes	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

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LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 12
A. INSTRUCTIONAL AIM :
1. GENERAL : *After studying this course, the student are expected to* be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject, the student are expected to be able to calculate the forecasting with use decomposition method

B. SUBJECT : Decomposition Method
C. SUB SUBJECT : Decomposition Method
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 12th meeting • Describing about general and specific objectives competence ▪ Explaining the basics concept of decomposition method	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the way to calculate forecasting with use the decomposition method ▪ Giving examples as a *study case and solving* together	Observing, asking, taking notes	OHP, transparancy, white board, reference book, and paper
CLOSING	• Discussion • Giving description about matter on the next meeting	Discuss, asking, observing, taking notes	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.

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LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 13

A. INSTRUCTIONAL AIM :

1. GENERAL : *After studying this course, the student are expected to* be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject, the student are expected to be able to finished the forecasting problem with decomposition method with use SPSS package and analyze the output

B. SUBJECT : Practical Work of Decomposition Method
C. SUB SUBJECT : Practical Work of Decomposition Method
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 13th meeting • Describing about general and specific objectives competence	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the use of SPSS to apply the decomposition method at the real problem ▪ Giving examples as a study case and solving together	Observing, practical work, asking, taking notes	OHP, transparancy, white board, reference book, computer and paper
CLOSING	• Discussion • Giving description about matter on the next meeting	Discuss, asking, observing, taking notes	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan*, alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting*, John Wiley and Sons, Inc., New York.

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LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 14

A. INSTRUCTIONAL AIM :

1. GENERAL : *After studying this course, the student are expected to* be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject, the student are expected to be able to calculate the regression on forecasting

B. SUBJECT : Regression on Forecasting
C. SUB SUBJECT : Regression on Forecasting
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 14th meeting • Describing about general and specific objectives competence ▪ Explaining the definition of regression	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the way to calculate the regression with time as independen variable ▪ Giving examples as a study case and solving together	Observing, asking, taking notes	OHP, transparancy, white board, reference book, and paper
CLOSING	• Discussion • Giving description about matter on the next meeting	Discuss, asking, observing, taking notes	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan,* alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting,* John Wiley and Sons, Inc., New York.

Warsito, B., 2005, *Modul Praktikum Metode Peramalan*, Jurusan Matematika FMIPA UNDIP Semarang

LEARNING UNIT PROGRAM (LUP)

COURSE TITLE : FORECASTING METHODS
CODE / CREDIT : PAM 414 / 3 SKS
DURATION : 150 MINUTES
WEEK : 15
A. INSTRUCTIONAL AIM :
1. GENERAL : *After studying this course, the student are expected to* be able to explain the forecasting methods to the real problem.
2. SPECIFIC : After studying this subject, the student are expected to be able to finished the regression on forecasting with use SPSS package and analyze the output
B. SUBJECT : Practical Work of Regression on Forecasting
C. SUB SUBJECT : Practical Work of Regression on Forecasting
D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
INTRODUCTION	• Describing about matter at the 15th meeting • Describing about general and specific objectives competence	Observing and taking notes	OHP, transparancy, white board, reference book, and paper
PRESENTATION	▪ Explaining the use of SPSS to finished the regression on forecasting at the real problem ▪ Giving examples as a study case and solving together	Observing, practical work, asking, taking notes	OHP, transparancy, white board, reference book, computer and paper
CLOSING	• Discussion • Giving description that the course was finished	Discuss, asking, observing, taking notes	white board and paper

E. ASSESSMENT : Giving problems to the students.

F. REFERENCE : Makridakis, Wheelwright and McGee, 1999, *Metode dan Aplikasi Peramalan*, alih bahasa, Binarupa Aksara, Jakarta.

Abraham, B. and Ledolter, J., 1983, *Statistical Methods for Forecasting*, John Wiley and Sons, Inc., New York.

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