RGPV (DIPLOM WING) BHOPA		OBE CURRICULUM FO	R THE COURSE	FORMAT- 3	Sheet No. 1	
Branch		MECHANICAL ENG	INEERING	Semester	I	11
Course Code	302	Course Name	THERMAL ENGI	NEERING		
Course Outcome 1	Expla	in renewable sources of e	nergy		Teah. Hrs	Marks
Learning Outcome 1	Classi	fy renewable and non-ren	ewable energy sour	rces.	2	3
Contents		ition and Classification of enewable sources.	f energy sources- F	Renewable and Non-Re	enewable, Example	s of renewable and
Method of Assessment	Paper	-Pen Test (Part of Prg 1)				
Learning Outcome 2	Sketch genera	h the schematic diagram o ation.	f solar, bio-gas, tid	al, geothermal power	8	10
Contents	solar	blate and concentrating secondary wind energy ho uction to Tidal energy, Ge	rizontal and vertic	al wind mill, site sele	ection for wind en	-
Method of Assessment	Theor	y Exam				
Learning Outcome 3	Identi	fy components of Solar sy	/stems		9	8
Contents		onstration of components lation system, solar cooke	1	d concentrating solar	collectors. Photo	voltaic Cell, Solar
Method of Assessment	Labor	atory Test by Observatior	n (Part of LW)			

Course Outcome 2	Solve simple problems based on basic concepts of thermodynamics, and its laws.	Teach Hrs	Marks
Learning Outcome 1	Explain thermodynamic systems, properties, processes, cycles, gas equation and modes of heat transfer.	6	7
Contents	Concept of thermodynamic System– definition, classification and ap Properties- Intensive and Extensive with examples, Point and Path fu Definitions: Enthalpy, Internal energy, Entropy, Specific heat at constant volume (C_v), relation between $C_p \& C_v$, characteristic gas equation, Univer- static process, flow work, Modes of Heat transfer - definition and types.	unction, Concept of pressure (C_p) , specif	Work and Heat, fic heat at constant
Method of Assessment	Paper-Pen Test (Part of Prg 1)		
Learning Outcome 2	Solve given problems based on thermodynamic systems, properties and gas equation.	4	10
Contents	Numerical problems based on Thermodynamic System, Properties, gas eq	luation.	I
Method of Assessment	Theory Exam		
Learning Outcome 3	Solve given problems based on the laws of thermodynamics.	8	10
Contents	Laws of thermodynamics- Zeroth law, concept of work and heat, sta enthalpy, relationship between heat transfer, work transfer and cha conservation of mass and control volume, Steady and steady flow energy of first law. Second law – Clausius and Kelvin-Planck Statements, cor engine, thermal efficiency, COP, reversible process, factors which make its efficiency and limitation, Clausius inequality, entropy	nge in internal en y equation (without ncept of heat pump,	ergy, Concept of proof). Limitation refrigerator, heat
Method of Assessment	Theory Exam		

Course Outcome 3	Solve numerical problems based on thermodynamic processes, air standard cycles.	Teach.Hrs	Marks
Learning Outcome 1	Compare thermodynamic processes, air standard cycle using P-V and T-S diagram.	8	10
Contents	Thermodynamic processes- Definition, classification and representation pressure, Constant volume, Constant Temperature, Adiabatic, Polytropic, Thermodynamic cycle – definition, classification- reversible and irrev Carnot cycle, Otto Cycle, Diesel Cycle, Dual Cycle, their representation of	throttling processes versible cycles, Air	Standard Cycles:
Method of Assessment	Paper-Pen Test (TW)		
Learning Outcome 2	Calculate mean effective pressure, work done, efficiency for a given Air Standard cycle.	7	10
Contents	Problems on calculation of work done, change in internal energy, thermodynamic processes. Problems on calculation of Mean Effective efficiency for Air Standard cycle.	-	
Method of Assessment	Theory Exam		
Course Outcome 4	Explain steam generation processes, steam generators.	Teach. Hrs	Marks
Learning Outcome 1	Solve given problems based on thermodynamic properties of steam.	9	10
Contents	Two Phase System: Pure substance, steam as a two phase system, its repression isochoric, isothermal, isentropic, polytrophic, throttling process, dryness fractid dryness fraction separating and throttling calorimeter. Steam tables, Mollier' changes in properties of steam such as enthalpy, internal energy, entropy; heat,	on of steam, methods s diagram and its use	of determination of s for calculation of

Method of Assessment	Paper-Pen Test (Part of Prg 2)		
Learning Outcome 2	Determine dryness fraction using throttling, separating calorimeters.	6	12
Contents	Experimental determination of dryness fraction using separating, throttlin	ig calorimeter.	
Method of Assessment	Laboratory Test by Observation (Part of LW)		
Learning Outcome 3	Explain construction, working of a given steam generator.	9	10
Contents	Steam Generator- Definition, classification, construction, working, m pressure boilers- Babcock and Wilcox boiler, Lancashire boiler (b) his boiler.	e	
Method of Assessment	Theory Exam		
Learning Outcome 4	Identify components, mountings, accessories of a given steam generator.	24	18
Contents	Demonstration of steam generator components, mountings and accessorie	es.	
Method of Assessment	Laboratory Test by Observation (Part of Practical Exam)		
Course Outcome 5	Explain steam nozzles, steam turbines, steam condensers.	Teach.Hrs	Marks

Learning	Explain construction, working of steam nozzle, steam turbine, steam	10	10
Outcome 1	condenser.	10	10
Contents	Steam nozzle- construction, working Flow of steam through convergent-d Steam turbine –classification, construction, working principle with line d turbine, reaction turbine-Parsons turbine, velocity diagram of impulse turbines. Pressure compounding, velocity compounding, pressure-velocity Steam condenser- classification construction and working.	iagram of a Impulse tu e, reaction turbine. Co	
Method of Assessment	Theory Exam		
Learning Outcome 2	Solve given problems based on discharge and area of nozzle.	4	10
Contents	Flow of steam through convergent-divergent nozzle, Friction in a nozzle, Critical pressure ratio (no derivation), Calculation of cross sectional and discharge.(simple problems)	•	0
Method of Assessment	Theory Exam		
Learning Outcome 3	Identify components of D- Laval and Parsons Turbine.	6	12
Contents	Demonstration of the components of De-Laval and Parsons steam turbine.	1	<u> </u>
Method of Assessment	Laboratory Test by Observation (Part of Practical Exam)		

