		ma Wing) Bhopa		SCHEME F	OR LEARNING	Bra	nch Co	ode		Cours	e Code	CO Code	LO Code	
RGPV	/ (Diplo	oma Wing) Bl	hopal	OU	TCOME	Ε	0	3		5	0	1	1	Format No. 4
COURS	SE NAME	Medical Electron	ics			11								
CO Des	cription	Explain the fundar	nentals Bi	io-electronics of hu	man body.									
LO Des	cription	Define fundamenta	als of the l	biomedical.										
					SCHEME OF STUDY									
S. No.		Learning Content		Teaching – Learning Method	Description of T-L Process	Tea Hrs	ch s.	F /T	Pract ut H	rs.	LRs	Require	ed	Remarks
LO-01	Human of Human of Bio-elect and action and report Blood ce Pathoph paramet ESR,Hb,N	cell cell ionization charac tric potential: Origin on potential, depolar blarisation ells ysiology of blood cel ers: RBC,WBC,Platel MCV,MCH	eteristics. , Resting rization Ils, ets,	Interactive classroom lecture, PPT, demonstration, quiz, assignments	Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/ assignments/ tutorial.	6					Text Bo Handou board, Videos NPTEL 8	oks, PP its, cha charts. lecture: & other	T, lk s- s	
				S	CHEME OF ASSESSMENT	•								
S. No.	Metho	d of Assessment		Descriptior	n of Assessment		M	axin Mar	num ks	R	esource	es Requ	uired	External / Internal
LO-01	Mid Sem	nester Theory Exam/ Assignment	Studen 1. 5 2. 5 3. 5 4. 1 5. 1	t will be asked to State all or none la ootential. Summarize electro electrodes used in Show with necess ootential. List out the compo Define resting and	(and/or): aw in respect of cell bio- ode and the types of the bipolar measureme ary diagram the origin of onents of blood. I action potential.	nt. f bio		10		Qı	estion s	oaper, F cale	Rating	Internal

		6	i. Draw and explain	structure of the human	cell.						
			ADDITIONAL INSTR	UCTIONS FOR THE HOD	/ FACUI	LTY (IF AN	Y)				
RGP	/ (Diplo	oma Wing) Bhopa	SCHEME	FOR LEARNING	Brar	nch Code	Cour	rse Code	CO Code	LO Code	Format No. 4
	(OL	JTCOME	Ε	0 3	5	0	1	2	
COURS	E NAME	Medical Electronics									
CO Des	cription	Explain fundamentals of	Bio-electronics of hu	man body.							
LO Des	cription	Classify the biomedical s	ignals in human musc	le.							
				SCHEME OF STUDY							
S. No.	Le	earning Content	Teaching – Learning Method	Description of T-L Pro	cess	Teach Hrs.	Pı / H	ract. Tut Irs.	LRs Re	quire	d Remarks
LO-02	Cardiac r Electroph Muscles Transmis Brain Electroph neurons, impulse, brain wa	nuscle hysiology of Heart sion of Cardiac impulse hysiology of Brain and Transmission of excitation of neurons, ves.	Interactive classroom lecture, PPT, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Te will conduct quiz/assignn tutorial to make students practice their knowledge	acher nents/ s	6			Text Boo Handou board, c Numeric Problem Workboo	ks, PPT ts, cha harts, al s ok	, lk
			S	CHEME OF ASSESSMEN	 F						

