

INTEGRAL UNIVERSITY, LUCKNOW INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES & RESEARCH

DEPARTMENT OF PARAMEDICAL SCIENCES

BACHELOR OF SCIENCE IN DIALYSIS TECHNOLGY (B. Sc. DT)

SYLLABUS

YEAR/ SEMESTER: II/III



Integral University, Lucknow Department of Basic Medical Sciences Study and Evaluation Scheme

	Program: B.Sc. Dialysis Technology												
S. N.	Course	Course Title	Type	-	eriod P /week/s]	Evaluatio	n Scheme		Sub.	Credit	Total
14.	code	course rue	ofPaper L T P CT TA Total ESE T							Total	creuit	Credits	
THEORIES													
1	DT201	Pathology	Core	2	1	0	40	20	60	40	100	2:1:0	3
2	DT202	Microbiology	Core	2	1	0	40	20	60	40	100	2:1:0	3
3	DT203	Medical Biochemistry -II	Core	2	1	0	40	20	60	40	100	2:1:0	3
4	DT204	Pharmacology	Core	2	1	0	40	20	60	40	100	2:1:0	3
5	DT205	Immunology & Serology	Core	2	1	0	40	20	60	40	100	2:1:0	3
6	DT206	Renal Dialysis Technology-I	Core	2	1	0	40	20	60	40	100	2:1:0	3
]	PRACTI	CAL							
1	DT207	Immunology, Serology & Microbiology Lab	Core	0	0	4	40	20	60	40	100	0:0:2	2
2 DT208 Pathology Lab Core 0 0 4 40 20 60									60	40	100	0:0:2	2
3	DT209	Medical Biochemistry - II Lab	Core	0	0	4	40	20	60	40	100	0:0:2	2
	Total 12 06 16 400 200 600 400 1000										26	26	

S.	Course		Туре			А	ttributes				United Nation Sustainable
N.	code	Course Title	ofPaper	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment& Sustainability	Human Value	Professional Ethics	Development Goal (SDGs)
		THEORIES									
1	DT201	Pathology	Core	\checkmark	\checkmark	\checkmark	\checkmark			\checkmark	3,4
2	DT202	Microbiology	Core	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	3,4
3	DT203	Medical Biochemistry -II	Core	\checkmark			\checkmark			\checkmark	3,4
4	DT204	Pharmacology	Core	\checkmark			\checkmark			\checkmark	3,4
5	DT205	Immunology & Serology	Core	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	3,4
6	DT206	Renal Dialysis Technology-I	Core			\checkmark		\checkmark			3,4
		PRACTICAL									
1	DT207	Immunology, Serology & Microbiology Lab	Core	\checkmark	\checkmark					\checkmark	3,4
2	DT208	Pathology Lab	Core	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark	3,4
3	DT209	Medical Biochemistry - II Lab	Core	V	\checkmark					\checkmark	3,4

L: Lecture T: Tutorials P: Practical CT: Class Test TA: Teacher Assessment ESE: End Semester Examination, AE= Ability enhancement, DSE- Discipline Specific Elective, Sessional Total: Class Test + Teacher Assessment Subject Total: Sessional Total + End Semester Examination



Effe	ctive from Session	: 2024-25									
Cou	rse Code	DT201	Title of the Course	PATHOLOGY L	Т	Р	С				
Year	:	П	Semester	III 2	1	0	3				
Pre-	Requisite	Nil	Co-requisite	Nil							
Cou	rse Objectives	learn about ha (2) The uniqu	indling and tissue processin	hology and its techniques aims to prepare the students to ag and prepare to aid in proper diagnosis is that the students should learn the basic histopathologi athology techniques.							
			Co	urse Outcomes							
CO1	Students will be	e able to gain know		histopathologylab, Fixation techniques							
CO2	Students will be	e able to gain know	vledge on Grossing of tissues	processing and decalcification techniques							
CO3			wledge on Microtome, its wor								
CO4			wledge on Staining techniques								
						M					
Unit No.	Title of the Ur	nit		Content of Unit	Contact Hrs.		pped CO				
1	INTRODUCTION TO 1. Introduction of histopathology, laboratory organization, care & maintenance of equipment used in histotechnology lab. 2. Safety measures in histotechnology lab reception, recording, labeling and transportation of tissue specimens. 7 CO1 3. Basic concepts of fixation and various types of fixative used in histopathology and cytopathology. 7 CO1										
2	GROSSING OF	TISSUE	automated method, compone 2. Decalcification, decalcificat	nount, sections, tissue processing and its steps, manual and ents & principle of automatic tissue processor. tion methods, types of decalcifying fluid, Processingof g media, its type and properties.	8	CC)2				
3	MICROTO			ng, various type of microtome, Microtome knives, its type cutting, fault and remedies, Section adhesive.	7	CC)3				
4	STAI	IN e		supravital staining, types of hematoxylins, hematoxylin and ections in tissue staining, mounting and mounting media, refractive index.	8	CC)4				
Refe	rence Books:	ł									
			ological Techniques, 7th Edition								
2. H	arshmohan (2017),	Textbook of Patho	ology,7th edition, JaypeePublic	cations.							
			ILT, 3rd edition, BhalaniPublica								
4. C	FA Culling, (1974) ublishers.), Handbook of H	Histopathological and Histoch	hemical techniques: Including Museum Techniques, 3rd editi	on, Butter	worth					
	earning Source:										
		nare.net/DJASMINI	EPRIYA/histopathology-introduc	ction							
				volume=8;issue=2;spage=63;epage=67;aulast=Theresa							
				MATOXYLIN-AND-EOSIN-STAINING-67250220							
5.											
			Course Articulation N	Matrix: (Mapping of COs with POs and PSOs)							
PO-P	50										

			Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
	-PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
(CO	101	102	105	104	105	100	107	100	10)	1010	1011	1012	1501	1502	1505	1504	1505	1500
(201	1	3	1	2	-	-	-	1	2	-	-	2	2	1	-	1	-	1
(CO2	1	3	1	3	-	-	-	1	3	-	-	3	3	2	-	2	-	1
(203	1	3	1	2	-	-	-	1	2	-	-	2	3	1	-	1	-	1
(CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	-	1
(205	1	3	1	2	-	-	-	1	2	-	-	2	2	1	-	1	-	1

Course Code	Course Title			At	tributes				SDGs	
DT201	PATHOLOGY	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.	
		Г	Г	Г	1		7	Г	3,4	



Effectiv	e from Session	: 2024-25								
Course	Code	DT202	Title of the Course	MICROBIOLOGY	L	Т	Р	С		
Year		II	Semester	Ш	2	1	0	3		
Pre-Rec	quisite	Nil	Co-requisite	Nil						
Course	This subject gives a general insight into the history, basics of microbiology and imparts knowledge about equipment used in microbiology.									
			Co	urse Outcomes						
CO1	This course n	nakes the students to k	now handling of instrumer	nts and sterilization techniques.						
CO2	This course makes the students to know general insight into the history, basics of microbiology.									
CO3	This course n	nakes the students to k	now imparts knowledge at	pout equipment used in microbiology.						
CO4	4 This course makes the students to know Structure, function and chemical composition of bacterial cell membranes.									

