

SYLLABUS CURRICULUM

COURSE	Course Name : ROBOT MECHANISM
	Course Code : TM184776
	Credit : 3 sks
	Semester : 7 or 8

COURSE DESCRIPTION

LEARNING OUTCOMES

LO8	Able to implement mathematics, science and engineering principles to solve engineering problems in mechanical systems.
LO9	Able to find the source of engineering problems in mechanical system through research that includes identification, formulation, analysis, data interpretation based on engineering principles.
LO10	Able to formulate the solution of engineering problem in mechanical system by considering economy, safety, environment and energy conservation.
LO11	Able to design mechanical system and the necessary components through analytical approach based on science and technology by considering technical standard and reliability.

COURSE LEARNING OUTCOMES

Student be able to show position and serial and parallel robot transfer, show the relation between Jacobian matrix with singularity of a robotic configuration, and design a parallel robotic structure that satisfies required degree of freedom.

MAIN SUBJECT

The focus of this course are as follows:

- Robotic type and its development : industrial robot, humanoid robot, mobile robot
- Analysis of position and transfer : degree of freedom, coordinate transformation, position and orientation
- Jacobian Matrix and singularity : singularity types based by Jacobian Matrix
- Robotic design : Screw theory, constraint types in various joint.
- Computation : computational analysis of position calculation and transfer

PREREQUISITES

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REFERENCE

1. Lung-Wen Tsai. Robot Analysis: The Mechanics of Serial and Parallel Manipulators. John Wiley and Sons, Inc, 1999.

2. Xianwen Kong and Clément Gosselin. Type Synthesis of Parallel Mechanisms. Springer Verlag Berli Heidelberg, Vol. 33. 2007.
3. Jorge Angeles. Fundamentals of Robotic Mechanical Systems: Theory, Methods and Algorithm. Springer Verlag New York, 2nd edition. 2003.