Computational Mathematics

Module name	Computational Mathematics	
Module level	Undergraduate	
Code	IF221102	
Courses (if applicable)	Computational Mathematics	
Semester	1	
Lecturer	Andreas Nugroho S, S.Kom, M.Kom (PIC) Agung Mustika Rizki, S.Kom., M.Kom. Eka Prakarsa Mandyartha, ST, M.Kom. Pratama Wirya Atmaja, S.Kom., M.Kom.	
Language	Bahasa Indonesia and English	
Relation to curriculum	Undergraduate degree program; **compulsory**; 1st semester	
Type of teaching, contact hours	Lectures, < 60 students	
Teaching Methods	discussion group, simulation, case study, collaborative learning, cooperative 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	-	
Courses description	In this course, students learn number systems, logic, sets, combinatorics, probability, trigonometry, coordinate systems, linear algebra, vectors, matrices, modular arithmetic, derivatives, and integrals.	
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:	
	CO1 Accuracy in Calculating, demonstrating, and solving problems related to mathematics, especially calculus, supported by appropriate concepts, formulas, methods, and reasoning	PLO5
Content	Number Systems; Theory Sets and Propositional Logic; Permutations and Combinations; Probability; Trigonometry; Coordinate System; Linear Algebra; Vector; Matrix; Modular Arithmetic; Derivative; Integral.	
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, take home written assignments	
Study and examination requirements and forms 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	● J. Vince, Foundation Mathematics for Computer Science: A Visual Approach, 4th ed. Springer International Publishing, 2024. ● R. Larson, B. Edwards, Calculus, 12th Edition. Cengage Learning, 2023. ● Hassani, M. Mehdi, Barjesteh, Hamed, Manoochehrzadeh, Mehdi, Computer fundamentals : English for computer engineering. Arcler Press, 2024. ISBN: 9781774699232. [Online]. Available: https://portal.igpublish.com/iglibrary/obj/ARCLER0001391?searchid=1754986945198LXL7o1aBR69eG64l3zh~7