GPV (Dij	oloma Wing	g) SCHE	ME FOR	Bi	ranch Cod	le	Course	e Code	CO Code	LO Code	4
		<i>.</i>	GOUTCOME	M	0	2	3 () 2	1	1	Format No. 4
SE NAME	Thermal Engi	neering		_		II	I	I			
scription	Explain renewal	ble sources of energy									
scription	Classify renewa	ble and non-renewable energy	sources.								
	1	S	CHEME OF STUDY								
Lear	ning Content	Teaching –Learning Method	B Description of T	-L Pro	ocess					LRs Require	d Remarks
energy source non-renewat	es- renewable and ble, examples of		n, and provide handout Teacher will conduct	s to stu t a quiz	dents. to	2	0		cha PP bo	alk board T, text ok, chart	,
1		SCHI	EME OF ASSESSME	NT			I				I
Method of	fAssessment	Descrip	otion of Assessment						-		
Paper-pen te											
	A	DDITIONAL INSTRUCT	TIONS FOR THE HO	D/ FA	CULT	ГY (IF	ANY)			
		P	art of Progressive – 1								
		Pa	art of Progressive – 1					<u> </u>			
	Bh SE NAME scription cription Learn Definition an energy source non-renewable an sources. Method of	Bhopal SE NAME Thermal Enginer Scription Explain renewal Scription Classify renewal Scription Classify renewal Image: Content Definition and classification or energy sources- renewable and non renewable sources. Method of Assessment Paper-pen test	Bhopal LEARNING SE NAME Thermal Engineering scription Explain renewable sources of energy scription Classify renewable and non-renewable energy scription Classify renewable and non-renewable energy Learning Content Teaching -Learning Method Definition and classification of energy sources- renewable and non-renewable, examples of renewable, examples of renewable and non renewable, examples of renewable and non renewable of renewable and non renewable sources. Scription Method of Assessment Description Method of Assessment Student will be asked to list resources. ADDITIONAL INSTRUCT	Image: I	Bhopal LEARNING OUTCOME M SE NAME Thermal Engineering Image: Secret of the secret of t	Bhopal LEARNING OUTCOME M 0 SE NAME Thermal Engineering Scription Explain renewable sources of energy Scription Classify renewable and non-renewable energy sources. Scription Classification of energy Learning Content Teaching -Learning Method Description of T-L Process Definition and classification of energy sources- renewable and non renewable, examples of renewable, examples of renewable, examples of sources. Interactive classroom teachings, demonstration, quiz. Teacher will explain the contents and provide handouts to students. Teacher will conduct a quiz to make students practice their knowledge. Method of Assessment Description of Assessment Student will be asked to list renewable and non renewable energy sources. Paper-pen test Student will be asked to list renewable and non renewable energy sources. Student will be asked to list renewable and non renewable energy sources.	BhopalLEARNING OUTCOMEM02SE NAMEThermal EngineeringSeriptionExplain renewable sources of energyClassify renewable sources of energyScriptionClassify renewable sources.SCHEME OF STUDYStription of T-L Provide Androgon of T-L Provide Androgon of T-L Provide Androgon of T-L Provide Androgon of teachings, demonstration, quiz.Definition and classification of energy sources- renewable and non-renewable, examples of renewable and non renewable, examples of renewable and non renewable of renewable of renewable and non renewable of renewable and non renewable of renewable	Bhoard SE NAMEThermal EngineeringM0230SE NAMEThermal EngineeringScriptionExplain renewable sources of energyScriptionClassify renewable and non-renewable energy sources.SCHEME OF STUDYScription of T-L ProcessTeaching -Learning MethodDescription of T-L ProcessIteaching -Learning MethodInteractive classoro and provide handouts to students. Teacher will explain the contents and provide handouts to students. Teacher will conduct a quiz to make students practice their knowledge.Image: Scription of StepsetImage: Scription of StepsetScription of T-L ProcessDefinition and classification of energy sources- renewable and non-renewable, examples of renewable and non renewable sources.Image: Scription of AssessmentTeacher will conduct a quiz to make students practice their knowledge.Image: Scription of AssessmentImage: Scription of AssessmentImage: Scription of AssessmentPaper-pen testStudent will be asked to list renewable and non renewable energy sources.Student will be asked to list renewable and non renewable energy sources.Image: Scription of AssessmentImage: Scription of AssessmentPaper-pen testStudent will be asked to list renewable and non renewable energy sources.Image: Scription Student Students For THE HOVELVEVEVEVEVEVEVEVEVEVEVEVEVEVEVEVEVEVE	BhoalItearning outroomeM02302SE NAMEThermal EngineeringSeriptionExplain renewable sources of energyScriptionClassify renewable and renewable energy sources.Classify renewable and ron renewable and classification of energy sources.Teaching -Learning MethodDescription of T-L ProcessTeach Hrs.Pract. Hrs.Definition and classification of energy sources.Teaching, demonstration, quiz.Description of T-L ProcessTeach Hrs.Pract. Hrs.Non-renewable, examples of renewable and non renewable sources.Interactive classroom teachings, demonstration, quiz.Description of T-L ProcessTeach 	GPV (DIPIOMA WING) Bhoal SCHEME FOR LEARNING OUTCOME Instant Colume Colum	GPV (D) Image (D) SCHE/NE FOR (D) Image (D) Course (D)

COURSE	Bho	loma Wing) Opal Thermal Engineering		ARNING O								Code	/
	NAME '	- Thermal Engineering	1		UICOME	M	0	2	3	0 2	1	2	Format No. 4
~~ -		I nei mai Engineering				1	1	1 1					
CO Descri	iption	Explain renewable source	ces of ene	rgy									
LO Descrij	iption S	Sketch the schematic dia	gram of s	olar, bio-gas, tidal,	geothermal power	genera	ation.						
	I			SCHE	ME OF STUDY								
S. No.]	Learning Content		Teaching – Learning Method	Description of Process	f T-L		each Hrs.		ct. /Tut Hrs.	LRs	Requir	red Remark
the dis hor sel- intr	Flat plate and concentrating solar collectors their application. Photovoltaic cell, solar distillation system, solar cooker. Wind ener horizontal and vertical wind mill, site selection for wind energy power plants, introduction to tidal energy, geothermal energy, biogas energy, bio-gas plant.			Interactive classroom teachings, demonstration, quiz.	Teacher will explain8the contents andprovide handouts tostudents. Teacher willconduct a quiz to makestudents practice theirknowledge.				0		board	outs, cha , PPT, te charts, film.	
				SCHEME	OF ASSESSME	NT							
S No	Method o Assessme		Γ	Description of As	sessment					imum arks		ources Juired	External Internal
1 Th	neory exam		Student will be asked to describe and sketch schematic represe of tidal energy, solar energy, geothermal energy, bio-gas plant.					one one		10	-	ion pape ing scale	
		ADDIT	IONAL	INSTRUCTION	S FOR THE HO)D/ F .	ACU	LTY	(IF A	NY)			
					Nil								

RC	GPV (Di	oloma Win	g)	SCHE	ME FOR	Br	ranch C	ode	Course Code			COLOCodeCode			Α
		lopal	0 /	LEARNING	GOUTCOME	M	0	2	3	0	2	1	3	For	mat No. 4
COUR	SE NAME	Thermal Eng	ineeri	ng		11								1	
CO Des	scription	Explain renewa	ble sou	arces of energy											
LO Des	scription	Identify compo	nents c	of solar systems											
		I		S	SCHEME OF STUDY	Y									
S. No.	Lear	ning Content		Teaching – Learning Method	Description of T-L	Proc	ess	Teac Hrs.			act. t Hrs.	LRs	Requ	ired	Remarks
1	flat plate an collectors. F	ion of componen d concentrating s Photovoltaic cell, system, solar coo	olar solar	Lab demonstration, hands on practice, lab assignments.	Teacher will explain th and provide handout to Teacher will demonstra components in lab. Stu learn through practice.	stude ate the	nts.	0			9	board manu video	louts, o 1, PPT (al, cha film, els, vir	, arts,	NIL
	1			SCH	IEME OF ASSESSM	ENT		1							1
S. No.	Method o	f Assessment		Description of	Assessment		laxim Marl			Re	source	s Requ	iired		External / Internal
1	Laboratory observation	test by	Stude syste		atify components of solar 8						tion scl cales /r	nedule/c ubrics	check-	list	Internal
			ADD	ITIONAL INSTRUC	TIONS FOR THE H	OD/]	FAC	ULTY	(II	FAN	Y)				
					Part of Lab Work										