 CO5
 This course makes the students to know Biomedical waste management in a Medical Microbiology laboratory: Types of the waste generated, Segregation, Treatment, Disposal.

Unit No.	Т	itle of t	he Unit	;					Co	ntent o	of Unit					1	Contact Hrs.	Mapped CO
1	AN	DHIST	UCTION ORYO OLOGY	F	Leen Jenn • Intro shap	uwenho ier. oductior	ek, Lou n to bact ngement	is Paste erial tax	eur, Rob xonomy	ert Koc , Classi	ipline, Co ch, Joseph ification of ores, capsu	Lister, A f Bacteri	lexandei a, Morph	Fleming,	ed on size	2,	6	COI
2	Μ	IICRO	SCOPY	7	reso • Darl • Brig Fluc	lution a k groun tht Fiel prescent	nd com d illumi ld Mic xe Micr	ponents nation, roscope	s of mic care of e, Darl	roscope f micro c Fiele missior	oscope– m e. scope and d Microso n Electron	commo cope, P	n difficu hase Co	lties micr ontrast M	ometry. licroscope	2,	6	CO2
3		RUCTU BACTI	JREOF ERIA		posiStruCyto plas	tive and cture, f oplasm: mids Er	d Gram- unction Riboson ndospor	negativ and ch me, mes e: Struc	ve cell w emical sosome: cture, fo	valls, C compos s, inclus rmation	all, compo ell Membr sition of b sion bodie: n, Bacteria	ane. acterial s, nucleo ll Geneti	cell men id, chror	nbranes.		1-	6	CO3
4		A	IZATIO ND ECTIO		 Ster UV cont Bior 	ilizatior radiatio rol and nedical	n and di on, ioniz steriliza waste r	sinfecti zing rac ation in nanage	on: Var liation, dicators ment ir	ious pł filtratio 1 a Me	iology labo nysical me on, characto edical Mic Disposal,	thods of ers affec robiolog	ting steri y labora	lization, a tory: Typ	uto clave		6	CO4
5		А	SEPTIC ND ECTAN		qual Qual Qual 	ities of mical d ternary	good di isinfecta ammon	sinfecta ants – p ium co	ants. bhenol a ompoun	nd its c ds, ald	, types an compounds ehyde, ga e disinfecta	s, alcoho seous co	ol, halog ompound	en, heavy l use and	metals ar abuse of	nd	6	CO5
Refere																		
										gy. 8th	edition, Ur	niversity	Press Pu	blication.				
			IK.C.,B															
			al Micro								ein's Micro	abiology	Oth adi	tion McG	row Hill 1	Highor F	ducation	
											W.H. Free						nucation.	
		Source		come I		.,,.ixu	., 5 mi		5J. 001	contion		ernan an	a compa					
				u.ng/o	er/lectu	re note	s/mlsc/	MLSC%	20417%	620HIST	CORY%20C	F%20M	CROBIO	OGY.ppt				
			ca/ sha															
3. <u>ht</u>	tps://w	ww.hea	althline.o	com/he	alth/wh	at-is-an	<u>tiseptic</u>											
						(Course	Articul	ation M	latrix:	(Mapping	g of COs	with PO	s and PSC	Os)			
PO-P		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO CO		1	3	2	2	-	-	-	1	2	_		2	3	1	2	3	
		1	3	1	3	-	-	-	2	3	-	-	3	3	-	1	2	-
CO	3	1	3	1	2	-	-	-	1	2	-	-	2	2	2	1	2	2
CO	94	1	3	1	2	-	-	-	1	3	1	-	3	2	3	1	3	2
CO		1	3	1	2	-	-	-	1	2	2	-	2	3	1	2	2	2
		relatio	on; 2-1	<u>Mode</u> se Title	ate Co	orrelat	ion; 3-	Subst	antial	Corre	lation Att							SDC-
Course	202	1			GY		yability	Entrep	oreneurst	^{iip} D	Skill evelopment	Attributes Gen Equa	der Ei lity S	vironment ustainabilit	y Val	lue	ofessional Ethics	SDGs No.
			MICROBIOLOGY T T Development Equality Sustainability Value Ethics T T T T T 3,4															



Effective from Session	: 2024-25						
Course Code	DT203	Title of the Course	MEDICAL BIOCHEMISTRY-II	L	Т	Р	С
Year	П	Semester	Ш	2	1	0	3
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	This course Biochemistry		netabolism, metabolic disorders, laboratory test and instru-	iments	of Cli	nical	

	Course Outcomes: After the successful course completion, learners will develop following attributes:
CO1	Students will be able to learn about metabolism of carbohydrates, HMP pathway& ETC
CO2	Students will be able to learn about blood glucose regulation mechanism and its disorder, ex- Diabetes Mellitus
CO3	Students will be able to learn about Proteins and their metabolism.
CO4	Students will be able to learn about Lipids, their structure, metabolic pathways and cholesterol metabolism
CO5	Students will be able to learn about Acid-Base balance mechanism, Blood chemistryprofile, various techniques to monitor blood chemistry.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	METABOLISM OF CARBOHYDRATES	Introduction of Metabolism, Metabolism of Carbohydrates: Glycolysis, TCA cycle, Gluconeogenesis, Glycogenesis, Glycogenolysis, Hexose monophosphate Pathway. Biological Oxidation and Electron Transport Chain.	6	CO1
2	DIABETES MELLITUS	Blood glucose homeostasis and its regulation, Insulin, glucagon, C-peptide. Diabetes mellitus, types, clinical features, diabetic profile test, HbA1C, Fructosamine, GTT, Glycosuria, Hyperglycemia and Hypoglycemia.	6	CO2
3	PROTEINS	Metabolism of Proteins: Formation of ammonia, Transamination, Deamination, Urea, Cycle, Significance of Urea cycle, metabolism of Aromatic and Branched chain amino acids, Aminoaciduria.	6	CO3
4	LIPID	Metabolism of Lipids: Fatty acid synthesis, Beta oxidation of fatty acids, Ketone bodies and ketosis, Cholesterol metabolism, metabolism of Lipoproteins, Lipid profile, Hyperlipidemia, Dyslipidemia and Atherosclerosis.	6	CO4
5	ACID & BASE BALANCE	 Acid- Base balance and pH: pH and its Regulation, Metabolic and Respiratory Disorders. Principle, application, calibration and maintenance of colorimeter, Blood Chemistry analyzer, ABG analyzer, Flame photometer, Turbidimetry, Nephelometry. 	6	CO5

Reference Books:

1.DM Vasudevan, Text book of Medical Biochemistry, Jaypee Publishers.