S. No.	Metho	d of Assessment	Description of Asse	essment	Ma N	ximum ⁄larks		Resourc	ces Requ	ired	External / Internal
LO-02	Mid Sem	Stude 1. 2. Assignment 3. 4. 5.	nt will be asked to(and/ How would you describ Conduction velocity? Define cardiac output. output of a person if hi BPM and stoke volume Explain the structure of help of diagram. Describe transmission of neurons. List out different types	Yor): be the term Find the cardiac is heart rate is 72 is 70ml. f neuron with of impulse across of brain waves.		10	Que	stion pa	iper, Ratii	ng scale	e Internal
		ŀ	DDITIONAL INSTRUCTION	ONS FOR THE HOD/	/ FACU	ILTY (IF AN	NY)				
	(Dinla	ma Wing) Bhona	SCHEME FOR	LEARNING	Bra	anch Code	Co	urse Code	CO Code	LO Code	/
NOPV			OUTCO	DME	Ε	0 3	5	0	2	3	Format No. 🕂
COURS	E NAME	Medical Electronics									
CO Des	cription	Explain the working and p	rinciple of various therape	eutic equipment.							
LO Dese	cription	Illustrate the working of c	ardiac pacemakers, defibri	llator and hearing aid	1.						
			SCI	HEME OF STUDY							
S. No.		Learning Content	Teaching – Learning Method	Description of Process	T-L	Teach Hrs.	Pı /Tu	ract. It Hrs.	LRs Re	quired	Remarks

LO-03	Therapeutic Equipment - Cardiac Implantable pacenta working principle with funct block diagram DC Defibrillator- working pr with functional block diagram block diagram of microproce based-defibrillator. Hearing aid-Working princip	akers- ional inciple m, essor- le with	ctive oom lecture, nstration, assignments, al	Teacher will contents and handouts to Teacher will quiz/assignm tutorial to m students pra- knowledge.	explain the l provide students. conduct nents/ ake ctice their	7	Tex Hai cha cha Nui Pro Wo	xt Books, PPT, andouts, alk board, arts, imerical oblems orkbook	
	Tunetional block diagram								
S. No.	Method of Assessment	Descript	ion of Assessr	ment	Maxim um Marks	Reso	ources Require	d	External / Internal
LO-03	End Semester Theory Exam	Student will be 1. Interpret cardiac p 2. List the t implanta 3. Why down synchron defibrilla 4. List the p 5. Draw the DC defibr 6. Identify the disadvanta 7. Describer of hearing	asked to the need for u acemaker. ypes of batteri ble pacemaker ve require a ization functio tor? arts of pacem schematic dia fillator. he advantages tages of DC de functional blo g aid.	using a ies used for r. on in akers. agram of a s and efibrillator. ock diagram	10	Rub	rics/Rating scale	e	External
		ADDITION	AL INSTRUCTIO	ONS FOR THE	HOD/ FAC	ULTY (IF ANY))		

RGPV	/ (Diplo	ma Wing) Bhoj	oal SCHEN	IE FOR LEARNIN	G	Branch Code	3	Course	e Code	CO Code	LO Code	Format No. 4
COURS	E NAME	Medical Electronics										
CO Des	cription	Explain the working an	nd principle of vario	ous therapeutic equipmen	t.							
LO Des	cription	Describe the working of	of diathermy, Laser	therapy and electrothera	ару.							
				SCHEME OF STU	DY							
S. No.	Le	earning Content	Teaching – Learning Method	Description of T-L P	rocess	Teach Hrs.	Pr /Tu	ract. It Hrs.	LR	s Requ	iired	Remarks
LO-04	Diathern with Fun- microwa Laser Re coagulat their ther Function Retinal p Electrot waveform principle diagram of muscle st	ny- working principle ctional block diagram of ve diathermy machine. etinal photo- or- Types of lasers and apeutic applications, al block diagram of hoto-coagulator. herapy –Types of ns used, working with Functional block of electrotherapeutic imulator.	Interactive classroom lecture, PPT, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. will conduct assignme quiz/tutorial to make practice their knowled	ne Teacher nts/ students Ige.	7			Text Hand board Video and o	Books, outs, c d, chart lecture thers.	PPT, halk s, - NPTEI	_
				SCHEME OF ASSESS	MENT							
S. No.	Metho	d of Assessment	Description	of Assessment	Maxiı Ma	mum rks	R	esour	ces Red	quired		External / Internal

