Tsuyama Co	ollege	Year	2021			Course Title	ourse Title Analysis					
Course Information												
Course Code	0157			Course Cate	gory	Specialized / Elective						
Class Format	Lecture			Credits		Academic Credit: 2						
Department	Department of Integrated Science and Technology Communication and Informations System Program			Student Gra	de	5th						
Term	Year-round			Classes per	Week	1						
Textbook and/or	Textbook: "I	Kyokusen to K	yokume no kikag	aku" (Syoukal	oou)							
Instructor YOSHIDA Eiji												
Course Objectives												
Learning purpose : Understand the basics of differential geometry tht is a field in modern mathematics.												
Course Objectives : 1. To apply mathematical methods to solve problems in your area of expertise. 2. To understand the basic concept of differential geometry, and can calculate the basic form and curvature of concrete curves and curved surfaces.												
Rubric												
	Exceller	Excellent			Acceptable			Not acceptable				
Achievement 1	The stuverious	e student can find ious curvatures. The student about 70% c curvatures.		t can find of various	The student can find about 60% of various curvatures.		ind ous	The student can not find about 60% of various curvatures.				
Achievement 2	The stub basic fo	dent can find rms.	The student about 70% forms.	t can find of basic	The stu about 6 forms.	e student can find out 60% of basic ms.		The student can not find about 60% of basic forms.				
Achievement 3	The stu Rieman	The student can find Riemannian metrics.		The student can find about 70% of Riemannian metrics.		The student can find about 60% of Riemannian metrics.		The student can not find about 60% of Riemannian metrics.				
Assigned Department Objectives												
Teaching Method												
Outline	General or Specialized : Specialized Field of learning : Mathematics / Physics Required, Elective, etc. : Elective must complete subjects Foundational academic disciplines : Mathematical science / Mathematics / Analysis basics Relationship with Educational Objectives : This class is equivalent to "(3) Acquire deep foundation knowledge of the major subject area". Relationship with JABEE programs : The main goal of learning / education in this class are "(A), and A-1". Course outline : It deals with the basics of Differential Geometry, using Curves and Curved Surfaces as subjects.											
	Course meth	nod : basically give	n but ovorcisos	aro alco divon	to doop	on undorst	anding					
	Lectures are basically given, but exercises are also given to deepen understanding.											
Style	Grade evaluation method : Exams [60%] + Others (exercises, reports, lessons, etc.)[40%]. Regular examinations will be conducted a total of 2 times, and the evaluation ratios will be the same. Depending on the grade, the student may be required to retake the exam or submit additional report.											
Notice	Precautions on the enrollment : This course is an elective course. In addition, this subject is a "subject that requires study outside of class hours". Classes are offered for 15 credit hours per credit, but 30 credit hours are required in addition to this. Follow the instructions of your instructor for these studies.											
	Course advice : Make sure to check what you have learned in Mathematics up to the 4th year, such as Trigonometric functions, Vectors, Matrices, One-variable and Multi-variable Differential Equations, Ordinary Differential Equations, and Vector Analysis.											
	Foundational subjects : Fundamental Mathematics (1st year), Fundamental Linear Algebra (2nd), Differential and Integral I and II (2nd and 3rd), Fundamental Differential Equations (3rd), Applied Mathematics (4th)											
	Physics after 4th year, specialized subjects											
If you are late a lot, you may be treated as absent after giving a warning.												
Characteristics of	Class / Di	vision in Le	arning	1								
Active Learning		Aided by IC	т	Applicabl	e to Ren	note Class	□ Ins Experi	structor Professionally ienced				
Course Plan												

			Theme			Goals				
		1st								
		2nd								
		3rd								
	1st	4th								
Qua	Quarte	5th								
		6th								
		7th								
Semeste		8th								
r		9th								
		10th								
		11th								
	2nd Quarter	12th								
		1.3th								
		14th								
		15th								
		16th	Cuidanas Dianas							
		1st	Speed Learning content c lassignment	outside class hour	rs: Distribution	Students can find the curvature and rotation speed of a plane curve.				
2nd Semeste r 4th Qua		2nd	Spatial curve and Frenet-Serret formula Learning content outside class hours: Distribution assignment			Students can find the curvature and torsion of the space curve.				
		3rd	Curved surface and tangent plane Learning content outside class hours: Distribution assignment			Students can find the tangent plane.				
	3rd Quarte	4th	First basic form, second basic form Learning content outside class hours: Distribution assignment			Students can find first and second fundamental forms.				
		5th	Legal curvature, principal curvature Learning content outside class hours: Distribution assignment			Students can find the law curvature and the principal curvature.				
		6th	Gaussian curvature, mean curvature Learning content outside class hours: Distribution assignment			Students can find Gaussian curvature and mean curvature.				
		7th	Specific examples of basic form and curvature Learning content outside class hours: Distribution assignment			Confirmation of b concrete example	oasic matters so f es	ar through		
		8th	2nd semester mid	-term exam						
		9th	How to use an orthonormal system Learning content outside class hours: Distribution assignment			Students can use the orthonormal system to represent the various basic quantities they have learned so far.				
		10th	Fwo-variable differential form _earning content outside class hours: Distribution assignment			Students can calculate the differential form of two variables.				
		11th	Riemannian metric curved surfaces Learning content c assignment	c and structural e outside class hou	quations on rs: Distribution	Students can find Riemannian metric on curved surfaces.				
	4th Quarte	12th	Vector field and co Learning content o assignment	ovariant derivativ outside class hou	e rs: Distribution	Students can find parallel vector fields along a curve.				
		13th	Geodesic Learning content o assignment	Seodesic .earning content outside class hours: Distribution assignment			Students can find the geodesic equation.			
		14th	Gauss-Bonnet theo Learning content of assignment	Gauss-Bonnet theorem Learning content outside class hours: Distribution assignment			Students can use Gauss-Bonnet's theorem.			
		15th	2nd semester fina	2nd semester final exam						
		16th	Return and commo	entary of exam a	nswers	Confirmation of basic matters				
Evaluation Method and Weight (%)										
		Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total		
Subtotal		50	0	0	0	0	40	100		
Basic Proficienc	y S	30	0	0	0	0	20	50		
Specialized		30	0	0	0	0	20	50		
Cross Area Proficiency)	0	0	0	0	0	0		