2. M N Chatterjee&RanaShinde, Text book of Medical Biochemistry, Jayppe Publications.

3. Michael Cox, David L. Nelson, Lehninger Principles of Biochemistry, 7th edition, W.H. Freeman.

4. RanjanaChawla, Practical Clinical Biochemistry: Methods and Interpretations.

- e-Learning Source:
- 1. <u>https://youtu.be/t5DvF5OVr1Y</u>

<u>https://youtu.be/gggC9vctvBQ</u>
 <u>https://youtu.be/ufvZ8bYtyO8</u>
 <u>https://youtu.be/Q6R4o-oECxs</u>

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	2	-	-	-	1	2	1	-	2	2	1	-	1	-
CO2	1	3	1	3	-	-	-	2	3	-	-	3	3	2	-	2	-
CO3	1	3	1	2	-	-	-	1	2	2	-	2	3	1	-	1	-
CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	-
CO5	1	3	1	2	-	-	-	1	2	1	-	2	2	1	-	1	-

1-

Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes	& SDGs	

Course Code	Course Title		Attributes							
DT203	MEDICAL BIOCHEMISTRY-II	Employability	Entrepreneursh ip	Skill Developme nt	Gender Equalit y	Environment & Sustainability	Huma n Value	Professional Ethics	No.	
		Г	Г	Г	7		ſ	Г	3,4	



Effective from Sess	Effective from Session: 2024-2025									
Course Code	DT204	Title of the Course	PHARMACOLOGY	L	Т	Р	С			
Year	П	Semester	Ш	3	1	0	4			
Pre-Requisite	Nil	Co-requisite	Nil							
	types of formulations	s, dose and frequency of ad	macology with special emphasis on common drugs used lministration, side effects and toxicity, management of name, importance of manufacturing and expiry dates	toxic	effects	s, drug				

	Course Outcomes: After the successful course completion, learners will develop following attributes:
CO1	General Pharmacology & ANS: Possess a relevant knowledge in basic principles of pharmacology and its recent advances.
CO2	Autacoids, PNS & Resp. System: Understand the basic pharmacology of common drugs used, their importance in the overall treatment
	including Physiotherapy.
CO3	CVS, GIT & Miscellaneous: Understand the general principles of drug action and the handling of drugs by the body.
CO4	CNS & Hormones: Understand the contribution of both drug and physiotherapy factors in the outcome of treatment
CO5	Anti - Microbial Agents: Learn the various drugs such as Anti-leprotic& Anti-fungal Drugs, Anti-malarial Drugs, Anti-tubercular Drugs

Uni t No.	Title of the Unit				Co	ntent of U	Unit					Contac t Hrs.	Mappe d CO
1	GENERAL PHARMACOLOGY	Introduction to phar Factors modifying & kinetics of elimination-Excretic drug action-Advers	drug absorpt on- Mechani	ion – Di sm of dr	stributio	n of drugs	- Metaboli synergism	sm: Phase I & antagon	II, - Excret	ion: routes,	modes	8	CO1
2	CENTRAL NERVOUS SYSTEM & RESPIRATORY SYSTEM	Introduction to CN. alprazolam, anti-a Anesthetics – halo Alcohols – ethyl alc Anti parkinsonians NSAIDs – aspirin asthma and cough	anxiety dru thane, isoff cohol –disulf – levodopa	gs, Ant urane, s uram, – carbi	iepileptie evofluration dopa, Oj	c-phenytoi ne – Loca pioids – n	n, carbar Il Anesthe norphine –	nazepine, tics – lign naloxone	sodium ocaine – I – tramado	valproate, ist of othe ol – pentazo	General r drugs, ocine,	8	CO2
3	CARDIO VASCULAR SYSTEM & BLOOD	drugs – Beta block of other drugs-fibri drugs useful in CC diuretics. Hyperten – captopril, ramipi Antiarrhythmic drug classification – Qui	Drugs used in ischemic heart disease-nitrates-Calcium channel blockers-nifedipine, verapamil-list of other drugs – Beta blockers – propronolol, atenolol – metoprolol and antiplatelets – aspirin, clopidogrel, and names of other drugs-fibrinolytic drugs-streptokinase and other drugs, Drugs used in CCF-digoxin and list of other drugs useful in CCF, Shock. Diuretics: 4 groups – Thiazides, Loop diuretics, Potassium sparing and osmotic diuretics. Hypertension – outline of drugs used in hypertension, Rennin angiotensin system – ACE inhibitors – captopril, ramipril and names of other drugs – Receptor antagonist – losartan and list of other drugs, Antiarrhythmic drugs- classification – Quinidine, Lignocaine and amiodaron – Drugs for Hypercholesterolemia – statins. Drugs for anemia – oral & parenteral iron preparations, folic acid, vit B12 and erythropoietin. Coagulants and anticoagulants										CO3
4	HORMONES AND GIT	dexamethasone and and others, Thyroi progestin's, Androgen And anti	Contraceptives – oral and injectable, Corticosteroids – glucocorticoids – hydrocortisone-prednisolone dexamethasone and names of topical steroids – Insulin – Oral hypoglycemic –sulphonyl urea's, biguanide and others, Thyroid and Antithyroid drugs, Sex Hormones-Estrogen and antiestrogens, Progestin and An										CO4
5	CHEMOTHERAPY AND MISCELLANEO US	Introduction – Beta cloxacillin-clauvulin ceftrioxone- cefipin erythromycin, azith cotrimoxazole- Arr Anti leprosy-dapsor amphotericin B- flu metronidazole – Ar Anti-cancer drugs-1 agents- cyclophosp antibiotics- actinon azathioprine and ste	a lactum an nic acid – me, Broad sp rromycin and nino glycosic ne and clofa uconazole an uthelmintics- Introduction hamide- bu: nycin D- mo	tibiotics: sulbactu ectrum a l others les-genta zimine A nd topica • albenda – Anti sulphan	Penicili m – Co antibiotic – Quinol amycin, a Anti-mala I drugs zole-pra metabol and cisp	lin's – nat ephalospor es – Doxyc ones- cipre amikacin a arial- chlor & Anti vir ziquantel. ites- meth blatin – F	tural, semi in's – ce cycline – cl ofloxacin a ind names roquine-me aldrugs- a notrexate- Plant produ	phalexin - nloramphen nd list of o of other d efloquine a cyclovir ar 6 mercapt acts- vinb	- cefuroxi nicol-imipe ther drugs rugs Anti 7 nd artemis id anti-HIV o purine- latin- vinc	me – cefiz num-Macro and sulfona rB-first line inins, Anti- 7, Anti prot Alkylating ristine-taxa	kime – blides – umides- e drugs, fungal- ozoals-	8	CO5
Refer	ence Books:	azaunoprine and ste	ioius.										
	K.D. Tripathi Jaypee, Essen	ial of Medical Pharm	acology, B	rothers	Medical	Publishe	rs.						
2.Gac	ldum Gaddum's Pharmacolo	gy											
	R.S. Satoskar & Dr. S.D. Bh						d 19t ^h Ed	ition 2005	by Popul	ar Prakash	an		
	antx, &Carr, Pharmacology p				Wilkins	5.							
	odman Pharmacological basi	s of Therapeutics, L.S.	S. Gilman A	1									
	earning Source: tps://youtu.be/a01WFQvQKw	8											
	tps://youtu.be/qhiMmNZjHR												
	tps://youtu.be/-znHCAu5On												
	tps://youtu.be/t2tKyjj7u5Y												
		Con	ırse Articula	tion Ma	trix• (M	anning of	COs with	POs and P	SOs)				
PO-PSO										DCCC	DCCC	FGG :	Page
CO	PO1 PO2 PO3		PO6 PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	
CO1 CO2	2 <u>3</u> - <u>3</u> <u>3</u> -		2 -	-	-	-	-	- 1	3	- 3	1 2	- 3	2 3
002	5 5 -		-	-	-	-			5	5	2	3	3