LO-04	End Semester Theory Exam	 Student will be asked to(and/or): 1. Write the principle of high frequency heat therapy. 2. State the term Diathermy. 3. Elaborate the working of microwave diathermy machine with the help of a simplified diagram. 4. List the applications of diathermy. 5. Explain the principle of heating using microwaves. 6. Mention the advantages and application of performing surgery using LASER in ophthalmology. 7. Elaborate the working of Retinal photo-coagulator with the help of a simplified diagram. 8. List out types of waveforms used in electrotherapy. 9. Explain the electrotherapeutic muscle stimulator with functional block diagram. 	10	Question paper, Rating scale	External
		ADDITIONAL INSTRUCTIONS FOR THE H	OD/ FACULTY	(IF ANY)	

	(Diploma Wing) Bhop	SCHEI	ME FOR LEARNING	Bran	ch Cod	le	C	ourse C	ode	CO Code	LO Code	л	
KGPV	סוקוט) י	ma wing j Bho	раг	OUTCOME	Ε	0	3	5	0		2	5	Format No. 4
COURS	E NAME	Medical Electronics											·
CO Des	cription	Explain the working a	nd principle of vari	ous therapeutic equipment.									
LO Dese	cription	Demonstrate the worki	ng of various thera	peutic equipment.									
				SCHEME OF STUDY									
S. No.	Le	earning Content	Teaching – Learning Method	Description of T-L Process	Teacł Hrs.	ו	Pr /Tu	act. t Hrs.		LRs R	equire	ed	Remarks
LO-05	Demonst Diatherm electroth	ration of hearing aid, ny, Laser therapy and erapy equipment.	Lab demonstration PPT , hands on practice, lab assignments.	•Teacher with support from lab staff will demonstrate the procedure of lab experiments.				6	La Ha ex tra ins	b man Indout perim ainer c strume	ual, ch ts, ental on ents/ki	arts, t.	
				SCHEME OF ASSESSMEN	IT								
S. No.	Metho	d of Assessment	Descriptio	on of Assessment	Maxim m Mark	u (S		Res	ource	es Rec	quired		External / Internal
LO-05	Pra I	S aboratory	tudent will be as 1. Demonstrate aid, Diather electrotherapy	ked to (and/or): the working of hearing my, Laser therapy and equipment.	10			Rut	orics, I	Rating	scale		Internal
			ADDITIONAL I	ISTRUCTIONS FOR THE HOL)/ FACUL	TY (IF AN	NY)					

	(/			SCHEME FO	R LEARNING	Branch	Code	Course	Code	CO Code	LO Code	
KGPV		oma w	ing) Bhopai	OUTC	OME	E O	3	5 0		3	6	Format No. 4
COURS	SE NAME	Medica	l Electronics			<u> </u>		I				
CO Des	cription	Classify	various medical mea	surement and analysis	s instruments.							
LO Des	cription	Explain	working of various b	lood constituents' mea	asurement and analysis	s instrumer	nts.					
				S	CHEME OF STUDY							
S. No.		Learnii	ng Content	Teaching – Learning Method	Description of Process	T-L	Teach Hrs.	Pract / Tu Hrs.	t. t I	.Rs Rec	luired	Remarks
LO-06	Block Di Medical Measure Coulter I principle Various B Spectrop with Func blood.	iagram of Instrumer ement and Blood cell with Func Blood parar bhotomet ctional bloo	a Generalized Bio- nt System d analysis Techniques counter- working tional block diagram. neters. er- working principle ck diagram. Analysis of	Interactive classroom lecture, PPT, Video, Demonstration, quiz, assignments.	Teacher will explain contents and provid handouts to studer Teacher will conduc assignments/ quiz/ to make students p their knowledge.	n the de nts. ct tutorial oractice	7		Te H be Vi N ot	ext Bool andouts bard, ch deo lect PTEL and hers. rduino b	ks, PPT s, chalk larts, ure- d oard	
				SCHE	ME OF ASSESSMENT	T			I			
S. No.	Meth Asses	od of sment		Description of As	sessment		Maxir Ma	num rks	R	lesouro Require	es ed	External / Internal
LO-06	End Se Theory	mester y Exam	 Student will be as Write the presence of the presenc	ked to(and/or): hysical principles ba constructed. out the measuremer diagram of Coulter of Safety standards of Spectrophotometer e analysis of blood of	ased on which blood at of the blood cell us Blood cell counter. f medical instrumen r with functional bloo using Spectrophoton	flow sing given ts. ck neter.	1()	Que R	estion pa ating sc	aper , ale	External

