	RGPV(I	Diplo	maWi	ng)Bhopa	I		SEM	ESTER	RTEACH	IINGLE	ARNIN	NG&A	SSESSN	ЛЕNTPL	AN		FORM	4 Т- 6
NA	MEOF P	PROGE	RAMMI	THRE	EYEARSE	OIPLO	MA		SCHEME		OBE		IMP	LEMENTI	NGYEA	\R	2020-	-21
BR	ANCHC	ODE	A03	NAMEOF	BRANCH			·	AUTON	/IOBILE	ENGINE	ERING	3		SEMI	ESTER	FIFTH	ł
			CO	URSEDETAI	LS	·		T-L	PLAN				AS	SESSMEN	TPLAN			
S.			cou	DCE		No.	No.	Total			ernal		Externa	lAssessmer	nt(Univer	sityExam)	Grand
No	COURSE		NAI	_	PAPER	of	of	T-L	T-L Hrs.	Asses	sment		TheoryPa	per	Pi	racticalEx	am*	Total
	CODE				CODE	COs	LOs	Hrs.	/Week	Duration				No.of LOs	Total Marks	Duration	of Marks	
1	501	AUTO	DESIGN 8	&DRAFTING	6956	05	15	120	08	05	50	07	70	03HRs.	03HRs. 03 30			150
2	502		ELECTRI		6957	05	15	120	08	05	50	07	70	03HRs.	03	30	03Hrs.	150
3	503	VEHICL EMISSI &AIRCO			6958	05	11	90	06	08	40	-	-	-	03	60	03Hrs	100
4	504	TRAC	TORS AN	D EARTH	6959	04	12	105	07	05	30	07	70	03HRs.	-	-	-	100
5	505	_	ESSIONAI LOPMENT			03	06	60	04	06	75	-	-	-	-	-	-	75
			TOTAL			22	59	495	33	29	245	21	210	-	09	120	-	575
											No	o.ofThe	oryPapers	03	No.of	PracticalE	xams03	-

^{*}ExamforLOs(Psycho+Affect.)**perbatch of20students

RGPV (DIPLOMA W BHOPAL		ING)	OBE CURI	FORMAT	r-3	Sheet No. 1/5			
Branch		A	UTOMOBILE ENG	INEERING	Semest	ter	Fifth		
Course Code	50 1	1	ting						
Course Outco	ome 1			apply design related lesign problem situati		T-L Hrs	∣Marks		
Learning Outo	come 1			explain the various d with suitable example	•	9	10		
Content	s	Types of designs, design considerations, morphology of design, design optimization, factor of safety, factors governing FS, critical dimension, impact load and fatigue considerations, Interchangeability, standardization, limits, fits, tolerances, legal aspects of design.							
Method of Asse	essment	Theor	y exam						
Learning Outo	come 2	Student will be able to conceptualize the design for the given simple machine element using the basic engineering design process					10		
Engineering design process, design need identification, analysis of design need, standards of performance and constraints, product design specifications, searching for design approach, conceptualizing design, assessing the conceptualized design for physical reliability, economic feasibility and utility. Design of keys, cotter, pins, bolts ,rivets, simple shaft, levers									
Method of Assessment Theory exam									

RGPV (DIPLO BHO		VING)		RICULUM FOR COURSE	FORMAT-	3	Sheet No. 2/5	
Branch		Al	JTOMOBILE ENG	Semeste	er	Fifth		
Course Code	Ę	501	Course Name	Auto Des	ign & Drafti	ing		
Course Outcor	Course Outcome 2 Student will be able to apply appropriate design approach to design the given machine element					T-L Hrs	Marks	
Learning Outco	me 1	Studen		functionally design the		8	10	
Contents		for any	machine compo	inction, functional requ nent, deciding shape, s f functional requireme	ize, materia			
Method of Assessment Theory assignment								
Learning Outco	me 2	machin	Student will be able to design the given simple machine element for its strength using IS Codes/Design data book/ design handbooks					
Contents		Concept of design for strength, strength requirements, and constrains for the component, different types of loading conditions, stress calculations at different portions / sections, critical dimension, factor of safety, material selection on basis of strength requirements, design of C-clamp, bell crank lever, overhang crank, arm of pulley, flange coupling						
Method of Assessment		Theory	exam					
Learning Outco	me 3			design the given simpl gempirical relationship		8	10	
Concept of empirical design, empirical design relationships, procedure of developing empirical design relationships, sources of empirical design relationships, procedure for designing the component using empirical relationships, calculation of dimensions using empirical relationships water jacket, cylinder head studs or bolts, crank shaft crank web, crank shaft sleeve bearing, design of knuckle and cotter joints						al design pirical ships for		
Method of Assessment		Theory			,			

RGPV (DIPLOMA WING) BHOPAL		ING)		RICULUM FOR COURSE	FORMA	л-3	Sheet No. 3/5	
Branch Al			JTOMOBILE ENG	SINEERING	Seme	ster	Fifth	
Course Code	50)1	Course Name	afting				
Course Outcome 3 d			nt will be able to ng practice in sol ication problem	T-L Hrs	Marks			
Learning Outco	simple drawii	Student will be able to design / draw the given simple machine component using any design / 12 drawing software						
Contents		design viewin	esign / drawing soft-wares and their benefits, introduction to various sign drawing soft-wares, their salient features, settings, commands wing and editing the design created, practice for designing / drawing simple machine component using any design/ drawing software.					
Method of Asses	sment	Theory	y assignment					
Learning Outco	me 2			explain the industrial with the help of examp	•	6	10	
Contents		indust modifi	Introduction to basic design modification process performed in the ndustry, different departments involved, examples of industrial design modification process for simple machine components, component design modification with the help of field failure data or lab research data					
Method of Assessment Paper			pen test					

RGPV (DIPLOMA WING BHOPAL			ICULUM FOR COURSE	FORM	ат-3	Sheet No. 4/5		
Branch		AUTOMOBILE ENC	GINEERING	Seme	ester	Fifth		
Course Code	501	Course Name	Auto Des	sign & Dr)rafting			
Course Outcome	4	ent will be able to conents	design various autom	obile	T-L Hrs	Marks		
Learning Outcom		Student will be able to design the given simple engine component under given design conditions						
Contents	cond	Study of important engine components regarding their working conditions and functional constraints, design for strength of cylinder head, cylinder, piston, piston pin, rocker arm						
Method of Assessm	ent Theo	ry exam						
Learning Outcom	Δ,	Student will be able to design the given simple thassis component under given design conditions						
Contents	cond friction	Study of important chassis components regarding their working conditions and functional constraints, design for strength of single plate friction clutch, flywheel, simple internal expanding brake, helical tension & compression springs, leaf spring						
Method of Assessm	ent Theo	heory exam						

RGPV (DIPLON BHOP	•		RICULUM COURSE	FORMAT-3		Sheet o. 5/5	
Branch	AU'	TOMOBILE ENGIN	EERING	Semester	er Fifth		
Course Code	501	Course Name	Auto	Design & Draf	fting		
Course Outcom	Course Outcome 5 Student will be able components and fas problem situation				T-L Hrs	Marks	
Learning Outcor	TIA I		select the appropr ny automobile sub		10	10	
Contents	bearir series roller	Standardized machine components, examples, need and function of bearings, types of bearings and their uses, ball and roller bearings, series, specifications, codes for different standard ball bearings and roller bearings, procedure for selection of ball bearing for the given design situation					
Method of Assess	ment Theor	y exam					
Learning Outcor	TIA /	ent will be able to ner to be used in a		11	5		
Various types of fasteners, their specific uses, examples, specifications, codes, series, general procedure for selection of common nuts, bolts and washers for the given design situation, selection of appropriate bolts, nuts and washers for the given design situation						,	
Method of Assess	ment Theor	heory assignment					

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME		Branch Code			Course Code			CO Code	LO Code	
				0		3	5	0	1	1	1	Format No. 4
COURSE NAME	Auto Design & Drafting											
CO Description	Student will be able to ap	Student will be able to apply design related basic concepts in the given design problem situation										
LO Description	Student will be able to explain the various design related basic concepts with suitable examples											

S. No.	Learning Content	Teaching -Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Types of designs, design considerations, morphology of design, design optimization, factor of safety, factors governing FS, critical dimension, impact load and fatigue considerations, Interchangeability, standardization, limits, fits, tolerances, legal aspects of design.	Traditional lecture method	Teacher will explain different concepts and formulas related to contents, demonstrate methods of solving different problems. Students will practice to solve problems under guidance of the teacher. Teacher will assess their ability and provide necessary remedial and tutorials	07	02	Book:- Machine Design by R. S. Khurmi Or Its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1.	Theory exam	One question will be asked in exam paper to explain the asked design related concepts with suitable examples	10	Framed question	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING	Branc	h Code	!	Co	ourse Co	de	CO Code	LO Code	
		OUTCOME	A	0	3	5	0	1	1	2	Format No. 4
COURSE NAME	Auto Design & Drafting										
CO Description	Student will be able to ap	ply design related basic concepts in the	given de	esign	pro	blem	situ	ation			
LO Description	Student will be able to co	nceptualize the design for the given sim	ple macl	hine	ele	ment	usin	g the	basic	engin	eering design
	process										

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Engineering design process, design need identification, analysis of design need, standards of performance and constraints, product design specifications, searching for design approach, conceptualizing design, assessing the conceptualized design for physical reliability, economic feasibility and utility. Design of keys, cotter, pins, bolts ,rivets, simple shaft, levers	Traditional lecture method	Teacher will explain different concepts and formulas related to contents, demonstrate methods of solving different problems. Students will practice to solve problems under guidance of the teacher. Teacher will assess their ability and provide necessary remedial and tutorials	08	03	Book:- Machine Design by R. S. Khurmi Or Its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1.	Theory exam	One question will be asked in exam paper in which student will design the simple machine component using design process, on basis of given standards of performance and location constraints	10	Framed question	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

A. Engineering design process:-

- 1. Describe the function of the element
- 2. Determine the shape of the element
- 3. Determine the forces on the element
- 4. Select the appropriate material
- 5. Determine the failure criteria
- 6. Determine geometric dimensions of the element
- 7. Design modification for manufacturing considerations
- 8. Preparing working drawing of element
- B. Additional LR required is 'Machine Design Data-book' by Kamal Kumar and S. K. Dhagat , Khanna Publications

SCHEME FOR LEARNING OUTCOME

	LO Code	CO Code	de	ourse Co	Co	le	ranch Cod	В
Format No. 4	1	2	1	0	5	3	0	Α

		001001112								
COURSE NAME	COURSE NAME Auto Design & Drafting									
CO Description	Student will be able to ap	pply appropriate design approach to des	ign th	e give	n ma	chine	e eler	nent		
LO Description	Student will be able to fu	nctionally design the given simple mac	nine e	lemen	t					

SCHEME OF STUDY

S. No.	Learning Content	Teaching -Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Concept of design for function, functional requirements and constraints for any machine component, deciding shape, size, material selection and surface finish on basis of functional requirements	Traditional lecture method	Teacher will explain different concepts related to contents, demonstrate methods of solving different problems. Students will practice to solve problems under guidance of the teacher. Teacher will assess their ability and provide necessary remedial and tutorials	05	03	Book:- Machine Design by R. S. Khurmi Or Its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1.	Theory assignment	One assignment will be given in which student will functionally design the given machine/ automobile component on basis of given description of its function and location constrains, along with sketches, reasons and justifications	10	Assignment Question and rating scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Functional design:- Every machine element is expected to perform certain task or function under certain location situation. Every new machine element is first designed for its functional design. Functional design basically deals with visualizing the shape, approx. surface finish and rough size of the element. Shape is the main aspect to be thought of. The designed shape should be justified. Functional design description includes

free hand sketches, rough dimensions and location situation drawings visualizing how the machine element working will work in the given situation.

Examples of functional design:- Design of tools, piston, connecting rod, flywheel, crank shaft, fasteners, engine head, engine block etc.