CO3	2	3	-	-	-	2	-	-	-	-	-	1	3	2	1	3	2
CO4	3	3	-	-	-	-	-	-	-	-	-	-	2	3	2	2	3
CO5	3	3	-	-	-	3	-	1	-	-	-	-	3	3	2	3	3

Course Code	Course Title		Attributes									
DT204	PHARMACOLOGY	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.			
	111111111002001			\checkmark			\checkmark	\checkmark	3,4			



Effectiv	Effective from Session: 2024-25											
Course	e Code	DT205	Title of the Course	IMMUNOLOGY & SEROLOGY	L	Т	P	C				
Year		Π	Semester	III	2	1	0	3				
Pre-Re	quisite	Nil	Co-requisite	Nil								
Course	e Objectives This course has been formulated to impart basic aspects of immunity, antigens, antibodies, various serological reactions, techniques and their utility in laboratory diagnosis of human diseases.											
	Course Outcomes: After the successful course completion, learners will develop following attributes:											
CO1	The students of the immun		tific approaches/techniques th	at are used to investigate various diseases, historical backgro	und, g	eneral c	concepts	8				
CO2			tific approaches/techniques the cell epitopes; T dependent and	at are used to investigate Antigens and haptens: Properties, for d T independent antigens.	oreigni	ness, m	olecular	r				
CO3	The students response	will learn scie	entific approaches/techniques	that are used to investigate Mechanism of humoral and c	ell me	diated i	mmune	e				
CO4	The students will learn scientific approaches/techniques that are used to investigate Laboratory tests for demonstration of antigen antibody reaction such as agglutination, precipitation, ELISA, RIA, Immune of fluorescence.											
CO5	The students will learn scientific approaches/techniques that are used to investigate Rheumatologic diseases, etiology and pathogenesis and lab investigations.											

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	INTRODUCTION AND HISTORY OF IMMUNOLOGY	 Historical background, general concepts of the immune system, innate and adaptiveimmunity; active and passive immunity; primary and secondary immune response. Cell and organs of immune system, Phagocytosis. 	6	CO1
2	ANTIGENS AND ANTIBODY	 Antigens and haptens: Properties, foreignness, molecular size, heterogeneity, B and T cell epitopes; T dependent and T independent antigens. Antibodies: Historical perspective of antibody structure; structure, function and properties of the antibodies; different classes, subclasses and biological activities of antibodies; concepts of antibody diversity. Introduction & m e c h a n i s m of hybridoma technology, monoclonal antibodies, polyclonal antibody. 	6	CO2
3	IMMUNE RESPONSE, MHC AND COMPLEMENT	 Mechanism of humoral and cell mediated immune response Introduction of Major Histocompatibility Complex, organization of MHC and inheritance in humans; Antigen presenting cells, antigen processing and presentation. Complement system and complement fixation test. 	6	CO3
4	ANTIGEN-ANTIBODY REACTION	 Laboratory tests for demonstration of antigen antibody reaction such as agglutination, precipitation, ELISA, RIA, immune of fluorescence, PCR 	6	CO4
5	RHEUMATOLOGICA L DISORDERS	 Rheumatological diseases, etiology and pathogenesis and lab investigations, vaccine production and vaccination schedule. 	6	CO5
	ence Books:			-
1. A	bbas AK .LichtmanAH.Pilla	iS.(2007).CellularandMolecularImmunology.6thedition Saunders Publication, Philadelphia.		

Abbas AK ,LichtmanAH,PillaiS.(2007).CellularandMolecularImmunology.6thedition Saunders Publication, Philadelphia.
 Goldsby RA, Kindt TJ, Osborne BA. (2007). Kuby's Immunology. 6th edition W.H. Freeman and Company, New York.

3. Murphy K, Travers P, Walport M. (2008). Janeway's Immunobiology. 7th edition Garland Science Publishers, New York.

4. Delves P,Martins,BurtonD,RoittIM.(2006).Roitt'sEssential Immunology.11thedition Wiley- Blackwell Scientific Publication, Oxford.

e-Learning Source:

1. https://en.wikipedia.org/wiki/Immune_system

2. <u>https://www.creative-diagnostics.com/blog/index.php/immunogen-antigen-hapten-epitope-and-adjuvant/</u>

3. https://www.webmd.com/rheumatoid-arthritis/an-overview-of-rheumatic-diseases

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	2	-	-	-	1	2	1	-	2	2	1	-	1	-
CO2	1	3	1	3	-	-	-	2	3	-	-	3	3	2	-	2	-
CO3	1	3	1	2	-	-	-	1	2	2	-	2	3	1	-	1	-
CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	-
CO5	1	3	1	2	-	-	-	1	2	1	-	2	2	1	-	1	-

Course Code	Course Title			At	tributes				SDGs
DT205	IMMUNOLOGY & SEROLOGY - I	Employability	Entrepreneursh ip	Skill Developme nt	Gender Equalit y	Environment & Sustainability	Huma n Value	Huma n Value Professional Ethics	
		ſ	ſ	ſ	ſ		7	Г	3,4



Effective from Session: 2	Effective from Session: 2018-19										
Course Code	DT206	Title of the Course	RENAL DIALYSIS TECHNOLOGY	L	Т	Р	С				
Year	П	Semester	Ш	2	1	0	3				
Pre-Requisite	Nil	Nil Co-requisite Nil									
Course Objectives		e student will be made aware of our environment in general, natural resources, ecosystems, environmental pollution social issues related to environment.									

	Course Outcomes
CO1	To study about the Fluid and Electrolyte
CO2	To study about the Urinary Tract infection
CO3	To study about Renal Stone Diseases.
CO4	To study Hypertension.
CO5	To study Nephrotic syndrome.

Unit No.	Title of the Unit	Content of Unit	Contac t Hrs.	Mappe d CO						
1	FLUID AND ELECTROLYTE	Fluid and electrolyte disorders • Hyponatremia, hypernatremia, hypokalemia& hyperkalemia: Etiology, clinical presentation and management • Disorders of calcium, phosphorous & magnesium ions. • Acid- base disorders: Basics of ABG • Metabolic acidosis & metabolic alkalosis: pathophysiology, etiology, clinical features and management.	6	CO1						
2	URINARY TRACT INFECTIONS	Definition, types of UTI, risk factors, diagnosis, treatment	6	CO2						
3	RENAL STONE DISEASES	Renal stone diseases, inherited and cystic renal diseases • Composition of kidney stones, risk factors for recurrent stones, clinical presentation, prevention of recurrent stones & treatment.	6	CO3						
4	HYPERTENSION	Normal BP control, definition, evaluation, primary & secondary HTN, complications, antihypertensive drugs.	6	CO4						
5	NEPHROTIC SYNDROME	Definition, clinical features, causes (MCNS, FSGS, MGN), Primary & secondary NS, complications, management • Acute glomerulonephritis/RPGN- definition, causes (PSGN, vasculitis, anti GBM, SLE, HSP), clinical features, management.	6	CO5						
1 17 '										
		seases, Fluid, Electrolytes & Acid-Base Balance, CBS Pub, 2 nd Edi, 2020. ystem and its disorders, Taneesha publishers.								
	<u> </u>	ystem and its disorders, Taleesna publishers. pgy, CBS Publications& Distributors pvt.								
		of Clinical Nephrology, CBS Publications pvt.								
		onic Kidney Disese management, Wolters, 2nd Edi, 2014								
		, Handbook of Nephrology, Nephrology Publ, 5th edi, 2013.								
	7. Schrier R.W, Diseases of the Kidney and The Urinary Tract.									
	e-Learning Source:									
		/default/files/course-material/2020-10/UNIT-I 15.pdf								
		sci/pdf/RAPSCI.MS.ID.555586.pdf								
3 ht	tns://ourworldindata.org/world_r	population_growth								