				ADDITIONAL INS	TRUCTIONS FOR THE HOD		TY (IF AN'	Y)				
	(Dinlo	ma M	Ving) Bhons	SCHEM	E FOR LEARNING	Branc	h Code	Cou	irse Code	CO Code	LO Code	
					OUTCOME	Ε	0 3	5	0	3	7	Format No. 🕇
COURS	E NAME	Medic	al Electronics									
CO Des	cription	Classif	y various medical	measurement and	analysis instruments.							
LO Des	cription	Compa	re different non-ir	ivasive measureme	nt methods.							
					SCHEME OF STUDY							
S. No.	Le	earning	Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pra /Tut	ct. Hrs.	LRs R	equire	ed	Remarks
LO-07	Finger-tip parameter oximeter shift base advantag BP measu & diastoli Working measurer BP measu Rheograph measurer	o Oxime ers meas . Ultrasc ed FHR n es. urement principle ment ma hic meth hent.	ter – Blood sured by onic Doppler- neasurement, t- Define systolic ure, e of Mercury BP achine, Digital : machine. od of BP	Interactive classroom lecture, PPT, Video, demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	7			Text Boc Handout board, cl Video lec and othe	ks, PP s, chal narts, ture- N rs.	Γ, k PTEL	
	1				SCHEME OF ASSESSMENT	•	I		1			
S. No.	Metho Assessi	od of ment		Description	of Assessment		Maximu Marks	ım s	Resource	s Req	uired	External / Internal

	1										
LO-07	End Seme Theory Ex	ster am ster cam ster ster cam ster cam ster cam ster ster cam ster ster cam ster ster ster ster ster ster ster ster	asked to (and/or): e principle behind Rhe e measuring technique e the principle used in e the typical values of n adult. merits and demerits of e measurement. he pulse rate measure e the Ultrasonic Dopple ment.	eographic method of bloo e. n pulse rate measuremen f blood pressure and pulse of given method of blood ed? er-shift based FHR	od t. e	10		Questic Ratir	on pape Ig scale	er,	External
	1	I	ADDITIONAL INSTRU	ICTIONS FOR THE HOD/ F	ACULTY (I	(IF ANY)					1
							Y)				
RGPV	/ (Diplon	na Wing) Bhopa	SCHEME F	OR LEARNING	Branch Code	2	Course	Code	CO Code	LO Code	Format No. 4
RGPV	(Diplon	na Wing) Bhopa	al SCHEME F	OR LEARNING TCOME	Branch Code	e 3	Course	Code	CO Code 3	LO Code 8	Format No. 4
	(Diplon	na Wing) Bhopa Medical Electronics	SCHEME F OU	OR LEARNING TCOME	Branch Code	3	Course	Code	CO Code 3	LO Code 8	Format No. 4
RGPV COURS CO Desc	(Diplon E NAME M cription (na Wing) Bhopa Medical Electronics Classify various medical	SCHEME F OU measurement and analy	OR LEARNING TCOME ysis instruments.	Branch Code	3	Course	Code	CO Code 3	LO Code 8	Format No. 4
RGPV COURS CO Desc LO Desc	/ (Diplon E NAME Cription Cription	na Wing) Bhopa Medical Electronics Classify various medical Demonstrate various med	SCHEME F OU measurement and analy dical measurement techn	OR LEARNING TCOME ysis instruments. niques.	Branch Code	e	Course	Code	CO Code 3	LO Code 8	Format No. 4
RGPV COURS CO Desc LO Desc S. No.	(Diplon E NAME M cription (cription I Lea	na Wing) Bhopa Medical Electronics Classify various medical Demonstrate various med	A SCHEME F OU measurement and analy dical measurement techn Teaching – Learning Method	OR LEARNING TCOME ysis instruments. niques. SCHEME OF STUDY Description of T-L Process	Branch Code	e 3 Pract	Course 5 0 . / rS.	Code	co Code 3	LO Code 8	Format No. 4