Why piston has particular cylindrical shape?

Why flywheel has disc like shape?

Why tools and fasteners have their unique shapes and sizes?

Procedure for functional design:-

- 1. Consider the part's purpose
- 2. Consider the part's function
- 3. Consider in which situation it will work (surroundings)
- 4. Consider how it will be used
- 5. Consider who will use it
- 6. Consider how does it handles mistakes (wrong use should not be harmful and there should be provision for resorting)
- 7. Creation, review and approval

RGPV (Diploma Wing) Bhopal SCHEME FOR LEARNING OUTCOME

В	ranch Cod	le	Co	urse Co	de	CO Code	LO Code	_
Α	0	3	5	0	1	2	2	Format No. 4

COURSE NAME	Auto Design & Drafting
CO Description	Student will be able to apply appropriate design approach to design the given machine element
LO Description	Student will be able to design the given simple machine element for its strength using IS Codes/Design data book/ design handbooks

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Concept of design for strength, strength requirements, and constrains for the component, different types of loading conditions, stress calculations at different portions / sections, critical dimension, factor of safety, material selection on basis of strength requirements, design of C-clamp, bell crank lever, overhang crank, arm of pulley, flange coupling	Traditional lecture method	Teacher will explain different concepts and formulas related to contents, demonstrate methods of solving different problems. Students will practice to solve problems under guidance of the teacher. Teacher will assess their ability and provide necessary remedial and tutorials	07	03	Book:- Machine Design by R. S. Khurmi Or Its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1.	Theory exam	One question will be asked in which student will design the given machine component for strength on basis of given description of loading/ forces/ torque/ moments etc.	10	Question paper	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Additional LR required is 'Machine Design Data-book' by Kamal Kumar and S. K. Dhagat, Khanna Publications

SCHEME FOR LEARNING OUTCOME

Ві	ranch Coo	le	Co	ourse Co	de	CO Code	LO Code	
Α	0	3	5	0	1	2	3	Format No. 4

COURSE NAME	Auto Design & Drafting									
CO Description	Student will be able to ap	oply appropriate design approach to desig	n the	given	mach	ine e	leme	nt		
LO Description	Student will be able to do	esign the given simple machine element ι	sing e	empiri	ical re	latio	nships	S		

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Concept of empirical design, empirical design relationships, procedure of developing empirical design relationships, sources of empirical design relationships, procedure for designing the component using empirical relationships, calculation of dimensions using empirical relationships for water jacket, cylinder head studs or bolts, crank shaft crank web, crank shaft sleeve bearing, design of knuckle and cotter joints	Traditional lecture method	Teacher will explain different concepts and formulas related to contents, demonstrate methods of solving different problems. Students will practice to solve problems under guidance of the teacher. Teacher will assess their ability and provide necessary remedial and tutorials	06	02	Book:- Machine Design by R. S. Khurmi Or Its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1.	Theory exam	One question will be asked in which student will design the given machine component for its strength under given design conditions using empirical relationship	10	Question paper	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

A. Empirical is something that is based solely on observation or experiment or experience. Empirical relationship between two variables is the relationship which is developed over years of experiences and works well but has no theoretical base. Empirical design is one which depends upon

use of empirical formulae based on the practice and past experience. The basis of empirical design is previous experience, without regard for any systematic theory. Its benefit is the ability to make expedient decisions on layout and sizing (and to communicate these decisions to the rest of the design team) prior to undertaking a detailed design. Following are examples of empirical relationships and formula used in designing engine components:-

- 1. Various dimensions related bolt joints
- 2. Thickness of cylinder wall
- 3. Thickness of water jacket wall
- 4. Water space between the outer wall and inner jacket wall
- 5. Thickness of cylinder dry liner
- 6. Cylinder flange thickness
- 7. Nominal or major diameter of cylinder head stud or bolt
- 8. Pitch circle diameter of cylinder head studs
- 9. Diameter of cup in the top of piston head
- 10. Thickness of piston head ribs
- 11. Piston top land
- 12. Piston ring land
- 13. Gap between free ends of the piston ring
- 14. Axial thickness of piston rings
- 15. Piston barrel thickness and piston wall thickness
- 16. Radial and vertical thickness of piston ring grooves
- 17. Inside to outside diameter ration of piston pin
- 18. Length of crank shaft sleeve bearing
- 19. Thickness and width of crank web
- B. Additional LR required is 'Machine Design Data-book' by Kamal Kumar and S. K. Dhagat , Khanna Publications

SCHEME FOR LEARNING OUTCOME

В	ranch Coo	le	Co	ourse Co	de	CO Code	LO Code	
Α	0	3	5	0	1	3	1	Format No. 4

COURSE NAME	Auto Design & Drafting
CO Description	Student will be able to follow the industrial design / drawing practice in solving the given design modification problem
LO Description	Student will be able to design / draw the given simple machine component using any design / drawing software

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Design / drawing soft-wares and their benefits, introduction to various design drawing soft-wares, their salient features, settings, commands, viewing and editing the design created, practice for designing / drawing any simple machine component using any design/ drawing software.	Traditional lecture method	Teacher will explain different concepts related to computer based designing and drawing, demonstrate procedure of using the software; students will practice to design /draw machine elements under guidance of the teacher. Teacher will assess their ability and provide necessary remedial and tutorials	07	05	Manual of concerned software operation	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1.	Theory assignment	An assignment will be given to students in which students have to design /draw the given simple machine component using the available design /drawing software	05	Assignment question & Rating scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

- A. Few suggested design soft-wares are as below:-
- 20. CATIA
- 21. NX (from Siemens)

- 22. Pro/Engineer
- 23. SOLIDWORKS
 - B. Few suggested drawing / sketching soft-wares are as below:-
- 24. AutoCAD
- 25. Car Sketch Tool
- 26. ALIAS
- 27. VRED
- 28. MAYA

DCDV/Diala	one Wine \ Dhenel	SCHEME FOR LEARNING		Branch Code			Course Code			Code	
KGPV (Dipid	oma Wing) Bhopal	OUTCOME	A	0	3	5	0	1	3	2	Format No. 4
COURSE NAME	Auto Design & Drafting	Drafting									
CO Description	Student will be able to fo	llow the industrial design / drawing pract	ice in s	solvin	g the	give	n des	ign m	odific	ation	problem
LO Description	Student will be able to ex	udent will be able to explain the industrial design modification process with the help of examples									

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
2.	Introduction to basic design modification process performed in the industry, different departments involved, examples of industrial design modification process for simple machine components, component design modification with the help of field failure data or lab research data	Traditional lecture method	Teacher will explain different learning contents with help of examples and cases. Teacher will give them assignments for practice, teacher will assess their knowledge and provide necessary remedial and tutorials for improvements	04	02	NIL	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
2.	Paper pen test	A test will be conducted to assess the learnt knowledge of the students	10	Test questions and rating scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Product improvement cycle:-

- 1. Complaint / deficiency / potential improvement observed in the component
- 2. Formation of component evaluation group comprising of representatives from design, assembly, production, service departments and supplier

- 3. Brief research on complaint/deficiency/ potential improvement by the group
- 4. Search of possible ways to improve the component by the group
- 5. Discussion on issues related to design, production, service, legal and cost of improved component by the group
- 6. Selection and finalization of way to improve the component by the group
- 7. Visualizing the new form of component by the group
- 8. Development of detailed specifications and drawing including detailed production and testing specifications by the group
- 9. Official Release of new specifications and drawing to all concern departments
- 10. Post production follow-up and feedback regarding performance of the component

Different departments involved:-

- 1. Production department
- 2. Assembly department
- 3. Design department
- 4. Service department
- 5. Vender

RGPV (Diploma Wing)
Bhopal

	LO Code	CO Code	de	urse Co	Co	le	ranch Cod	В
Format I	1	4	1	0	5	3	0	Д

COURSE NAME	Auto Design & Drafting
CO Description	Student will be able to design various automobile components
LO Description	Student will be able to design the given simple engine component under given design conditions

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 important engine components regarding their working conditions and functional constraints, design for strength of cylinder head, cylinder, piston, piston pin, rocker arm	Traditional lecture method	Teacher will explain different concepts and formulas related to contents, demonstrate methods of solving different problems. Students will practice to solve problems under guidance of the teacher. Teacher will provide necessary remedial and tutorials	07	03	Book:- Machine Design by R. S. Khurmi Or Its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1.	Theory exam	One simple numerical question, based on use of formula, will be asked to design any one engine component to work under given conditions	10	Question paper	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

- 1. The design procedure will also include the designing using empirical relationships as per requirement
- 2. Additional LR required is 'Machine Design Data-book' by Kamal Kumar and S. K. Dhagat , Khanna Publications

DCDV/Diala	one Wing \ Dhenel	SCHEME FOR LEARNING	E	Branch Co	ode	С	ourse Co	de	Code	LO Code	Д
KGPV (DIPIC	oma Wing) Bhopal	OUTCOME	Α	0	3	5	0	1	4	2	Format No. 4
COURSE NAME	Auto Design & Drafting										
CO Description	Student will be able to de	dent will be able to design various automobile components									
LO Description	Student will be able to de	sign the given simple chassis compone	nt un	der gi	ven d	esign	cond	lition	S		

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Study of important chassis components regarding their working conditions and functional constraints, design for strength of single plate friction clutch, flywheel, simple internal expanding brake, helical tension & compression springs, leaf spring	Traditional lecture method	Teacher will explain different concepts and formulas related to contents, demonstrate methods of solving different problems. Students will practice to solve problems under guidance of the teacher. Teacher will provide necessary remedial and tutorials	07	03	Book:- Machine Design by R. S. Khurmi Or Its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1.	Theory exam	One simple numerical question, based on use of formula, will be asked to design any one engine component to work under given conditions	10	Question paper	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

- 1. The design procedure will also include the designing using empirical relationships as per requirement
- 2. Additional LR required is 'Machine Design Data-book' by Kamal Kumar and S. K. Dhagat , Khanna Publications

DCDV/Diala	was Mina \ Dhanal	SCHEME FOR LEARNING	Branch Code Cou			Course Code		Code Co			
KGPV (DIPIC	oma Wing) Bhopal	OUTCOME	Α	0	3	5	0	1	5	1	Format No. 4
COURSE NAME	Auto Design & Drafting										
CO Description	Student will be able to se	lect standard machine components and	faste	ners	for th	e give	en de	sign p	oroble	m situ	ıation
LO Description	Student will be able to se	lect the appropriate bearing to be used	in any	y auto	omob	ile su	b ass	embl	У		

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Standardized machine components, examples, need and function of bearings, types of bearings and their uses, ball and roller bearings, series, specifications, codes for different standard ball bearings and roller bearings, procedure for selection of ball bearing for the given design situation	Traditional lecture method	Teacher will explain different concepts related to contents, demonstrate methods of selection of bearings through examples and cases. Students will practice to select bearings under guidance of the teacher. Teacher will provide necessary remedial and tutorials	07	03	Commercial bearing selection manuals	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1.	Theory exam	One simple question will be asked in which student will demonstrate selection procedure to select an appropriate ball bearing on basis of given data	10	Question paper	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

1. There are free soft copies of many commercial bearing selection manuals available on internet

una Wina \ Dhanal	SCHEME FOR LEARNING	E	Branch C	ode	C	ourse Co	ode	CO Code	LO Code	Д
oma wing) Bhopai	OUTCOME	Α	0	3	5	0	1	5	2	Format No. 4
Auto Design & Drafting										
Student will be able to sel	ect standard machine components and	faste	ners	for th	e give	en de	sign p	oroble	m situ	ation
Student will be able to se	ect the appropriate fastener to be used	l in an	ıy aut	omol	bile sı	ıb ass	semb	ly		
	Student will be able to sel	OUTCOME Auto Design & Drafting Student will be able to select standard machine components and	Auto Design & Drafting Student will be able to select standard machine components and faste	Auto Design & Drafting Student will be able to select standard machine components and fasteners	OUTCOME A 0 3 Auto Design & Drafting Student will be able to select standard machine components and fasteners for the	OUTCOME A 0 3 5 Auto Design & Drafting Student will be able to select standard machine components and fasteners for the give	OUTCOME A 0 3 5 0 Auto Design & Drafting Student will be able to select standard machine components and fasteners for the given de	OUTCOME A 0 3 5 0 1 Auto Design & Drafting Student will be able to select standard machine components and fasteners for the given design process.	OMA Wing) Bhopal OUTCOME SCHEME FOR LEARNING OUTCOME A 0 3 5 0 1 5 Auto Design & Drafting	OUTCOME A 0 3 5 0 1 5 2 Auto Design & Drafting Student will be able to select standard machine components and fasteners for the given design problem situ