3. <u>https://ourworldindata.org/world-population-growth</u>

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
PO-PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO	101	102	100	10.	1.00	100	10/	100	10/	1010	1011	1012	1501	1002	1000	150.	1500
CO1	1	3	1	2	-	-	-	1	2	1	-	2	-	1	2	-	3
CO2	2	3	2	2	-	-	-	1	3	1	-	3	-	2	1	-	2
CO3	1	3	1	2	-	-	-	1	2	-	-	2	-	1	2	-	3
CO4	2	3	1	2	-	-	-	1	3	-	-	3	-	2	3	-	3
CO5	1	3	1	2	-	-	-	1	2	1	-	2	-	1	2	-	3

			Attibu									
Course Code	Course Title		Attributes									
DT206	RENAL DIALYSIS	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.			
	TECHNOLOGY	7	1	7	1		7	Ţ	3,4			



Effectiv	e from Session	n: 2024-25		grai University, Lucknow					
Course	Code	DT207	Title of the Course	IMMUNOLOGY, SEOLOGY & MICROBOLOGY LAB	L	Т	Р	C	
Year		П	Semester	III	0	0	4	2	
Pre-Rec	quisite	Nil	Co-requisite	Nil					
Course	Objectives	The student will respective SOPS		nt type of Clinical aspects of Immunology, Serology & Microbiolo	ogy aco	cording	to		
				Course Outcomes					
CO1	Students will	l be able to learn	about Hemoglobin Dete	ection Technique, Total RBC counting technique, PCV					
CO2	Students will	l be able to learn	about Red cell Indices,	Blood smear, GBP					
CO3	Students will	l be able to learn	about G-6PD, Leucocyt	e count, ALC techniques					
CO4	Students will be able to learn about toxic granulation of neutrophil, PT & NR, APTT								
CO5	Students will	l be able to learn	about SICKLE TEST, P	lasma HB, Reticulocyte count techniques.					

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mappe d CO						
1	HEMOGLOBIN DETECTION TECHNIQUE	1. Determination of hemoglobin by various methods.		CO1						
2	TOTAL RBCCOUNTING TECHNIQUE	2. Determination of Total RBC count.		CO1						
3	PCV	3. Determination of PCV.		CO1						
4	RED CELL INDICES	4. Determination of red cell indices.		CO2						
5	BLOOD SMEAR	5. Demonstration of hypochromic microcytic slide.		CO2						
6	GBP	6. General blood picture.		CO2						
7	G-6PD	7. Determination of G-6-PD.		CO3						
8	LEUCOCYTE COUNT	8. Differential Leucocyte Count.	60	CO3						
9	ALC	9. Absolute leucocyte count.		CO3						
10	NEUTROPHIL	10. Demonstration of toxic granulation of neutrophil.		CO4						
11	PT & NR	11. Toperform PT and Calculate INR.		CO4						
12	APTT	12. Toperform APTT.		CO4						
13	SICKLE TEST	13. Toperform sickling test.		CO5						
14	PLASMA HB	14. Determination of Plasma Hemoglobin.		CO5						
15	RETICULOCYTE COUNT	15. To perform reticulocyte count.		CO5						
Referen	nce Books:		1							
1. Prafu	Il B. Godkar: Textbook of Medical Laboratory T	Yechnology								
2. Dr.R	amnikSood: Textbook of Medical Laboratory Te	echnology								
e-Lea	rning Source:									
1. <u>https://www.slideshare.net/peddanasunilkumar/introduction-to-pathology-ppt</u>										
2. htt	ps://www.ucsfhealth.org/medical-tests/semen-									
ana	alysis#:~:text=Semen%20analysis%20is%20one%	- 20of,have%20a%20male%20infertility%20problem.								

3. https://www.youtube.com/watch?v=wZCKrseSIOE

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
PO-PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO									/								
CO1	1	3	1	2	-	-	-	1	2	-	-	2	-	1	-	1	-
CO2	1	3	1	3	-	-	-	1	3	-	-	3	-	2	-	2	-
CO3	1	3	1	2	-	-	-	1	2	-	-	2	-	1	-	1	-
CO4	1	3	1	2	-	-	-	1	3	-	-	3	-	1	-	1	-
CO5	1	3	1	2	-	-	-	1	2	-	-	2	-	1	-	1	-

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title			At	tributes				SDGs
DT207	IMMUNOLOGY, SEOLOGY &	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.
	MICROBOLOGY LAB	Ţ	1	ſ	ſ		Г	Ţ	3,4



	Effective from Session: 2024	4-25						
	Course Code	DT208	Title of the Course	PATHOLOGY LAB	L	Т	Р	С
ĺ	Year	II	Semester	Ш	0	0	4	2
	Pre-Requisite	Nil	Co-requisite	Nil				
	Course Objectives	The student wi	ll be taught about differ	ent type of Clinical aspects of Pathology according to respec	tive S	OPS		

	Course Outcomes
CO1	Students will be able to learn about Glasswares used in histopathology lab, alcohol preparation, formalin preparation
CO2	Students will be able to learn about honing and stopping technique, grossing of tissue, tissue processing
CO3	Students will be able to learn about section cutting techniques, smear fixation techniques
CO4	Students will be able to learn about H & E staining techniques
CO5	Students will be able to learn about mounting and preservation of slides

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	GLASSWARE	1. Demonstration of glass wares and equipment used in histopathology lab.		CO1
2	ALCOHOL PREPARATION	2. To prepare alcohol of different concentration.		CO1
3	FORMALIN PREPARATION	3. To prepare formalin from stock solution.		CO2
4	HONING AND STOPPING	4. To sharp knife by honing and stropping.		CO2
5	GROSSING OF TISSUE	5. Grossing of tissue.	60	CO3
6	TISSUE PROCESSING	6. Toperform tissue processing by manual method.	00	CO3
7	SECTION CUTTING	7. Toperform section cutting of paraffin embedded tissue.		CO4
8	SMEAR FIXATION	8. To fix the smear on glass slide.		CO4
9	H & E STAINING	9. To perform hematoxylin and eosin staining		CO5
10	PRESERVATION OF SLIDE	10.Mounting and preservation of slide		CO5
Refer	ence Books:			

1. Bancroft's Theoryand Practice of Histological Techniques, 7th Edition, Elsevier Publications

2. CFA Culling, (1974), Handbook of Histopathological and Histochemical techniques: Including Museum Techniques, 3rd edition, Butter worth publishers.

