RG	SPV (Diploma	wing ) Bhopal	SCHEME F	OR LEAR	NING	B	ranch (	Code	Co	ourse (	Code	CO Code	LO Code	Format No. 4
						C	0	2	3	0	4	1	1	
COURS	E NAME	CHEMICAL PROC	ESS UTILITIES AND MAINTI	EANCE						'	'			
CO Des	scription	Identify the con	nposition, characteristics a	nd combusti	on process o	of fuels.								
LO Des	scription	To Identify the	e composition and charac	eteristics of	solid fuel.									
				SCHE	ME OF ST	ΓUDY								
S. No.	Learnin	ng Content	Teaching –Learning Method	D	Description Proces			1	each Irs.		ract. it Hrs.	LRs Required		d Remark
1	coal an classification rank and significance constituent moisture, wash content carbon, u	coal, origin of d theories, n of coal by characteristics, of the of coal, volatile matter,	Interactive classroom teaching, demonstration, quiz, assignments, tutorial Lab assignments, presentation, lab demonstration, hands on practice	and provi Teacher v quiz/tutor practice the will condumake stuck knowledg Teacher v procedure	will demons e of lab exp	s to stu t assign e studen edge. T gnmen ce thei strate the	idents. hts leacher ts to r he hts.	5		4		Hand chalk PPT, book	board tex	<b>′</b>
	1		I	SCHEME										
S. No.	Method	of Assessment	Description of A	ssessment	Maximun	n Marl	<b>KS</b>		Re	sourc	es Requ	uired	Exte	rnal /Internal
1	Pen Paper tes Exam/practic		Student will be asked explain different type coal and test their characteristics			10		(Quest	tion pa	aper +1	Rating s Rating s or pract	scale) an	ale) and THEORY	

## ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RO	GPV (Dipl	Diploma Wing ) Bhopal  SCHEME FOR LEARNING  OUTCOME  Branch Co.				de	_	ours Code		CO Code	LO Code	Format No. 4			
CB(	₿ <b>Ŗ</b> ⅀ſſDipl ME	oma Wing ) Bhop CHEMICAL PROCES	oal SS UTII	SCHE LITIES AND MAINT	ME FOR LEARNI EAGLETCOME	NG C	(	0	2	3	0	4	1	2	Format No. 4
	scription	Identify the compo	osition	, characteristics a	nd combustion process	of fuels.									
LO Des	cription	to use solid fuels	effici	ently											
					SCHEME (	OF STUDY									
S. No.	Lear	rning Content	Tea	ching – Learning Method	Description of T	-L Process	Tea Hr		]	Pract /Tut Hrs.		]	LRs Req	uired	Remarks
1	determination oxidation combustion coal – advadisadvanta		class teach demo quiz, tutor assig prese lab d	ractive sroom ning, onstration, , assignments, rial Lab gnments, entation, lemonstration, ls on practice	Teacher will expla contents and provide to students. Teacher conduct assignment quiz/tutorial to male practice their known Teacher will conduct assignments to male practice their known Teacher will demo- procedure of lab expressions.	de handouts or will tts/ ke students vledge. act lab ke students vledge. nstrate the kperiments	6		3				douts, ch d, PPT, t c.lab		
	T				SCHEME OF A	I									
S. No.	Meth	od of Assessment		Description	of Assessment	Maximum Marks			]	Reso	urce	s Rec	quired		External / Internal
1		test/Theory ctical Exam	te		ked to explain the cient utilization of termine their	10	' -	_	•	aper -	+Rat		ng scale) cale) and		External

Nil

RGPV (Diplo	ma Wing ) Bhopal	SCHEME FOR LEARNING OUTCOME	Bra	nch Coo	le	Co	ourse Co	ode	CO Code	LO Code	Format No. 4
			C	0	2	3	0	4	1	3	
COURSE NAME	CHEMICAL PROCESS UT	FILITIES AND MAINTEANCE	'							1	
CO Description	Identify the composit	ion, characteristics and combustion process of	of fuels.								

#### SCHEME OF STUDY

S. No.	<b>Learning Content</b>	Teaching — Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Characteristics of liquid and gaseous fuel and comparison with solid fuel. Some common liquid and gaseous fuels Name and Composition.	Interactive classroom teaching, demonstration, quiz, assignments, tutorial Lab assignments, presentation, lab demonstration, hands on practice.	Teacher will explain the contents and provide handouts to students.  Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge. Teacher will conduct lab assignments to make students practice their knowledge.  Teacher will demonstrate the procedure of lab experiments.	05	02	Handouts, chalk board, charts, , lab.	

### SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Pen Paper test/Theory Exam/practical Exam	Student will be asked to characterize liquid and gaseous fuel and determine their characteristics	10	(Test paper + Rating scale)/ (Question paper +Rating scale) and rating scale for practicals	Internal

## ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Nil

**LO Description** To explain characteristics of liquid & gaseous fuel

R	GPV (Dip	oloma Wing ) Bhop	oal		FOR LEARNING TCOME		Branch		2	Cou	rse C	ode	CO Code		LO ode 1	Format No. 4
	URSE AME	CHEMICAL PROCES	SS UTILITIE	S AND MAINTEAN	NCE				-							
CO Des	scription	To Identify the princ	ciples invo	lved in the forma	tion of compressed	d air, stea	am and o	other ι	utilitie	5.						
LO Des	scription	to produce compres	ssed air ar	nd steam for che	mical plant											
		-			SCHEME OF	FSTUD	Y									
S. No.	Lear	rning Content		ng –Learning Method	Description of Process	f T-L	Teach Hrs.		Pract. ut Hr		L	Rs F	Require	d		Remarks
	in chemic steam, for wet and d fraction of	ed air and its uses al industries, mation of steam, ry steam, dryness f steam, ed steam, uses of	teaching demonst assignm	ve classroom f, cration, quiz, ents, tutorial. onstration	Teacher will exp the contents and provide handout students. Teache will conduct assignments/ quiz/tutorial to r students practice their knowledge	es to er make	06	02			Handouts, chalk board, PPT, text book,					
				\$	SCHEME OF AS	SESSN	IENT									
S. No.	Metho	od of Assessment	D	escription of A	ssessment	Maxii Mai				Res	ource	s Re	quired			External / Internal
1	Pen Paper	test/Theory Exam	10 11 11 11	nt will be asked rial air and stear		10	)	1.			+ Rating scale) and aper +Rating scale)			External		
			ADDIT	IONAL INSTR	RUCTIONS FOR	THE	HOD/ F	'ACU	LTY	( <b>IF</b> .	ANY)	)				
					Nil											

RG	PV (Diplo	oma Wing ) Bhopal	SCHEME FOR OUTCO		В	ranch (	Code 2	Co	ourse (	Code 4	CO Code 2	LO Code 2	Format No. 4
	JRSE ME	CHEMICAL PROCESS	UTILITIES AND MAINTEANCE					<u> </u>	, U	4			
CO Des	cription	To Identify the princ	iples involved in the formation	n of compressed	l air, stean	n and ot	her uti	lities.					
LO Des	cription	to operate steam boi											
				SCHEME OF	FSTUDY	7							
S. No.	Lear	rning Content	Teaching –Learning Method	Description Proces		Teach Hrs.	/	ract. Tut Hrs.		LRs I	Require	d	Remarks
1	and acces	classification of various mountings essories of a typical essories		02		Handouts, chalk board, PPT, text book,							
			SCI	HEME OF AS	SESSMI	ENT						'	
S. No.	Metho	od of Assessment	Description of Asse	ssment	Maxim Mark			Re	esourc	es Re	quired		External / Internal
1	Pen Pape	er test/Theory Exam	Student will be asked to deboiler mountings and access		10		-	-	Rating per +R	_	*		Internal
			ADDITIONAL INSTRUC	CTIONS FOR	THE H	OD/ FA	CUL	TY (I	F ANY	<i>Z</i> )			
			-	Nil									

CO De	scription	To economize and	d select best among the avai	ilable alterna	tives of energy					
LO Des	scription	To locate sources of	of heal losses and their remed	dies.						
				SCHEMI	E OF STUDY					
S. No.	Lear	rning Content	Teaching –Learning Method	De	escription of T-I Process	L	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remark
1	furnaus an methods to waste heat		Interactive classroom teaching, demonstration, quiz, assignments, tutorial. lab demonstration	and provide I students. Tea assignments/ make student knowledge. T	ncher will conduct quiz/tutorial to ts practice their reacher will conducts to make stud	ct	08	4	Handouts, cha board, charts, lab.	
				SCHEME O	F ASSESSMEN	T				
S. No.	Meth	od of Assessment	Description of Asse	essment	Maximum Marks		Resource	es Requirec	l	External / Internal
-	_	test/Theory ctical Exam	Student will be asked to de sources of heat losses in cl plants and methods to reco	hemical	10			-	and rating scale	External
			ADDITIONAL INSTI	RUCTIONS 1	FOR THE HOD	)/ FACUL	TY (IF AN	VY)		