S. No.	Learning Content	Teaching -Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Various types of fasteners, their specific uses, examples, specifications, codes, series, general procedure for selection of common nuts, bolts and washers for the given design situation, selection of appropriate bolts, nuts and washers for the given design situation	Traditional lecture method	Teacher will explain different concepts related to contents, demonstrate methods of selection through examples and cases. Students will practice to select fastener under guidance of the teacher. Teacher will provide necessary remedial and tutorials	07	04	Commercial Fastener selection manuals	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1.	Theory assignment	One simple question will be asked in which student will demonstrate selection procedure to select three appropriate bolts, nuts and washers on basis of given three sets of data	05	Question & rating scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

1. There are soft copies of many fastener selection manuals freely available on internet.

RGPV (DIPLO		NG)		RICULUM FOR COURSE	FORMA	r- 3	Sheet No. 1/5			
Branch		AU	TOMOBILE ENG	INEERING	Semester Fi					
Course Code	502		Course Name	Auto Electri	cals & Elec	tronic	S			
Course Outco	ome 1	onstru		explain the theory, and main components given vehicle	s of the	T-L Hrs	Marks			
Learning Outo	come 1	onstru	uction / working	explain theory / circust c/ components of the e with help of line diag	starting	10	10			
Content	s s	tartin		ng system, basic car standix, pr-engauged, per drives	•					
Method of Asse	essment T	Theory	exam							
Learning Outo	nme 2			explain the construct given starting motor	ion,	6	10			
Content	s s	tartin		racteristics of the start og theory, constructior tarting motors	-	•				
Method of Asse	essment T	Theory	assignment							
Learning Outo	ome 3		it will be able to en car starting s	identify major compo ystem	onents of	7	10			
Content	S	-	•	ents of the common c n, purpose, constructio	_	•	ns			

RGPV (DIPLO		WING)		RICULUM FOR COURSE	FORMAT-	3	Sheet No. 2/5
Branch		Al	JTOMOBILE ENG	INEERING	Semeste	er	Fifth
Course Code		502	Course Name	Auto Electric	cals & Elect	ronics	•
Course Outcor	me 2	constru	iction, working a	explain the theory, and main components system for the given ve		T-L Hrs	Marks
Learning Outco	me 1	/constr	uction / working	explain theory / circuit g components of the ch with help of line diagr	narging	10	20
Contents		the car, regulat	, alternators and	of charging system, ba charging circuits, rectit tage, theory, study of a nd components	fication of A	C to [OC,
Method of Assessment		Theory	exam				
Learning Outco	me 2	constru		explain theory / circui and components of lig	-	7	10
Contents		Various and haz used in	s types of lights in zard warning ligh operation of spe	n a car, their circuits, , f ts types of headlights, eedometer, horn, wiper ges & engine temperat	circuits and r system, ty	comp pes of	onents
Method of Assessment		Theory	exam				
Learning Outco	me 3		harging system /	identify major compor voltage regulators/a		7	10
Contents		and aux	•	ents of the charging sys common car regarding on	,		
Method of Assessment		Practica	al exam				

RGPV (DIPLO		/ING)		RICULUM FOR COURSE	FORMA	т-3	Sheet No. 3/5
Branch		Al	UTOMOBILE ENG	INEERING	Seme	ster	Fifth
Course Code	50	02	Course Name	Auto Electric	cals & Ele	ctroni	cs
Course Outco	me 3	constr		explain the theory, and main components given vehicle	of the	T-L Hrs	Marks
Learning Outco	ome 1	Stude /const	nt will be able to	explain theory / circu g / components of the		8	10
Contents		constr their c types	ruction and worki construction, ignit of spark advance	s of ignition system, being of car ignition syste tion coil, types of distri s, electronic ignition sy control, distributor-les	m, types butors, s stem, ele	of spai park ac ectronic	rk plugs, dvance,
Method of Asses	sment	Theor	y exam				
Learning Outco	ome 2		onents of the ig	to identify the major gnition system of give		7	10
Contents				nents of the ignition sys			n car
Method of Asses	sment	Praction	cal exam				

RGPV (DIPLOMA BHOPAL	-	OBE CURR	FORMA	1 Т- 3	Sheet No. 4/5			
Branch		AUTOMOBILE ENG	SINEERING	Seme	ster	Fifth		
Course Code	502	Course Name	Auto Electri	cals & Ele	ectronic	s		
Course Outcome	4 const	ruction, working a	explain the theory, and components of the em for the given vehic		T-L Hrs	Marks		
Learning Outcome	e 1 work	Student will be able to explain theory, construction, working and components of the given automobile 8 pattery						
Contents	const good	Principle and construction of lead acid battery, principle and construction of batteries used in electric vehicles, characteristics of good battery, rating, capacity and efficiency of batteries, various tes on batteries, charging methods and equipments						
Method of Assessm	ent Theo	t Theory exam						
Learning Outcome	וכב	ent will be able to ry for determining	perform tests on give its condition	n	6	10		
Contents	cell ve	oltage, test for serv	e battery, charging of viceability by means or measuring the battery doubt	f high rat	e discha	arge		
Method of Assessm	ent Pract	ical assignment						
Learning Outcome	Student will be able to explain the wiring circuit ome 3 diagram / wiring system / different components of the wiring system of the given vehicle							
Contents	wire strips, wiring harness, ribbon cables, specifications, color codes for circuits, circuit numbers printed circuits, relay controls, multi-pin plugs, rubber grommets, terminals, crimp connectors, special or multiple sleeve connectors, strip or cable connectors, fuses							
Method of Assessm	ent Theor	Theory assignment						

RGPV (DIPLO		ING)		RICULUM COURSE	FORMAT-3	7	Sheet o. 5/5		
Branch		AUT	TOMOBILE ENGIN	EERING	Semester		Fifth		
Course Code	50)2	Course Name	Auto Ele	ctricals & Ele	ctronics			
Course Outco	me 5	constr		explain the theory ng of the electrical ybrid vehicle		T-L Hrs	Marks		
Learning Outco	ome 1	constr	Student will be able to explain theory, circuit, construction and working of the electrical system for 9 10 the given electric / hybrid vehicle						
Contents		Theory, circuit, construction and working of electrical drive system of common electric and electric-hybrid vehicles, major components, characteristics of electric traction motor, chopper control of motor, SRM drives							
Method of Asses	sment	Theory	y exam						
Learning Outco	ome 2	electri		compare electric vegarding constructions		6	10		
Contents		Compa	arison of electrica	l systems of electri truction, working,			•		
Method of Asses	sment	Theory	y assignment						
Learning Outco	ome 3	Student will be able to identify major components of electrical system for the given electric / hybrid 7 10 vehicle							
Contents		•	•	ents of the electric cles regarding purp	•				
Method of Asses									

RGPV	(Diploma	Wing)	Bhopal
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	LO Code	CO Code	de	urse Co	Co	le	anch Cod	В
Format	1	1	2	0	5	3	0	Α

COURSE NAME	Auto Electricals & Electronics											
CO Description	Student will be able to explain the theory, construction, working and main components of the starting system for the given vehicle											
LO Description	Student will be able to exwith help of line diagram	cplain theory / circuit / construction / wo	rking	com	npon	ents of	fthe	start	ting sy	stem	of giver	n vehicle

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Requirements of starting system, basic car starting circuit, , need of starting drive units, bendix, prengauged, permanent magnet, folothru and overrunning clutch drives	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	07	03	Kholi.P.L "Automotive Electrical Equipment", Tata McGraw- Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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	LO Code	CO Code	de	urse Co	Co	le	ranch Cod	В
Format	2	1	2	0	5	3	0	Α

		001001112										
COURSE NAME	Auto Electricals & Electronics											
CO Description	Student will be able to the given vehicle	explain the theory, construction, work	king a	and m	ain c	omp	onei	nts of	f the s	startiı	ng systen	n for
LO Description	Student will be able to	explain the construction, circuit and w	orki	ng of	given	star	rting	mote	or			

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Requirements and characteristics of the starting motor, study of starting motor regarding theory, construction, working and major components, types of starting motors	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	04	02	Kholi.P.L "Automotive Electrical Equipment", Tata McGraw- Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory assignment	Two questions related to the learned content will be asked in the assignment	10	Test paper, Check list	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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	LO Code	CO Code	de	urse Co	Co	Branch Code			
Format	3	1	2	0	5	3	0	Α	

		00100IIIE										
COURSE NAME	Auto Electricals & Elect	Electricals & Electronics										
CO Description	Student will be able to explain the theory, construction, working and main components of the starting system for the given vehicle											
LO Description	Student will be able to id	entify major components of the given ca	r star	ting sy	ystem	1						

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 major components of the common car starting systems regarding their location, purpose, construction and function	Lab demonstration method	Teacher will demonstrate major components inside the lab to students, students will practice, provide quiz, assignment etc., teacher will conduct remedial and tutorials	04	03	System/ components/ diagrams/ charts/ posters	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment		Resources Required	External / Internal
1.	Practical exam	The student will be asked to identify five components and state their purpose, function and location in the system	10	System/ components/ diagrams/ charts/ posters	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

	LO Code			Course Code			Branch Code			
Form	1	2	2	0	5	3	0	Δ		

		OOTCOME		_		_				
COURSE NAME	Auto Electricals & Elect	uto Electricals & Electronics								
CO Description	Student will be able to explain the theory, construction, working and main components of the charging and auxiliary system for the given vehicle									
LO Description	Student will be able to exwith help of line diagram	cplain theory / circuit/ /construction / wo	orking com	poner	nts of	the char	ging sy	stem	of given	vehicle

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 and requirements of charging system, basic charging system for the car, alternators and charging circuits, rectification of AC to DC, regulation of output voltage, theory, study of alternator regarding construction, working and components	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	07	03	Kholi.P.L "Automotive Electrical Equipment", Tata McGraw- Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	Two questions related to the learned content will be asked in the university question paper	20	Question paper, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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Branch Code			Co	Course Code			LO Code	
Α	0	3	5	0	2	2	2	Forma

COURSE NAME	Auto Electricals & Elect	auto Electricals & Electronics										
CO Description	Student will be able to ex systems for the given veh	kplain the theory, construction, workin nicle	g and ı	main c	ompone	ents of	the c	hargin	g and	auxiliar	y	
LO Description	Student will be able to ex	plain theory / circuit / construction /	worki	ng and	d compo	nents	of ligh	hting /	auxili	ary syst	em	

SCHEME OF STUDY

S. No.	Learning Content	Teaching -Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Various types of lights in a car, their circuits, , functions of turn, stop, and hazard warning lights types of headlights, circuits and components used in operation of speedometer, horn, wiper system, types of fuel gauges, oil pressure gauges & engine temperature gauges etc.	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	05	02	Young A.P. & Griffiths. L. "Auto. Electrical Equipment", ELBS & New Press or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

SCHEME FOR LEARNING OUTCOME

	LO Code	CO Code	de	urse Co	Co	e	ranch Cod	В
For	3	2	2	0	5	3	0	Α

COURSE NAME	Auto Electricals & Electronics								
CO Description	Student will be able to explain the theory, construction, working a systems for the given vehicle	and n	nain c	ompo	nent	s of the	char	ging and	auxiliary
LO Description	Student will be able to identify major components of given chargi	ng sy	stem	/ volt	age r	egulato	ors / a	auxiliary	systems