e-Learning Source:

1. https://www.slideshare.net/DJASMINEPRIYA/histopathology-introduction

2. <u>https://www.ijohsjournal.org/article.asp?issn=2231-6027;year=2018;volume=8;issue=2;spage=63;epage=67;aulast=Theresa</u>

3. https://www.slideshare.net/VarugheseGeorge/hematoxylin-and-eosin-staining-67250220

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
PO-PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO																	
CO1	1	3	2	2	-	-	-	1	2	1	-	2	-	2	2	1	-
CO2	1	3	1	3	-	-	-	2	3	-	-	3	-	1	1	1	-
CO3	1	3	1	2	-	-	-	1	2	2	-	2	-	1	1	1	-
CO4	1	3	1	2	-	-	-	1	3	-	-	3	-	1	2	1	-
CO5	1	3	1	2	-	-	-	1	2	1	-	2	-	1	1	1	-

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title			At	tributes				SDGs
DT208	PATHOLOGY LAB	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.
		ſ	Ţ	Г	5		7	Г	3,4



2024 25

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Effective from Session: 20	24-25													
Course Code	DT209	Title of the Course	MEDICAL BIOCHEMISTRY- II LAB	L	Т	Р	С							
Year	П	Semester	Ш	0	0	4	2							
Pre-Requisite	Nil	Co-requisite	Nil											
Course Objectives	The student w	tudent will be taught about different type of Clinical aspects of Medical Biochemistry according to respective SOPS												

	Course Outcomes
CO1	Students will be able to learn about Picratemethod, Benedict's/Uristixmethod
CO2	Students will be able to learn about Rothera Nitroprussidetest, Serum Amylase, Serum Lipase estimation
CO3	Students will be able to learn about Malloy-Evelyn method, BCG method
CO4	Students will be able to learn about Uricase/ PAP method
CO5	Students will be able to learn aboutSemi Autoanalyzer. Flame Photometer

Unit No.	Ti	tle of t	he Unit							Conte	nt of Un	it				Contact Hrs.	Mapped	I CO
1		-		THOD.		1.1	Estimati	on of S	erum C	reatinine	e by Alka	line Picra	ate metho	od.			CO1	
2		ME	ГНОД	RISTE		2.7	Γoperfo	rm urin	e sugar	byBene	dict's/ U	ristix me	thod.				CO1	
3	RO	THER	A NITE TES		SSIDE	3.7	Гoperfo	rm urin	e Keton	ie bodya	nalysis b	y Rother	a Nitropi	usside tes	st.		CO2	
4	S	ERUM	AMYI	LASE					erum An								CO2	
5			4 LIPA						erum Lij							60	CO3	
6	MAL	LOY-	EVELY	'N ME'	ГНОД								lyn metho				CO3	
7]	BCG M	IETHO	D			Globuli	n & A/0	Gratio.		-		nd calcula	ation of			CO4	
8	URI	CASE/	' PAP N	1ETHO	D	8.1	Estimati	on of S	erum ur	ic acid b	y Uricase	e/ PAP m	nethod.				CO4	
9	SEI	MI AU	TOAN	ALYZE	ER					i Autoan							CO5	
10	FLAME PHOTOMETER 10. Demonstration of Flame Photometer. ference Books: 10. Demonstration of Flame Photometer.																CO5	
	1. <u>Ranjna Chawla</u> , Practical Clinical Biochemistry: Methods and Interpretations. 2. Praful B. Godkar, DarshanP.Godkar, Textbook of Medical Laboratory Technology.																	
										erpretation rrelation								
					tical Bi			sincipie	esandco	rrelation	8.							
	earning			of y I Tac			isu y.											
				50Vr1Y	7													
				vctvBQ														
3. h	nttps://y	outu.be	/ufvZ8l	oYtyO8														
4. h	nttps://yo	outu.be/	Q6R40-	oECxs														
						С	ourse A	rticula	ation M	atrix: (N	Apping	of COs	with POs	andPSC)s)			
PO-I	PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
С	0	rui	F02	103	r04	105	100	10/	FU8	109	1010	FOIL	F012	1301	1502	1303	r504	1303
CC	-	1	3	2	2	-	-	-	1	2	1	-	2	-	2	2	1	-
CC		1	3	1	3	-	-	-	2	3	-	-	3	-	1	1	1	-
CC		1	3	1	2	-	-	-	1	2	2	-	2	-	1	1	1	-
CC		1	3	1	2	-	-	-	1	3	-	-	3	-	1	2	1	-
CC)5	1	3	1	2	-	-	-	1	2	1	-	2	-	1	1	1	-

Course Code	Course Title			At	tributes				SDGs	
DT209	MEDICAL BIOCHEMISTRY-II LAB	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.	
	BIOCHEMIST KT-IILAD	Г	Г	7	Г		ſ	7	3,4	



INTEGRAL UNIVERSITY, LUCKNOW INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES & RESEARCH

DEPARTMENT OF PARAMEDICAL SCIENCES

BACHELOR OF SCIENCE IN DIALYSIS TECHNOLOGY (B.Sc. DT)

SYLLABUS

YEAR/ SEMESTER: II/IV



Integral University, Lucknow Department of Paramedical Sciences Study and Evaluation Scheme

Program: B.Sc. Dialysis Technology

Period Per S. Type Course **Evaluation Scheme** Sub. Total hr/week/sem N. **Course Title** of Paper Credit code Total Credits TA ESE L Т Р СТ Total THEORIES Renal Dialysis Technology-II 1 DT210 Core 2 0 40 20 60 40 100 2:1:0 3 1 DT211 Applied Pharmacology 2 Core 2 1 0 40 20 60 40 100 2:1:0 3 Clinical Biochemistry 3 DT212 Core 2 0 40 20 60 40 100 2:1:0 3 1 40 DT213 Applied Microbiology 2 40 20 60 100 2:1:0 3 4 Core 1 0 2 40 20 60 40 100 2:1:0 3 5 DT214 **Basics of Patient Care** Core 0 1 6 DT215 Management of Dialysis Unit 2 0 40 20 60 40 100 2:1:0 3 Core 1 PRACTICAL Clinical Biochemistry Lab DT216 Core 0 0 4 40 20 60 40 100 0:0:2 2 1 Renal Dialysis Technology-II Lab 2 DT217 Core 0 0 4 40 20 60 40 100 0:0:2 2 40 3 DT218 Clinical Posting 0 0 40 20 60 100 0:0:2 3 Core 4 Total 12 06 16 400 200 600 400 1000 26 25

S.	Course		Туре			United Nation Sustainable					
N.	Course code	Course Title	ofPaper	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	Development Goal (SDGs)
		THEORIES									
1	DT210	Renal Dialysis Technology-II	Core			\checkmark					3,4
2	DT211	FF	Core				\checkmark				3,4
3	DT212	Clinical Biochemistry	Core								3,4
4	DT213	Applied Microbiology	Core								3,4
5	DT214	Basics of Patient Care	Core				\checkmark				3,4
6	DT215	Management of Dialysis Unit	Core								3,4
		PRACTICAL									
1	DT216	Clinical Biochemistry Lab	Core								3,4
2	DT217	Renal Dialysis Technology-II Lab	Core				\checkmark				3,4
3	DT218	Clinical Posting	Core				\checkmark				3,4

