STUDYING CONTRACT
LEARNING PROGRAM OUTLINE
LEARNING PROGRAM UNIT

NUMERICAL ANALYSIS

COURSE CODE: PAM 411

3 SCU

SEMESTER IV

DEPARTEMENT OF MATHEMATICS
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DIPONEGORO UNIVERSITY
SEMARANG

LECTURING PROGRAM OUTLINE

TITLE OF COURSE : Numerical Analysis

CODE NUMBER / SKS : PAM 411 / 3 SKS

SHORT DESCRIPTION:

Numerik Analiasa is choice course in Mathematics of FMIPA UNDIP. This course studies about some elementary concept of numerical analysis, for example error, numerical analysis of method to solving of Linear Systems Equation and differential equation. Lecturing try as possible study elementary concept of numerical analysis, started by giving geometric intuition description to give motivation congeniality of student. Lather then proved by result of the core important analysed and finally its idea is made by concrete by applying to example of of numerik simple and later then at case study which is relative more complex. This course is important in order to to assist student in studying other course and to ready to writing of final project.

GENERAL INSTRUCTIONAL OBJECTIVE :

After studying this course is expected Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about methods are using to solving problems by numeric, so can using to study other course and to prepare final project

No	Specific Instructional Objective	Subject	Sub Subject	Time Estimation
1	Majors Mathematics student of FMIPA UNDIP can explain concept of error in Numerical Analysis : absolute and relative error, inseparable error, approximation error, curtailment error.	Errors	absolute and relative error, inseparable error, approximation error, curtailment error	One meeting
2	Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about Gauss Elimination method to solving/finishing Linear Equation System, repair of uncertainty effect and solution of linear equation systems coefficient.	Linear Equation System	Gauss Elimination method to solving/finishing Linear Equation System, repair of uncertainty effect and solution of linear equation systems coefficient.	One meeting

3	Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about Gauss Seidel Elimination Method to solving Linear Equation Systrm and its convergence acceleration.	Linear Equation System	Gauss Seidel Elimination Method to solving Linear Equation System and its convergence acceleration	One meeting
4	Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about methods to solving Differential Equation, for example: Euler method, repair Euler mehod and Modification Euler method	Differenial Equation	Euler method, repair Euler method and Modification Euler method	One meeting
5	Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about methods to solving Differential Equation, Runge Kutta method	Differenial Equation	Runge Kutta method	One meeting

LECTURING PROGRAM UNIT

Course : Numerical Analysis
Code of Course : PAM 411
Duration : 3 X 50 menit
Week : 8th

A. Instructional Objective

1. General :

After studying this course is expected Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about methods are using to solving problems by numeric, so can using to study other course and to prepare final project.

2. Specific :

After studying this course is expected Majors Mathematics student of FMIPA UNDIP can explain concept of error in Numerical Analysis : absolute and relative error, inseparable error, approximation error, curtailment error.

B. Subject : Error

C. Sub Subject : absolute and relative error, inseparable error, approximation error, curtailment error.

D. Lecturing Activity

Step	Lecturer Activity	Student Activity	Media dan Teaching Equipment
Introduction	1.Explaining utility and scope of this course. 2.Explaining General and specific instructional objective.	Paying attention	Blackboard & OHP
Presentation	Explaining absolute and relative error, inseparable error, approximation error, curtailment error	Giving idea contribution Paying attention Paying attention	Blackboard & OHP Blackboard & OHP
Closing	1. Asking lecturing items ambit 2. Giving reinforcement to lecturing items ambit. 3.Giving individual assignment as homework. 4.Giving information to next lecturing.	Giving idea contribution Paying attention Writing Paying attention	Blackboard & OHP Blackboard & OHP Blackboard & OHP Blackboard & OHP

E. Evaluation :

Instrument the used is individual assignment to measure ability of understanding of student in following lecturing and measure efficacy of lecturing process.

F. References :

1.Drs, Wahyudin, M.Pd, "Metode Analiasa numerik", Tarsito Bandung
2.Drs Wardiman"Analisa Numerik ",F Mipa UGM

LECTURING PROGRAM UNIT

Course : Numerical Analysis
Code of Course : PAM 411
Duration : 3 X 50 menit
Week : 9th

A. Instructional Objective

1. General :

After studying this course is expected Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about methods are using to solving problems by numeric, so can using to study other course and to prepare final project..

2. Specific :

After studying this course is expected Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about Gauss Elimination method to solving/finishing Linear Equation System, repair of uncertainty effect and solution of linear equation systems coefficient.

B. Subject : Linear Equation System

C. Sub Subject : Gauss Elimination method to solving/finishing Linear Equation System, repair of uncertainty effect and solution of linear equation systems coefficient.

D. Lecturing Activity

Step	Lecturer Activity	Student Activity	Media dan Teaching Equipment
Introduction	1.Explaining utility and scope of this course. 2.Explaining General and specific instructional objective.	Paying Attention	Blackboard & OHP
Presentation	Explaining Gauss Elimination method to solving/finishing Linear Equation System, repair of uncertainty effect and solution of linear equation systems coefficient.	Giving idea contribution Paying Attention Paying Attention	Blackboard & OHP Blackboard & OHP
Closing	1. Asking lecturing items ambit 2. Giving reinforcement to lecturing items ambit. 3.Giving individual assignment as homework. 4.Giving information to next lecturing.	Giving idea contribution Paying Attention Writing Paying Attention	Blackboard & OHP Blackboard & OHP Blackboard & OHP Blackboard & OHP

E. Evaluation :

Instrument the used is individual assignment to measure ability of understanding of student in following lecturing and measure efficacy of lecturing process.