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 major components of the charging system, voltage regulators and auxiliary systems of common car regarding their location, purpose, construction and function	Lab demonstration method	Teacher will demonstrate major components inside the lab to students, students will practice, provide quiz, assignment etc., teacher will conduct remedial and tutorials	04	03	Systems/ components/ diagrams/ charts/ posters	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Practical exam	The student will be asked to identify five components and state their purpose, function and location in the system	10	Systems/ components/ diagrams/ charts/ posters	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

SCHEME FOR LEARNING OUTCOME

	LO Code	CO Code	de	ourse Co	Co	le	ranch Cod	В
format No. 4	1	3	2	0	5	3	0	4

		OOTCOME										
COURSE NAME	Auto Electricals & Elect	ronics										
CO Description	Student will be able to exvehicle	xplain the theory, construction, working	and n	nain c	ompo	onent	ts of t	he ig	nition	syste	m for the given	
LO Description	Student will be able to ex	xplain theory / circuit /construction / wo	rking	/ con	npon	ents o	of the	ignit	ion sy	stem	of given vehicle	

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 and requirements of ignition system, basic ignition circuit for car, construction and working of car ignition system, types of spark plugs, their construction, ignition coil, types of distributors, spark advance, types of spark advances, electronic ignition system, electronic spark control/ spark advance control, distributor-less ignition	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	06	02	Kholi.P.L "Automotive Electrical Equipment", Tata McGraw- Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. N	o. Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
	1. Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

SCHEME FOR LEARNING OUTCOMF

	LO Code	CO Code	de	urse Co	Co	le	anch Cod	В
Format	2	3	2	0	5	3	0	Α

		OOTCOME		•				_	_	
COURSE NAME	ME Auto Electricals & Electronics									
CO Description	Student will be able to exgiven vehicle	Student will be able to explain the theory, circuit, construction, working and components of the ignition system for the given vehicle								
LO Description	Student will be able to id	lentify the major components of the igni	tion sy	stem	of g	iven v	vehicl	е		

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 major components of the ignition system of common car regarding their location, purpose, construction and function	Lab demonstration method	Teacher will demonstrate major components inside the lab to students, students will practice, provide quiz, assignment etc., teacher will conduct remedial and tutorials	04	03	System/ components/ diagrams/ charts/ posters	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Practical exam	The student will be asked to identify five components and state their purpose, function and location in the system	10	System/ components/ diagrams/ charts/ posters	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

SCHEME FOR LEARNING OUTCOME

	LO Code	CO Code	Course Code			Branch Code		
Format	1	4	2	0	5	3	0	Α

COURSE NAME	NAME Auto Electricals & Electronics										
CO Description	Description Student will be able to explain the theory, construction, working and components of the battery and wiring system given vehicle							for the			
LO Description	Student will be able to ex	kplain theory, construction, working and o	comp	onent	s of the	e give	n autor	nobile	batte	ry	

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Principle and construction of lead acid battery, principle and construction of batteries used in electric vehicles, characteristics of good battery, rating, capacity and efficiency of batteries, various tests on batteries, charging methods and equipments	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	06	02	Kholi.P.L "Automotive Electrical Equipment", Tata McGraw- Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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	LO Code	CO Code	de	ourse Co	Co	le	ranch Coc	В
Forma	2	4	2	0	5	3	0	Α

COURSE NAME	Auto Electricals & Elect	ronics									
CO Description	Student will be able to exgiven vehicle	xplain the theory, construction, working	and compo	nents	of t	he bat	tery	and w	viring	system 1	for the
LO Description	Student will be able to pe	erform tests on given battery for determ	ining its co	nditio	n						

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process Teach Pract. LRs Hrs. /Tut Hrs. Required		LRs Required	Remarks	
1.	Fitting and removing the battery, charging of battery, measurement of cell voltage, test for serviceability by means of high rate discharge tester and hydrometer, measuring the battery capacity and comparing the results with its rated output	Lab demonstration method	Teacher will demonstrate procedures and tests to students, students will practice under guidance of teacher, teacher will improve their performance through feedback and suggestions, teacher will conduct remedial and tutorials		02	Battery/ charger/ fitting and testing instrumen ts	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Practical assignment	The student will be asked to perform any one activity either fitting or removing or charging the battery AND will perform any one asked test in front of teacher	10	Battery/ charger/ fitting and testing instruments	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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Format N	LO Code	CO Code	de	ourse Co	Co	le	anch Cod	В
	3	4	2	0	5	3	0	Α

COURSE NAME	Auto Electricals & Elect	ronics									
CO Description	Student will be able to exgiven vehicle	cplain the theory, construction, work	ing and c	ompon	ents of	the ba	attery	and w	iring:	system 1	or the
LO Description	Student will be able to exthe given vehicle	cplain the wiring circuit diagram / wi	ring syste	em / di	fferent c	ompo	nents	of the	e wirir	ng syste	m of

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Wire strips, wiring harness, ribbon cables, specifications, color codes for circuits, circuit numbers printed circuits, relay controls, multi-pin plugs, rubber grommets, terminals, crimp connectors, special or multiple sleeve connectors, strip or cable connectors, fuses	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	04	03	Kholi.P.L "Automotive Electrical Equipment", Tata McGraw- Hill Co., Ltd., New Delhi or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment		Resources Required	External / Internal
1.	Theory assignment	Two questions related to the learned content will be given in the assignment	10	Assignment questions, Rating scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

	LO Code	CO Code	de	ourse Co	Co	le	ranch Coc	В
Form	1	5	2	0	5	3	0	Α

COURSE NAME	Auto Electricals & Electronics										
CO Description	tudent will be able to explain the theory, circuit, construction and working of the electrical system for the given electric nd hybrid vehicle										
LO Description	Student will be able to explain theory, circuit, construction hybrid vehicle	on and wor	king	g of the el	ectric	al sys	tem f	or the	giver	n electric	/

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, circuit, construction and working of electrical drive system of common electric and electric-hybrid vehicles, major components, characteristics of electric traction motor, chopper control of motor, SRM drives	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	07	02	M. Ehsani, Y. Gao, S. Gay and Ali Emadi, Modern Electric, Hybrid Electric, and Fuel Cell Vehicles: Fundamentals, Theory, and Design, CRC Press, 2005 or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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	Branch C	ode	Co	ourse Co	de	CO Code	LO Code	
Α	0	3	5	0	2	5	2	Format No. 4

COURSE NAME	Auto Electrical & Electronics
CO Description	Student will be able to explain theory, construction and working of electrical system of the electric and hybrid electric vehicle.
LO Description	Student will be able to compare electric vehicle and electric hybrid vehicle regarding construction, working, merits and
LO Description	limitations

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 electrical systems of electric vehicle and electric hybrid vehicle* regarding construction, working, merits and limitations	Lab demonstration	Teacher will demonstrate the contents to the students. Students will practice under the guidance of teacher	04	02	M. Ehsani, Y. Gao, S. Gay and Ali Emadi, Modern Electric, Hybrid Electric, and Fuel Cell Vehicles: Fundamentals, Theory, and Design, CRC Press, 2005 or its equivalent	If necessary teacher will suggest video link, learning resources *two and four wheelers

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1 T	Theory assignment	An assignment will be given to students to compare the electrical system of electric and electric hybrid vehicles	10	Assignment question, rating scale	Internal

INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal

SCHEME FOR LEARNING OUTCOME

	LO Code	CO Code	de	urse Co	Co	le	ranch Cod	В
Format	3	5	2	0	5	3	0	Α

COURSE NAME	Auto Electricals & Elect	ronics										
CO Description	Student will be able to example and hybrid vehicle	xplain the theory, circuit, construction an	d wo	rking	of the	elect	rical sy	stem	for the	given e	electric	
LO Description	Student will be able to id	entify major components of electrical sys	tem	for th	e giver	n elec	ctric / I	nybrid	vehicle	9		

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 major components of the electrical systems of electric vehicles and electric hybrid vehicles regarding purpose, location and function	Lab demonstration method	Teacher will demonstrate major components inside the lab to students, students will practice, provide quiz, assignment etc., teacher will conduct remedial and tutorials	04	03	Systems/ components / diagrams/ charts/ posters	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Practical assignment	The student will be asked to identify five components and state their purpose, function and location in the system	10	Systems/ components/ diagrams/ charts/ posters	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (DIPLO		'ING)		RICULUM FOR COURSE			Sheet No. 1/5			
Branch		Al	UTOMOBILE ENGI	TOMOBILE ENGINEERING Semest			Fifth			
Course Code	50	3	Course Name	Vehicle Emission	ions & Air Conditioning					
Course Outco	rse Outcome 1 know		wledge about control of pollutants in engine T-L Hrs			Student will be able to demonstrate his / her knowledge about control of pollutants in engine exhaust emissions				Marks
Learning Outc	ome 1			explain the mechanismollutants in SI and CI e		7	10			
Contents	S	Pollutant formation in SI and CI Engines, mechanism of HC and CO formation, NOx formation, smoke and particulate emissions, effect design and operating variables on engine emissions								
Method of Asse	ssment	Theory exam								
Learning Outc	ome 2	/work	king /components	explain the construct of systems for recove nd blow-by gases		10	15			
Contents	S	Source line, c vapor gases	es of vapor leakag harcoal canister, v storage in crank o , Open & Closed c	les, vapor recovery systems, vapor separation from case, expansion tank. nankcase ventilation sy vorking of PCV valve.	fuel, seale eed of rem	d fuel noving	tanks, j blow-by			
Method of Asse	ssment	Theor	y exam							
Learning Outc	ome 3			identify major comporecovery systems / PC		8	10			
Contents	6	vapor case,	separation from texpansion tank. O	ents of fuel vapor retu fuel, sealed fuel tanks, pen & Closed crankcas cation, construction an	vapor stor e ventilation	age in on sys	crank			
Method of Asse	ssment	Practi	cal exam							

•	RGPV (DIPLOMA WING) BHOPAL		NG) OBE CURRICULUM FOR THE COURSE			3	Sheet No. 2/5	
Branch		AUTOMOBILE ENG		MOBILE ENGINEERING Semester			Fifth	
Course Code	5	503	Course Name	me Vehicle Emissions & Air Conditioning			ning	
Course Outcon	ne 2		t will be able to rol pollutants in	explain the various tec exhaust gases	hniques	T-L Hrs	Marks	
Learning Outco	me 1			explain different methuality and reduction in		7	10	
Contents		Ratio, for compression	Various methods to improve combustion quality, efficient control of Ratio, faster acting choke, reducing combustion chamber surface are compression ratio, increasing combustion temperature, valve overlay control of vacuum advance, Electronic engine control and microprocessor based engine control, Non conventional vehicles.					
Method of Assessment		Theory	Theory exam					
Learning Outco	me 2	/ worki	ng /components	explain the theory/ co s of electronic engine c es of catalytic converto	ontrol	10	20	
Contents		Study of system	of electronic en is and various ty	gine control systems, ypes of catalytic conv working/ components	micro-pro erters rega			
Method of Assessment			assignment	<u> </u>				
Learning Outco	me 3	electro	Student will be able to identify major components of electronic engine control systems and commonly used catalytic converters				10	
Contents			rocessor based e	nts of Electronic engine ngine control, commor				
Method of Assessment		Practica	al exam					

