

# データサイエンスの数理

Compulsory 2  
credit

WATANABE, Ryuji

## 1. Course Description

This course provides an introduction to linear algebra, calculus, probability, and statistics as mathematical basis for data science. The items are as follows: Matrix, linear transformation, determinant, simultaneous linear equations, diagonalization and eigen values in linear algebra. Derivative, mean value theorem, Taylor's expansion, definite integral, partial derivative, extreme values of functions of many variables, multiple integral in calculus. Definition of probability, Bayes' theorem, random variable, distribution function, characteristic values of the random variables, Chebyshev's inequality, law of large numbers, central limit theorem in probability. Mean value, variance, correlation coefficient, population and sample, unbiased estimator, interval estimation, test of hypothesis, test of population mean, test of goodness of fit, test of independence in statistics.

This subject is related to the section 1 of the diploma policy of the Graduate Degree program of Comprehensive Applied Data Science.