				SCHEME OF ASSESS	MENT								
S. No.	Met	hod of Assessment	Description	of Assessment	Max M	kimum arks		Resou	urces	s Req	uired		External / Internal
LO-08	Pract	ical test in laboratory	 Student will be a Perform an given Fing Mercury B machine ar measurement Prepare repard specific Oximeter, measurement Digital BP machine ar measurement 	asked to ad measure reading of er-tip Oximeter, P measurement ad Digital BP ent machine. bort of different types cation Finger-tip Mercury BP ent machine and measurement vailable in market.		15		Rubri	cs, R	ating	scale		External
			ADDITIONAL INS	TRUCTIONS FOR THE	HOD/ F	ACULTY	(IF AN	IY)					
	(Dinla	ma Wing) Bhona	SCHEM	E FOR LEARNING	G	Branch C	ode	Cou	rse Cod	le	CO Code	LO Code	
			" C	DUTCOME		E 0	3	5	0		4	9	Format No. 🕈
COURS	E NAME	Medical Electronics											
CO Des	cription	Identify the working of d	ifferent bio potenti	al recorders.									
LO Dese	cription	Explain the working prine	ciple of ECG (Elect	ro Cardio Graph).									
				SCHEME OF STUI	YC								
S. No.	Le	earning Content	Teaching – Learning Method	Description of T-I Process	L	Teach Hrs.	Pr: /Tut	act. : Hrs.	L	.Rs Re	equire	d	Remarks

LO-09	Bio potential Recorders : Block diagram of ECG, isolate preamplifier, ECG leads, effe of artefacts on ECG recordin Multichannel ECG machine, specifications, Applications of	Interactive ed classroom lecture, PPT, gs, Video, Demonstration, FECG. quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz / tutorial to make students practice their knowledge.	7		Text Books, PPT, Handouts, chalk board, charts, Video lecture- NPTEL and others.	
	I		SCHEME OF ASSESSMENT		1		1
S. No.	Method of Assessment	Descriptio	on of Assessment	Maximu	um Marks	Resources Required	External / Internal
LO-09	End Semester Theory Exam	 Student will be asked Define Lead. Name ECG. Name the electron Construct the typic mention the cause BTL 3 Applying Sou Name the 10-20 log recording. Explain different log recorder. Draw a typical ECG Give the ECG Signal 	d to (and/or): e the type of leads used for des used for recording ECG? cal ECG waveform and e for first & second heart unds. ead system used in ECG ead system used in an ECG 6 waveform. al Characteristics.		10	Question paper, Rating scale.	External
		ADDITIONAL INS	STRUCTIONS FOR THE HOD/	FACULTY	(IF ANY)		
RGPV	(Diploma Wing) B	hopal SCHEM	IE FOR LEARNING	Branch Co	ode C	ourse Code Code Code	Format No A

