KONTRAK KULIAH, GBPP, SAP

TEKNIK SIMULASI

PAS 138

PROGRAM STUDI STATISTIKA JURUSAN MATEMATIKA
FMIPA UNIVERSITAS DIPONEGORO
SEMARANG
2007

TEACHING – LEARNING CONTRACT

Course Title : Simulation Technique
Code : PAS 138
Credit : 3
Semester : VI

1. Course Description

Simulation Technique is used for the application of theorys which have been studied later then attributed to everyday reality events.

2. General Instructional Aim

After attend this lecture the student are expected to use simulation models matching with system to finish some problem of statistical model.

3. Lecture Strategic

This lecturing method use discourse accompanied with praktikum. Each participant expected to earn active participate to ask concepts or things which still not yet been comprehended and or submit good idea under consideration in the form of personal opinion which obtained from fact exist in its environment or which obtained from source of bibliography which have been read.

4. References

Reference book which used in this coure is:

1. Banks, Jerry, J. Carson II, B. L. Nelson. ***Discrete-Event System Simulation.*** Prentice-Hall International, Inc., London, 1984 [BAN1984]
2. Sandi Setiawan. ***Simulasi Teknik Pemrograman.*** Penerbir Andi Offset, Yogyakarta 1993 [SAN1993]
3. Soepono Soeparlan. ***Pengantar Simulasi.*** Penerbit Gunadarma, Jakarta, 1995. [SOE1995]

5. Scoring Criteria

Criteria of scoring in this course is :

scoring	value
A	4.0
AB	3.5
B	3.0
BC	2.5
C	2.0
CD	1.5
D	1.0
DE	0.5
E	0.0

Determination of scoring criteria is used weighted such as :

No	Component	Percentage
1	Quiz and litle task	10
2	Paper	25
3	Midterm	30
4	Final exam	35

6. Lecture Schedule

week	Material	references
1	Introduction of Simulation Technique 1. Congeniality and target of Simulation Technique 2. Benefit and Excess Of Approach Of Simulation 3. Applying Of Simulation / Simulation Application	a. [BAN1984] b. [SAN1993] c. [SOE1995]

2,3,4	System, Simulation Model and steps of Study Simulation System 1. Definition of model and system. 2. Model classification. 3. Steps in simulation study. 4. Way of studying system. 5. Study simulation steps.	a. [BAN1984] b. [SAN1993] c. [SOE1995]
5,6,7	Steps in developing simulation model and evocation of random number 1. Step 1, 2, 3. 2. Definition Generating Of Random Number (RNG). 3. Distribution and random number source. 4. Parts of generating of random number.	a. [BAN1984] b. [SAN1993] c. [SOE1995]
8	Midterm	
9,10,11,12	Random Variable, Probability Distribution Function, Approach of Simulation and discrete Event 1. Definition and way of obtaining random variable. 2. Kinds of random variable. 3. Distribution of Probability. 4. Simulation pass of discrete event 5. Single Queue service system 6. Verification of simulation model.	a. [BAN1984] b. [SAN1993] c. [SOE1995]
13,14,15	Probability theory, set and event, independent event and foreign event	a. [BAN1984]

	1. Definition of Probability theory. 2. Definition of set and event. 3. Axiom of Probability. 4. Union and Intercept. 5. Independent event . 6. Foreign event.	b. [SAN1993] c. [SOE1995]
16	Final Exam	

LEARNING PROGRAM OUTLINE

Course Title : Simulation Technique
Code : PAS 138
Credit : 3
Semester : VI

Course Description

Simulation Technique is used for the application of theorys which have been studied later then attributed to everyday reality events.

General Instructional Aim

After attend this lecture the student are expected to use simulation models matching with system to finish some problem of statistical model

