220223579 Calculus

Module Name	Calculus
Module Level, if applicable	Basic
Code if Applicable	220223579
Subtitle, if applicable	
Courses, if applicable	220223579 Calculus
Semester(s) in which the module is taught	1st
Person responsible for the module	Devi Dwi Siskawardani, S.TP., M.Sc.
Lecturer	Minatun Nadhifah, S. Pi., M.P
Language	Indonesian
Relation to curriculum	Compulsory Course for undergraduate program in the Food Technology Department, Faculty of Agriculture and Animal Science
Type of teaching	Lecture, project
Workload	- Lecture: 3 SKS X 50 minutes X 16 weeks - Project: 3 SKS X 60 minutes X 16 weeks - Independent learning: 3 SKS X 60 minutes X 16 week
Credit points	3 SKS X 1.5 = 4.5 ECTS
Requirements according to the examination regulations	1. Registered in this course 2. Minimum 80% attendance in this course
Recommended prerequisites	-

Module Objectives (Intended learning outcomes)	On successful completion of this course, students should be able to :
	• Understand and can do practice for: Trigonometric Functions → behavior, properties, and applications of trigonometric functions such as sine, cosine, and tangent. • Understand and can do practice for: Exponential Function → Exploring the exponential function $f(x)=ex$ f(x)=ex and its properties, including growth, decay, and applications in various fields like finance, population growth, and physics. • Understand and can do practice for: Limit and Continuity of Functions → concept of limits, which describe the behavior of functions as inputs approach certain values, and continuity, which deals with the smoothness of functions. • Understand and can do practice for: Differentiation and its Application → differentiation, which involves finding the rate of change or slope of a function at any given point, and its applications in areas such as physics, economics, and engineering. • Understand and can do practice for: Integrals and Their Application → integrals, which represent the accumulation of quantities over a region, and their applications in finding areas, volumes, and solving various real-world problems. • Understand and can evaluate integrals, such as substitution, integration by parts, and partial fractions.

Module Content	This course introduces students to the principles of calculus and their relevance to the field of food science and technology. It focuses on developing mathematical skills and problem-solving techniques necessary for analyzing and modeling food-related phenomena, processes, and systems.
Study and examination requirements and forms of examination	**Cognitive:** Midterm exam, Final exam, presentation **Affective:** Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort.
Media employed	The course may be delivered through a combination of lectures, problem-solving sessions, interactive demonstrations, and computer-based simulations. Students may engage in hands-on activities and projects that involve applying calculus concepts to analyze and solve real-world problems in food science and technology. The class activity used whiteboard and PowerPoint. It can add some tools to support some activities.

Recommended Literature	For Class
	A. Compulsory
	   1. Hughes-Hallett, D., Gleason, A.M. and McCallum, W.G., 2020. Calculus: Single and multivariable. John Wiley & Sons.
	
	B. Option
	   1. Stewart, J., 2012. Calculus: early transcendentals. Cengage Learning.
	   2. Lohr, S.L., 2021. Sampling: design and analysis. Chapman and Hall/CRC.

Date of Last Amendment	20th January 2022