

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
					A	0	3	4	0	1	1	1	
<b>COURSE NAME</b>	<b>AUTO ENGINES – II (DIESEL ENGINES)</b>												
<b>CO Description</b>	<b>Student will be able to explain about theory, construction and components for given diesel engine</b>												
<b>LO Description</b>	<b>Student will be able to explain theory/construction/components/working of diesel engine with help of a labeled line diagram</b>												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Introduction to diesel engine, dual combustion cycle, actual diesel and dual combustion cycles, Types of diesel engines, working principle, construction and operation, Valve timing diagram, significance of firing order, study of engine specifications for LCV, HCV, and SUV	Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc.	08	04	<ul style="list-style-type: none"> <li>Automobile Engg. by R.B.Gupta SatyaPrakashan N. Delhi</li> <li>Automobile Engg. by K.K.Jain &amp; Asthana Tata McGraw-Hill Publisher</li> <li>W.H. Crouse “Automotive mechanics”, Tata McGraw-Hill Publishing Co., N. Delhi.</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Theory exam	Two theory questions related to the learned content will be asked in the university question paper	10	Question paper, Check list	External								
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
NIL													

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
					A	0	3	4	0	1	1	2	
<b>COURSE NAME</b>	<b>AUTO ENGINES – II (DIESEL ENGINES)</b>												
<b>CO Description</b>	<b>Student will be able to explain about theory, construction and components for given diesel engine</b>												
<b>LO Description</b>	<b>Student will be able to compare the diesel engine with the 4S petrol engine regarding construction, merits and limitations</b>												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Comparison of 4S petrol Engine & diesel Engine regarding their construction, merits and limitations.	Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc.	04	03	<ul style="list-style-type: none"> <li>Automobile Engg. by R.B.Gupta SatyaPrakashan N. Delhi</li> <li>Automobile Engg. by K.K.Jain &amp; Asthana Tata McGraw-Hill Publisher</li> <li>W.H. Crouse “Automotive mechanics”, Tata McGraw-Hill Publishing Co., N. Delhi.</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Paper pen test	One theory question related to the learned content will be asked in the test paper	10	Test paper, Check list	Internal								
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
NIL													

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
					A	0	3	4	0	1	1	3	
<b>COURSE NAME</b>	<b>AUTO ENGINES – II (DIESEL ENGINES)</b>												
<b>CO Description</b>	<b>Student will be able to explain about theory, construction and components for given diesel engine</b>												
<b>LO Description</b>	<b>Student will be able to identify various components of diesel engines</b>												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Study of locations, constructional features, functions of various components of diesel engines	Lab demonstration method	Teacher will demonstrate the contents to the students. Students will practice under the guidance of teacher.	04	03	Cut-sectioned/ working models, disassembled engines, different components and sub-assemblies	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1.	Laboratory Test by Observation	Examiner will ask the student to identify five engine components	10	Cut-sectioned/ working models/ disassembled engines/ different components and sub-assemblies, Rating scale	External								
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
<b>The assessment will be done on basis of following performance indicators:-</b>													
1- Correctness of identification of first component 2- Correctness of identification of second components 3- Correctness of identification of third component 4- Correctness of identification of fourth component 5- Correctness of identification of fifth component.													

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					A	0	3	4	0	1	1	4	
<b>COURSE NAME</b>	<b>AUTO ENGINES – II (DIESEL ENGINES)</b>												
<b>CO Description</b>	<b>Student will be able to explain theory, construction and components about given diesel engine</b>												
<b>LO Description</b>	<b>Student will be able to locate the position of various components in relation to other components in the given diesel engine system</b>												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Location/ relative position of various components in diesel engine assembly	Lab demonstration	Teacher will demonstrate the contents to the students and provide observation tables. Students will complete given observation tables based on their observations.	03	04	Cut-section / working models of diesel engines	NIL						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Laboratory test by observation	Examiner will ask the students to locate the relative position of five different components in relation to other components in the given diesel engine during practical examination	10	Cut-section/ working model of diesel engines, Rating scale	External								
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
<p><b>The assessment will be done on basis of following performance indicators:-</b></p> <p>1- Correctness of locating the position of first component 2- Correctness of locating the position of second component 3- Correctness of locating the position of third component 4- Correctness of locating the position of fourth component 5- Correctness of locating the position of fifth component.</p>													