No	Specific Instructional Aim	Subject	Sub Subject	Duration	References
1.	After studying this course, the student are expected to be able to give clarification about simulation application example in the world of reality.	Introduction of Simulation Technique	1. Congeniality and target of Simulation Technique 2. Benefit and Excess Of Approach Of Simulation 3. Applying Of Simulation / Simulation Application	150 minutes	a. [BAN1984] b. [SAN1993] c. [SOE1995]
2.	After studying this course, the student are expected to be	System, Simulation Model and steps	1. Definition of model and system.	3x150 minutes	a. [BAN1984] b. [SAN1993] c. [SOE1995]

	able to explain technique and congeniality making of simulation model	of Study Simulation System	2. Model classification. 3. Steps in simulation study. 4. Way of studying system. 5. Study simulation steps.		
3.	After studying this course, the student are expected to be able to explain technique and congeniality making of random number	Steps in developing simulation model and evocation of random number	1. Step 1, 2, 3. 2. Definition Generating Of Random Number (RNG). 3. Distribution and random number source. 4. Parts of generating of random number.	3x150 minutes	a. [BAN1984] b. [SAN1993] c. [SOE1995]
4.	After studying this course, the student are expected to be able to explain technique and congeniality making of simulation model	Random Variable, Probability Distribution Function, Approach of Simulation and discrete Event	1. Definition and way of obtaining random variable. 2. Kinds of random variable. 3. Distribution of Probability. 4. Simulation pass of discrete event 5. Single Queue service system 6. Verification of simulation	4x150 minutes	a. [BAN1984] b. [SAN1993] c. [SOE1995]

			model.		
5.	After studying this course, the student are expected to be able to explain about probability theory, set and event, independent event and foreign event.	Probability theory, set and event, independent event and foreign event	1. Definition of Probability theory. 2. Definition of set and event. 3. Axiom of Probability. 4. Union and Intercept. 5. Independent event . 6. Foreign event.	3x150 minutes	a. [BAN1984] b. [SAN1993] c. [SOE1995]

References:

1. Banks, Jerry, J. Carson II, B. L. Nelson. ***Discrete-Event System Simulation.*** Prentice-Hall International, Inc., London, 1984 [BAN1984]
2. Sandi Setiawan. ***Simulasi Teknik Pemrograman.*** Penerbir Andi Offset, Yogyakarta 1993 [SAN1993]
3. Soepono Soeparlan. ***Pengantar Simulasi.*** Penerbit Gunadarma, Jakarta, 1995. [SOE1995]

LEARNING UNIT PROGRAM

Course Title	:	Simulation Technique
Code	:	PAS 138
Credit	:	3
Duration	:	3 x 50 menit
Week	:	I

A. INSTRUCTIONAL AIM :

1. General : After attend this lecture the student are expected to use simulation models matching with system to finish some problem of statistical model.

2. Specific : After studying this course, the student are expected to be able to give clarification about simulation application example in the world of reality.

B. SUBJECT : Introduction of Simulation Technique

C. SUB SUBJECT :
1. Congeniality and target of Simulation Technique
2. Benefit and Excess Of Approach Of Simulation
3. Applying Of Simulation / Simulation Application.

D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
1	2	3	4
INTRODUCTION	1. Expalining about matter at the 1st meeting. 2. Expalining about advantage of applied of simulation 3. Expalining about general and specific objectives competence	• Observing and taking notes	• OHP
PRESENTATION	4. Congeniality and target of Simulation Technique a. Expalining about definition and concept of Simulation System b. Expalining about types of simulation model. 5. Benefit and Excess Of Approach Of Simulation a. Expalining about Mathematical model b. Expalining about variables in Mathematical model c. Expalining about variables in simulation model d. Expalining about discrete, continu, and combination simulation 6. Applying Of Simulation / Simulation Application a. Expalining about simple example of simulation b. Expalining about simple application of simulation	• Observing and taking notes.	• OHP, whiteboard
CLOSING	7. Closing of meeting: a Giving comment to work student b Giving task to be done at home c Describing material at next week	• Answering to, discussion, taking a notes	• OHP, white board

E. Asassement

1. Giving write duty into student to present simulation application example in education environment, to know level absorbtion of items by student.
2. Assessment done by next week after student deliver write duty which is given.

F. References

1. Banks, Jerry, J. Carson II, B. L. Nelson. ***Discrete-Event System Simulation***. Prentice-Hall International, Inc., London, 1984
2. Sandi Setiawan. ***Simulasi Teknik Pemrograman***. Penerbir Andi Offset, Yogyakarta 1993
3. Soepono Soeparlan. ***Pengantar Simulasi***. Penerbit Gunadarma, Jakarta, 1995.

LEARNING UNIT PROGRAM

Course Title	:	Simulation Technique
Code	:	PAS 138
Credit	:	3
Duration	:	3 x 3 x 50 menit
Week	:	II + III + IV

A. INSTRUCTIONAL AIM :

1. General : After attend this lecture the student are expected to use simulation models matching with system to finish some problem of statistical model.

