

SYLLABUS CURRICULUM

COURSE	Course Name : Vehicle Dynamics and Control
	Course Code : TM184750
	Credit : 3 sks
	Semester : Optional

COURSE DESCRIPTION

In this course students will learn the basic dynamics of vehicle and control. Students will learn to formulate vehicle dynamics models in lateral, longitudinal and vertical directions (driving quality). Students will get an overview of the vehicle's active safety system that includes basic concepts and terminology, State-of-the art active safety system development and basic principles of: yaw control, roller stability control, ABS system, traction control, semi suspension system -active and active as well as dynamic stability control system.

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

Students are able to formulate accurate simple dynamic model for vehicle dynamics, students are able to apply feedback control principles and analyze vehicle dynamics control system through simulation, students are able to utilize Computer-Aided Control System Design and Analysis Tool to analyze and design vehicle dynamics control system, students are able to possessing basic understanding in modern active safety system in vehicle.

MAIN SUBJECT

The focus of this course are as follows:

- Vehicle dynamics in lateral, longitudinal and vertical direction
- Vehicle dynamics control in lateral direction (yaw and roll stability control)
- Vehicle dynamics control in longitudinal direction (cruise control, traction control, ABS)
- Vehicle dynamics control in vertical direction (semi-active and active suspension)

PREREQUISITES
<ul style="list-style-type: none">- Engineering Dynamics- Mechanical Vibration- Dynamic System and Control
REFERENCE
<ol style="list-style-type: none">1. W. Chen, H. Xiao, Q. Wang, L. Zhao and M. Zhu, Integrated Vehicle Dynamics and Control, John Wiley & Sons, 20162. J. P. Pauwelussen, Essential of Vehicle Dynamics, Elsevier Ltd. 20153. R. Rajamani, Vehicle Dynamics and Control, 2nd Edition, Springer, 20124. M. Meywerk, Vehicle Dynamics, John Wiley & Sons, 2015