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					A	0	3	4	0	1	2	1	
<b>COURSE NAME</b>	<b>AUTO ENGINES – II (DIESEL ENGINES)</b>												
<b>CO Description</b>	<b>Student will be able to explain combustion process, reasons and remedies for knocking in diesel engines</b>												
<b>LO Description</b>	<b>Student will be able to explain combustion process in diesel engines with help of line diagram</b>												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Combustion in CI engine, stages of combustion, factors affecting delay period, related line diagrams, Combustion chamber for diesel engines & its different types	Traditional Lecture method	Teacher will explain different concepts and descriptions related to contents. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	04	03	<ul style="list-style-type: none"> <li>Sharma &amp; Mathur “Internal Combustion Engines” Dhanpat Rai and sons, N. Delhi</li> <li>Ganesan.V “Internal Combustion Engines”, Tata McGraw-Hill Publishing Co., N. Delhi.</li> </ul>	If necessary teacher will suggest video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Theory exam	One theory questions related to the learned content will be asked in the test paper	10	Question paper, Check list	External								
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
NIL													

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code		Course Code		CO Code	LO Code	Format No. <b>4</b>
						A	0	3	4	0	1	
<b>COURSE NAME</b>	AUTO ENGINES – II (DIESEL ENGINES)											
<b>CO Description</b>	Student will be able to explain combustion process, reasons and remedies for knocking in diesel engines											
<b>LO Description</b>	Student will be able to explain reasons and remedies for the diesel knock in diesel engines											
SCHEME OF STUDY												
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks					
1	Abnormal combustion in diesel engine, Various reasons for diesel knock, effect of engine variables on knocking, important properties of diesel, IS Code for diesel , Cetane number, Fuel additives, remedies for the diesel knock, comparison of detonation and diesel knock	Traditional Lecture method	Teacher will explain different concepts and descriptions related to contents. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	06	03	<ul style="list-style-type: none"> <li>Sharma &amp; Mathur “Internal Combustion Engines” Dhanpat Rai and sons, N. Delhi</li> <li>Ganesan.V “Internal Combustion Engines”, Tata McGraw-Hill Publishing Co., N. Delhi.</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.					
SCHEME OF ASSESSMENT												
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required		External / Internal						
1	Paper pen test	One theory question related to the learned content will be asked in the test paper	10	Test paper, Check list		Internal						
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)												

**NIL**

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
					A	0	3	4	0	1	3	1	
<b>COURSE NAME</b>	<b>AUTO ENGINES – II (DIESEL ENGINES)</b>												
<b>CO Description</b>	<b>Student will be able to explain theory, construction, working and components about fuel injection system used in the given diesel engines</b>												
<b>LO Description</b>	<b>Student will be able to explain theory/construction/working/ components of given fuel supply and injection system for diesel engine with the help of a labeled line diagram</b>												
SCHEME OF STUDY													
S. No	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Theory of Diesel fuel injection, Description and function of common rail system, different types of fuel injector, rotary pump, types of governors, Types of diesel filters, fuel feed pump.  Clean diesel technology, Common Rail Diesel Injection system, Hydraulically Actuated Electronically Controlled Unit Injector, Sensors, actuators and ECU.	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	08	03	<ul style="list-style-type: none"> <li>Automobile Engg. Vol.2 by Singh, Kripal Standard publishers New-Delhi</li> <li>Ramalingam, K.K. "I.C. Engines Theory &amp; Practice", Scitech Publisher Chennai</li> <li>W.H.Crouse "Automotive Mechanics" Tata McGraw-Hill Publishing co., New-Delhi</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Theory exam	Two theory questions related to the learned content will be asked in the university question paper	10	Question paper, Check list	External								
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
NIL													

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					A	0	3	4	0	1	3	2	
<b>COURSE NAME</b>		<b>AUTO ENGINES – II (DIESEL ENGINES)</b>											
<b>CO Description</b>		<b>Student will be able to explain theory, construction and components about fuel injection system used in the given diesel engines</b>											
<b>LO Description</b>		<b>Student will be able to compare the two given fuel injection systems for their construction, merits and limitations</b>											
<b>SCHEME OF STUDY</b>													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Comparison between (a) conventional fuel injection system and CRDI (b) mechanical & electronically controlled diesel injection system, (c) direct injection, multi-port injection and throttle body injection Regarding their construction, merits and limitations	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	6	3	<ul style="list-style-type: none"> <li>Automobile Engg. by R.B.Gupta, SatyaPrakashan, New Delhi</li> <li>Ganesan.V “I.C. Engines”, Tata McGraw-Hill Publishers., New Delhi,</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
<b>SCHEME OF ASSESSMENT</b>													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Paper-Pen Test	One theory question related to the learned content will be asked in the test paper	10	Test paper, Check list			Internal						
<b>INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
<b>NIL</b>													

