

Akashi College		Year	2024		Course Title	Mathematics II A-1	
Course Information							
Course Code		6205		Course Category		General / Compulsory	
Class Format		Lecture		Credits		School Credit: 2	
Department		Architecture		Student Grade		2nd	
Term		First Semester		Classes per Week		4	
Textbook and/or Teaching Materials		Differential and Integral I (Dai Nihon Tosho)					
Instructor		MATSUMIYA Atusi,					
Course Objectives							
1. Understand limits of functions, the meaning of a derivative at a point, the definition of the derivative, the product and quotient rules for derivatives, composite functions, and inverse trigonometric functions, and can calculate the derivatives of various functions.							
2. Can write a derivative sign chart for a function, find its extrema, and sketch its graph. Can use extrema to calculate functions' maximum and minimum values. Also, can investigate the shapes of graphs using second derivatives. Understand parametric representations of functions, and can use them to calculate their derivatives.							
Rubric							
		Ideal Level		Standard Level		Unacceptable Level	
Achievement 1		Fully understand limits of functions, the meaning of a derivative at a point, the definition of the derivative, the product and quotient rules for derivatives, composite functions, and inverse trigonometric functions, and can fully calculate the derivatives of various functions.		Understand limits of functions, the meaning of a derivative at a point, the definition of the derivative, the product and quotient rules for derivatives, composite functions, and inverse trigonometric functions, and can calculate the derivatives of various functions.		Do not understand the limits of functions, the meaning of a derivative at a point, the definition of the derivative, the product and quotient rules for derivatives, composite functions, and inverse trigonometric functions, and cannot calculate the derivatives of various functions.	
Achievement 2		Can write a derivative sign chart for a function, find its extrema, and sketch its graph. Can fully use extrema to calculate the function's maximum and minimum values. Also, can fully investigate the shapes of graphs using second derivatives. Fully understand parametric representations of functions, and can fully use them to calculate their derivatives.		Can write a derivative sign chart for a function, find its extrema, and sketch its graph. Can use extrema to calculate functions' maximum and minimum values. Also, can investigate the shapes of graphs using second derivatives. Understand parametric representations of functions, and can use them to calculate their derivatives.		Cannot write a derivative sign chart for a function, find its extrema, and sketch its graph. Cannot use extrema to calculate the function's maximum and minimum values. Also, cannot investigate the shapes of graphs using second derivatives. Do not understand parametric representations of functions, and cannot use them to calculate their derivatives.	
Assigned Department Objectives							
Teaching Method							
Outline		Students will learn one-variable derivative and integral as the basis of the calculus.					
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							
<input checked="" type="checkbox"/> Active Learning		<input checked="" type="checkbox"/> Aided by ICT		<input checked="" type="checkbox"/> Applicable to Remote Class		<input type="checkbox"/> Instructor Professionally Experienced	
Course Plan							
			Theme		Goals		
1st Semester	1st Quarter	1st	Limits and derivatives of functions		Can find the limit of a function.		
		2nd	Limits and derivatives of functions		Can find the infinite limit of a function.		
		3rd	Derivatives of functions		Can understand the definition of derivatives of functions and perform simple calculations.		
		4th	Derivatives of functions		Can find derivatives of products and quotients of functions.		
		5th	Derivatives of various functions		Can find derivatives of composite and trigonometric functions.		
		6th	Derivatives of various functions		Can find derivatives of exponential and inverse functions.		
		7th	Derivatives of various functions		Can find derivatives of inverse trigonometric functions and investigate continuity of functions.		
		8th	Function Variation		Can find equations for tangent and normal lines and examine the increase or decrease of a function.		
	2nd Quarter	9th	Function Variation		Can draw graphs of various functions and find the maximum and minimum values of functions.		
		10th	Function Variation		Can find the limit of an indefinite form and use derivatives to prove inequalities.		

		11th	Various applications of the derivative	Can find higher derivatives and examine the concavity and convexity of graphs.
		12th	Various applications of the derivative	Can find derivatives of functions by parameter representation and can find velocity and acceleration.
		13th	Various applications of the derivative	Can use derivatives to obtain approximate values.
		14th	Indefinite and definite integrals	Can find indefinite integrals.
		15th	Calculation of integrals	Can use the substitution integral method.
		16th	Exam	Confirmation of the studies.

Evaluation Method and Weight (%)

	Exam	Presentation	Attendance points		Total
Subtotal	30	40	30	0	100
Basic Proficiency	30	40	30	0	100
Specialized Proficiency	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0