Bho SE NAME cription cription	Thermal Engineeri Solve simple numeric Explain thermodynam	al problems based on basic on ic systems, properties, proce	concepts of therm	equation		2 nd its la	3 0 ws.	2	2	1 Fo	ormat No. 4
cription	Solve simple numeric Explain thermodynam	al problems based on basic on ic systems, properties, proce	esses, cycles, gas	equation		nd its la	ws.				
-	Explain thermodynam	nic systems, properties, proce	esses, cycles, gas	equation		nd its la	WS.				
cription		• • • • •		-	on and						
	Looming Cont	SCHE	ME OF STUD		JII allu	modes	of heat tr	ansfer	•		
	Looming Contr			Y							
	Learning Conte	ent	Teaching – Learning Method		cripti L Pro		Teach Hrs.		act. Hrs.	LRs Requir	
ensive propert acept of work ropy, specific astant volume (ation, universa	Interactive classroom teachings, demonstration, quiz.	Teacher will explain the contents and provide handouts to students. Teacher will conduct a quiz to make students practice their		6	0		Handou chalk board, PPT, tex book, charts, video film.				
		SCHEME	OF ASSESSM	IENT			1			_	I
Method of Assessment		Description of A	ssessment								External / Internal
Paper-pen test	Student will be ask content.	ed to explain basic concepts	of thermodynam	ics fror	m the 1	earning	· · · · · · · · · · · · · · · · · · ·	7	+ F	Rating	Internal
	ADDIT	TIONAL INSTRUCTION	NS FOR THE H	IOD/ I	FACU	JLTY	(IF ANY	7)			<u></u>
		Part o	f Progressive –	1							
	ensive propert cept of work opy, specific stant volume (ation, universa work, modes Method of Assessment	Ensive properties with examples, properties with examples, properties of work and heat, definitions:cept of work and heat, definitions:opy, specific heat at constant presented at the constant volume (c_v) , relation between constant, universal gas constant, definition, universal gas constant, definition, work, modes of heat transfer - definitionMethod of AssessmentPaper-pen testStudent will be ask content.	Method of AssessmentDescription of APaper-pen testStudent will be asked to explain basic concepts content.ADDITIONAL INSTRUCTION	Institution of the examples, point and path function, cept of work and heat, definitions: enthalpy, internal energy, opy, specific heat at constant pressure (cp), specific heat at stant volume (cv), relation between cp and cv, characteristic gas ation, universal gas constant, definition of quasi-static process, work, modes of heat transfer - definition and types. teachings, demonstration, quiz. Method of Assessment Description of Assessment Paper-pen test Student will be asked to explain basic concepts of thermodynam content. ADDITIONAL INSTRUCTIONS FOR THE H	ensive properties with examples, point and path function, cept of work and heat, definitions: enthalpy, internal energy, opy, specific heat at constant pressure (cp), specific heat at stant volume (cv), relation between cp and cv, characteristic gas ation, universal gas constant, definition of quasi-static process, work, modes of heat transfer - definition and types. teachings, demonstration, quiz. contemposition of to sture teachings, quiz. SCHEME OF ASSESSMENT Method of Assessment Description of Assessment Paper-pen test Student will be asked to explain basic concepts of thermodynamics from content.	ensive properties with examples, point and path function, cept of work and heat, definitions: enthalpy, internal energy, opy, specific heat at constant pressure (cp), specific heat at stant volume (cv), relation between cp and cv characteristic gas ation, universal gas constant, definition of quasi-static process, work, modes of heat transfer - definition and types. teachings, demonstration, quiz. contents and provide han to students. Teacher will conduct a q make student work, modes of heat transfer - definition and types. Method of Assessment Description of Assessment SCHEME OF ASSESSMENT Paper-pen test Student will be asked to explain basic concepts of thermodynamics from the l content. ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACU	Image: sensive properties with examples, point and path function, cept of work and heat, definitions: enthalpy, internal energy, opy, specific heat at constant pressure (cp), specific heat at the stant volume (cv), relation between cp and cv, characteristic gas ation, universal gas constant, definition of quasi-static process, work, modes of heat transfer - definition and types. teachings, demonstration, quiz. contents and provide handouts to students. Teacher will conduct a quiz to make students practice their knowledge Scheme of Assessment Scheme of Assessment Paper-pen test Student will be asked to explain basic concepts of thermodynamics from the learning content. Additional LINSTRUCTIONS FOR THE HOD/ FACULTY of the section of the section.	ensive properties with examples, point and path function, cept of work and heat, definitions: enthalpy, internal energy, opy, specific heat at constant pressure (cp), specific heat at stant volume (cv), relation between cp and cv, characteristic gas ation, universal gas constant, definition of quasi-static process, work, modes of heat transfer - definition and types. teachings, demonstration, quiz. contents and provide handouts to students. Teacher will conduct a quiz to make students practice their knowledge Method of Assessment Description of Assessment Maxessessment Paper-pen test Student will be asked to explain basic concepts of thermodynamics from the learning content. Maxes tudent (IF) (IF) (IF) (IF) (IF) (IF) (IF) (IF)	Inside properties with examples, point and path function, cept of work and heat, definitions: enthalpy, internal energy, opy, specific heat at constant pressure (cp), specific heat at stant volume (cv), relation between cp and cv characteristic gas ation, universal gas constant, definition and types. teachings, demonstration, quiz. contents and provide handouts to students. Teacher will conduct a quiz to make students practice their knowledge SCHEME OF ASSESSMENT Maximum Marker Method of Assessment Description of Assessment Maximum Marker Paper-pen test Student will be asked to explain basic concepts of thermodynamics from the learning content. 7	Image: series with examples, point and path function, cept of work and heat, definitions: enthalpy, internal energy, opy, specific heat at constant pressure (cp), specific heat at stant volume (cv), relation between cp and cv, characteristic gas ation, universal gas constant, definition of quasi-static process, work, modes of heat transfer - definition and types. teachings, demonstration, quiz. contents and provide handouts to students. Teacher will conduct a quiz to make students practice their knowledge Method of Assessment Description of Assessment Maximu m Marks Re R	Instruments, building, process, cycles, properties minimite time, naive properties with examples, point and path function, cept of work and heat, definitions: enthalpy, internal energy, opy, specific heat at constant pressure (c _p), specific heat at toolume (c _v), relation between c _p and c _v , characteristic gas ation, universal gas constant, definition of quasi-static process, work, modes of heat transfer - definition and types. teachings, demonstration, quiz. contents and provide handouts to students. Teacher will conduct a quiz to make students practice their knowledge board, PPT, test book, charts, video film. Method of Assessment Description of Assessment Maximu m Marks Resources Required Paper-pen test Student will be asked to explain basic concepts of thermodynamics from the learning content. 7 Test paper + Rating scale ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY) ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY) Provide Any for the state of t