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				A	0	3	4	0	1	3	3	
<b>COURSE NAME</b>	<b>AUTO ENGINES – II (DIESEL ENGINES)</b>											
<b>CO Description</b>	<b>Student will be able to explain theory, construction and components about fuel injection system used in the given diesel engines</b>											
<b>LO Description</b>	<b>Student will be able to identify the different components of given fuel supply and injection system for diesel engine</b>											
SCHEME OF STUDY												
S. No.	Contents	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks					
1	Study of location, constructional features, functions of various components of different types of fuel injection system.	Lab demonstration method	Teacher will demonstrate the contents to the students. Students will practice under the guidance of teacher.	06	03	<ul style="list-style-type: none"> <li>Cut-section / working models, different components and sub-assemblies</li> </ul>	NIL					
SCHEME OF ASSESSMENT												
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal							
1	Laboratory test by observation	Examiner will ask the student to identify five different components in the given diesel engine fuel injection system during practical examination	10	Cut-section / working models, different components and sub-assemblies, Rating scale	External							
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)												
<b>The assessment will be done on basis of following performance indicators:-</b> 1- Correctness of identification of first component 2- Correctness of identification of second component 3- Correctness of identification of third component 4- Correctness of identification of fourth component 5- Correctness of identification of fifth component.												

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					A	0	3	4	0	1	4	1	
<b>COURSE NAME</b>	<b>AUTO ENGINES – II (DIESEL ENGINES)</b>												
<b>CO Description</b>	<b>Student will be able to improve the IC engine performance through performance measurement and suggesting additional devices</b>												
<b>LO Description</b>	<b>Student will be able to calculate specific fuel consumption, volumetric efficiency, indicated power and dissipation of heat from given test data</b>												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract/Tut Hrs.	LRs Required	Remarks						
1	Specific Fuel Consumption, Volumetric Efficiency, Heat balance sheet, Indicated Power, Dynamometer and its types, study of various tests conducted on dynamometer, methods of calculating various engine performance indicators from given data, simple numerical problems based on use of formula	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	06	02	<ul style="list-style-type: none"> <li>Ganeshan V. I.C. Engines Tata Mc-Graw Hill Publishing Co. Ltd.</li> <li>R. K. Rajput A Textbook of Internal Combustion Engines Laxmi Publication Ltd.</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Theory paper	One simple numerical question will be asked in theory paper to calculate the value of engine performance indicator from the given engine test data using the formula	10	Question Paper	External								
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
NIL													

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					A	0	3	4	0	1	4	2	
<b>COURSE NAME</b>	<b>AUTO ENGINES – II (DIESEL ENGINES)</b>												
<b>CO Description</b>	<b>Student will be able to improve the IC engine performance through performance measurement and suggesting additional devices</b>												
<b>LO Description</b>	<b>Student will be able to explain the purpose, theory, construction and working of turbocharger and supercharger with the help diagrams</b>												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract/Tut Hrs.	LRs Required	Remarks						
1	Need, purpose of supercharging, turbo-charging, construction & Working of supercharger and turbocharger, types of superchargers and Turbo-chargers, Intercoolers.	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	04	02	<ul style="list-style-type: none"> <li>S. Srinivasan “Automotive Mechanics” Tata McGraw-Hill Education</li> <li>W.H.Crouse “Automotive Mechanics” Tata Mc-Graw Hill Publishing Co. Ltd</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Paper-pen test	One theory question related to the learned content will be asked in the test paper	10	Test paper, Check list	Internal								
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
NIL													

