	Module Description/Course Syllabi
	Study Programme: Bachelor of Mathematics Faculty of Mathematics and Natural Sciences Universitas Andalas

1. *Course number and name*

MAT62256 Categorical Data Analysis

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

3 SKS / 4,53 ECTS

3. *Instructors and course coordinator*

1. Mawanda Almuhayar, M.Sc
2. Dr. Maiyastri

4. *Textbook, title, author, and year*

1. A. Agresti, *An Introduction to Categorical Data Analysis,* 3rd ed. Hoboken, New Jersey: John Wiley & Sons, 2019.
2. D. W. Hosmer, S. Lemeshow, R. X. Sturdivant, *Applied Logistic Regression,* 3rd ed. Hoboken, New Jersey: John Wiley & Sons, 2013.

5. *Recommended reading and other learning resources/tools*

3. A. Agresti, *Categorical Data Analysis,* 3rd ed. Hoboken, New Jersey: John Wiley & Sons, 2012.
4. J. Nugraha, *Pengantar Analisis Data Kategorik.* Yogyakarta: Deepublish, 2014.

6. *Specific course information*

A. Brief description of the content of the course (catalog description)

In this course, students will learn about data analysis methods used to describe and analyze categorical data which include an introduction to categorical data, probability distribution for categorical data, statistical inference for categorical data, 2-dimensional contingency tables, independence tests on 2-dimensional contingency tables, binary logistic regression models, multinomial logistic regression models, and ordinal logistic regression models along with model specifications, statistical inference, model examination, and model interpretation for each of those models.

B. Prerequisites or co-requisites

1. MAT61151 Data Analysis
2. MAT62252 Regression Analysis

C. Indicate whether a required or elective course in the program

Elective course

D. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First cycle Bachelor

E. Year of study when the course unit is delivered (if applicable)

3rd year

F. Semester when the course unit is delivered

6th semester or even semester

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

Face-to-face learning

7. Intended Learning Outcomes

ILO-4: An ability to use concepts and fundamental techniques of mathematics in solving simple mathematical problems.

ILO-5: An ability to formally and correctly prove a simple mathematical statement using facts and methods that have been studied.

ILO-6: Have ability data literacy and technology and can apply them in solving simple mathematical problems or other relevant fields.

8. *Course Learning Outcomes*

An ability to explain categorical data and probability distributions for categorical data in everyday life. (ILO-4)

An ability to perform statistical inference for categorical data to draw conclusions based on sample data. (ILO-4, ILO-5)

An ability to create 2-dimensional contingency tables, determine probability structures from 2-dimensional contingency tables, compare proportions, and calculate relative risks and odds ratios in 2-dimensional contingency tables based on events in everyday life. (ILO-4, ILO-5)

An ability to use various methods to test independence on 2-dimensional contingency tables based on events in everyday life. (ILO-4, ILO-5)

An ability to create binary logistic regression models and multiple binary logistic regressions as well as perform statistical inference, model examination, model selection, and model interpretation using data based on events in everyday life. (ILO-4, ILO-5, ILO-6)

An ability to create multinomial and ordinal logistic regression models and perform statistical inference, model examination, and model interpretation using data based on events in everyday life. (ILO-4, ILO-5, ILO-6)

9. *Brief list of topics to be covered*

1. Introduction to Categorical Data Analysis: Categorical Data and Probability Distribution for Categorical Data.
2. Statistical Inference for Categorical Data: Parameter Estimation and Hypothesis Test.
3. 2-Dimensional Contingency Table: Probability Structure in 2-Dimensional Contingency Table, Proportion Comparison, Relative Risk, and Odds Ratio.

4. Independence Test on 2-Dimensional Contingency Table: Chi-Square Independence Test, Likelihood Ratio Independence Test, Fisher Exact Independence Test, and Ordinal Data Independence Test.
5. Binary Logistic Regression: Model Specifications, Statistical Inference, Model Variations Binary Logistic Regression, Model Examination, Model Selection, and Model Interpretation.
6. Multinomial Logistic Regression: Model Specification, Statistical Inference, Model Examination, and Model Interpretation.
7. Ordinal Logistic Regression: Model Specification, Statistical Inference, Model Examination, and Model Interpretation.

10. *Learning and teaching methods*

Directed Learning, Teacher-Centered Learning, Case-Based Learning

11. *Language of instruction*

Bahasa Indonesia and English

12. *Assessment methods and criteria*

Summative Assessment :
1. Assignment: 20%
2. Mid-term exam: 25%
3. Final exam / final project: 55%