T: Tutorials P: Practical CT: Class Test L: Lecture TA: Teacher Assessment ESE: End Semester Examination, AE= Ability enhancement, DSE- Discipline Specific Elective, Sessional Total: Class Test + Teacher Assessment End Semester Examination (ESE)

Subject Total: Sessional Total +

Semester-IV



Effective Session: 2	024-25											
Course Code	DT210	Title of the Course	RENAL DIALYSIS TECHNOLOGY-II	L	Т	P	C					
Year	П	Semester	IV	2	1	0	3					
Pre-Requisite	Nil	Co-requisite	Nil									
	The course is design	ed to help the students to d	evelop an understanding of the basic concepts, Principles	, equip	ment,							
Course Objectives	composition and men	mbrane of dialysis, Water t	reatment and reuses, anticoagulation therapy in dialysis w	ith em	phasis	on clini	cal					
Course Objectives	Course Objectives application to practice.											
		Co	urse Outcomes									
CO1 Students wi	ll be able to understand b	asic concepts of Dialysis										
CO2 Students wi	ll be able to gain knowle	dge on Water Treatment ar	nd Reuse									
CO3 Students wi	j j											
CO4 Student will	be able to understand Co	omposition of Dialysate and	Anticoagulation									
CO5 Students will	Students will be aware of Complications during hemodialysis											

Contact Mapped Unit No. Title of the Unit **Content of Unit** Hrs. CO 1. The concept (Brief history, definition, mechanism) Components of Dialysis Access, blood flow, anticoagulant, dialysate, initiation of dialysis, Indications of dialysis). 2. Hemodialysis: Basics (Blood circuit: tubing, pump, dialyzer, flow rate, dialysate circuit, concentrates, delivery systems, flow rate). 1 3. Peritoneal Dialysis: Basic concepts. Dialysis 4. Solute transport mechanism in both types of dialysis 8 CO1 5. Dialysis teams: Dialysis Team (Doctors, Technologist, Nurses, Technician, Renal Dietician) rights, responsibilities and relationship with patients 1. Purpose 2. Preventing harm to patients 3. Preventing harm to equipment. 4. How does water become impure? 5. Types of contaminants and effects on Patients - Microbiological pollution - Solid impurities - Chemical impurities. Water 6. Components of water treatment plant & their arrangement (Feed water components, 2 Treatment and R.O process). CO₂ 7. Monitoring water treatment plant continuously. 8 Reuse 8. Periodic monitoring Microbiological testing -Chemical monitoring (Chloramines, Na+, K+) - Routine blood chemistries, Monitoring Pt. Symptoms. 9. Disinfection 10. Water quality 11. AAMI Standard Ultra-pure water 12. Dialyzer reprocessing and reuse of dialyzers 1. Machine front panel 2. Blood Circuit 3. Dialysate Circuit. 4. Proportioning system Equipment and 5. Various Alarms and safety profile Dialysis 6. Temperature 3 CO3 8 Membrane 7. UF Controller 8. Disinfection 9. Characteristics (Molecular weight cut off; Ultrafiltration coefficient (Kuf); Mass transfer coefficient (KoA) and efficiency; Low and high flux; Clearance(K) Biocompatibility, Newer membranes/ High performance membranes 1. The concept (Brief history, definition, mechanism) Components of Dialysis Access, blood **Composition of** flow, anticoagulant, dialysate, initiation of dialysis, Indications of dialysis). 4 2. Types of dialysate solution Dialysate and 3. Composition of acid, bicarbonate Anticoagulation 4. Electrolytes managed through dialysate solution CO₄ 8 5. RO water for composition, mixing proportional 6. Anticoagulation • Heparin including Low Molecular Weight • Heparin • Warfarin • Regional citrate anticoagulation • Antiplatelet Drugs • Thrombolytic agents 1. Biochemical investigations for dialysis patients and its significance. 2. Urea Kinetic modelling. 3. Mechanisms of solute transport Complications CO5 8 5 4. Solute removal from the perspective of the dialyzer during 5. Concept of clearance • URR, spKt/V, eKt/V • Solute removal from the patient perspective hemodialysis • Access re-circulation • Cardiopulmonary re-circulation • Urea nitrogen generation

Reference Books:

1. Kasi Visweswaran, Handbook of dialysis, Bhalani Publication 1st Edition, 2022.

2. Anjani Sharma, Handbook of Dialysis Technician, Mount book Pub, 2nd edi, 2022.

3. Allen R Nisenson, Handbook of Dialysis Technology, Elsevier, 1st Edi, 2017.

4. Judith.Z.Kallenbach, Review of Hemodialysis, Elsevier, 9th Edition, 2016.

5. John T Daugirdas & Peter G Blake, Hand Book of Dialysis, Wolters Kluwer Pvt, 5th Edi, 2014.

e-Learning Source:

1. https://www.slideshare.net/DJASMINEPRIYA/histopathology-introduction

2. <u>https://www.ijohsjournal.org/article.asp?issn=2231-6027;year=2018;volume=8;issue=2;spage=63;epage=67;aulast=Theresa</u>

3. <u>HTTPS://WWW.SLIDESHARE.NET/VARUGHESEGEORGE/HEMATOXYLIN-AND-EOSIN-STAINING-67250220</u>

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
СО	101	102	105	104	105	100	10/	100	10)	1010	1011	1012	1501	1502	1505	1504	1505	1500
CO1	1	3	1	2	-	-	-	1	2	-	-	2	2	1	-	1	-	1
CO2	1	3	1	3	-	-	-	1	3	-	-	3	3	2	-	2	-	1
CO3	1	3	1	2	-	-	-	1	2	-	-	2	3	1	-	1	-	1
CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	-	1
CO5	1	3	1	2	-	-	-	1	2	-	-	2	2	1	-	1	-	1

	Course Code	Course Title			Att	tributes				SDGs	
ſ	DT210	RENAL DIALYSIS	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.	
		TECHNOLOGY-II	1	Г	1	1		1	7	3,4	



Effective Session: 2024	4-25													
Course Code	DT211	Title of the Course	APPLIED PHARMACOLOGY	L	Т	Р	C							
Year	П	Semester	IV	2	1	0	3							
Pre-Requisite	Nil													
Course Objectives	This subject gives used in microbiolog	s subject gives a general insight into the history and basics of microbiology and imparts knowledge about equipment												

