

Program : <b>Diploma in Automobile Engineering</b>	
Course Code : <b>6059B</b>	Course Title: <b>Automotive Vehicle and Body Control Systems Lab</b>
Semester : <b>6</b>	Credits: <b>1.5</b>
Course Category: <b>Program Elective</b>	
Periods per week: <b>3 (L:0, T:0, P:3)</b>	Periods per semester: <b>45</b>

### Course Objectives:

- To familiarize and experiment with various components of automotive vehicle and body control systems
- To demonstrate the functioning of different control mechanisms involved in the system and their fault finding/remedial measures.

### Course Prerequisites:

Topic	Course code	Course name	Semester
Knowledge about Automobile Engine and Chassis		Internal Combustion Engines	3
		Automobile Electrical and Electronics Systems	3
		Automotive Chassis and Transmission	4

### Course Outcomes:

On completion of the course, the student will be able to:

CO <sub>n</sub>	Description	Duration (Hours)	Cognitive level
CO1	Experiment with Electronic Suspension system and Steering system	10	Applying
CO2	Make use of Cruise control Antilock braking system and traction control	10	Applying
CO3	Experiment with wiper, Automatic air conditioning and instruments	11	Applying
CO4	Utilize Power windows, airbags and security systems	11	Applying
	Lab Exam	3	

**CO –PO Mapping:**

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
<b>CO1</b>	3			2			2
<b>CO2</b>	3			2			
<b>CO3</b>	3			2			
<b>CO4</b>	3			2			2

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

**Course Outline:**

Module Outcomes	Description	Duration (Hours)	Cognitive Level
<b>CO1</b>	<b>Experiment with Electronic Suspension system and Steering system</b>		
M1.01	Experiment with Electronic Suspension system	2	Applying
M1.02	Experiment with Adjustable shock absorber	2	Applying
M1.03	Make use of Electronic suspension control system	2	Applying
M1.04	Utilize Power steering	2	Applying
M1.05	Experiment with Electronic steering control	2	Applying
<b>CO2</b>	<b>Make use of Cruise control Antilock braking system and traction control</b>		
M2.01	Experiment with Cruise control system	2	Applying
M2.02	Make use of Advanced cruise control	3	Applying
M2.03	Experiment with Antilock braking system	3	Applying
M2.04	Utilize Traction Control unit	2	Applying
	Lab Exam – I	1.5	
<b>CO3</b>	<b>Experiment with wiper, Automatic air conditioning and instruments</b>		
M3.01	Experiment with Wind shield wiper/washer system	2	Applying
M3.02	Make use of Automatic air conditioning	3	Applying
M3.03	Experiment with Coolant temperature sensor and measurement	2	Applying

M3.04	Make use of Oil pressure sensor and measurement	2	Applying
M3.05	Experiment with Vehicle speed sensor and measurement	2	Applying
<b>CO4</b>	<b>Utilize Power windows, airbags and security systems</b>		
M4.01	Experiment with Power windows	2	Applying
M4.02	Utilize Power lock systems	1	Applying
M4.03	Experiment with Power seats- Power mirror system	2	Applying
M4.04	Make use of Air bags	3	Applying
M4.05	Experiment with Security systems	3	Applying
	Open Ended Projects**		Applying
	Lab Exam – II	1.5	

**\*\* - Suggested Open Ended Projects**

(Not for End Semester Examination but compulsory to be included in Continuous Internal Evaluation. Students can do open ended experiments as a group of 2-3. There is no duplication in experiments between groups. Open ended experiments should include the concepts of arrays, functions and structures)

1. Make use of the procedure of dismantling and inspection procedure on power steering unit.
2. Make use of the data of modern security systems and suggest creative modifications.

**Text / Reference:**

<b>T/R</b>	<b>Book Title/Author</b>
T1	U.Kienck, and L. Nielsen, Automotive Control Systems, SAE and Springer-Verlag 2000
R1	LjuboVlacic, Michel Parent, Fumio Harashima, "Intelligent Vehicle Technologies", Butterworth-Heinemann publications, Oxford, 2001
R2	Crouse, W.H & Anglin, D.L,"Automotive mechanics", Intl.Student edition, 9 <sup>th</sup> edition, TMH, NewDelhi, 2002.
R3	William B. Ribbens-Understanding Automotive Electronics, 5 <sup>th</sup> edition, Butter worth Heinemann Woburn 1998.
R4	Bosh, "Automotive Handbook", 6 <sup>th</sup> edition, SAE,2004

**Online Resources:**

<b>Sl.No</b>	<b>Website Link</b>
1	<a href="https://www.youtube.com/watch?v=zkaado-fNddo">https://www.youtube.com/watch?v=zkaado-fNddo</a>
2	<a href="https://www.youtube.com/watch?v=o2kyozK9GII">https://www.youtube.com/watch?v=o2kyozK9GII</a>
3	<a href="https://www.youtube.com/watch?v=own_VaRZ9M8">https://www.youtube.com/watch?v=own_VaRZ9M8</a>
4	<a href="https://www.youtube.com/watch?v=YeXlmdlXp2s">https://www.youtube.com/watch?v=YeXlmdlXp2s</a>