2. Specific : After studying this course, the student are expected to be able to explain technique and congeniality making of simulation model

B. SUBJECT : System, Simulation Model and steps of Study Simulation System

C. SUB SUBJECT :

1. Definition of model and system.
2. Model classification.
3. Steps in simulation study.
4. Way of studying system.
5. Study simulation steps.

D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
1	2	3	4
INTRODUCTION	1. Expalining about matter at this meeting. 2. Expalining about advantage of simulation model 3. Expalining about general and specific objectives competence	• Observing and taking notes	• OHP
PRESENTATION	4. Definition of model and system. a. Explaining about model and system. b. Expalining the importance of model for the requirement of simulation. 5. Model classification a. Explaining classification of fisical model b. Explaining classification of mathematical model 6. Steps in simulation study a. Explaining steps in simulation study marginally 7. Way of studying system a. Explaining how to study good system by using model or not 8. Study simulation steps a. Explaining formulation of problem and plan	• Observing and taking notes.	• OHP, whiteboard
CLOSING	9. Closing of meeting: a Giving comment to work student	• Answering to, discussion, taking a	• OHP, white board

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
1	2	3	4
	b Giving task to be done at home c Describing material at next week	notes	

E. Asassement

1. Giving write duty into student to present simulation application example to know level absorbtion of items by student.
2. Assessment done by next week after student deliver write duty which is given.

F. References

a. Banks, Jerry, J. Carson II, B. L. Nelson. ***Discrete-Event System Simulation***. Prentice-Hall International, Inc., London, 1984

b. Sandi Setiawan. ***Simulasi Teknik Pemrograman***. Penerbir Andi Offset, Yogyakarta 1993

c. Soepono Soeparlan. ***Pengantar Simulasi***. Penerbit Gunadarma, Jakarta, 1995.

LEARNING UNIT PROGRAM

Course Title	:	Simulation Technique
Code	:	PAS 138
Credit	:	3
Duration	:	3 x 3 x 50 menit
Week	:	V + VI + VII

A. INSTRUCTIONAL AIM :

1. General : After attend this lecture the student are expected to use simulation models matching with system to finish some problem of statistical model.

2. Specific : After studying this course, the student are expected to be able to explain technique and congeniality making of random number

B. SUBJECT : Steps in developing simulation model and evocation of random number

C. SUB SUBJECT :

1. Step 1, 2, 3.
2. Definition Generating Of Random Number (RNG).
3. Distribution and random number source.
4. Parts of generating of random number.

D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
1	2	3	4
INTRODUCTION	1. Expalining about matter at the 1st meeting. 2. Expalining about advantage of steps in developing simulation model and evocation of random number 3. Expalining about general and specific objectives competence	• Observing and taking notes	• OHP
PRESENTATION	4. Step 1, 2, 3. a Explaining to develop model with effort entangle maximum information. b Explaining to test model assumptions. c Explaining data representatif of output Simulation. 5. Definition Generating Of Random Number (RNG). a. Explaining random number and where from the random number obtained. 6. Distribution and random number source a. Explaining kinds of random number distribution and source of to obtain random 7. Parts of generating of random number a Explaining the parts of generating of random number of Additive, Multiplicative and of Mixed Congruent RNG	• Observing and taking notes.	• OHP, whiteboard
CLOSING	8. Closing of meeting:	• Answering to,	• OHP, white board

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
1	2	3	4
	a Giving comment to work student b Giving task to be done at home c Describing material at next week.	discussion, taking a notes	

E. Asassement

1. Giving write duty into student to present simulation application example to know level absorbtion of items by student.
2. Assessment done by next week after student deliver write duty which is given.

F. References

1. Banks, Jerry, J. Carson II, B. L. Nelson. ***Discrete-Event System Simulation***. Prentice-Hall International, Inc., London, 1984
2. Sandi Setiawan. ***Simulasi Teknik Pemrograman***. Penerbir Andi Offset, Yogyakarta 1993
3. Soepono Soeparlan. ***Pengantar Simulasi***. Penerbit Gunadarma, Jakarta, 1995.

