	INSTITUT TEKNOLOGI SEPULUH NOPEMBER **FACULTY OF SCIENCE AND DATA ANALYTICS** **DEPARTMENT OF STATISTICS** **STATISTICS UNDERGRADUATE PROGRAM**

Course	Course Name	:	**Mathematical Statistics**
	Course Code	:	SS234311
	Credit	:	5 SKS
	Semester	:	III

COURSE DESCRIPTION

Mathematics Statistics is one of the basic courses which is part of the field of study in Statistical Theory. The purpose of studying Mathematics Statistics is to master the concept of Distribution of Discrete Random Variable Functions, Distribution of Continuous Random Variable Functions, Sampling Distribution, Statistical Order Distribution, Law of Large Numbers, Central Limit Theorem, Limit Distribution, and applications in the statistical method so that students will have learning experience to think critically and to be able to make the right decisions about the use of these concepts. The learning strategy used is discussion and exercises and assignments.

PROGRAM LEARNING OUTCOME

PLO-4	Able to apply science and mathematics to support the understanding of statistical methods.
PLO-5	Able to apply statistical theory to statistical methods.

COURSE LEARNING OUTCOME

CLO.1	Mastering the concept of distribution of discrete random variable functions, distribution of continuous random variable functions, sampling distribution, statistical order distribution, law of large numbers, central limit theorem, limit distribution
CLO.2	Can formulate problems Distribution of discrete random variable functions, distribution of continuous random variable functions, sampling distribution, statistical order distribution, large number law, central limit theorem, limit distribution
CLO.3	Can solve the distribution of the discrete random variable function, the distribution of the continuous random variable function, the sampling distribution, the statistical order distribution, the law of large numbers, the center limit theorem, the limit distribution
CLO.4	Can choose the method of determining the distribution of the random variable function, sampling distribution
CLO.5	Can adapt to the distribution problem of the random variable function, sampling distribution
CLO.7	Able to communicate effectively and work together in interdisciplinary and multidisciplinary teams
CLO.8	Have professional responsibilities and ethics

CLO.9	Able to motivate oneself to think creatively and learn throughout life

MAIN SUBJECT

1. Discrete random variable sampling distribution
2. Continuous random variable sampling distribution
3. Distribution of statistical orders
4. Limit Distribution
5. Distribution of khi squared, student-t, beta, and F
6. The law of large numbers and the central limit theorem
7. Estimation, point estimation, interval estimation method of estimator determination
8. Properties of estimators, functions of losses and risks
9. Exponential Family , adequacy statistics, minimal adequacy statistical factorization criteria, Equivariance
10. Hypothesis Testing
11. Proportions Hypothesis Testing, two proportions, Test difference two mean, Test difference two variations

PREREQUISITE

Introduction to Probability Theory

REFERENCES

1. Hogg, R.V. dan Craig, A.T. (1995). Introduction to Mathematical Statistics, 5th ed. Mac Millon. New York.
2. Mood, A.M., Graybill,F.A. dan Boes, D.C. (1974). Introduction of the Theory of Statistics. 4th ed. Mc-Graw Hill. Tokyo.
3. Rice, J.A. (1995). Mathematical Statistics and Data Analysis. Second Ed. Duxbury Press. Belmont, California.
4. Lindgren, B.W. (1976). Statistical Theory. 3th ed. Mac Millon. New York.
5. Rohatgi, V.K. (1976). An Introduction to Probability Theory and Mathematical Statistics. Wiley & Sons. New York.