RGPV (DIPLO BHOI		•	RICULUM FOR COURSE			Sheet No. 3/5	
Branch		AUTOMOBILE ENG	GINEERING	Semester Fifth			
Course Code	503	Course Name	e Name Vehicle Emissions & Air Conditioning				
Course Outco	me 3	dent will be able to measure the exhaust T-L issions of given vehicle					
Learning Outco	ome 1 cor		explain the theory / g / components of con d smoke meters	nmonly	8	15	
Contents	Cor for con	Concept of exhaust measurement for S.I and C.I engines, smoke test for S.I and C. I. engines. Measurement of CO, HC and NOx. Study of commonly used gas analysers and smoke meters regarding their theory/ construction/ working/ components					
Method of Asses	sment The	Theory exam					
Learning Outco	ome 2 em		measure the exhaust nicle using gas analyze	r /	8	10	
Contents	and	I smoke testing for S	easurement for S.I and (S.I and C. I. engines, me I the available gas analy	easureme	ent of CC	, HC and	
Method of Asses	sment Pra	ctical assignment					
Learning Outco	ome 3 pol	Student will be able to identify the causes of pollutants in given exhaust measurement report and suggest the appropriate treatment to reduce the level of pollutants			9	10	
Contents	Ass stu CO	essment of nature a dy of available data	and composition of poll such as color of the ex pacity, recommending	haust, m	easured	values of	
Method of Asses	sment The	eory assignment					

RGPV (DIPLOM BHOPA	•		OBE CURRICULUM FOR THE COURSE		FOD		FORMAT-3	
Branch		AUTOMOBILE ENGINEERING Semester			Semester			
Course Code	503	Course Name	Vehicle Emissio	ns & Air	Condition	oning		
Course Outcome	e 4 const	dent will be able to explain the struction/working/components/control chanism of a car air conditioning system.			Marks			
Learning Outcom	Stude e 1 const	Student will be able to explain the construction/working/components of a car air-conditioning system.				10		
Contents	Huma air co basic	luman comfort, air conditioning, variables to be controlled, theo ir conditioning, theory, construction, working and components coasic air conditioning system, theory, construction, working, omponents of common car air conditioning system.						
Method of Assessm	nent Theor	ry exam						
Learning Outcom	e 2 comp	Student will be able to identify the main components of the given car air conditioning system.			7	10		
Contents	Study regar	of major compon	ents of common car ai , purpose, function an ents					
Method of Assessm	nent Pract	ical exam						

RGPV (DIPLO BHOI		/ING)	OBE CUR FOR THE	FORMAT-3	FORMAT-3 Sheet No. 5/9			
Branch		AU	TOMOBILE ENGIN	EERING	Semester	Fifth		
Course Code	5	03	Course Name	Vehicle Emis	sions & Air Co	Conditioning		
Course Outco	me 5		dent will be able to recharge the refrigerant in T-L given car air conditioning system Hrs					
Learning Outco	ome 1	chara	Student will be able to explain the important characteristics of commonly used refrigerants for car AC system					
Contents		refrige	erants, types of re	f refrigerants, impo frigerants and thei erants used in com	r codes, study	of imp		
Method of Asses	sment	Theor	y exam					
Learning Outco	me 2		nt will be able to echarging the give	follow the SOP for n car AC system	testing	9	10	
Contents		equip		ant charging and re r re-charging the re car AC system			/stem,	
Method of Asses	sment	Praction	Practical assignment					

	LO Code	CO Code	de	urse Co	Course Code			В
Form	1	1	3	0	5	3	0	4

COURSE NAME	ehicle Emissions & Air Conditioning	
CO Description	tudent will be able to demonstrate his / her knowledge about control of pollutants in engine exhaust emissions	
LO Description	tudent will be able to explain the mechanism of formation of exhaust pollutants in SI and CI 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.	Pollutant formation in SI and CI Engines, mechanism of HC and CO formation, NOx formation, smoke and particulate emissions, effects of design and operating variables on engine emissions	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	05	02	B.P Pundir "Engine Emissions", Pub.: Alpha Science Int. Ltd. Or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Check list	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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4	LO Code	CO Code	de	ourse Co	Co	le	ranch Cod	В
Format No. 4	2	1	3	0	5	3	0	Α

COURSE NAME	Vehicle Emissions & Air	Conditioning										
CO Description	Student will be able to	demonstrate his / he	r knowledge abo	ut cont	rol of p	ollut	ants i	in eng	gine ex	xhau	st emissi	ons
LO Description	Student will be able to	explain the construct	tion /working /co	mpone	ents of	syste	ms fo	or rec	overy	of le	aked	
LO Description	hydrocarbons and blow	-by gases										

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Sources of vapor leakages, vapor recovery systems, fuel vapor return line, charcoal canister, vapor separation from fuel, sealed fuel tanks, vapor storage in crank case, expansion tank. need of removing blow-by gases, Open & Closed crankcase ventilation system, function of PCV valve, Construction & working of PCV valve.	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	07	03	B.P Pundir "Engine Emissions", Pub.: Alpha Science Int. Ltd. Or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One and half question related to the learned content will be asked in the university question paper	15	Question paper, Check list	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopa	RGPV	(Diploma	Wing)	Bhopa
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	LO Code	CO Code	de	urse Co	Co	le	ranch Cod	В
Format N	3	1	3	0	5	3	0	A

COURSE NAME	Vehicle Emissions & Air	Conditioning										
CO Description	Student will be able to	demonstrate his / her	knowledge abou	it con	rol of p	olluta	ants i	in eng	gine e	xhau	st emiss	ions
LO Description	Student will be able to	dentify major compor	nents of common	ly use	d vapor	reco	very	syste	ms / F	PCV v	/alve	

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 major components of fuel vapor return line, charcoal canister, vapor separation from fuel, sealed fuel tanks, vapor storage in crank case, expansion tank. Open & Closed crankcase ventilation system, PCV valve regarding their location, construction and function	Lab demonstration method	Teacher will demonstrate major components inside the lab to students, students will practice, provide quiz, assignment etc., teacher will conduct remedial and tutorials	05	03	Systems/ components/ diagrams/ charts/ posters	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Practical exam	The student will be asked to identify five components and state their purpose, function and location in the system	10	Systems/ components/ diagrams/ charts/ posters	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal

SCHEME FOR LEARNING OUTCOME

	LO Code	CO Code	de	urse Co	Co	le	anch Cod	В
Format	1	2	3	0	5	3	0	Α

COURSE NAME	ehicle Emissions & Air Conditioning
CO Description	tudent will be able to explain the various techniques to control pollutants in exhaust gases
LO Description	tudent will be able to explain different method to improve combustion quality and reduction in emission.

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Various methods to improve combustion quality, efficient control of A/F Ratio, faster acting choke, reducing combustion chamber surface area, compression ratio, increasing combustion temperature, valve overlap, control of vacuum advance, Electronic engine control and microprocessor based engine control, Non conventional vehicles.	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	05	02	B.P Pundir "Engine Emissions", Pub.: Alpha Science Int. Ltd. Or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S	. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
	1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Check list	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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Format N	LO Code	CO Code	de	ourse Co	Co	е	ranch Cod	В
Format N	2	2	3	0	5	3	0	١

COURSE NAME	Vehicle Emissions & Air Conditioning											
CO Description	Student will be able to explain the various techniques to control pollutants in exhaust gases											
LO Description		explain the theory/ construction / wo es of catalytic convertors	rking	/com	pone	ents	of el	ectro	nic e	ngine	control	

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 electronic engine control systems, micro-processor based systems and various types of catalytic converters regarding their theory/construction/working/ components	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	07	03	B.P Pundir "Engine Emissions", Pub.: Alpha Science Int. Ltd. Or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory assignment	Two questions related to the learned content will be asked in the theory assignment	20	Assignment question, rating scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma	Wing	Bhopal
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	LO Code	CO Code	de	urse Co	Co	е	ranch Cod	В
Format	3	2	3	0	5	3	0	١

COURSE NAME	Vehicle Emissions & Air Conditioning
CO Description	Student will be able to explain the various techniques to control pollutants in exhaust gases
LO Description	Student will be able to identify major components of electronic engine control systems and commonly used
LO Description	catalytic converters

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 main components of Electronic engine control and microprocessor based engine control, commonly used catalytic converters	Lab demonstration method	Teacher will demonstrate major components inside the lab to students, students will practice, provide quiz, assignment etc., teacher will conduct remedial and tutorials	05	03	Systems/ components/ diagrams/ charts/ posters	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Practical exam	The student will be asked to identify five components and state their purpose, function and location in the system	10	Systems/ components/ diagrams/ charts/ posters	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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_	LO Code	CO Code	Course Code			Branch Code		
Format	1	3	3	0	5	3	0	Α

COURSE NAME	Vehicle Emissions & Air Conditioning
CO Description	Student will be able to measure the exhaust emissions of given vehicle
LO Description	Student will be able to explain the theory / construction / working / components of commonly used gas analyzers and smoke meters

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Concept of exhaust measurement for S.I and C.I engines, smoke testing for S.I and C. I. engines. Measurement of CO, HC and NOx. Study of commonly used gas analysers and smoke meters regarding their theory/ construction/ working/ components	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	06	02	B.P Pundir "Engine Emissions", Pub.: Alpha Science Int. Ltd. Or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One and half questions related to the learned content will be asked in the university question paper	15	Question paper, rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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В	ranch Cod	le	Co	ourse Co	de	CO Code	LO Code	
\	0	3	5	0	3	3	2	Format No. 4

		OUTCOIVIE	_ ^								
COURSE NAME	OURSE NAME Vehicle Emissions & Air Conditioning										
CO Description	Student will be able to measure the exhaust emissions of given vehicle										
LO Description	O Description Student will be able to measure the exhaust emissions of given vehicle using gas analyzer / smoke meter										

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Concept of exhaust measurement for S.I and C.I engines, gas analysis and smoke testing for S.I and C. I. engines, measurement of CO, HC and NOx. and opacity using the available gas analyzer and smoke meter	Lab demonstration method	Teacher will demonstrate the method of exhaust measurement to students, students will practice, teacher will conduct remedial and tutorials to improve their performance	05	03	Exhaust measuring instruments and accessories, vehicles	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Practical assignment	The student will be asked to measure any two parameters related to exhaust using appropriate instrument for given vehicle	10	Exhaust measuring instruments and accessories, vehicles	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diplo	ma Win	g)Bh	opal
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	LO Code	CO Code	Course Code			le	ranch Cod	Bra	
Forma	3	3	3	0	5	3	0	4	

COURSE NAME	Vehicle Emissions & Air	Conditioning										
CO Description	Student will be able to	measure the exhaust emissions of g	iven ve	hicle								
LO Description		identify the causes of pollutants in to reduce the level of pollutants	given ex	chaust	meası	ureme	nt re	port a	ınd su	iggest t	the	

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Assessment of nature and composition of pollutants in exhaust through study of available data such as color of the exhaust, measured values of CO, HC and NOx. and opacity, recommending treatment required to reduce the pollutants in the exhaust	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	06	03	B.P Pundir "Engine Emissions", Pub.: Alpha Science Int. Ltd. Or its equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory assignment	A set of data regarding pollution level measured in a given vehicle, will be provided to the student group and they will analyze and interpret the data to find the causes and suggest the treatment	10	Case study, rating scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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	LO Code	CO Code	de	urse Co	Co	le	ranch Cod	В
Format	1	4	3	0	5	3	0	Α

COURSE NAME	Vehicle Emissions & Air	Conditioning										
CO Description	Student will be able to	explain the construction	on/working/con	nponents	/cont	rol m	nechar	nism	of a c	ar air	condit	ioning
	system.											
LO Description	Student will be able to	explain the construction	n/working/con	nponents	of a c	car ai	ir- con	ditio	ning s	syste	m.	

SCHEME OF STUDY

S. No.	Learning Content	Teaching -Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Human comfort, air conditioning, variables to be controlled, theory of air conditioning, theory, construction, working and components of basic air conditioning system, theory, construction, working, components of common car air conditioning system.	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	()6	02	Book: Refrigeration & Air Conditioning by R. S. Khurmi OR equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

DCDV/Diala	ma Wing \ Dhanal	SCHEME FOR LEARNING	В	Branch Co	de	C	ourse Co	ode	Code	Code	4
KGPV (DIPIO	oma Wing) Bhopal	OUTCOME	OUTCOME A 0						4	2	Format No. 4
COURSE NAME	Vehicle Emissions & Air	Conditioning									
CO Decemention	Student will be able to explain the construction/working/components/control mechanism of a car air conditioning										
CO Description	system.										
LO Description	Student will be able to i	dentify the main components of the	given	cara	air co	nditi	onin	g sys	tem.		