LEARNING UNIT PROGRAM

Course Title	:	Simulation Technique
Code	:	PAS 138
Credit	:	3
Duration	:	4 x 3 x 50 menit
Week	:	IX + X + XI + XII

A. INSTRUCTIONAL AIM :

1. General : After attend this lecture the student are expected to use simulation models matching with system to finish some problem of statistical model

2. Specific : After studying this course, the student are expected to be able to explain technique and congeniality making of simulation model

B. SUBJECT : Random Variable, Probability Distribution Function, Approach of Simulation and Diskrit Event

C. SUB SUBJECT :

1. Definition and way of obtaining random variable.
2. Kinds of random variable.
3. Distribution of Probability.
4. Simulation pass of discrete event
5. Single Queue service system
6. Verification of simulation model.

D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
1	2	3	4
INTRODUCTION	1. Expalining about matter at this meeting. 2. Expalining about advantage of random variable 3. Expalining about general and specific objectives competence	• Observing and taking notes	• OHP
PRESENTATION	4. Definition and way of obtaining random variable a. Explaining definition and way of seeking of random variable 5. Kinds of random variable a. Explaining difference between discrete and continu random variable 6. Distribution of Probability a. Explaining probability from a random variable 7. Simulation pass of discrete event a. Explaining about simulation of discrete event 8. Single Queue service system a. Expalining about Single Queue service system 9. Verification of simulation model a. Expalining about Verification of simulation model	• Observing and taking notes.	• OHP, whiteboard
CLOSING	10. Closing of meeting: a Giving comment to work student	• Answering to, discussion, taking a	• OHP, white board

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
1	2	3	4
	b Giving task to be done at home c Describing material at next week.	notes	

E. Asassement

1. Giving write duty into student to present simulation application example to know level absorbtion of items by student.
2. Assessment done by next week after student deliver write duty which is given.

F. References

1. Banks, Jerry, J. Carson II, B. L. Nelson. ***Discrete-Event System Simulation***. Prentice-Hall International, Inc., London, 1984
2. Sandi Setiawan. ***Simulasi Teknik Pemrograman***. Penerbir Andi Offset, Yogyakarta 1993
3. Soepono Soeparlan. ***Pengantar Simulasi***. Penerbit Gunadarma, Jakarta, 1995.

LEARNING UNIT PROGRAM

Course Title	:	Simulation Technique
Code	:	PAS 138
Credit	:	3
Duration	:	3 x 3 x 50 menit
Week	:	XIII + XIV + XV

A. INSTRUCTIONAL AIM :

1. General : After attend this lecture the student are expected to use simulation models matching with system to finish some problem of statistical model.

2. Specific : After studying this course, the student are expected to be able to explain technique and congeniality making of simulation model.

B. SUBJECT : Probability theory, set and event, independent event and foreign event

C. SUB SUBJECT :

1. Definition of Probability theory.
2. Definition of set and event.
3. Axiom of Probability.
4. Union and Intercept.
5. Independent event .
6. Foreign event.

D. TEACHING-LEARNING ACTIVITIES

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
1	2	3	4
INTRODUCTION	1. Expalining about matter at this meeting. 2. Expalining about advantage of probability theory 3. Expalining about general and specific objectives competence	Observing and taking notes	OHP
PRESENTATION	4. Definition of Probability theory. a Explaining about probability theory and probability of result of attempt 5. Definition of set and event. a. Explaining about the means of set and event. 6. Axiom of Probability. a. Explaining about axiom 1, 2, 3 7. Union and Intercept. a. Explaining about union and intercept of event in a set 8. Independent event. a. Explaining about independent event of each attempt 9. Foreign event. a. Explaining about foreign event from each attempt which there are two different event	Observing and taking notes.	• OHP, whiteboard
CLOSING	10. Colsing of meeting: a Giving comment to work student	• Answering to, discussion, taking a	• OHP, white board

STAGE	LECTURER ACTIVITIES	STUDENT ACTIVITIES	LEARNING MEDIA
1	2	3	4
	b Giving task to be done at home c Describing material at next week	notes	

E. Asassement

1. Giving write duty into student to present simulation application example to know level absorbtion of items by student.
2. Assessment done by next week after student deliver write duty which is given.

F. References

1. Banks, Jerry, J. Carson II, B. L. Nelson. ***Discrete-Event System Simulation***. Prentice-Hall International, Inc., London, 1984
2. Sandi Setiawan. ***Simulasi Teknik Pemrograman***. Penerbir Andi Offset, Yogyakarta 1993
3. Soepono Soeparlan. ***Pengantar Simulasi***. Penerbit Gunadarma, Jakarta, 1995.