

Bangladesh Sweden Polytechnic Institute  
Kaptai, Rangamati Hill Tracts  
Automobile Technology  
6<sup>th</sup> Semester

Semester Plan (2016 Probidan)

**Automotive Electrical and Electronic System -1(66265)**

T P C  
2 6 4

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No. of Week	No. of Class	Theory Class Content	Practical Contents	Remarks
01	01	1.1 Define battery cell and battery. 1.2 Mention the function of battery in automobile. 1.3 Describe the constructions of lead acid battery. 1.4 Describe the construction of each component of lead acid battery.	<b>1. Observe the construction of battery.</b>	
	02	1.5 Explain the chemical reaction happens in battery cell during charging and discharging period. 1.6 Explain battery efficiency, battery capacity and battery ratings. 1.7 Explain the effect of temperature on battery characteristics and electrolyte gravity. 1.8 Explain self discharge characteristics of a lead acid battery.	<b>2. Perform specific gravity test of lead acid battery.</b>	
02	01	2.1 Define battery charging. 2.2 Name the different types of battery charging system. 2.3 Draw a charging circuit diagram from AC 220V. 2.4 Describe the procedure of slow charging.	<b>Perform high discharge test of a lead acid battery.</b>	
	02	2.5 Describe the procedure of quick charging. 2.6 Describe the procedure of trickle charging. 2.7 Describe the procedure of preparing electrolyte. 2.8 Explain the charging sulfated battery. 2.9 Describe the process of charging more than one battery at a time. <b>Quiz Test-01</b>	<b>Practice charging a lead acid battery.</b>	
03	01	3.1 Name the different testing procedure of battery. 3.2 Describe the testing procedure of specific gravity of the electrolyte. 3.3 Describe the high discharge testing procedure. 3.4 Describe the battery testing procedure by electronic tester.	<b>Perform maintenance of a lead acid battery.</b>	
		3.5 Mention the steps of battery maintenance. 3.6 Explain over charging failure, sulphation failure, cycling failure & internal short circuit failure. 3.7 Describe the process of storing of dry and wet lead acid battery. 3.8 Mention the advantages of maintenance free battery.	<b>Practice the preparation of electrolyte.</b>	
	02	<b>Class test-01</b>		
04	01	4.1 Mention the purposes of ignition system. 4.2 Mention the classification of the ignition system. 4.3 Describe the operation of battery coil ignition system. 4.4 Mention the function of each component of battery coil ignition system.	<b>Perform the battery coil ignition system circuit connection &amp; observe operation.</b>	
	02	4.5 Describe the construction of ignition switch, ignition coil, blast resistor, condenser, C.B. Point and spark plug. 4.6 Mention the classification of spark plug. 4.7 Mention the specification of spark plug.	<b>Observe the construction of ignition distributor.</b>	

05	01	5.1 Mention purposes of ignition distributor. 5.2 Name the different types of ignition distributor. 5.3 Describe the operation of conventional ignition distributor. 5.4 Explain the role of dwell angle in ignition system. 5.5 Mention the purposes of CB point gap adjusting. 5.6 Explain the importance of spark advance.	<b>Service the spark plug.</b>	
	02	<b>Class test -02</b>		
06	01	6.1 Mention the purposes of magneto ignition system. 6.2 Name the different types of magneto ignition system. 6.3 Describe the operation of magneto ignition system. 6.4 Mention the advantages of magneto ignition system.	<b>Observe the magneto ignition system.</b>	
	02	7.1 Mention the function of diode, zenor diode, SCR (Thyristor), Transistor & IC. 7.2 Mention the purposes of CDI system. 7.3 Mention the different types of CDI system. 7.4 Describe the operation of CDI system. 7.5 Mention the function of each component of CDI systems. 7.6 Explain Hall Effect principle. <b>Quiz Test--02</b>	<b>Observe the CDI system of motor cycle.</b>	
07		<b>Mid Term Exam</b>		
08	01	8.1 State the meaning of integrated ignition assemblies (IIA). 8.2 Mention the types of integrated ignition assemble (IIA). 8.3 Mention the function of each components of magnetic pulse distributor or IIA.	<b>Observe the operation of magnetic pick up distributor type ignition system.</b>	
	02	8.4 Describe the operation of magnetic pulse distributor ignition system or IIA (without ECU & with ECU). 8.5 Mention the advantages of magnetic pulse distributor or IIA system.		
09	01	9.1 Mention the purposes of distributor less ignition system. 9.2 Mention the function of each component of DLI system. 9.3 Describe the operation of DLI system. 9.4 Mention the advantages of DLI system. <b>Quiz Test-03</b>	<b>Observe the operation of distributor less ignition (DLI) system &amp; test..</b>	
	02	10.1 Define DIS. 10.2 Mention the components of DIS. 10.3 Describe the operation of DIS. 10.4 Compare DIS with DLI system. 10.5 Mention the advantages of DIS.		
10	01	11.1 Mention the necessity of starting system. 11.2 Classify the starting system. 11.3 Describe the operation of manual starting system. 11.4 Describe the operation of electric motor starting system with circuit diagram. 11.5 Describe the construction of armature, commutator, pole shoe, field coil, carbon brush, etc.	<b>Observe the operation of Direct system (DIS) &amp; test.</b>	
	02	11.6 Describe the operation of over running clutch and ben dix mechanism. 11.7 Describe the operation of solenoid switch. 11.8 Explain the starter motor driver mechanism & planetary gear set for gear reduction. 11.9 Describe the procedure of testing, fault finding and repair of starting motor and its components.	<b>Observe the operation of starter motor circuit &amp; test.</b>	

11	01	<b>Class Test – 03</b>		
	02	12.1 Mention the purpose of automobile charging system. 12.2 Describe the operation of automobile charging system with circuit diagram. 12.3 Describe the construction of alternator. 12.4 Describe the operation of alternator. 12.5 Mention the function of alternator rectifier, heat sink, rotor, stator, slip ring, carbon brush, etc.	<b>Observe the construction of starter motor.</b>	
12	01	12.6 Describe the operation of alternator regulator. 12.7 Explain the field excitation, self excitation and battery excitation type alternator. 12.8 Describe the warning light control operating mechanism. 12.9 Describe the procedure of testing, servicing and repairing of alternator and its components.	<b>Observe the operation of solenoid switch of starter motor &amp; test.</b>	
	02	13.1 Explain cable color coding and cable size selection. 13.2 State the meaning of wiring harness. 13.3 List the typical cable connectors for auto-electrical equipment. 13.4 Explain uses of fuses, fusible link, circuit breakers and various relays used in automobile.	<b>Observe the operation of alternator &amp; test.</b>	
13	01	13.5 Explain a simplified wiring diagram of automobile. 13.6 Explain the printed circuit board and its use in automobile. 13.7 Mention the electrical load for a passenger car. 13.8 Draw the symbols used in automotive electrical diagram.	<b>Observe the wiring and insulation of automobile.</b>	
	<b>02</b>	<b>Final Evaluation Test</b>		