Nil

**SCHEME FOR LEARNING** 

**OUTCOME** 

RGPV (Diploma Wing ) Bhopal

CHEMICAL PROCESS UTILITIES AND MAINTEANCE

COURSE

**NAME** 

**Branch Code** 

0

2

3

 $\boldsymbol{\mathcal{C}}$ 

CO

3

**Course Code** 

LO

Format No. 4

Code Code

F	Scription CHEMICAL PROCESS UTILITIES  To economize and select be	าดไ	FOR LEARNING	Branc	ch Co	Course Code			CO Code	LO Code	Format No. 4		
	-		· Ot	JTCOME	<i>C</i>	0	2	3	0	4	3	2	
	URSE AME	CHEMICAL PROCESS	UTILITIES AND MAINTEANCE	<u> </u>	'		'						
CO De	scription	To economize and	select best among the availa	ble alternatives of energ	у.								
LO Des	scription	to understand imp	ortance of renewable ener	gy sources.									
				SCHEME OF ST	UDY								
S. No.	Lea	rning Content	Teaching –Learning Method	Description of 7 Process	Γ-L	Teac Hrs.	h	Pract /Tut Hrs.	t	I	Rs Requ	ired	Remarks
1	idea abou	on to and brief t characteristics d demerits of bio	Interactive classroom teaching, demonstration, quiz, assignments,	Teacher will explain contents and provide handouts to student	le	)9	04	4			louts, chald, PPT, tex		

### SCHEME OF ASSESSMENT

their knowledge.

assignments/ quiz/tutorial to make students practice

energy, tidal energy and

geothermal energy.

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Pen Paper test/Theory Exam	Student will be asked to explain bleaching powder and its uses.	10	(Test paper + Rating scale) and (Question paper +Rating scale)	External

### ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

	URSE AME	CHEMICAL PROCESS	UTILITIES AND MAINTEAL	INCE					
CO Des	scription	To select appropria	ate maintenance techniq	que and coordinate	in organization of o	chemical	plant.		
LO Des	scription	To coordinate with	n maintenance departme	ent.					
				SCHEME	OF STUDY				
S. No.	Lear	rning Content	Teaching – Learning Method		ion of T-L ocess	Teach Hrs.	Pract. /Tut Hrs.	LRs Require	ed Remarks
1	objectives of mainten maintenar significan demerits. Organizat maintenar control an	tion structure of nce department, nd coordination of elated functions,	Interactive classroom teaching, demonstration, quiz, assignments, tutorial.	and provide hand Teacher will cond	louts to students. duct z/tutorial to	07	03	Handouts, chalk board, PPT, tex book, chart.	
				SCHEME OF	ASSESSMENT				
S. No.	Metho	od of Assessment	Description of	f Assessment	Maximum Marks	3	Resou	urces Required E	External / Internal
1	Theory exa	am/Practical Exam	Student will be ask different type of main		10		st paper + Rat		Internal
			ADDITIONAL IN	STRUCTIONS F	OR THE HOD/ FA	ACULTY	Y (IF ANY)		

Nil

**SCHEME FOR LEARNING** 

**OUTCOME** 

RGPV (Diploma Wing ) Bhopal

**Branch Code** 

0

2

3

CO

Code

**Course Code** 

0

LO

Code

1

Format No. 4

RG	RGPV (Diploma Wing ) Bhopal	SCHEME FOR		Br	ranch (	Code	C	ourse (	Code	Code	Code	Format No. 4	
	, ( <b>p-</b>	/· <b>8</b> / <b>-</b> • <b>pu</b>	OUTCO	<b>)ME</b>	C	0	2	3	0	4	4	2	
	URSE AME	CHEMICAL PROCESS U	TILITIES AND MAINTEANCE									1	
CO Des	scription	To select appropriate	maintenance technique	and coordinate in	n organiz	ation o	f chemi	cal pl	ant.				
LO Des	scription	To describe the gene	ral procedure for fault fin	ding and trouble	shooting	g.							
		-		SCHEME OI	F STUD	Y							
S. No.	Lear	rning Content	Teaching — Learning Method	Description Proces			Tea Hı		Pra /T Hi		LRs Req	uired	Remarks
	trouble she adopted for trouble she and their r	of fault finding and cooting, general procedur fault, finding and cooting, simple. Probler maintenance associated g systems, joints, values.	teaching, demonstration, quiz, assignments,	Teacher will excontents and proto students. Teacher duiz/tutorial to practice their kassignments the practice their kassignments the practice their kassignments the practice their kassig	rovide ha acher wil ments/ make stu nowledg onduct la make stu nowledg emonstra	udents te. b udents te. udents te. udents te. te the	08		04		Handout chalk bo PPT, tex book, ch lab.	ard,	
			S	CHEME OF AS	SSESSM	IENT							
S. No.	Meth	od of Assessment	Description of Ass	sessment	Maxin Mar			I	Resour	ces R	equired		External / Internal

SCHEME FOR LEARNING

Student will be asked to explain

procedure for fault finding, and repair

pumps, valves and joints.