F. References :

1.Drs, Wahyudin, M.Pd, "Metode Analiasa numerik", Tarsito Bandung

2.Drs Wardiman"Analisa Numerik ",F Mipa UGM

LECTURING PROGRAM UNIT

Course : Numerical Analysis
Code of Course : PAM 411
Duration : 3x50 menit
Week : 10

A. Instructional Objective

1. General :

After studying this course is expected Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about methods are using to solving problems by numeric, so can using to study other course and to prepare final project..

2. Specific :

After studying this course is expected Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about Gauss Seidel Elimination Method to solving Linear Equation Systrm and its convergence acceleration.

B. Subject : Linear Equation System

C. Sub Subject : Gauss Seidel Elimination Method to solving Linear Equation System and its convergence acceleration.

D. Lecturing Activity

Step	Lecturer Activity	Student Activity	Media dan Teaching Equipment
Introduction	1.Explaining utility and scope of this course. 2.Explaining General and specific instructional objective.	Paying Attention	Blackboard & OHP
Presentation	Explaining Gauss Seidel Elimination Method to solving Linear Equation System and its convergence acceleration	Giving idea contribution Paying Attention Paying Attention	Blackboard & OHP Blackboard & OHP
Closing	1. Asking lecturing items ambit 2. Giving reinforcement to lecturing items ambit. 3.Giving individual assignment as homework. 4.Giving information to next lecturing.	Giving idea contribution Paying Attention Writing Paying Attention	Blackboard & OHP Blackboard & OHP Blackboard & OHP Blackboard & OHP

E. Evaluation :

Instrument the used is individual assignment to measure ability of understanding of student in following lecturing and measure efficacy of lecturing process.

F. References :

1.Drs, Wahyudin, M.Pd, "Metode Analiasa numerik", Tarsito Bandung
2.Drs Wardiman"Analisa Numerik ",F Mipa UGM

LECTURING PROGRAM UNIT

Course : Numerical Analysis
Code of Course : PAM 411
Duration : 3x50 menit
Week : 11

A. Instructional Objective

1. General :

After studying this course is expected Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about methods are using to solving problems by numeric, so can using to study other course and to prepare final project..

2. Specific :

After studying this course is expected Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about methods to solving Differential Equation, for example: Euler method, repair Euler mehod and Modification Euler method

B. Subject : Differential Equation

C.Sub Subject : Euler method, repair Euler mehod and Modification Euler mehod

D. Lecturing Activity

Step	Lecturer Activity	Student Activity	Media dan Teaching Equipment
Introduction	1.Explaining utility and scope of this course. 2.Explaining General and specific instructional objective.	Paying Attention	Blackboard & OHP
Presentation	Explaining geometrically and also is analytical about methods to solving Differential Equation, for example: Euler method, repair Euler mehod and Modification Euler mehod	Giving idea contribution Paying Attention Paying Attention	Blackboard & OHP Blackboard & OHP
Closing	1. Asking lecturing items ambit 2. Giving reinforcement to lecturing items ambit. 3.Giving individual assignment as homework. 4.Giving information to next lecturing.	Giving idea contribution Paying Attention Writing Paying Attention	Blackboard & OHP Blackboard & OHP Blackboard & OHP Blackboard & OHP

E. Evaluation :

Instrument the used is individual assignment to measure ability of understanding of student in following lecturing and measure efficacy of lecturing process.

F. References :

1.Drs, Wahyudin, M.Pd, "Metode Analiasa numerik", Tarsito Bandung

2.Drs Wardiman"Analisa Numerik ",F Mipa UGM

LECTURING PROGRAM UNIT

Course : Numerical Analysis
Code of Course : PAM 411
Duration : 3 x 50 menit
Week : 12

A. Instructional Objective

1. General :

After studying this course is expected Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about methods are using to solving problems by numeric, so can using to study other course and to prepare final project..

2. Specific :

After studying this course is expected Majors Mathematics student of FMIPA UNDIP can explain geometrically and also is analytical about methods to solving Differential Equation, Runge Kutta method.

B. Subject : Differential Equation

C. Sub Subject : Runge Kutta method

D. Lecturing Activity

Step	Lecturer Activity	Student Activity	Media dan Teaching Equipment
Introduction	1.Explaining utility and scope of this course. 2.Explaining General and specific instructional objective.	Paying Attention	Blackboard & OHP
Presentation	Explaining geometrically and also is analytical about methods to solving Differential Equation, Runge Kutta method	Giving idea contribution Paying Attention Paying Attention	Blackboard & OHP Blackboard & OHP
Closing	1. Asking lecturing items ambit 2. Giving reinforcement to lecturing items ambit. 3.Giving individual assignment as homework. 4.Giving information to next lecturing.	Giving idea contribution Paying Attention Writing Paying Attention	Blackboard & OHP Blackboard & OHP Blackboard & OHP Blackboard & OHP

E. Evaluation :

Instrument the used is individual assignment to measure ability of understanding of student in following lecturing and measure efficacy of lecturing process.

F. References :

1.Drs, Wahyudin, M.Pd, "Metode Analiasa numerik", Tarsito Bandung
2.Drs Wardiman"Analisa Numerik ",F Mipa UGM