					OUTCOME	E 0	3	5	0		4	10					
COURS	E NAME	Medical Electro	onics								-						
CO Des	cription	Identify the work	ing of c	lifferent bio potent	ial recorders.												
LO Des	cription	Define the princip	ple of E	EG (Electro Encep	halon Graph).												
		1			SCHEME OF STUDY												
S. No. Learning Content				Teaching – Learning Method	Description of T-L Process	Teach Hrs.	ו ו	Pract. /Tut Hrs.		Pract. /Tut Hrs.		Pract. Tut Hrs.		LR	ls Req	uired	Remarks
LO-10 Block diagram of EEG machine, 10-20 electrode placement system for EEG, Evoked potential, specifications, applications, advantages and disadvantages.			ine,	Interactive classroom lecture, PPT, Video, demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	6		Text Books Handouts, board, char lecture- NPT others.			Books, outs, c I, chart e- NPTE s.	PPT, halk s, Video EL and					
					SCHEME OF ASSESSMENT												
S. No.	Method	of Assessment		Description of Assessment			Maximum Marks			Resources Required			External / Internal				
LO-10	LO-10 Mid Semester Theory Exam/ Assignment 2		Stude 1. 2. 3. 4. 5.	ent will be asked to(and/or): Assess the important bands of frequencies in EEG and their importance Choose the various EEG signals with amplitude and frequencies. List the names and frequency bands of EEG signals. Enlist the electrodes used for recording EEG Discuss in detail about the 10 – 20 lead system.			10		Qu	uestio	n pape scale.	r , Ratin	g Internal				
				ADDITIONAL INS	STRUCTIONS FOR THE HOD/ F	ACULTY (NY)									

RGPV	/ (Diplo	oma Wing) Bhopa	SCHEME F	OR LEARNING	Branch Co	ode	Cours	e Cod	e CO Code	LO Code	Forn	nat No 4			
	\		OU	TCOME	E O	3	4	0	4	11					
COURS	E NAME	Medical Electronics													
CO Des	cription	Identify the working of d	ifferent bio potential re	ecorders.											
LO Des	cription	Demonstrate the working	and recording of ECG	and EEG.											
				SCHEME OF STUDY											
S. No.	L	earning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract /Tut H	t. rs.	LRs Required				LRs Required Re			Remarks
LO-11	11 Demonstration, operation and recording of ECG and EEG machines.		Lab demonstration, PPT , hands on practice, lab assignments.	•Teacher with support from lab staff will demonstrate the procedure of lab experiments.		6 Lab manual, charts Handouts, experim trainer on instrume		Lab manual, charts, Handouts, experimental trainer on instruments/kit.							
	1		sc	HEME OF ASSESSMENT			I					•			
S. No.	Met	hod of Assessment	Description	of Assessment	Maxi Ma	imum arks	Re	esou	urces Req	uired	External / Internal				
LO-11	0-11 Practical test in laboratory		 Student will be aske Demonstrate and EEG mach Prepare report specification o machines avail 	ed to the working of ECG nines. of different types and of ECG and EEG lable in market.	15		Rubrics		cs, Rating	scale	E	xternal			

			AD	DITIONAL INS	TRUCTIONS FOR THE HOD/	FACULTY	(IF AN	Y)					
	(Dinlo	ma Wing) Bł	nonal	SCHEM	E FOR LEARNING	Branch C	ode	Co	urse Coc	de C	CO ode	LO Code	
RGPV (Diploma wing) Bhopa					E 0	3	4	0		5	14	Format No. 🛥	
COURS	E NAME	Medical Electron	ics										
CO Des	cription	Compare various ty	ype of im	aging systems of	of medical electronics.								
LO Deso	cription	Differentiate betwe	en Endos	scope and CT in	naging.								
		·			SCHEME OF STUDY								
S. No.	Le	earning Content		Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.		LRs		LRs Required		Remarks
LO-12	-12 Working principle of Imaging systems: Endoscope- Endoscope imaging machine, applications, specifications, advantages and disadvantages. Computerized tomography CT Scan- basic principle, block diagram of a typical CT imaging system, advantages, disadvantages and applications of CT imaging.		ng Intaria cla ing leo Vio nd de qu CT as ng	teractive assroom cture, PPT, deo, emonstration, uiz, signments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	7	7 Text Books, Handouts, c board, chart Video lecture and others.		, PPT chall cts, ce- NI	Γ, k PTEL			
					SCHEME OF ASSESSMENT								
S. No.	Method	l of Assessment		Description	n of Assessment	Maxim	um Ma	rks	Reso	ources f	Requ	uired	External / Internal