R	GPV (Diplo	ma Wing)		CHEME FOR		В	Franch Co	ode	Course	Cod	e	CO Code	LO Code	Form	at No. 4
	Bhop	al	LEAR	NING OUTC	OME	M	0	2	3 0		2	2	2	Forma	al NO. 🕇
COI	URSE NAME	Thermal Engine	ering												
CO De	escription	Solve simple nume	erical problem	ns based on basic conce	pts of the	rmody	namic	s and	its laws.						
LO De	scription	Solve a numerical	problem base	d on thermodynamic s	ystems, pr	operti	es and	gas eo	quation.						
				SCHEME O	F STUD	Y									
S.No	Le	arning Content		Teaching – Learning Method	Desc	riptio Proc	on of "	Г-L	Teac Hrs.			ract. t Hrs.		.Rs uired	Remark
1	Numerical probl system, properties	ems based on ther s, gas equation.	rmodynamic	Interactive classroom teaching, demonstration, quiz, assignments.	Teacher contents handout Teacher quiz and to make their know	and p s to stu will c d give studer	orovide udents onduct assign nts pra	t a aments	4		0		chall boar	d, , text <, ts, o	
	1			SCHEME OF A	SSESSM	ENT									
S. No.	Method of Assessment		Des	scription of Assessm	ent						mu rks	-	esourc equirc		External / Internal
1	Theory exam	Students will be as systems, properties		two numerical problem ation.	s based or	n therr	nodyna	amic		1	0	pap	estion per + ting ile	Ex	ternal
		ADDIT	FIONAL IN	STRUCTIONS FO	R THE H	IOD/	FAC	ULTY	I (IF AN	Y)					
				Nil											

•	RGPV (Dipl	oma Wing)	SCHEME	FOR	В	ranch Co	ode	C	ourse Code	CC Coc		de	1
	Bho	_	LEARNING O	UTCOME	M	0	2	3	0	2 2	3	Form	at No. 4
CO	DURSE NAME	Thermal Engineer	ing				_					I	
CO	Description	Solve simple numerio	cal problems based on basi	c concepts of thern	nodyna	amics	and it	s law	s				
LO	Description	Solve a numerical pro	oblem based on the laws of	thermodynamics.									
			SCH	EME OF STUD	Y								
S. No		Learning Conte	ent	Teaching – Learning Method		script L Pro		f T-	Teach Hrs.	Pra /Tut		LRs Require	ed Remark
1	statement of first between heat tra energy, Concept Steady and stea Limitation of first Statements, conce thermal efficiency	ansfer, work transfer of conservation of m ady flow energy eq t law. Second law – Cl cept of heat pump, n y, COP, reversible pro-	concept of work and heat, y, enthalpy, relationship and change in internal hass and control volume, uation (without proof). hausius and Kelvin-Planck refrigerator, heat engine, beess, factors which make efficiency and limitation,	Interactive classroom teaching, demonstration, quiz, assignments.	expl and hand Tead cond give mak prac	cher w lain the provic dout to cher w duct a e assign e stud ctice th wledge	e conto le o stude ill quiz a nment ents eir	ents. nd	8	0		Handout chalk board, PPT, text book, charts, video film.	
			SCHEM	E OF ASSESSM	IENT								
S. N	No. Method of Assessment		Description of Asse	essment]		imum arks		esour equir		External / Internal
1	Theory exam	Student will be ask	ed solve two numerical pro	blems based on lea	rning o	conten	t.	1	0	Quest Rating	-	± _	External
	·	ADDI	FIONAL INSTRUCTIO	ONS FOR THE H	IOD/	FAC	ULTY	Y (IF	ANY)				
				Nil									

כ	FPV (Di	iplor	na Wing)	SCHEM	IE FOR		Bra	anch Co	de	Course		ode	CO Code	LO Code	-	
	B	hopa	al	LEARNING	OUTCOM	$\mathbf{E} \mid \mathbf{M}$	1	0	2	3	0	2	3	1	Form	at No. 4
	URSE ME		rmal Engineering	1			1		1		1	1		1	1	
5	cription	Solve	e numerical problems	s based on thermodynar	nic processes, air	standard	l cy	cles.								
5	cription	Desc	ribe thermodynamic	processes, air standard	cycle using P-V a	nd T-S d	liag	gram.								
				SC	CHEME OF ST	UDY										
			Learning Conten	ıt	Teaching – Learning Method	Descr	_	tion o ocess			each Irs.		ract. t Hrs.		LRs Juired	Remark
 Thermodynamic processes- definition, classification and representation on P-V and T-S diagram for constant pressure, constant volume, constant temperature, adiabatic, polytropic, throttling processes. Thermodynamic cycle – definition, classification- reversible and irreversible cycles, Air standard cycles: Carnot cycle, Otto cycle, Diesel cycle, Dual cycle, their representation on P-V and T-S diagrams. 					Interactive classroom teaching, demonstration, quiz, assignment.	Teacher will explain the contents and provide handouts to students. Teacher will conduct a quiz and give assignments to make students practice their knowledge				8		0		Handouts, chalk board, PPT, text book, charts, video film.		
				SCHE	EME OF ASSES	SSMEN	T									
	Methoo Assessn			Description of	f Assessment					Ν	Aaxiı Mai	mum rks		lesour Requir		External / Internal
	Paper-pen	Test		ed to describe two thern g P-V and T-S diagram	• 1	sses and	one	e air			1()				Internal
			ADDIT	IONAL INSTRUCT	TIONS FOR TH	IE HOL)/ H	FACU	JLTY	7 (IF	ANY	<u>(</u>)				
					Term Work											
			standard cycle usin	g P-V and T-S diagram		IE HOD			JLTY	/ (IF	1()		Tes	Test pape	Test paper + Rating scale

ŀ	RGPV (Dipl	oma Wing)	SCHE	ME FOR	B	ranch Co	de	C	ourse Co	de	CO Code	LO Code		A
	Bho	U ¢	LEARNING	GOUTCOME	M	0	2	3	0	2	3	2	Forma	t No. 4
CO	URSE NAME	Thermal Engineer	ing		I									
COI	Description	Solve numerical prob	blems based on thermo	dynamic processes, ai	r standar	d cycl	es.							
LO I	Description	Calculate mean effec	tive pressure, work do	ne, efficiency for a giv	ven air st	andaro	d cycl	e.						
			S	SCHEME OF STU	DY									
S. No		Learning Conten	it	Teaching – Learning Method	Descr	iption Proce		-L	Hrs. /T				LRs Required	Remark
1	internal energy, thermodynamic	Aumerical problems on calculation of work done, change in nternal energy, heat transfer, change in entropy for mermodynamic processes. Problems on calculation of mean ffective pressure, work done, air standard efficiency for air tandard cycle. Teacher will exp demonstration, quiz. Teacher will exp the contents and provide handout students. Teacher conduct a quiz make students practice their knowledge.				and outs to cher v z to s	D C	7			c b F b c	Handouts, halk poard, PPT, text pook, harts, rideo film.		
	·		SCH	IEME OF ASSESS	MENT			· · ·						
S. No.	Method of Assessment		Description	of Assessment				N	/laxin Mar			esou Requi		External / Internal
1	Theory exam		ked to solve one numer ne, efficiency of any ai	1	ate mea	n effec	tive		10		-	stion ating	1 1	External
		ADDI	FIONAL INSTRUC	TIONS FOR THE	HOD/	FACU	JLTY	۲ (IF	ANY)				
				Nil										
				Nil										

