Computational Statistics

Module name	Computational Statistics
Module level	Undergraduate
Code	IF221112
Courses (if applicable)	Computational Statistics
Semester	3
Lecturer	Budi Nugroho, S.Kom, M.Kom (PIC) Dr. Eng. Ir. Anggraini Puspita Sari, MT Dr. Ir. Kartini, S.Kom, MT Yisti Vita Via, S.ST, M.Kom Dr. Rr. Ani Dijah Rahajoe, S.T, M.Cs
Language	Bahasa Indonesia and English
Relation to curriculum	Undergraduate degree program; compulsory; 3rd semester
Type of teaching, contact hours	Lectures, < 60 students
Teaching Methods	Simulation, case study, collaborative learning
Workload	1. Lectures: 3 sks x 50 = 150 minutes (2 hours 30 minutes) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. Private study: 3 x 60 = 180 minutes (3 hours) per week
Credit points	3 credit points (sks)
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.
Mandatory prerequisites	Algorithm & Programming
Courses description	This course provides insights and understanding about the concepts of probability, random variables, discrete and continuous variable distributions that underlie statistical theories and their applications, by elaborating on calculation techniques and analysis procedures for various fields.
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:	
	CO1 Students are able to identify and implement appropriate statistical method to solve the given problems.	PLO3
Content	Descriptive statistics, distributions and parameters, data summaries, Bayesian probability and theorem, probability, random variables, probability dan distribution function, expectation: mean and variance, discrete distributions, continuous distributions, sample distributions, statistical inference: estimation, mean and variance testing, one-way analysis of variance (ANOVA), simple linear regression & correlation, nonparametric statistics.
Media employed	LCD, whiteboard, websites, books (as references), online meeting, etc.
Assessments and Evaluation	One written Midterm assessment (60 minutes) and one final oral exam (30 minutes), two short computer-based quizzes, takehome written assignments
Study and examination requirements and orms of examination	The final grade in the module is composed of: • Two short computer-based quizzes: 15% x 2 = 30% • Take-home written assignments: 15% • Written Midterm assessment: 25% • Final oral exam: 30% Students must have a final grade of 55.6% or higher to pass.

Reading List	• F. D. Sumaryana, N. Risnawati, A. Arisena, M. H. Fadhilah, Modul Pengantar Statistika. Tangguh Denara Jaya, 2023.
	• R.E. Walpole, R.H. Myers, S.L. Myers and K. E. Ye, Probability and Statistics for Engineers dan Scientists, 9th. Pearson, 2024.
	• Campesato, Oswald, Python tools for data scientists pocket primer. Packt Publishing, 2024. ISBN: 9781683928232. [Online]. Available: https://portal.igpublish.com/iglibrary/obj/PACKT0007451?searchid=1754984640 549gpSfMgbBiS~OQWgGInYaP