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 major components of common car air conditioning system regarding their location, purpose, function and relative position with other neighbor components	Lab demonstration method	Teacher will demonstrate major components inside the lab to students, students will practice, provide quiz, assignment etc., teacher will conduct remedial and tutorials	04	03	System/ components/ diagrams/ charts/ posters	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Practical exam	The student will be asked to identify five components and state their purpose, function and location in the system	10	System/ components/ diagrams/ charts/ posters	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal

SCHEME FOR LEARNING OUTCOME

	LO Code	CO Code	de	urse Co	Co	le	ranch Cod	В
Format N	1	5	3	0	5	3	0	A

COURSE NAME	Vehicle Emissions & Air	Conditioning										
CO Description	Student will be able to re	echarge the refrigerant in t	the given ca	ar air	cond	itioni	ng syst	em				
LO Description	Student will be able to e	explain the important chara	acteristics o	of cor	nmor	nly use	ed refri	gerar	nts for	car A	C systen	n

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 and importance of refrigerants, important characteristics of refrigerants, types of refrigerants and their codes, study of important characteristics of refrigerants used in common car AC system	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc., conduct remedial and tutorials	04	02	Book: Refrigeration & Air Conditioning by R. S. Khurmi OR equivalent	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	t Description of Assessment		Resources Required	External / Internal
1.	Theory exam	One question related to the learned content will be asked in the university question paper	10	Question paper, Check list	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal

SCHEME FOR LEARNING OUTCOME

	LO Code	CO Code	Course Code			Branch Code			
Forma	2	5	3	0	5	3	0	Α	

		001001112									
COURSE NAME	/ehicle Emissions & Air Conditioning										
CO Description	Student will be able to recharge the refrigerant in the given car air conditioning system										
LO Description Student will be able to follow the SOP for testing and recharging the given car AC system											

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 refrigerant charging and re-charging, tools and equipments required for re-charging the refrigerant in car AC system, SOP for recharging the car AC system	Laboratory demonstration method	Teacher will demonstrate the procedure of recharging the car AC system, he will explain the purpose / function of various tools and equipments used in re-charging, students will practice to re-charge under guidance of teacher, teacher will correct /improve their performance through feedback / suggestions.	06	03	Car AC system/ related tools and equipments	Teacher will suggest more video links, LRs to assist in learning

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal	
1.	Practical assignment	Student will be asked to demonstrate the SOP to recharge the given car AC system	10	Car AC system/ related tools and equipments	Internal	

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (DIPLO	•		RICULUM FOR COURSE	FORMAT	.3	Sheet No. 1/5		
Branch		AUTOMOBILE ENG	INEERING	Semest	ter	Fifth		
Course Code	504	Course Name	TRACTORS AND EARTHMOVERS					
Course Outco		dent will be able king/ components	T-L Hrs	Marks				
Learning Outc		king/ components	explain the construction of the basic hydraulic of		7	10		
Content	s wor	•	ydraulic control system nts with schematic &flo			ruction,		
Method of Asse	ssment The	ory exam						
Learning Outo	omo 2	dent will be able to he given hydraulic	7	10				
Content	2	•	l in basic hydraulic cont with neat sketch and w	•	ıs, t h e	ir		
Method of Asse	ssment Lab	oratory exam						
Learning Outo	ome 3 con	Student will be able to develop simple hydraulic control circuit for the given purpose and operational conditions				10		
Content	s circ	ntroduction to development of various types of simple logical control circuits for the given purpose and operational conditions in hydraulics mode.						
Method of Assessment Theory exam								

RGPV (DIPLO		VING)		OBE CURRICULUM FOR THE COURSE			Sheet No. 2/5		
Branch		Al	JTOMOBILE ENG	INEERING	Semester		Fifth		
Course Code	5	504	Course Name	ID EARTHN	10VEF	RS			
Course Outcon	ne 2	workin	Student will be able to explain the construction / working /systems / components / specifications of the given tractor						
Learning Outco	me 1		f their use / tech	classify the various tra nology adopted/ spec		10	15		
Contents			iction, developm on the basis of v	ent, purpose, application arious features.	ons and clas	ssifica	tions of		
Method of Assessment		Paper-p	oen test						
Learning Outco	me 2	workin	Student will be able to explain the construction / working/ systems / components / specifications of the basic tractor						
Contents			nents and their f	ems of basic tractor wit unctions. Technical spe	•		sic		
Method of Assessment	•	Theory	Theory exam						
Learning Outcome 3		Student will be able to identify various system / components of the given tractor				7	10		
Contents		Demon	Demonstration of various system and components of a tractor						
Method of Assessment			Laboratory exam						

RGPV (DIPLO BHO			OBE CURRICULUM FOR THE COURSE			Sheet No. 3/5	
Branch		AUTOMOBILE ENG	GINEERING	Semes	ster	Fifth	
Course Code	504	Course Name	HMOVERS				
Course Outcor	ne 3 wor	udent will be able to explain the construction / orking/ components of the special purpose estems of the given tractor				Marks	
Learning Outco	ome 1 wor	Student will be able to explain construction/ working / main components of the transmission system / power take off unit / hydraulic control system / ballasting of the given tractor				20	
Contents	box	•	he transmission system, e off (PTO) unit, ballastir	•	•	•	
Method of Asses	sment The	ory exam					
Learning Outcome 2		Student will be able to identify the various components of the transmission system / power take off unit / hydraulic control system of the given tractor			8	10	
Contents	layo		transmission system, ge (PTO) unit, wheel, and I	•		•	
Method of Assessment Laboraory exam							

RGPV (DIPLOM BHOPA	•	OBE CURR	FORM	AT- 3	Sheet No. 4/5		
Branch		AUTOMOBILE ENG	AUTOMOBILE ENGINEERING Sen			Fifth	
Course Code	504	Course Name	TRACTORS AI	ND EART	THMOVERS		
Course Outcome	4 work	ent will be able to ing / systems / ma fications of the giv	T-L Hrs	Marks			
Learning Outcom	e 1 earth	ent will be able to movers on basis o nology used / speci	10	15			
Contents		duction, purpose, a e basis of various f	pplications and classife eatures.	fications	of earth	imovers	
Method of Assessment Paper-pen test							
Learning Outcom	e 2 /wor	tudent will be able to explain the construction working / main components/ specifications of the iven power shovel/ backhoe / bulldozer			7	10	
Contents		components and to	heir functions of power	er shovel	, backho	pe and	
Method of Assessm	ent Theo	ry exam					
Learning Outcom	_ ? │	udent will be able to identify various system / mponents of the given tractor			7	10	
Contents		emonstration of various system and their components of power novel, backhoe and bulldozer					
Method of Assessment Laboratory Test by Observation							

RGPV (DIPLOMA WING) BHOPAL			OBE CUR FOR THE	FORMAT-3		Sheet o. 5/5		
Branch		AU	TOMOBILE ENGIN	EERING	Semester		Fifth	
Course Code	50)4	Course Name	TRACTORS	S AND EARTH	THMOVERS		
Course Outco	explain the constructions of on the earthmover	special	T-L Hrs	Marks				
Learning Outco	ome 1	worki purpo	student will be able to explain the construction / vorking / components / specifications of special burpose systems (three systems) used on the earthmovers					
Contents			se systems used ir	components and sp n power shovel, ba		-		
Method of Asses	sment	Theor	y exam					
Learning Outco	me 2		dent will be able to identify the components of en special purpose system used in earth movers				10	
Contents			emonstration of special purpose systems and their components of ower shovel, backhoe and bulldozer					
Method of Assessment Laboratory Test by Observation								

Branch Code			Co	Course Code			LO Code	
Α	0	3	5	0	4	1	1	Format No. 4

COURSE NAME	TRACTORS AND EARTHMOVERS			
CO Description Student will be able to explain the construction/ working/ components of the given hydraulic control system				
LO Description	Student will be able to explain the construction / working/ components of the basic hydraulic control circuit			

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 basic hydraulic control system, purpose, construction, working and components with schematic &flow diagram and applications	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc.	6	1	Book:- Oil hydraulic Systems: principles and maintenance by S R Majumdar or its equivalent	Teacher may suggest more video/PDF links, which will help the students to solve quiz, prepare assignments etc.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One theory question related to the learned content will be asked in the university question paper	10	Question paper, Check list	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Branch Code			Course Code			CO LO Code Code		Format No.	
Α	0	3	5	0	4	1	2	4	

COURSE NAME	TRACTORS AND EARTHMOVERS								
CO Description	Student will be able to explain the construction/ working/ components of the given hydraulic control system								
LO Description	Student will be able to identify the main components of the given hydraulic control system								

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Main components used in basic hydraulic control systems, their purpose, construction with neat sketch and working	Lab demonstration	Teacher will demonstrate the contents to the students. Students will practice under the guidance of teacher.	3	4	Laboratory equipped with diagrams and/or trainer kit	Teacher may suggest more videos/PDF links, which will help the students to identify systems.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Laboratory Exam	Examiner will ask each students to identify at least five main components and state their purpose, location and function.	10	Group of components of basic hydraulic control system or diagrams, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Dip	loma Wing) Bhopal
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Branch Code			Course Code			CO Code	LO Code	Format No.	
Α	0	3	5	0	4	1	3	4	

COURSE NAME	TRACTORS AND EARTHMOVERS					
CO Description	Student will be able to explain the construction/ working/ components of the given hydraulic control system					
LO Description	Student will be able to develop simple hydraulic control circuit for the given purpose and operational conditions					

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 development of various types of simple logical control circuits for the given purpose and operational conditions in hydraulics mode.	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc.	5	2	Book:- Oil hydraulic Systems: principles and maintenance by S R Majumdar Or its equivalent	Teacher may suggest more video/PDF links, which will help the students to solve quiz, prepare assignments etc.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory exam	One theory question related to the learned content will be asked in the university question paper	10	Question paper, Check list	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

A	LO Code	CO Code	de	urse Co	Co	Branch Code		
Format No. 4	1	2	4	0	5	3	0	Α

COURSE NAME	TRACTORS AND EARTHMOVERS
CO Description	Student will be able to explain the construction / working /systems / components / specifications of the given tractor
LO Description	Student will be able to classify the various tractors on basis of their use / technology adopted/ special features

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, development, purpose, applications and classifications of tractor on the basis of various features.	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc.	7	3	 Books:- Tractor Mechanics by R. B. Gupta Farm Tractor, Power Tiller Maintenance & Repair by S. C. Jain and C. R. Roy 	Teacher may suggest more video/PDF links, which will help the students to solve quiz, prepare assignments etc.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment		Resources Required	External / Internal	
1.	Paper-pen test	Two theory questions related to the learned content will be asked in the test paper	15	Test paper, Check list	Internal	

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

F	RGPV (E	Diploma Wing	SCHEN	SCHEME FOR LEARNING		de	Cours		de CO Code	LO Code	
		Bhopal		OUTCOME A 0	3	5	0	4 2	2	Format No. 4	
COURSE NAME TRACTORS AND EART		ID EARTHMOVER	RS	'			'	1			
		ble to explain the co	nstruction / working /systems	compo	nents	s / spe	cifica	ations of th	ne giv	en tractor	
LO De	scription	Student will be a	ble to explain the co	nstruction / working/ systems	compo	nents	s / spe	cifica	ations of th	ne bas	sic tractor
				SCHEME OF STUDY							
S. No.	Lea	rning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.		Pract. Tut Hrs	J.	LRs Requir	ed	Remarks
		g of various							ooks:- Tractor		Teacher may

SCHEME OF ASSESSMENT

inside the class based on

his/her session plan. Discuss

the topics with students,

provide quiz, assignment etc.