LO-12 End Semester Theory Exam		ester Theory Exam	Student 1. La 2. Li 3. W 4. Bi 5. Li	will be asked abel the parts st application /hat are the fu riefly explain t naging system st advantages,	to(and/or): of an Endoscope unit. of Endoscopy unctions of endoscopy unit? the description of CT disadvantages and		10		Ques Rat	tion pap ing scale	er ,	External
			AC	DITIONAL INS	STRUCTIONS FOR THE HOD	FACULTY	' (IF AN	Y)				
		ma Wing) B	bonal	SCHEME FOR LEARNING			Code	de Co		CO Code	LO Code	/
KGPV			пораг		OUTCOME	E 0	3	4	0	5	13	Format No. 🕂
COURS	E NAME	Medical Electro	nics									
CO Des	cription	Compare various	type of imaging systems of medical electronics.									
LO Des	cription	Explain the work	ing princip	le of ultrasonog	graphy.							
					SCHEME OF STUDY							
S. No.	5. No. Learning Content			Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.		LRs	LRs Required		Remarks
LO-13 Ultrasonography-Properties of ultrasonic waves, Principles of imaging, basic components of imaging system, applications, advantages and disadvantage Ultrasonic imaging.		of In f cli le Vi	teractive assroom cture, PPT, ideo,	Teacher will explain the contents and provide handouts to students. Teacher will conduct	6	-	-	Text Books, I Handouts, ch board, chart Video lecture and others.		T, k PTEL		

S. No.	Metho	d of Assessment		Descriptio	n of Assessment	Maxim	num Mark		Resources F		es Rec	quired	External / Internal
LO-13 End Semester Theory Exam			Student 1. E 2. S 1. E 1.	t will be asked to (and/or): Express characteristic impedance in ultrasound. Summarize the advantages of an ultrasound imaging system. Distinguish between 'A' and 'B' mode of ultrasound imaging system. List applications, advantages and disadvantages of Ultrasonic imaging List different types probes and transducer of ultrasound imaging system.					Que	stion r S ⁱ	oaper cale.	, Ratin	g External
			AD	DITIONAL INS	TRUCTIONS FOR THE HOD/	FACULTY	(IF AN	IY)					
				SCHENA		Branch (ode	Co	ourse Co	de	со	LO	
RGPV	/ (Diplo	oma Wing) Bl	hopal			E 0	3	4	0		Code 5	Code	Format No. 4
COURS	E NAME	Medical Electron	nics										
CO Description Compare various type of imaging systems of medical electronics.													
LO Des	cription	Demonstrate vario	us medica	l imaging techn	iques.								
					SCHEME OF STUDY								
S. No. Learning Content				Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pra /Tut	act. t Hrs.		LRs Re	equire	ed	Remarks

LO-14	Demonstration of Endoscope, CT scan, Ultrasonography machine.		 Instration of Endoscope, CT Ultrasonography machine. Lab demonstration, PPT , hands on practice, lab assignments. Teacher with support from lab staff will demonstrate the procedure of lab experiments. 			6	Lab manual, charts, Handouts, experimental trainer on instruments/kit.				
				SCHEME OF ASSESSME	NT		11				
S. No.	Method of Assessment Descrip			of Assessment	Maximu m Marks	Reso	urces Required	External / Internal			
LO-14	Practical test in laboratory	 Student will be asked t Demonstrate the workscan and Ultrasonograph List different types of a Ultrasonography mach market. 		to orking of Endoscope, CT aphy machine. Endoscope, CT scan and hine system available in	10	Rubr	ics, Rating scale	Internal			
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)										