RGPV (Dip	loma Wing)	SCHEME	FOR	B	ranch Co	de	С	ourse C	ode	CO Code	LO Code		
Bh	opal	LEARNING O	UTCOME	M	0	2	3	0	2	4	1	Format	No. 4
IRSE NAME	Thermal Engineerin	Ŋ											
Description	Explain steam generati	on processes, steam generato	ors.										
Description	Solve a given numerica	al problem based on thermod	ynamic properties	s of ste	eam.								
		SCHE	EME OF STUD	Y									
	Learning Con	tent	T-L Method		-		T-					LRs Required	Remark
its representation isothermal, ise fraction of stea separating and diagram and it steam such as	he for isobaric, isochoric, hrottling process, dryness ination of dryness fraction r. Steam tables, Mollier of changes in properties of	Interactive classroom teaching, demonstration, quiz, assignment	Teacher will explain the contents and provide handouts to students. Teacher will conduct a quiz and give assignments to make students practice their knowledge.				9		0		chalk board, PPT, text book, charts, video		
		SCHEME	E OF ASSESSM	IENT									
Method of Assessment		Description of Ass	sessment										External / Internal
Paper-pen test	Student will be asked	l to solve a given numerical j	problem based on	proper	rties of	steam	1.		10				ernal
	ADDI	FIONAL INSTRUCTION	NS FOR THE H	HOD/	FACU	JLTY	7 (IF	ANY	Z)				
		Part o	of Progressive –	2									
)	Bhe RSE NAME escription rescription Two Phase Sys its representation isothermal, ise fraction of steat separating and diagram and it steam such as various process Method of Assessment	BhopalRSE NAMEThermal EngineeringescriptionExplain steam generationbescriptionSolve a given numericalbescriptionSolve a given numericalTwo Phase System: Pure substance, stealIteration on P-V, T-S plantisothermal, isentropic, polytrophic, tfraction of steam, methods of determseparating and throttling calorimeteddiagram and its uses for calculation of steam such as enthalpy, internal energy various processes.Method of AssessmentAssessmentPaper-pen testStudent will be asked	Bhopal LEARNING ON RSE NAME Thermal Engineering Description Explain steam generation processes, steam generation Description Solve a given numerical problem based on thermood Description Solve a given numerical problem based on thermood Description Solve a given numerical problem based on thermood Solve a given numerical problem based on thermood SCHE Description Learning Content Two Phase System: Pure substance, steam as a two phase system, its representation on P-V, T-S plane for isobaric, isochoric, isothermal, isentropic, polytrophic, throttling process, dryness fraction of steam, methods of determination of dryness fraction separating and throttling calorimeter. Steam tables, Mollier diagram and its uses for calculation of changes in properties of steam such as enthalpy, internal energy, entropy; heat, work in various processes. SCHEME Method of Assessment Paper-pen test Student will be asked to solve a given numerical process of steam such as enthalpy. ADDITIONAL INSTRUCTION	Bhopal LEARNING OUTCOME RSE NAME Thermal Engineering bescription Explain steam generation processes, steam generators. bescription Solve a given numerical problem based on thermodynamic properties Solve a given numerical problem based on thermodynamic properties SCHEME OF STUD Learning Content T-L Method Two Phase System: Pure substance, steam as a two phase system, its representation on P-V, T-S plane for isobaric, isochoric, isothermal, isentropic, polytrophic, throttling process, dryness fraction of steam, methods of determination of dryness fraction separating and throttling calorimeter. Steam tables, Mollier diagram and its uses for calculation of changes in properties of steam such as enthalpy, internal energy, entropy; heat, work in various processes. SCHEME OF ASSESSM Method of Assessment Description of Assessment Paper-pen test Student will be asked to solve a given numerical problem based on	Bio PalLEARNING OUTCOMEMRSE NAMEThermal EngineeringDescriptionExplain steam generation processes, steam generators.DescriptionSolve a given numerical problem based on thermodynamic properties of steamDescriptionSolve a given numerical problem based on thermodynamic properties of steamDescriptionSolve a given numerical problem based on thermodynamic properties of steamDescriptionSolve a given numerical problem based on thermodynamic properties of steamTwo Phase System: Pure substance, steam as a two phase system, its representation on P-V, T-S plane for isobaric, isochoric, isothermal, isentropic, polytrophic, throttling process, dryness fraction of steam, methods of determination of dryness fraction separating and throttling calorimeter. Steam tables, Mollier diagram and its uses for calculation of changes in properties of steam such as enthalpy, internal energy, entropy; heat, work in various processes.SCHEME OF ASSESSENTMethod of AssessmentDescription of AssessmentStudent will be asked to solve a given numerical problem based on properties	Bhopal LEARNING OUTCOME M 0 RSE NAME Thermal Engineering 0 bescription Explain steam generation processes, steam generators. bescription Solve a given numerical problem based on thermodynamic properties of steam. bescription Solve a given numerical problem based on thermodynamic properties of steam. Description Description Two Phase System: Pure substance, steam as a two phase system, its representation on P-V, T-S plane for isobaric, isochoric, isothermal, isentropic, polytrophic, throttling process, dryness fraction of steam, methods of determination of dryness fraction of steam, methods of determination of dryness fraction giargam and its uses for calculation of changes in properties of steam such as enthalpy, internal energy, entropy; heat, work in various processes SCHEME OF ASSESSENT Will conduct assignment students protein strugents protein strugents protein strugents assignment Method of Assessment Description of Assessment Student will be asked to solve a given numerical problem based on properties of steam students protein strugents protein strugents as a given numerical problem based on properties of steam students protein strugents prote	BhopalLEARNING OUTCOMEM02RSE NAMEThermal EngineeringbescriptionExplain steam generation processes, steam generators.Solve a given numerical problem based on thermodynamic properties of steam.bescriptionSolve a given numerical problem based on thermodynamic properties of steam.SCHEME OF STUDYTuearning ContentT.L MethodTwo Phase System: Pure substance, steam as a two phase system, its representation on P-V, T-S plane for isobaric, isochoric, isothermal, isentropic, polytrophic, throttling process, dryness fraction of steam, methods of determination of dryness fraction separating and throttling calorimeter. Steam tables, Mollier diagram and its uses for calculation of changes in properties of steam such as enthalpy, internal energy, entropy; heat, work in various processes.Interactive classroom teaching, assignment sto m students practice their knowledge.SCHEME OF ASSESSMENTMethod of AssessmentDescription of AssessmentPaper-pen testStudent will be asked to solve a given numerical problem based on properties of steamPaper-pen testStudent will be asked to solve a given numerical problem based on properties of steam	BhopalLEARNING OUTCOMEM023RSE NAMEThermal EngineeringDescriptionExplain steam generation processes, steam generators.Solve a given numerical problem based on thermodynamic properties of steam.DescriptionSolve a given numerical problem based on thermodynamic properties of steam.SCHEME OF STUDYT.L MethodDescription of T. L ProcessTwo Phase System: Pure substance, steam as a two phase system, its representation on P-V, T-S plane for isobaric, isochoric, isothermal, isentropic, polytrophic, throttling process, dryness fraction of steam, methods of determination of dryness fraction separating and throttling calorimeter. Steam tables, Mollier diagram and its uses for calculation of changes in properties of steam such as enthalpy, internal energy, entropy; heat, work in various processes.Interactive calculation of AssessmentTeacher will enable stidents to make stidents to make stidents to students to students to students to steam such as enthalpy, internal energy, entropy; heat, work in various processes.Description of AssessmentTeacher will conduct a quiz assignment to make stident knowledge.Method of AssessmentStudent will be asked to solve a given numerical problem based on properties of steam.Description of AssessmentPaper-pen testStudent will be asked to solve a given numerical problem based on properties of steam.	Bhopal LEARNING OUTCOME M 0 2 3 0 RSE NAME Thermal Engineering Explain steam generation processes, steam generators. Secription Explain steam generation processes, steam generators. Secription Solve a given numerical problem based on thermodynamic properties of steam. Image: Complex of the complex of	BhoalLEARNING OUTCOMEM02302RSE NAMEThermal EngineeringbescriptionExplain steam generation processes, steam generators.bescriptionSolve a given numerical problem based on thermodynamic properties of steam.bescriptionSolve a given numerical problem based on thermodynamic properties of steam.SCHEME OF STUDYTwo Phase System: Pure substance, steam as a two phase system, its representation on P-V, T-S plane for isobaric, isochoric, isochoric, isothermal, isentropic, polytrophic, throttling process, dryness fraction of steam, methods of determination of dryness fraction separating and throttling calorimeter. Steam tables, Mollier diagram and its uses for calculation of changes in properties of steam such as enthalpy, internal energy, entropy; heat, work in various processes.SCHEME OF ASSESSMENTVSCHEME OF ASSESSENTMethod of AssessmentDescription of AssessmentMaximu MarksPaper-pen testStudent will be asked to solve a given numerical problem based on properties of steam.10	BhopalLEARNING OUTCOMEM023024RSE NAMEThermal EngineeringbescriptionExplain steam generation processes, steam generators.bescriptionSolve a given numerical problem based on thermodynamic properties of steam.bescriptionSolve a given numerical problem based on thermodynamic properties of steam.SCHEME OF STUDYT-L MethodDescription of T- L ProcessTeach Hrs.Prace Hrs.Two Phase System: Pure substance, steam as a two phase system, is representation on P-V, T-S plane for isobaric, isochoric, isothermal, isentropic, polytrophic, throttling process, dryness fraction of steam, methods of determination of dryness fraction separating and throttling calorimeter. Steam tables, Mollier diagram and its uses for calculation of changes in properties of steam such as enthalpy, internal energy, entropy; heat, work in various processes.SCHEME OF ASSESSMENTMaximum MarksHMethod of AssessmentDescription of AssessmentMaximum MarksHPaper-pen testStudent will be asked to solve a given numerical problem based on properties of steam.Maximum MarksHPaper-pen testStudent will be asked to solve a given numerical problem based on properties of steam.I0ITMathod of AssessmentDescription of AssessmentLearning ContentDescription of AssessmentI0IMethod of AssessmentDescription of AssessmentDescription of AssessmentI0IIRMethod of Assessment	BhopalLEARNING OUTCOMEM0230241RSE NAMEThermal Engineering bescriptionExplain steam generation processes, steam generators.bescriptionExplain steam generation processes, steam generators.bescriptionSolve a given numerical problem based on thermodynamic properties of steam.SCHEME OF STUDYLearning ContentT-L MethodDescription of T- L ProcessTeach Hrs.Pract. /Tut Hrs.Pract. Hrs.Pract. /Tut Hrs.Pract. 	BhopalLEARNING OUTCOMEM0230241FormatRSE NAMEThermal EngineeringEscriptionExplain steam generation processes, steam generators.BescriptionSolve a given numerical problem based on thermodynamic properties of steam.BescriptionSolve a given numerical problem based on thermodynamic properties of steam.SCHEME OF STUDYTeacher Mil explainPract.I.Rs.Two Phase System: Pure substance, steam as a two phase system, its representation on P-V, T-S plane for isobaric, isochoric, isothermal, isentropic, polytrophic, throttling process, dryness fraction of steam, methods of determination of dryness fraction separating and throttling calorimeter. Steam tables, Mollier diagram and its uses for calculation of changes in properties of steam such as enthalpy, internal energy, entropy; heat, work in various processes.SCHEME OF ASSESSMENTMaximum MarksResources RequiredMethod of AssessmentDescription of AssessmentStudent will be asked to solve a given numerical problem based on properties of student will be asked to solve a given numerical problem based on properties of student will be asked to solve a given numerical problem based on properties of student will be asked to solve a given numerical problem based on properties of student will be asked to solve a given numerical problem based on properties of student will be asked to solve a given numerical problem based on properties of student will be asked to solve a given numerical problem based on properties of student will be asked to solve a given numerical problem based on properties of steam.Maximum ResourcesTest paper + Ra

