Tsuyama College	Year	2020		Course Title	Fundamental Differential Equations

Course Information

Course Code	0051		Course Category	General / Compulsory
Class Format	Lecture		Credits	School Credit: 1
Department	Department of Integrated Science and Technology Communication and Informations System Program		Student Grade	3rd
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	MATSUDA Osamu			

Course Objectives

Learning Purpose : Familiarize students in understanding and solving differential equations.
Course Objective: 1. To understand the meaning of differential equations. 2. To be able to solve basic differential equations of variables. 3. To be able to solve basic first-order linear differential equations. 4. To be able to solve second-order homogeneous linear differential equations with constant coefficients.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can solve high-level problems of the same order related to the separation of variables system.	Can solve standard problems of the same order related to the separation of variables system.	Can't solve standard problems of the same order related to the separation of variables system.
Achievement 2	Can solve high-level first-order linear differential equations.	Can solve standard first-order linear differential equations.	Can't solve standard first-order linear differential equations.
Achievement 3	Can solve high-level second-order constant coefficient differential equations.	Can solve standard second-order constant coefficient differential equations.	Can't solve standard second-order constant coefficient differential equations.
Achievement 4	Can solve problems that apply conventional solutions such as simultaneous differential equations.	Can solve standard problems that apply conventional solutions such as simultaneous differential equations.	Can't solve standard problems that apply conventional solutions such as simultaneous differential equations.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : General Field of learning : Natural science common / basic Required, Elective: Elective must complete subjects Foundational academic disciplines : Mathematical science / mathematics / analysis basics Relationship with Educational Objectives: This class is equivalent to "(1)" Relationship with JABEE programs : The main goal of learning / education in this subject are (A) , A-1 Class outline: Understand the meaning of differential equations and learn how to find the release of various first-order differential equations and simple second-order differential equations. We start with the separation of variables that is solved by finding the primitive function (quadrature) and the homologous form that results in this. Furthermore, for linear differential equations that have a cohesive theoretical system in differential equations and have a wide range of applications, learn the solutions and the properties of solutions in the case of the first and second floors.
Style	Class method: Content is presented primarily at the board, and we will emphasize computer-based calculation experiments in order to deepen understanding. Grade evaluation method: Two regular examinations, equally weighted (60%) and exercises / reports (40%). Depending on the grade, a retest may be conducted. Textbooks, notebooks, etc. are not allowed for the exam.
Notice	Course method : In order to complete the 3rd-grade course, students must take this class (no more than one-third of required number of class hours missed). Course advice: Reviewing integrals is especially important. Foundational subjects : Fundamental Mathematics (1st year), Fundamental Mathematics Practice (1st), Differential and Integral Ⅰ (2nd), Fundamental Linear Algebra (2nd) Related subjects: Mathematics, physics, and other subjects after the 4th year Advice on attendance: It is important to listen carefully to the lectures and read the textbook by yourself, and I would like you to preparare for class diligently. Also, if you take the time to solve the problems with your own power, you will gain benefit. In addition to solving the equations, think about what the obtained solution curve will look like. Feel free to ask questions if you don't understand. If you are late often, it may be treated as absent after a warning. The person in charge of this subject is a part-time lecturer. The faculty member in charge of liaison is Matsuda.

Course Plan

			Theme		Goals
2nd Semester	3rd Quarter	1st	Guidance and review of calculus, meaning of differential equations		
		2nd	Solution of differential equations		Understanding the solution of differential equations
		3rd	Separation of variables 1		Understanding of Separation of Variables

		4th	Separation of variables 2	Understanding of Separation of Variables
		5th	Homogeneous form 1	Understanding of Homogeneous form
		6th	Homogeneous form 2	Understanding of Homogeneous form
		7th	First-order linear differential equation	Understanding of First-order linear differential equation
		8th	Mid-term exam	
	4th Quarter	9th	Return and explanation of the first half test answer, second-order linear differential equation (solution of equation differential equation)	Understanding of second-order linear differential equations
		10th	Second-order linear differential equation (linear differential equation)	Understanding of second-order linear differential equations
		11th	Constant coefficient homogeneous second-order linear differential equation	Understanding of Constant coefficient homogeneous second-order linear differential equation
		12th	Constant Coefficient Non-homogeneous Second Order Linear Differential Equation 1	Understanding of Constant Coefficient Non-homogeneous Second Order Linear Differential Equation 1
		13th	Constant Coefficient Non-homogeneous Second Order Linear Differential Equation 2	Understanding of Constant Coefficient Non-homogeneous Second Order Linear Differential Equation 1
		14th	Various linear differential equations	Understanding of Various linear differential equations
		15th	Final exam	
		16th	Return and explanation of final exam answers, non-linear second-order differential equations	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	70	0	0	0	0	30	100
Basic Proficiency	70	0	0	0	0	30	100
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0	0