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
					A	0	3	4	0	1	4	3	
<b>COURSE NAME</b>	<b>AUTO ENGINES – II (DIESEL ENGINES)</b>												
<b>CO Description</b>	<b>Student will be able to improve the IC engine performance through performance measurement and suggesting additional devices</b>												
<b>LO Description</b>	<b>Student will be able to compare the turbocharger and supercharger for their construction, merits and limitations</b>												
<b>SCHEME OF STUDY</b>													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Comparison between various types of supercharger, between supercharger and turbo-charger, for their construction, merits and limitations	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	04	02	<ul style="list-style-type: none"> <li>Anil Chhikara “Automobile Engineering vol-1 “ SatyaPrakashan, New Delhi</li> <li>W.H.Crouse &amp; D.L. Anglin “Automotive Mechanics” Tata Mc-Graw Hill Publishing Co. Ltd.</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
<b>SCHEME OF ASSESSMENT</b>													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Theory exam	One theory question will be asked in the question paper	10	Question paper	External								
<b>INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
<b>NIL</b>													

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					A	0	3	4	0	1	5	1	
<b>COURSE NAME</b>	AUTO ENGINES – II (DIESEL ENGINES)												
<b>CO Description</b>	Student will be able to explain the requirements and characteristics of alternative fuels, lubricants and coolants used in IC engines												
<b>LO Description</b>	Student will be able to explain the important characteristics of given alternative fuel for IC engines												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Need of alternative fuels, Fuel properties, Classification of alternative fuels. <b>Fuels for SI engines</b> such as Compressed Natural Gas (CNG), Liquefied Petroleum Gas (LPG), Biogas and Methanol <b>Fuels for CI engines</b> such as Di-Methyl Ether(DME), Di-Ethyl Ether, bio-diesel, Hydrogen (H <sub>2</sub> )	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	06	03	<ul style="list-style-type: none"> <li>• S.S.Thipse “ Alternative Fuels” Jaico Publisher</li> <li>• Ramalingam, K.K. “I.C. Engines Theory &amp; Practice”, Scitech Publisher Chennai</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Theory exam	Two theory questions related to the learned content will be asked in the university question paper	10	Question paper, Check list	External								
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NIL													

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					A	0	3	4	0	1	5	2	
<b>COURSE NAME</b>	<b>AUTO ENGINES – II (DIESEL ENGINES)</b>												
<b>CO Description</b>	<b>Student will be able to explain the requirements and characteristics of alternative fuels, lubricants and coolants used in IC engines</b>												
<b>LO Description</b>	<b>Student will be able to explain the important characteristics of given lubricant for the IC Engines</b>												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Need of lubricants, Function of lubricating oil, Properties of lubricants, Types of lubricants, Study of important characteristics of main commercially available lubricants, nomenclature /SAE codes for commercial lubricants	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	04	02	<ul style="list-style-type: none"> <li>Ramalingam, K.K. "I.C. Engines Theory &amp; Practice", Scitech Publisher Chennai</li> <li>Jain K.K., Asthana R.B. Automobile Engineering Tata Mc-Graw Hill Publishing Co. Ltd.</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required		External / Internal							
1	Theory exam	Two theory questions related to the learned content will be asked in the university question paper	10	Question paper, Check list		External							
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					A	0	3	4	0	1	5	3	
<b>COURSE NAME</b>	AUTO ENGINES – II (DIESEL ENGINES)												
<b>CO Description</b>	Student will be able to explain the requirements and characteristics of alternative fuels, lubricants and coolants used in IC engines												
<b>LO Description</b>	Student will be able to explain the important characteristics of the given coolant for the IC engines												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Requirement of coolant, Functions of coolant, Types & Characteristics of Coolant , and their effect on engine cooling, additives, study of characteristics of main commercially available coolants, nomenclature of main commercially available coolants	Traditional Lecture method	Teacher will explain different concepts. He will give assignments and organize quizzes to ascertain their learning. Students will prepare assignments and attempt quizzes. Teacher will identify their weaknesses and provide necessary remedial and tutorials	05	02	<ul style="list-style-type: none"> <li>Ramalingam, K.K. “I.C. Engines Theory &amp; Practice”, Scitech Publisher Chennai</li> <li>S. Srinivasan “Automotive Mechanics” Tata McGraw-Hill Education</li> </ul>	If necessary teacher will suggest more video link, learning resources which will help the students to solve quiz, prepare assignments etc.						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Paper-pen Test	Two theory questions related to the learned content will be asked in the university question paper	10	Test paper, Check list	Internal								
INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
NIL													