Pen Paper test/Theory

Exam/practical Exam

CO

**Course Code** 

(Test paper + Rating scale)/

scale for practicals

(Question paper +Rating scale) and rating

**Branch Code** 

LO

External

Nil

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

10

1	RGPV (Diploma Wing ) Bhop		pal	SCHEME FOR LEARNING OUTCOME		G Br	Branch Code		e Course Code		e CO Code	LO Code	Format No. 4		
	_				OUTCOME	$\boldsymbol{C}$		0	2	3	0	1 2	2 5	1	
	URSE AME	CHEMICAL PROCE	SS UTILITIES	AND MAINTEA	NCE	'							'		
CO De	scription	To apply engine	eering aspo	ects of industr	rial safety in chemic	al industrie	<b>S</b>								
LO De	scription	to describe the as			•										
	•		•	-	SCHEME OF	STUDY									
S. No.	Lear	rning Content		ng –Learning Aethod	Description of T Process	-L	h	eac I	/'	ract. Tut Hrs.			LRs Req	uired	Remarks
1	accidents, indirect lo accidents, electrical a accidents	spects of safety, industrial direct and sses due to mechanical and chemical and preventions, safety act 1948.	teaching, demonstra	re classroom ation, quiz, nts, tutorial. nstration	Teacher will explain contents and provid to students. Teacher conduct assignment quiz/tutorial to mak practice their know	e handouts r will cs/ e students ledge.	08	3	05		b b	oar	douts, c d, PPT, k, charts,	halk text	
					SCHEME OF AS	SESSMENT	Γ								
S. No.	Metho	od of Assessment	I	Description of	Assessment	Maximu Marks				Re	esour	ces	Required		External / Internal
1	Theory exam/Practical Exam students will be accidents.			ted to losses due to 10			1.1	(Test paper + Rating scale) and (Question paper +Rating scale)				External			
	1		ADDI	TIONAL INS	TRUCTIONS FOR	THE HOD	/ FA	CUI	LTY	(IF A	NY)				1
					Nil					-	-				

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME		Branch Code			<b>Course Code</b>			LO Code	Format No. 4
				0	2	3	0	2	5	2	
COURSE NAME	CHEMICAL PROCESS UTILITIES AND MAINTEANCE										
CO Description	<b>Description</b> To apply engineering aspects of industrial safety in chemical industries										
LO Description	LO Description to follow provisions of industrial safety to combat accidents and hazards										
GOVERNO OF GRANDA											

#### **SCHEME OF STUDY**

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Anotomy of fire, various steps in controlling fire hazards, fire extinguishers used for fire fighting, storage, handling and transportation of dangerous materials, personal protective devices used for safety, significance of colour coding	Interactive classroom teaching, demonstration, quiz, assignments, tutorial.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge. Teacher will conduct lab assignments to make students		03	Handouts, chalk board, PPT, text book, charts, lab.	

### SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Pen Paper test/Theory Exam/practical Exam	Student will be asked to describe steps to control fire hazards and use personal protective devices.	10	(Test paper + Rating scale)/ (Question paper +Rating scale) and rating scale for practicals	External

# ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

# **Practical List**

S.No.	NAME OF EXPERIMENT	CO	LO
1	Perform Proximate Analysis of coal.	1	1
2	Perform Ultimate Analysis of coal.	1	1
3	Determine calorific value of coal	1	2
4	Determine carbon residue of oil.	1	3
5	Determination of viscosity of diesel kerosene and lube oil	1	3
6	Determination of flash and fire point of diesel, kerosene and lube oil	1	3
7	Determination of smoke point of kerosene	1	3
8	Study of various steps of maintenance of pipe fitting	4	2
9	Study of various steps of maintenance of belt conveyor	4	2
10	Study of various steps of maintenance of elevator	4	2
11	Study of various steps of maintenance of pumps	4	2
12	Study of various steps of maintenance of pipe fitting	4	2
13	Study of various steps of maintenance of distillation column	4	2
14	To locate points of heat losses from a furnace and double pipe heat exchanger	3	1
15	study of personal protective devices	5	1