COURSE	Bho	oma Wing) nal			RNING		anch Cod		Cour			CO Code	LO Code	
		Jai		OUTCOME		M	0	2	3	0	2	4	2 F	ormat No. 4
~ ~ -	ENAME	Thermal Engineer					1 1							
CO Descr	ription	Explain steam genera	ation processes, ste	eam generators.										
LO Descr	ription	Determine dryness fr	action using thrott	tling, separating calo	rimeters.									
				SCHEME (OF STUDY									
S.		Learning Conten	nt	T-L Method	Descripti	ion of	T-L	1	Teach]	Prac	t.	LRs	Remark
No.						ocess			Hrs.	/T	'ut H	rs.	Require	
	-	determination of one of the determination of the de		Lab demonstration, hands on practice	Teacher will end contents and p to students. Te demonstrate the lab experiment will learn through	provide eacher ne proc ts. The	e hando will cedure e stude	ut of	0	6			Handouts, chalk board PPT, chart video film apparatus.	1, 5,
				SCHEME OF A		<u> </u>								
	Method of Assessmen		Descripti	on of Assessment				ixim /Iark		Re	sour	ces F	Required	External / Internal
	aboratory te y observatio		asked to find out d	ryness fraction of sto	eam using any m	nethod	. 12		S	sched	rvatio lule/c s /rub	heck	-list /rating	Internal
		ADI	DITIONAL INS	TRUCTIONS FO	R THE HOD	/ FAC	CULT	Y (IF	F ANY)				
				Part of La	ab Work									

