100-1 Preliminary Syllabus, Da-Yeh Univ

Information

Title		Serial No. / ID	1679 / ADR 5057
Dept.		School System / Class	1 1
Lecturer		Full or Part-time	
Required / Credit	Optinal / 3	Graduate Class	No
Time / Place	( )56 / H568 ( )4 / H568	Language	English

Introduction

Establish the principles for vehicle powertrain dynamic system and combine the knowledge of control theory and dynamic simulation methodologies to reach the understanding of powertrain system performance correlation with the design and control parameters and variables.

Outline

1. Vehicle Dynamic System introduction.
2. Mathematical Model for the System from the Physical Laws and the Control Theory
3. System Dynamic Performance and the Transfer Function Response of 1st and 2nd order Systems
4. Mechanical Translation and Rotation Stiffness and Damping Elements Linear and Nonlinear Characteristics
5. Hydraulic and Pneumatic Elements and Circuit Analysis from the System Models
6. Heat Transfer and Thermal Resistance and Capacitor in Thermal System Dynamics
7. Combine the Electrical and Hydraulic or Mechanical System Analogy Model Analysis.
8. Electical Motor Drive Load and the Performance Evaluation from the Dynamic Analysis.
9. Nonlinear System Approximation in State Space and Jacobin Transfer Matrix in Engine Application
10. Matlab-Simulink Introduction for the Linear Control System Model and Implment.
11. Establish of Mechanicla Mass, Stiffness, Damper and Inertia Elements under the Simulink Environment
12. Cascade Conection and Mask the System Parameter for Vehicle Powertrain Elements
13. Manual and Automatic Transmission Model, Clutch and CVT Model, and Differential Model.
14. Vehicle Road Load and Tire Model
15. Vehicle Powertrain Cascade Model Requirements and Analysis.
16. Combined Translation and Rotational Dynamic in Vehicle Modular Suspension Models and Interaction.
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Prerequisite

Automatic Control
Engineering Mathematics
Vehicle Dynamics