



Module Description/Course Syllabi

Study Programme : Magister of Soil Science

Faculty of Agriculture

Universitas Andalas

1. Course number and name

STK 511 Applied Statistics

2. Credits and contact hours/Number of ECTS credits allocated

3 sks (3-0)

3. Instructors and course coordinator

2.Prof. Dr. Ir. Rahmat Syahni, MS, MSc; 2. Prof. Dr. Ir. Herviyanti, MS; 3. Dr. Ir. Gusnidar, MS

4. Text book, title, outhor, and year

1. Conover,W.J. 1980. Practical Nonparametric Statistics.John Wiley & Sons, New York. 2. Daniel, W.W. 1989. Statistik Nonparametrik Terapan. Gramedia, Jakarta 3. Draper, N.R. & H. Smith. 1981. Applied Regression Analysis. John Wiley & Sons, New York.

4. Gomez, K.A. & A.A. Gomez. 1984. Statistical Prosedures for Agricultural Research. John Wiley & Sons, New York.

5. Steel R.G.D & J.H. Torrie. 1980. Prinsip dan Prosedur Statistika. Gramedia, Jakarta

5. Specific course information

A. Brief description of the content of the course (catalog description) This course provides statistical principles and procedures for designing researches and analyzing the experimental data in agriculture. How to design an experiment: environmental and treatment design (multiple comparisons, factorial design, split plot design, split group design); analysis of variance, data problems, simple linear regression, multiple linear regression, and several nonparametric tests.

B. Course Content

Week Course Content

1 Introduction:

1. Definition and Scope of Statistics
2. Some Terminology
3. Measurement Scale
4. Statistics in Scientific Research

2 Experimental Design Principles:

1. Research Design
2. Experimental design
3. Treatment
4. Treatment Unit
5. Principles of Experimental Design
6. Treatment plan
7. Environmental Design
8. Determining the Design

3 Completely Randomized and Randomized Block Design (CRD &

- RBD) 1. CRD Layout
2. CRD Model
3. CRD Data Structure
4. CRD Variety Analysis

5. Unequal replicate
6. Plan of RBD
7. RBD Model
8. RBD Data Structure
9. RBD Variety Analysis
10. Lost data estimation

4 Latin Square and Latin Graeco Design:

1. LS floor plan
2. LS models
3. LS Data Structure
4. LS Variance Analysis
5. LSG floor plan
6. LSG models
7. LSG Data Structure
8. LSG Variety Analysis

5 Factorial Experiment Design (FED):

1. Plan of the FED
2. FED models
3. FED Data Structure
4. FED Variety Analysis
5. Interpretation of Interactions
6. Factorial Design in CRD
7. Double Comparison of FED

6 Split Plot Design and Split Group Design (SPD & SGD):

1. Plan of SPD
2. SPD models
3. SPD Data Structure

4. Analysis of SPD Variety

5. CTR Plan

6. CTR models

7. CTR Data Structure

8. CTR Variety Analysis

7 7 Estimation of Missing Data and Data

Transformation:

1. Hilinag data on RBD

2. Missing Data on FED

3. Lost Data on SPD

4. Missing Data on SP-CRD

5. Data Transformation

6. Use of the Software

8 MID TERM Exam

9 Simple Regression and Correlation

Analysis:

1. Linear Regression Models

2. Estimation of the Regression Coefficient

3. Regression Coefficient Testing

4. Coefficient of Determination

5. Correlation Coefficient

6. Correlation Coefficient Testing

10 Multiple Linear Regression:

1. Multiple Linear Regression Model

2. Estimation of the Regression Coefficient

3. Regression Coefficient Testing

4. Regression with Matrix
5. Multiple Correlation and Partial Correlation

11 Regression With Dummy Variables:

1. Regression Model with Dummy Free Variables
2. Estimation and Interpretation of Regression Coefficients
3. Variable Puppet 2 Categories
4. Variable Diversity 3 Categories

12 Cross Analysis:

1. Cross Analysis Model
2. Cross Diagram
3. Estimation of Cross Coefficients
4. Cross Coefficient Testing
5. Interpretation of Cross Coefficients
6. Direct and Indirect Influence

13 Analysis of Variables:

1. Model Analysis of Diversity
2. Diversity Analysis Data Structure
3. Table of Variation Analysis
4. Diverse Analysis Model for RBD
5. Data Structure Analysis of Diverse for RBD
6. Table of Variation Analysis for RBD

14 Nonparametric Tests:

1. Kolmogorov-Smirnov test
2. Mann-Whitney test
3. Compliance Test
4. Kruskal Wallis test
5. Spearman Correlation
6. Kendall Correlation
7. Cramer correlation

7 Pendugaan Data Hilang dan
 Transformasi data: Data hiling pada
 RBD

Data Hilang pada FED

Data Hilang pada SPD

Data Hilang pada SP-RBD

Tranformasi Data

Use of programs

15 Review & assignment models

16 FINAL Exam

C. Semester when the course unit is delivered

Even Semester

D. Mode of delivery (face-to-face, distance learning)

Face to face

6. Intended Learning Outcomes (CPL)

ILO 4 : An ability to develop knowledge and professionalis carrier, as well as to bemotivator in sustainable agriculture and development

PI 1 : An ability to design research in soil science

PI 2 : An ability to do research and write the report

ILO 5 : An ability to innovate in development of science and

PI 1 : An ability to innovate for improving land management

7. Course Learning Outcomes (CPMK) ex. The student will be able to explain thesignificance of current research about a particular topic.

4. Students will be able to design research in soil science and land management 5.

Students will be able to do research, analyze the data, and write scientific articlesindependently, eligibly, and accurately

6. Students will be able to innovate in soil science and management of land resources

8. Learning and teaching methods

Cooperative Learning and Case Base Method

9. Language of instruction

Bahasa and English (English Class)

10. Assessment methods and criteria

Summative Assessment :

1. Tasks : 5%
2. Quiz : 5 %
3. Mid Semester : 25%
4. Final Semester : 25%
5. Praktikum :30%
6. Attendance : 5%

Formative Assessment:

1. Thumb up and thumb down

2. Minutes paper