Traditional

Lecture method

video/PDF links,

which will help

the students to

assignments etc.

solve quiz,

prepare

B. Gupta

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Farm Tractor,

Power Tiller

Maintenance &

Repair by S. C.

Jain and C. R.

Roy

with layout. Main

1. components and their

tractor.

functions. Technical

specifications of basic

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory Exam	One theory question related to the learned content will be asked in university question paper.	10	University paper, Check list	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (E	Diploma Wing)			Branch Co	de	Course Code			CO Code	LO Code	
	Bhopal			0	3	5	0	4	2	3	Format No. 4
COURSE NAME	TRACTORS AND EA	RTHMOVERS	•		•				'	'	
CO Description Student will be able to exp		explain the construction / working /system	ms / c	ompo	nent	s / sp	ecific	ation	s of th	ne give	en tractor
LO Description Student will be able to i		dentify various system / components of t	he giv	en tr	actor						

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Demonstration of various system and components of a tractor	Lab demonstration	Teacher will demonstrate the contents to the students. Students will practice under the guidance of teacher.	3	4	Preferably actual tractor, model otherwise diagrams are compulsory	Teacher may suggest more videos/PDF links, which will help the students to identify systems.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max.M arks	Resources Required	External / Internal
1.	Laboratory Exam	Examiner will ask each students to identify at least five main components and state their purpose, location and function.	10	Actual tractor or model or diagrams, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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Branch Code			Course Code			CO Code	LO Code	
Α	0	3	5	0	4	3	1	Format No. 4

COURSE NAME	TRACTORS AND EARTHMOVERS								
CO Description	Student will be able to explain the construction / working/ components of the special purpose systems of the given tractor								
LO Description	Student will be able to explain construction/ working / main components of the transmission system / power take off unit /								
LO Description	hydraulic control system / ballasting of the given tractor								

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Main components of the transmission system, gear shift pattern, gear box layout, power take off (PTO) unit, ballasting, breaking and hydraulic control system.	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc.	8	5	 Books:- Tractor Mechanics by R. B. Gupta Farm Tractor, Power Tiller Maintenance & Repair by S. C. Jain and C. R. Roy 	Teacher may suggest more video/PDF links, which will help the students to solve quiz, prepare assignments etc.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment		Resources Required	External / Internal
1.	Theory Exam	Two theory questions related to the learned content will be asked in university question paper.	20	University paper, Check list	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

	LO Code	CO Code	Course Code			Branch Code		
Format No. 4	2	3	4	0	5	3	0	Α

COURSE NAME	TRACTORS AND EARTHMOVERS									
CO Description	Student will be able to explain the construction / working/ components of the special purpose systems of the given tractor									
I O Description	Student will be able to identify the various components of the transmission system / power take off unit / hydraulic control									
LO Description	system of the given tractor									

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Demonstration of the transmission system, gear shift pattern, gear box layout, power take off (PTO) unit, wheel, and braking and hydraulic control system.	Lab demonstration	Teacher will demonstrate the contents to the students. Students will practice under the guidance of teacher.	3	5	Preferably actual tractor otherwise model, diagrams are compulsory	Teacher may suggest more videos/PDF links, which will help the students to identify systems.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment		Resources Required	External / Internal
1.	Laboratory Exam	Examiner will ask each students to identify at least five main components and state their purpose, location and function.	10	Actual tractor or diagrams, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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Forms at N	LO Code	CO Code	de	ourse Co	Co	le	ranch Cod	В
Format N	1	4	4	0	5	3	0	Α

COURSE NAME	TRACTORS AND EARTHMOVERS										
CO Description	Student will be able to exerthmover	cplain the construction / working / sys	tems /	main c	ompon	ents /	specif	ficatio	ns of t	he give	n
LO Description	Student will be able to cl	assify different earthmovers on basis o	f their	applic	ation/ t	techno	ology u	ised / s	specia	l featur	es

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, purpose, applications and classifications of earthmovers on the basis of various features.	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc.	7	3	 Construction Equipment and Management by S. C. Sharma Manuals of Earth moving Equipments 	Teacher may suggest more video/PDF links, which will help the students to solve quiz, prepare assignments etc.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	essment Max. Resou		External / Internal
1.	Paper-pen test	Two theory questions related to the learned content will be asked in the test paper	15	Test paper, Check list	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

5 1	LO Code	CO Code	de	ourse Co	Co	le	ranch Cod	В
Format No. 4	2	4	4	0	5	3	0	Α

COURSE NAME	TRACTORS AND EARTHMOVERS							
CO Description	Student will be able to explain the construction / working / systems / main components / specifications of the given earthmover							
LO Description	Student will be able to explain the construction /working / main components/ specifications of the given power shovel/ backhoe / bulldozer							

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Main components and their functions of power shovel, backhoe and bulldozer with labelled diagram.	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc.	4	3	 Construction Equipment and Management by S. C. Sharma Manuals of Earth moving Equipments 	Teacher may suggest more video/PDF links, which will help the students to solve quiz, prepare assignments etc.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Theory Exam	One theory question related to the learned content will be asked in university question paper.	10	University paper, Check list	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

1	LO Code	CO Code	de	ourse Co	Co	le	ranch Cod	В
Format No. 4	3	4	4	0	5	3	0	Α

COURSE NAME	TRACTORS AND EAR	RACTORS AND EARTHMOVERS									
CO Description	Student will be able to ex	cplain the construction / working / syste	ms / ı	main comp	onen	its / s	pecific	cation	s of th	ne given	
CO Description	earthmover										
LO Description	Student will be able to id	entify various system / components of	he giv	en tractor	r						

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Demonstration of various system and their components of power shovel, backhoe and bulldozer	Lab demonstration	Teacher will demonstrate the contents to the students. Students will practice under the guidance of teacher.	3	4	Preferably actual earthmovers otherwise models/ diagrams/posters are compulsory	Teacher may suggest more videos/ PDF links, which will help the students to identify systems.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	ment Description of Assessment		Resources Required	External / Internal
1.	Laboratory Test by Observation	Examiner will ask each students to identify at least five main components and state their purpose, location and function.	10	Actual earth movers or diagrams/posters, Rating scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV	(Diploma	Wing)	Bhopal
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	LO Code	CO Code	de	Code Course Code			Branch Code	
Format N	1	5	4	0	5	3	0	Α

COURSE NAME	TRACTORS AND EARTHMOVERS
CO Description	Student will be able to explain the construction / working / components / specifications of special purpose systems used on
CO Description	the earthmovers
LO Description	Student will be able to explain the construction / working / components / specifications of special purpose systems (three
LO Description	systems) used on the earthmovers

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Construction, working, components and specifications of special purpose systems used in power shovel, backhoe and bulldozer with diagrams.	Traditional Lecture method	Teacher will organize lecture inside the class based on his/her session plan. Discuss the topics with students, provide quiz, assignment etc.	5	3	 Construction Equipment and Management by S. C. Sharma Manuals of Earth moving Equipments 	Teacher may suggest more video/PDF links, which will help the students to solve quiz, prepare assignments etc.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1	Theory Exam	One theory question related to the learned content will be asked in university question paper.	10	University paper, Check list	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

	LO Code	CO Code	de	ourse Co	Co	le	anch Cod	В
Format No. 4	2	5	4	0	5	3	0	Α

COURSE NAME	TRACTORS AND EAR	RACTORS AND EARTHMOVERS									
CO Description Student will be able to explain the construction / working / components / specifications of special purpose systems us the earthmovers							sed on				
LO Description	Student will be able to id	lentify the components of given special	purpose	syster	n used	in ear	th mo	vers			

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Demonstration of special purpose systems and their components of power shovel, backhoe and bulldozer	Lab demonstration	Teacher will demonstrate the contents to the students. Students will practice under the guidance of teacher.	2	5	Preferably actual earthmovers otherwise model/ diagrams/ posters are compulsory	Teacher may suggest more videos/PDF links, which will help the students to identify systems.

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Max. Marks	Resources Required	External / Internal
1.	Laboratory Test by Observation	Examiner will ask each students to identify at least five main components and state their purpose, location and function.	10	Actual earth movers or model/ diagrams/ posters, Rating scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal

SCHEME FOR LEARNING OUTCOME

Branch Code	e	Coi	urse Cod	e	CO LO Code		Format No.	
		5	0	5	1	1	4	

COURSE NAME	Professional Development- V
CO Description	Student will be able to lead the group discussion
LO Description	Student will be able to participate in the group discussion

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 and importance of group discussion in professional work, ideal group discussion, skills needed to effectively participate in group discussion, practice of group discussion skills	Traditional lecture method + Case Study	Teacher will teach students how group discussion is organized, through examples and cases. Teacher will form small student groups, assign them topics for group discussion, lead the group discussion, guide them to participate in group discussion, teacher will also supervise, correct and improve their participation, teacher will ensure their learning through organizing group discussions on various topics	04	06	Handout, video film*	*Teacher will suggest a suitable online video to be viewed by students

SCHEME OF ASSESSMENT

S No	Mothod of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Student activity/task	The teacher will arrange a group discussion and the student will participate in it. Teacher will observe and assess appropriateness of student's participation	10	Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

- 1. **Group Discussion**:- It is to discuss and argue about the given topic
- 2. **Group size**: Normally 10 to 15 persons.

- 3. **Group discussion topics**: Current affairs, social issues, real life multi-aspect engineering/technology related problems, professional cases etc.
- 4. **Prior communication of topic to students**:- Topic of GD should be communicated to students well in advance so that they could prepare themselves for the discussion through gaining knowledge about topic.
- 5. **Duration of group discussion**: Normally 20-30 Minutes.
- 6. Skills required for effective participation in GD:-
 - Communication skills
 - Behavioral Skills & Etiquettes
 - Listening and arguing skills
 - Self-view presenting skill
 - Student's analysis skill
 - Student's appropriate attitude
- 7. Discussion etiquette

Dos:-

- 1. Speak pleasantly and politely to the group
- 2. Respect the contribution of every member
- 3. Learn to disagree politely
- 4. Try to stick to the topic of the discussion
- Agree with and acknowledge what you find interestingDon't:-
- 1. Lose your temper
- 2. Shout. Use moderate tone and medium pitch
- 3. Use too many gestures when you speak. Gestures like finger pointing and table thumping.

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8. Group discussion rules for participants:-

- Come prepared
- Note down the names of all the participants
- Maintain a firm posture
- Actively participate in the discussion
- Retain your standing and balance
- Do not get emotional

9. Assessment criteria:-

•	Extent of Imitativeness demonstrated	2marks
•	Extent of involvement (action /reaction)	2marks
•	Effectiveness of Communication within group settings	2marks
•	Extent of persuasion demonstrated	2marks
•	Extent of efforts to bring best out of the GD	2marks

RGPV (Diploma Wing) Bhopal

SCHEME FOR LEARNING OUTCOME

Branch Code	Co	urse Cod	le	CO Code	LO Code	Format No.	
	5	0	5	1	2	4	

COURSE NAME	Professional Developm	ent- V				
CO Description	Student will be able to	lead the group discussion				
LO Description	Student will be able to	lead the group discussion				

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 and importance of leading in group discussion, role of leader, skills needed to effectively lead group discussion, practice of leading the group discussion	Traditional lecture method + Case Study	Teacher will teach students how group discussion is lead by the leader through examples and cases. Teacher will form small student groups, demonstrate the role of leader, guide students to lead the group discussion ensure practice of role of leader by each student, teacher will also supervise, correct and improve their role as leader	03	07	Handout, video film*	*Teacher will suggest a suitable online video to be viewed by students

SCHEME OF ASSESSMENT

S		Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	1	Student activity/task	The teacher will arrange a short group discussion and the student will lead it. Teacher will observe and assess appropriateness of student's performance as leader	15	Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

1. Role of Leader in group discussion:-

He /she Leads the group to discuss ALL aspects of the topic, avoid chaos & confusion, focus on the given issue & not be sidetracked and facilitates the

group to reach a consensus (if possible). Without a shred of doubt, this role is highly desirable and one should try assuming this role.

