

AE-416: Vehicle Safety Engineering										
L	T	P	Credit	Area		CWS	PRS	MTE	ETE	PRE
3	0/1	2/0	4	DEC		15/25	25/-	20/25	40/50	-

**Objectives:** To familiarize the students with the safety systems for automobiles, testing for safety, environment related testing and Motor vehicle Acts

AE-416: Vehicle Safety Engineering		Contact Hours
<b>Unit-1</b>	Automotive vehicle testing for Safety: Introduction to active& passive vehicle safety systems	8
<b>Unit-2</b>	Braking test (as per IS 11852-2001), ABS performance & Traction control test Seat belt anchorage testing, Horn, lighting installation and mirror, test and their simulation	6
<b>Unit-3</b>	Collapsible steering column testing: Frontal crash test, side door intrusion, interior and exterior test. Body block test (IS-11939-1996), Introduction to the offset, Frontal impact test (IS-11939-1996. & (ECE 94), Lateral Impact (ECE R95), AIS-029: SURVIVAL SPACE FOR OCCUPANTS, pedestrian protection test and other upcoming standards	6
<b>Unit-4</b>	Environment related testing: Emission test: As per TAP 115, Full throttle test for engine, pass by noise test and their simulation	8
<b>Unit-5</b>	Performance: gradability, Steering effort test, turning circle diameter test and their simulation Controls: speedometer calibration, MPFI, CRDI calibration test and their simulation	8
<b>Unit-6</b>	Motor Vehicle Act (1988), Central Motor Vehicles Rules (1989) and subsequent amendments	6
	<b>Total</b>	<b>42</b>

**Reference Books:**

1	Integrated Automotive Safety Handbook by U.W. Seiffert & M. Gonter Published by SAE-International ISBN (978- 07680-6437-7)
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### Course Outcomes

CO1	To study automotive vehicle testing for safety
CO2	To discuss different test of different parts of automotive vehicle.
CO3	To describe collapsible steering column testing
CO4	To analyze Environment related testing and their simulation
CO5	To explain performance of different parts test and their simulation
CO6	To apply motor vehicle act, vehicles rules and subsequent amendments for case studies.

### CO-PO/PSOMatrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	0	0	0	0	0	0	2	2	1	1
CO2	3	3	2	3	1	0	0	0	0	0	0	1	2	1	1
CO3	3	3	3	3	1	0	0	0	0	0	0	2	3	3	2
CO4	3	3	3	3	1	0	0	0	0	0	0	1	3	3	2
CO5	2	2	2	2	2	0	0	0	0	0	0	1	2	2	2