R	GPV (Diplo	ma Wing)	SC	HEME FOR LE	EARNING		Branch C	ode	C	Course Co	de	CO Code	LO Code	
	Bhop	al		OUTCOM	[E	M	0	2	3	0	2	4	3 ^I	Format No. 4
CO	URSE NAME	Thermal Engin	eering			-					I			
COI	Description	Explain steam ger	neration	processes, steam generat	cors.									
LOI	Description	Explain construct	ion, wor	rking of a steam generato	r.									
				SCHE	ME OF STUDY									
S. No.	Lear	ning Content		Teaching – Learning Method	Description of	f T-L	Proce	CC	Гeach Hrs.	Prac H	t. /Tu Irs.		LRs Required	Remark
1	construction, w accessories of Babcock and W	- definition, classifi vorking, mounting (a) low pressure b Vilcox boiler, Lan ressure boilers - La	s and ooilers- cashire	Interactive classroom teachings, demonstration, quiz.	Teacher will exp contents and pro to students. Teac conduct a quiz t students practice knowledge.	ovide l cher w o mak	nandou /ill e	1)	0	0		andouts, alk board, PT, text bok, charts deo film.	
				SCHEME	OF ASSESSMI	ENT								
S. No.	Method of Assessmen			Description of As	sessment					iximu Aarks		Resou Requ	urces iired	External Internal
1	Theory exam	Student will b boiler.	e asked	to classify boilers, explai	in construction, we	orking	of one)	10			stion ng sca	paper + ale	External
		AD	DITIO	NAL INSTRUCTION	S FOR THE H) D/ F	FACU	LTY	(IF Al	NY)				
					Nil									
					1911									

RGP	V (Diploma	SCHEME	FOR LEARN	ING	F	Branch Co	ode		Course Co	de	CO Code	LO Code	Fo	rmat No. 4
	ng) Bhopal		JTCOME		M	0	2	3	0	2	4	4	- 10	mat No. 🕇
	URSE NAME	Thermal Engineeri												
CO De	scription	Explain steam generat	ion processes, steam g	generators.										
LO De	scription	Identify components, i	nountings, accessorie	s of a given	steam	genera	tor.							
		L	SCH	EME OF S	STUD	Y								
S. No.	Learnii	ng Content	T-L Method	Descrij	ption o	of T-L	Proce	ess	Teach Hrs.		ract. it Hrs.	LI Requ		Remark
1.		f steam generator tings and accessories.	Lab demonstration, hands on practice	Teacher w and provid Teacher w componen will learn	de hand vill dem nts in la	lout to 10nstra b. The	student te the studen	ts.	0	24		Hando chalk b PPT, te book, c video f virtual models	ooard, ext charts, film, lab,	
			SCHEM	E OF ASS	ESSM	ENT								
S. No.	Method of Asses	sment	Description of	Assessmer	nt			m	axi um arks	Reso	ources l	Require	ed	External / Internal
1.	Laboratory test by observation		e asked to identify con a given boiler.	mponents, n	nountin	gs and		18	S	bserva chedule cales /r	e/check-	list /ratii	ng	External
		ADDITION	AL INSTRUCTIO	NS FOR 1	THE H	IOD/]	FACU	LTY	(IF AN	Y)				

	earning Content	steam condensers. nozzle, steam turbine SCHEME OF STUI Teaching –	and st DY	02 team cond	3 lenser.	0 2	5	1	Format	No. 4
URSE NAME cription cription Leam nozzle- constru	Explain steam nozzles, steam turbines, s Explain construction, working of steam s earning Content	nozzle, steam turbine SCHEME OF STUI Teaching –	DY	team cond	lenser.					
cription Le eam nozzle- constru	Explain construction, working of steam	nozzle, steam turbine SCHEME OF STUI Teaching –	DY	team cond	lenser.					
Leeam nozzle- constru	earning Content	SCHEME OF STUI Teaching –	DY	team cond	lenser.					
eam nozzle- constru	earning Content	Teaching –								
eam nozzle- constru	_	0	Des							
		Learning Method	DCS	scription Proce		Teach Hrs.	Pra /Tu Hr	ıt	LRs Required	Remark
eam turbine –cla inciple with line dia rbine, reaction turbi impulse, reaction essure compounding locity compounding	nozzle assification, construction, working agram of a Impulse turbine-De Laval ine-Parsons turbine, velocity diagram turbine. Compounding of turbines. ng, velocity compounding, pressure-	Interactive Classroom teaching, demonstration, quiz	the c prov stude conc make	ents. Tea duct a qui e student tice their	nd outs to cher will z to	10	0			
	SCH	IEME OF ASSESSI	MEN'	Т		-	-	I		
Method of Assessment	Description	of Assessment								External / Internal
•	±	ion, working of a stear	n nozz	zle or turt	oine or	10		-		External
	ADDITIONAL INSTRUC	CTIONS FOR THE	HOD)/ FACU	LTY (I	F ANY)	I			
	Suitably mix the conte	ent in assessment to jus	stify n	naximum	marks 1()				
in rb is lo ea N	ciple with line dia ine, reaction turb mpulse, reaction soure compoundir city compounding m condenser- class Method of ssessment ory exam S	m condenser- classification construction and working. SCE Method of Ssessment ory exam Student will be asked to explain construct condenser. ADDITIONAL INSTRUC	init throme "classification," construction," working ciple with line diagram of a Impulse turbine-De Laval ine, reaction turbine-Parsons turbine, velocity diagram mpulse, reaction turbine. Compounding of turbines. ssure compounding, velocity compounding, pressure- city compounding m condenser- classification construction and working. Scheme of Assessment ory exam Student will be asked to explain construction, working of a stear condenser. ADDITIONAL INSTRUCTIONS FOR THE	and throme declassification, construction, working stud ciple with line diagram of a Impulse turbine-De Laval stud ine, reaction turbine-Parsons turbine, velocity diagram mak mpulse, reaction turbine. Compounding of turbines. mak ssure compounding, velocity compounding, pressure- know city compounding m condenser- classification construction and working. Method of Scheme OF ASSESSMEN Method of Description of Assessment ory exam Student will be asked to explain construction, working of a steam noza condenser. ADDITIONAL INSTRUCTIONS FOR THE HOI	initiationic sensitication, construction, working iteration, construction, working ciple with line diagram of a Impulse turbine-De Laval iteration, conduct a qui make students, practice their ine, reaction turbine. Compounding of turbines. iteration, reaction turbine, compounding, pressure- issure compounding m condenser- classification construction and working. Scheme of assessment Scheme of Assessment ory exam Student will be asked to explain construction, working of a steam nozzle or turb condenser. Additional instruction struction in turbine condenser. Addition of Assessment	Initiation of a limpulse turbine, construction, working ine, reaction turbine-Parsons turbine, velocity diagram mpulse, reaction turbine. Compounding of turbines. issure compounding, velocity compounding, pressure-city compounding m condenser- classification construction and working. students. Teacher will conduct a quiz to make students practice their knowledge Method of ssessment SCHEME OF ASSESSMENT Method of ssessment Description of Assessment ory exam Student will be asked to explain construction, working of a steam nozzle or turbine or condenser. ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (II)	and turbine declassification, construction, working students. Teacher will conduct a quiz to make students practice their knowledge ciple with line diagram of a Impulse turbine. De Laval ine, reaction turbine. Compounding of turbines. issure compounding, velocity compounding, pressure-city compounding m condenser- classification construction and working. students. Teacher will conduct a quiz to make students practice their knowledge Method of ssessment Scheme OF ASSESSMENT Maxim Mari Mari ory exam Student will be asked to explain construction, working of a steam nozzle or turbine or 10	in throme consistentiation, construction, working students. Teacher will conduct a quiz to make students. ciple with line diagram of a Impulse turbine-De Laval ine, reaction turbine-Parsons turbine, velocity diagram mpulse, reaction turbine. Compounding of turbines. students. Teacher will conduct a quiz to make students practice their knowledge sure compounding mechanism construction and working. SCHEME OF ASSESSMENT Maximum Marks Method of ssessment Description of Assessment Maximum Marks ory exam Student will be asked to explain construction, working of a steam nozzle or turbine or condenser. 10 ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)	m turbine -classification, construction, working a Impulse construction, working a Impulse turbine-De Laval students. Teacher will students. Teacher will ciple with line diagram of a Impulse turbine-De Laval ine, reaction turbine-Parsons turbine, velocity diagram students. Teacher will conduct a quiz to mpulse, reaction turbine. Compounding of turbines. surface of their students. Teacher will conduct a quiz to sure compounding, velocity compounding, pressure- city compounding m condenser- classification construction and working. SCHEME OF ASSESSMENT Method of ssessment Description of Assessment Maximum Marks Req ory exam Student will be asked to explain construction, working of a steam nozzle or turbine or condenser. 10 Questing + Ratin ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY) students is the fubbric of the students is the students is the students is the students in the students in the students in the students is the students in the students	m turbine -classification, construction, working construction, qui and protection is provided by students. Teacher will conduct a quiz to make students practice their knowledge book, charts, video film. ciple with line diagram of a Impulse turbine-De Laval ine, reaction turbine. Compounding of turbines. sure compounding, velocity compounding, pressure-city compounding book, charts, video film. book, charts, video film. students: Teacher will conduct a quiz to make students practice their knowledge book, charts, video film. book, charts, video film. students: reaction turbine. Compounding, pressure-city compounding pressure-compounding. book, charts, video film. m condenser- classification construction and working. SCHEME OF ASSESSMENT Maximum Marks Resources Required Method of ssessment Description of Assessment Maximum Marks Required 10 Question paper + Rating scale 1 ory exam Student will be asked to explain construction, working of a steam nozzle or turbine or condenser. 10 Question paper + Rating scale 1 ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY) Student will be asked to explain construction structions for the HOD/ FACULTY (IF ANY) Student will be asked to explain constructions for the HOD/ FACULTY (IF ANY)