2. Leader's responsibilities:-

- 1. To introduce topic and purpose of the discussion
- 2. Arrange to provide all members sufficient time to speak
- 3. To skillfully keep the discussion on the track
- 4. To control the inappropriate behaviors and language of group members, if any
- 5. To motivate members hesitating to speak
- 6. To discourage members unnecessarily dominating the group
- 7. Summaries what has been come out of GD
- 8. Thanking all group members for their contribution
- 3. The teacher should organize short practice GD sessions where each student can get opportunity to learn the role of leader
- 4. The teacher should organize a series of assessment GD sessions where each student can be assessed for his/her learning of role of leader

5. Assessment criteria:-

a.	Ability to keep discussion on track	(4marks)
b.	Ability to control the group members for their behaviors	(3marks)
c.	Ability to judge and give fair chance to members hesitating to speak	(3marks)
d.	Ability to create coherent tale of different arguments and views	(5marks)

RGPV (Diploma Wing) Bhopal		SCHEN	SCHEME FOR LEARNING OUTCOME		Code Course			e	CO Code	LO Code	Format No.
		aı				5	0	5	2	1	4
COURSE NAME	Professional Develo	pment- V		·							
CO Description		J	hort awareness programm ethical / technical / profes		•	ımu	ınity	/ soc	ciety o	on any	/ relevant
LO Description			oposal of a short awarene nental/ ethical / technical				earby	, con	nmun	ity on	any
			SCHEME OF STUDY								
S. Learnin	Teachin	g –Learning	Description of T.I. Proce		Teach		Prac	t.	LR	Rs	Pomarks

S. No	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Need and importance of planning and organizing skills, importance of awareness programme, planning a short awareness programme, preparation of proposal for programme	Traditional lecture method + Case Study	Teacher will teach students the planning and organizing skills through examples and cases. Teacher will form small student groups, assign them topics for planning short awareness programmmes, guide them to prepare proposals for the programme, teacher will assess, correct/improve their proposals	02	06	Handout, video film*	*Teacher will suggest a suitable online video to be viewed by students

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Student group assignment	The teacher will assess the short awareness programme proposals of different student groups on basis of criteria	10	Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

- 1. Planning and organizing skills: These are important soft skills for professionals. Planning is the process of thinking about the activities required to achieve a desired goal. It is the first and foremost activity to achieve desired results. After planning, next comes Organizing. Organizing is the process of arranging human, material and financial resources to put them in action in an integrated way according to the plan so that the desired goal could be achieved.
- 2. **Community:** The members of any group small or large, liver together in such a way that they share the basic conditions of a common life. Example: city or sub-urban area or township or colony or village. Small communities exist within larger communities as cities/villages within the district.
- 3. **Awareness programme**: these are the programmes intended to create awareness or to educate the common people. Normally the duration of awareness programme ranges from few hours (2 to 3 Hrs.) to few days (2-3days).
- 4. **Importance of community awareness programmes:-** Organizing community awareness programme develops ability in students to interact with the society or community as a professional. It also develops skills to plan and implement professional micro projects as per requirements. It also develops attitudes in students to social work for the nearby community.
- 5. The teacher should form small groups of students (4-5 students) and assign them general topics for community awareness programmes. The student group should be asked to first plan the programme and then develop the proposal under guidance of the teacher. The programme should be of duration 1 to 2 Hrs. with expected no. of participants 50 to 70. Venue can be local community centre or community hall or nearby government primary/middle/higher secondary school or any other convenient place. Timings should be

convenient to participants, venue managers and organizing student group. Programmes may be also planned for targeted community like household women, teenagers, senior citizens, laborers, farmers, footpath businessmen etc.

6. **Topics for awareness programmes**:- Any appropriate topic which caters the need of community may be finalized. Few suggestions are as below:-

	Domain of awareness	Suggested Topics
		Awareness about conservation of petroleum fuel (Petrol/Diesel/LPG/Kerosene)
1	Technical	Awareness about conservation of domestic electricity
1	recimical	Awareness of non-conventional sources of energy for homes
		Solar energy based water pumps as energy conservation devices for farmers
		Laws and legal procedures related to purchase/sale/ registry of house property
2	Professional	Introduction to medi-claim insurance for citizens
2	Professional	Importance of saving and government saving schemes
		Various government schemes to support small enterprises and home industries
		Importance of cleanliness and hygiene in community
3	Social	Benefits of cleanliness in houses and nearby area
3	Social	Awareness about seasonal deceases and measures for precautions and prevention
		Harmful effects of smoking, drugs and alcohol
		Harmful effects of plastics and polyethylene on environment
4	Environmental	Prevention of pollution in public water sources
4	Liiviioiiiileiitai	Effect of air/ water pollution on human health
		Importance of plantation and protection of greenery
5	Ethical	Respect for life, law and public good

	Honesty and integrity in public life
	Respect for senior citizens, handicapped, poors and deprived people
	Benefits of ethical living

7. Format for proposal:-

- 1. Name of proposed programme;-
- 2. Student group details
- 3. Date, time and duration of programme
- 4. Venue of programme
- 5. Type and number of participants
- 6. Major activities to be completed
- 7. Details of charts/ posters/ Banners / pamphlets to be required
- 8. Major activities to be performed for preparation of programme:-

	Activity details	Duration	Start date	Finish date	Responsible member	Resources required
1						
2						
3						

- 9. Estimated cost of the programme
- 10. Programme Schadule

	Time (fromto)	Event
1		Inaguration

6	Vote of thanks

11. Signature of students

8. Assessment criteria:-

• Extent of appropriateness of programme topic and title **2 marks**

• Extent of appropriateness of details of major activities to be undertaken **3marks**

• Extent of appropriateness of programme schedule **3marks**

• Extent of appropriateness of charts/ posters/ Banners needed **2marks**

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING	LEARNING Branch Code		le	Course Code			O ode	LO Code	Format No.	
KGPV (DIPIO	ma wing) Bhopai	OUTCOME				C		5	2	2	4	
COURSE NAME	Professional Developme	ent- V										
	Student will be able to	organize a short awareness programn	ne fo	r near	by comr	nuni	y/:	socie	ty i	n sma	III group on	
CO Description	any relevant and useful	I social / environmental / ethical / technical / professional topic										
	Student will be able to	organize a short awareness programn	ne fo	r near	by comr	nuni	y/:	socie	ty i	n sma	III group on	
LO Description	any relevant and useful	ıl social / environmental / ethical / technical / professional topic										

SCHEME OF STUDY

S. No	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	organizing skills, working on the plan, conduction of the programme	Guided student activity	Each student group will work on the programme proposal for organizing the awareness programme under guidance of the teacher. Teacher will be present in every such programme to assess the quality of conduction of programme	-	12	Handout, video film*	*Teacher will suggest a suitable online video to be viewed by students

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Student group activity	The teacher will be present in every short awareness programme organized by student group and he/she will assess the quality of the conducted programme	15	Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

1. Assessment criteria:-

• Extent to which activities conducted as per programme schedule 4 marks

• Extent of quality in presentation of charts, posters, banners etc. 4 marks

• Extent of quality in awareness sessions conducted by students 4 marks

• Extent of satisfaction of participants from programme (through feedback) 3 marks

RGPV (Diploma Wing) Bhopal

SCHEME FOR LEARNING OUTCOME

Branch Code		Coi	ırse Cod	e	CO Code	LO Code	Format No.	
		5	0	5	3	1	4	

COURSE NAME	Professional Development- V
CO Description	Student will be able to demonstrate his/her learning from industry exposure
LO Description	student will be able to demonstrate his/her learning from lectures of industry experts / professionals

SCHEME OF STUDY

S. No	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Necessity of exposure to industrial environment and practices, lectures by industry experts	Traditional Lecture method + Student assignment	The department/teacher will organize at least two lectures of industry experts for the students, students will prepare assignment after attending the lecture, teacher will guide them to prepare the assignment	06	-	Handout, video film*	*Teacher will suggest a suitable online video to be viewed by students

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Student assignment	The teacher will assess the two assignments on expert lectures, submitted by each student, on the basis of set criteria	05+05	Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

1. The university is emphasizing closer ties with the industry and its professionals to keep up with the challenging role of preparing the diploma graduates for the work place. Guest lectures, in which practicing industry professionals, frequently teach and share their experiences with the students, provides valuable learning to the students.

2.	Industry experts include	de relevant industry experts re	elated to design & product de	evelopment, manufactu	uring/ construction, sale	es & servicing,
	testing, repair and main	ntenance etc.				
3.	The expert lecture sho	uld be of duration 1 to 2 Hrs. T	he date, time, expert details	and topic of the lecture	should be communica	ted in advance
	to the students.					
4.	After attending the exp	pert lecture, each student will p	prepare and submit an assignr	nent.		
5.	Format for student ass	signment:-				
	Name			Date		
	Roll No.					
	Semester					
	Expert lecture date		Name of expert			
	Expert lecture topic					
	Sub topics covered in	the lecture :-				
	1.					
	2.					
	3.					
	My learning about the	e topic from attending this lectu	ure:-			-
	1.					
	2.					
						ı

3.	
4.	
5.	
	Signature of student
Assessment criteria for assignment:-	
Extent of amount of learning (2marks)	

DCD\//D'l.	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	SCHEME FOR LEARNING	В	Branch Code		Cou	ırse Cod	le	Code	Code	Format No.
RGPV (Diplo	ma Wing) Bhopal	OUTCOME			. !	5	0	5	3	2	4
COURSE NAME	Professional Developm	ent- V									
CO Description	Student will be able to	demonstrate his / her learning from ir	ndust	try exp	osure						
LO Description	student will be able to	demonstrate his / her learning from h	is/he	er visit t	to rele	var	nt inc	dustr	'V		

SCHEME OF STUDY

S. No	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Importance of Students' industrial visits, learning through observing real life industrial systems, planning and organizing the industrial visit	Traditional lecture method +student visit+ student assignment	The teacher will teach students how to learn by observing real life industry systems, the college/ department/ teacher will organize at least one industrial visit of students to any relevant industry, after visit, students will prepare assignment, teacher will guide them to prepare the assignment	02	12	Handout, video film*	*Teacher will also suggest a suitable online video to be viewed by students

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Student assignment	The teacher will assess the assignment on industry exposure submitted by each student on the basis of set criteria	15	Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

1. Being a part of interactive learning, educational visits give students a major exposure to real working environments along with a practical perspective of a theoretical concept relevant to their domain. In addition to that, industrial visits bridge the widening gap between theoretical learning and practical exposure by giving students the first-hand exposure to identify the inputs and outputs for different business operations

and processes performed at the workplace.

- 2. The college/department/ teacher should arrange at least one industrial visit of the students. The visit may be to a nearby relevant industry or to a distant relevant industry. The visit should be of at least one working day (8 Hrs.) or its equivalent (two visits of 4hrs. + 4Hrs., or two visits of 5Hrs + 3Hrs. etc.).
- 3. The term industry is a broad term and encompasses many stake holding units such as production plants, bottling and packaging plants, construction units for roads/bridges/tunnels, sales and service outlets, repair and maintenance workshops, small scale industries, cooperative industries, private proprietary enterprises, authorized dealerships, authorized service stations, public sector enterprises etc.
- 4. If, due to unavoidable reasons, it is not possible to arrange the industrial visit, the college/ department should plan for demonstration of relevant industry related video movies and films to the students, to show the inside working of industry including technology, systems, machines, equipments, plants, processes, testing, roles of officers and workers etc. The total duration of movies or videos demonstrations should be at least 8 hours.
- 5. After industrial visit, each student will prepare and submit an assignment.
- 6. Suggested format for student assignment:-

Name of student		Date	
Roll No.		Semester	
Industry exposure date(s)	Name of industry(s)		
Description of my impor	tant observations about the industry:-		
1.			
2.			
3.			

<u>.</u>	
••	
3.	
l.	
j.	
	Signature of student
ssessment criteria for assignment:-	