

Tsuyama College		Year	2020		Course Title	Mechanics II
Course Information						
Course Code	0053		Course Category	General / Compulsory		
Class Format	Lecture		Credits	School Credit: 1		
Department	Department of Integrated Science and Technology Advanced Science Program		Student Grade	3rd		
Term	First Semester		Classes per Week	2		
Textbook and/or Teaching Materials	Textbooks : "Kougyou Rikigaku", "Dai 3 Han (Zouho Ban)", Aoki Hiroshi,Kitani Susumu,(Morikita Shuppan),Reference books : "Kougyou Rikigaku Reidai Ensyu",Takenaka Toshio,Urata Eizou,(Korona Sya)					
Instructor	YAMAMOTO Yoshinori,NISHIKAWA Kotaro					
Course Objectives						
Learning purposes : This course helps students develop the ability to analyze forces and displacements that are the basis of industrial product design, with a focus on statics.						
Course Objectives : 1. To understanding and calculating the expression of forces, moments and forces acting on objects. 2. To understand the meaning of the center of gravity and be able to calculate the position of the center of gravity of flat and solid objects. 3. To understanding the motion of a rigid body and being able to calculate the motion of a rigid body.						
Rubric						
	Excellent	Good	Acceptable	Not acceptable		
Achievement 1	Understand the expression of forces and moments, and solve for the forces acting on objects by using laws, diagrams and graphs.	Understand the expression of forces and moments and solve for the forces acting on objects.	Able to understand the expression of forces, moments and forces acting on objects.	The content on the left is not met.		
Achievement 2	Understand the concept of the center of gravity and be able to determine the position of the center of gravity of various objects.	Understand the concept of the center of gravity and be able to determine the position of the center of gravity of a regular object.	The position of the center of gravity of a regular object can be determined.	The content on the left is not met.		
Achievement 3	To understand the motion of rigid bodies and to be able to solve equations of motion using the laws of motion.	To understand the motion of simple rigid bodies and to be able to solve equations of motion using the laws of motion.	Solve simple rigid body motions by using laws of motion.	The content on the left is not met.		
Assigned Department Objectives						
Teaching Method						
Outline	General or Specialized : General Field of learning : Natural Sciences, Common and Basic Required, Elective, etc. : Must complete subjects Foundational academic disciplines : Engineering/mechanical engineering  Relationship with Educational Objectives : This class is equivalent to "(2) Acquire basic science and technical knowledge".  Relationship with JABEE programs : The main goal of learning / education in this class is "(A)".  Course outline : Industrial Mechanics is a course focusing on the application of elementary mechanics. In this course, we will learn how to solve the problems of industrial dynamics. The subject focuses on the analysis of engineering phenomena with a focus on statics, such as the equilibrium of forces.					
Style	Course method : Students will be taught mainly by writing on the board. The class will be conducted in relation to actual examples as much as possible. Exercises, reports and quizzes are given to deepen students' understanding.  Grade evaluation method : Results of regular examinations are equally evaluated (70%). Quizzes, exercises and assignment reports (30%). Students with an aggregate score of less than 60 may be required to take a re-examination by the end of the school year, which will be the same as the regular examinations. For each examination, students may only bring in writing materials and calculators.					
Notice	Precautions on the enrollment : This course is mandatory for completion of the academic year.  Course advice : This course is based on the mechanics of physics and is quite mathematical, so it is important to establish a solid foundation in physics and mathematics.  Foundational subjects : Physics I (1st year), Physics II (2nd) Related subjects :Mechanical Mechanics (4th year), Vibration Engineering (2nd year of Advanced course), etc.  Attendance advice : This is a basic course of the Department of Science and Engineering. Students are encouraged to solve problems in the dynamics system exercise books to acquire practical skills. Students are required to prepare and review the exercises as needed. Students are required to submit reports by the due date, and will be considered to have missed one class.					
Course Plan						

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance, lecture outline, forces, synthesis and decomposition of forces acting on a point	Ability to represent the synthesis and decomposition of forces acting on a point by means of diagrams, and to calculate the total and partial forces.
		2nd	Synthesis of force system with more than 3 forces, moment of force, even force, replacement of force	Ability to understand and calculate the meaning of moment of force.
		3rd	Synthesis of forces with different impulse points	Explain the equilibrium conditions for forces with different points of arrival.
		4th	Equilibrium of forces acting on a point, forces acting on the point of contact and fulcrum	Explain the conditions for the balancing of forces acting on a point.
		5th	Balance of forces at different points of arrival	Explain the equilibrium conditions for forces with different points of arrival.
		6th	Center of gravity, figure center, center of gravity of an object	Can understand the meaning of the center of gravity and calculate the position of the center of gravity of a flat or solid object.
		7th	Center of gravity of a rotating body, sitting of an object	Understand the contents of the left-hand column.
		8th	1st semester mid-term exam	
	2nd Quarter	9th	Return and commentary of exam answers. The point motion	Understand the meaning of velocity and acceleration.
		10th	Linear Motions, Plane Motions, Circular Motions of points	Understand constant velocity and constant acceleration motions.
		11th	Laws of motion, inertia, centripetal force and centrifugal force	Can understand the laws of motion and calculate centripetal and centrifugal forces.
		12th	Rotational motion of a rigid body, moment of inertia, theorem on moment of inertia	Equations of angular motion and the ability to calculate torque and inertial moments acting on a rigid body.
		13th	The Moment of Inertia of Simple Objects	Able to understand and calculate the content of the left-hand column.
		14th	Plane motion of a rigid body, Equations for plane motion of a rigid body	The translational and rotational motions of a rigid body can be represented by equations.
		15th	(1st semester final exam)	
		16th	Return and commentary of exam answers	

#### Evaluation Method and Weight (%)

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