

Akashi College		Year	2023		Course Title	Mathematics III A-1
Course Information						
Course Code		5304		Course Category	General / Compulsory	
Class Format		Lecture		Credits	Academic Credit: 2	
Department		Mechanical Engineering		Student Grade	3rd	
Term		First Semester		Classes per Week	2	
Textbook and/or Teaching Materials		Differential AND Integral II (Dai Nihon Toshō)				
Instructor		TAKATA Isao				
Course Objectives						
Develop important mathematical thinking and problem solving skills as engineering technicians based on the mathematics learned previously. The goal of this class is for students to acquire the ability to understand more specialized applied mathematics. (1) First, understand the convergence of a sequence, the convergence and divergence of a series, and the Maclaurin series. Then understand the function of two variables as a curved surface in space, and are able to calculate partial differentials and multiple integrals. (2) Acquire a faithful understanding of theories and the ability to express them theoretically. (3) Acquire the ability to apply an abstract framework to specific issues.						
Rubric						
		Ideal Level		Standard Level		Unacceptable Level
Achievement 1		Fully understand the convergence and divergence of a sequence, the convergence and divergence of a series, and the Maclaurin series. Then fully understand two-variable functions as curved surfaces in space, and sufficiently calculate partial derivatives and multiple integrals.		Understand the convergence and divergence of a sequence, the convergence and divergence of a series, and the Maclaurin series. Understand a two-variable function as a curved surface in space, and can calculate partial differentials and multiple integrals.		Cannot understand the convergence and divergence of a sequence, the convergence and divergence of a series, and the Maclaurin series. Do not understand a two-variable function as a curved surface in space, and cannot calculate partial differentials or multiple integrals.
Achievement 2		Fully have a good understanding of theories and the ability to express them theoretically.		Have a understanding of theories and the ability to express them in theoretically.		Do not have a understanding of theories and the ability express them theoretically.
Achievement 3		Fully have the ability to apply an abstract framework to specific issues.		Have the ability to apply an abstract framework to specific issues.		Do not have the ability to apply an abstract framework to specific issues.
Assigned Department Objectives						
Teaching Method						
Outline		Students will acquire the basic concepts of differential integration and the various computational methods developed from it, and the necessary resources for analyzing various events in the specialized fields. We will mainly teach the convergence and divergence of a sequence, the convergence and divergence of a series, the evolution of the Maclaurin series, the partial differentiation of a two-variable function and its application, and the application of double integrals.				
Style		Students are asked to prepare for the class with video clips according to the syllabus. Students will be asked to study in groups during class to check their level of understanding. Bilingual classes may be offered.				
Notice		Review your work before class. Do not leave anything you do not understand unanswered, but ask questions. Study independently by using problem collections. CBT will be given in one of the weeks. Students who miss 1/3 or more of classes will not be eligible for evaluation.				
Characteristics of Class / Division in Learning						
☒ Active Learning		☒ Aided by ICT		☒ Applicable to Remote Class		☐ Instructor Professionally Experienced
Course Plan						
			Theme		Goals	
1st Semester	1st Quarter	1st	Class Description		Confirm how to proceed with the class.	
		2nd	Expansion of functions		Can obtain the approximation by polynomial.	
		3rd	Expansion of functions		Can find the series of a simple function.	
		4th	Expansion of functions		Find the Maclaurin expansion of a simple function.	
		5th	Expansion of functions		Can determine the radius of convergence of a power series.	
		6th	Partial differentiation method		Can recall the graph of a simple two-variable function.	
		7th	CBT test		CBT test to check retention.	
		8th	Partial differentiation method		Can find the limit of a two-variable function.	
	2nd Quarter	9th	Partial differentiation method		Can obtain the partial derivatives.	
		10th	Partial differentiation method		Can find equations of tangent planes and total derivatives.	
		11th	Partial differentiation method		Can use partial differentiation of composite functions.	
		12th	Partial differentiation method		Can obtain higher-order partial derivatives.	

		13th	Partial differentiation method	Can find the local maxima and local minima of a two-variable function.
		14th	CBT test	CBT test to check retention.
		15th	Partial differentiation method	Can differentiate implicit functions.
		16th	Exam	Confirmation of the studies.

Evaluation Method and Weight (%)						
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	Examination	Comprehension Test	Review Tests	Assignments	Attendance Points	Total
Subtotal	25	20	25	15	15	100
Basic Proficiency	25	20	25	15	15	100
Specialized Proficiency	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0