RG	GPV (Diplo	ma Wing)	SCHEME	E FOR LEARNIN	NG	Br	anch C	ode	Co	ourse C	ode	CO Code	LO Code		4
	Bhop	al	C	DUTCOME		М	0	2	3	0	2	5	2	Form	nat No. 4
COL	JRSE NAME	Thermal Engine	eering							1			1		
CO D	escription	Explain steam noz	zles, steam turbine	es, steam condensers.											
LOD	escription	Solve a given num	nerical problem bas	ed on discharge and area of	of nozzl	e.									
				SCHEME OF STU	JDY										
S. No.		Learning Conter	nt	Teaching –Learning Method	Desc	riptio Proc		T-L	Hrs			Pract. ut Hrs.		Rs uired	Remark
1	friction in a mozzles, critic calculation of c	on in a nozzle, discharge of steam through les, critical pressure ratio (no derivation), alation of cross sectional areas at throat and exit maximum discharge.(simple problems).			Teach the co provid studer condu make practic knowl	s to r will	4	4			Text b charts board	, chalk			
				SCHEME OF ASSES	SMEN	Т									
S. No.	Method o Assessmen		Descri	ption of Assessment				I	Maxi Ma		n	Resou Requ			xternal / nternal
1	Theory exam			ate discharge, cross section a given convergent-diverg			itical	. 1	.0			Question + Rating		Exte	ernal
		ADD	ITIONAL INST	RUCTIONS FOR THI	E HOD)/ FA	CUL	ΔTY (ÎF A	NY)					
				Nil											

RC	GPV (Diplo	ma Wing)	SCHEM	E FOR	B	ranch Co	de	Co	ourse Co	Code Code Code				1
	Bhop	-	LEARNING (OUTCOME	M	0	2	3	0	2	5	3	Forma	ut No. 4
COU	RSE NAME	Thermal Enginee	ring											
CO De	scription	Explain steam nozzl	es, steam turbines, steam	condensers.										
LO Des	scription	Identify components	of D- Laval and Parsons	s Turbine.										
			SCH	IEME OF STUDY										
S. No.	Learn	ing Content	Teaching – Learning Method	Description of T	-L P 1	rocess	2	Feach Hrs.	s. /Tut Hrs.			LI Requ		Remark
1		of the components of arsons steam turbine.	Lab demonstration, hands on practice.	Teacher will expla contents and provid to students. Teacher demonstrate the co lab. The students w through practice.	le han r will mpone	ents in	0					Handou chalk bo PPT, cha video fi manual, lab, mod	ard, irts, lm, virtual	
			SCHEM	IE OF ASSESSMI	ENT									
S. No.	Method Assessme	-	Description of Asse	ssment		Maxi Ma		1	Res	ourc	ces Re	equired		External / Internal
1	Laboratory te observatio		be asked to identify com Turbine	ponents of De-Laval		1	2	so	bserv chedu cales /	le/ch	eck-lis	st /rating		External
	1	ADDITI	ONAL INSTRUCTIO	ONS FOR THE H	OD/ I	FACU	LTY	(IF 4	ANY))				
				Nil										

LIST OF EXPERIMENTS OF THERMAL ENGINEERING

S.No.	Name of Experiment	Duration
1	Identify components of solar systems.	3
2	Write a Report on visit to solar power/wind mill / biogas plant / hydraulic power plant to document the specifications of components and power generation capacity, draw schematic arrangement.	6
3	Determine dryness fraction of steam using Throttling calorimeter.	3
4	Determine dryness fraction of steam using separating calorimeter.	3
5	Identify components of Babcock and Wilcox, Lancashire boiler	6
6	Identify components of La-Mont and Velox Boilers	6
7	Draw the flue gas path and water steam circuit with the help of boiler model and write a report	3
8	Identify mountings and accessories in Boiler.	3
9	Write a Report on visit to Dairy / thermal power plant to document specifications of boiler, list mountings and accessories.	6
10	Identify components of Impulse turbine (De-Leval)	3
11	Identify components of Reaction Turbine (Parson's Turbine)	3