	Course Outcomes
CO1	Students will be able to understand the pharmacology of Diuretics.
CO2	Students will be able to understand the pharmacology of Anti-Hypertensives.
CO3	Students will be able to understand the pharmacology of Drugs and Dialysis.
CO4	Students will be able to understand the concepts of hemodialysis concentrations.
CO5	Students will be able to understand the peritoneal dialysis.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO							
1	Diuretics	1. Diuretics: classification, actions, dosage, side effects & contraindications.	6	CO1							
2	Anti-hypertensives	 Anti-hypertensives: classification, actions, dosage, side effects & contraindications, special reference during dialysis, vasopressors, drugs used in hypotension 	6	CO2							
3	 5. Heparin, low molecular weight heparin and heparin-induced thrombocytopenia 6. Protamine sulphate is antidote and indication. 7. Alternative anticoagulants. 8. Formalin, citrate, sodium hypochlorite, hydrogen peroxide: role as disinfectants & adverse effects of residual particles applicable to formalin. 4. Hemodialysis concentrates 1. Hemodialysis concentrates: composition & dilution (acetate & bicarbonates) 										
4	Hemodialysis concentrates	1. Hemodialysis concentrates: composition & dilution (acetate & bicarbonates)	6	CO4							
5	1. Peritoneal dialysis fluid in particular hypertonic solutions: composition.										
Refere	ence Books:										
1. Joh	n T. Daugirdas , Peter G. Bla	ke, et al. Handbook of Dialysis 22 November 2014.									
2. Joh	n T. Daugirdas. Handbook of	Chronic Kidney Disease Management, 2nd South Asian ed. 1 January 2018.									
3. B.C	C. Bhagavan, I Clement, P. V.	Ramachandran. Textbook on Renal Dialysis Paperback – 1 January 2017.									
		Juideline for the Evaluation and Management of Chronic Kidney Disease. VOLUME 105 ISSU	E 4S APF	RIL 2024.							
Hir Oct	nmelfarb (Editor), Giuseppe I tober 2015.	Lameire (Editor), David J. Goldsmith (Editor), Christopher G. Winearls (Editor), Jonathan Remuzzi (Editor). Oxford Textbook of Clinical Nephrology (Set of 3): Three-Volume Pack Prod	uct Bundle	- 29							
	arning Source:										
		r/lecture_notes/mlsc/MLSC%20417%20HISTORY%20OF%20MICROBIOLOGY.ppt									
2. <u>htt</u>	ps://www.tru.ca/_shared/ass	ets/Microbiology_Lab_Safety39696.pdf									
3. <u>ht</u>	tps://www.healthline.com/he	alth/what-is-antiseptic									
		Course Articulation Matrix: (Mapping of COs with POs and PSOs)									
PO-I	PSO = PO1 = PO2 = PO2			DSO5							

					U	ourse r	M utur		ati ix. (1	viapping	, or COS	with I O	s anu i Sv	JS)			
PO-PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
СО	FOI	FO2	FUS	F04	FUS	100	10/	100	F09	FOID	FOIT	FO12	1301	F302	1303	F304	1303
CO1	1	3	2	2	-	-	-	1	2	-	-	2	3	1	2	3	-
CO2	1	3	1	3	-	-	-	2	3	-	-	3	3	-	1	2	-
CO3	1	3	1	2	-	-	-	1	2	-	-	2	2	2	1	2	2
CO4	1	3	1	2	-	-	-	1	3	1	-	3	2	3	1	3	2
CO5	1	3	1	2	-	-	-	1	2	2	-	2	3	1	2	2	2

Course Code	Course Title		Attributes								
DT211	APPLIED PHARMACOLOGY	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.		
		1	Г	1	7		5	1	3,4		



Effective Session: 2024	4-25																
Course Code	DT212	Title of the Course	CLINICAL BIOCHEMISTRY	L	Т	Р	C										
Year	II	Semester	IV	2	1	0	3										
Pre-Requisite	Nil	Co-requisite	Nil														
Course Objectives	This paper gi	ves a brief understanding abou	at various types of function tests, acid base balance and associate	ciated	disorde	rs.	paper gives a brief understanding about various types of function tests, acid base balance and associated disorders.										

	Course Outcomes: After the successful course completion, learners will develop the following attributes:								
CO1	Students will be able to gain knowledge about Liver function tests								
CO2	2 Students will be able to gain knowledge about Renal function tests								
CO3	Students will be able to gain knowledge about Cardiac function tests								
CO4	Students will be able to gain knowledge about Gastric function tests								
CO5	Student will be able to gain knowledge about Acid base balance, arterial blood gas analysis								

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	LIVER FUNCTION TEST	Liver function tests: Introduction, bile pigment metabolism, jaundice and its types, Estimation of Bilirubin, Bile salt, Bile pigments, urobilinogen, SGPT/ALT, SGOT/AST, ALP, GGT, Viral Hepatitis.	6	CO1
2	KIDNEY FUNCTION TEST	Renal Function Test: Introduction, Glomerular filtration rate, renal threshold, Urea, Creatinine, Uric Acid, Sodium, Potassium, Creatinine Clearance test, Urea clearance test, examination of renal calculi.	6	CO2
3	CARDIAC FUNCTION TEST	Cardiac Function test: Introduction, myocardial infarction, CHD, Biochemical markers of Heart diseases, Role of laboratory in monitoring heart diseases.	6	CO3
4	GASTRIC FUNCTION TEST	Gastric function Test: Introduction, gastric secretions, total and free acid, stimulation test, physical & chemical examination of gastric secretions. Tumor markers: Introduction, types, applications.	6	CO4
5		Acid base balance, action of buffer system, Hb buffers, respiratory and metabolic acidosis,	6	CO5
-	AND ANALYSIS ence Books:	respiratory and metabolic alkalosis, arterial blood gas analysis, blood gas analyzer.	0	005
		cal Biochemistry, Jaypee Publishers.		
		extbook of Medical Biochemistry, Jaypee Publications.		
	•	chninger Principles of Biochemistry, 7 th edition, W.H. Freeman.		
		l Biochemistry: Methods and Interpretations.		
5. Sin	ngh &Sahni, (2008), Introductor	y Practical Biochemistry,2 nd edition, Alpha Science.		
		nical Chemistry,6thedition,ElsevierPublications.		
	arning Source:			
	tps://youtu.be/t5DvF5OVr1Y			
	tps://youtu.be/gggC9vctvBQ			
	tps://youtu.be/ufvZ8bYtyO8			
4. <u>htt</u>	tps://youtu.be/Q6R4o-oECxs			

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	2	-	-	-	1	2	1	-	2	2	1	-	1	-
CO2	1	3	1	3	-	-	-	2	3	-	-	3	3	2	-	2	-
CO3	1	3	1	2	-	-	-	1	2	2	-	2	3	1	-	1	-
CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	-
CO5	1	3	1	2	-	-	-	1	2	1	-	2	2	1	-	1	-

Course Code	Course Title			Att	tributes				SDGs	
DT212	CLINICAL BIOCHEMISTRY	Employability	Entrepreneursh ip	Skill Developme	Gender Equalit	Environment & Sustainability	Huma n Value	Professional Ethics	No.	
	biocilladio int	Г	Г	л. Г	у Г	Sustainaointy	value √	Г	3,4	-



Effective from Session	: 2024-2025											
Course Code	DT213	Title of the Course	APPLIED MICROBIOLOGY	L	Т	Р	С					
Year	II	Semester	IV 3 1									
Pre-Requisite	Nil	Co-requisite	Nil									
Course Objectives			to develop an understanding of Sterilization and disinfectior for various urinary and blood born infections with emphasis				n to					

	Course Outcomes: After the successful course completion, learners will develop the following attributes:
CO1	Students will be able to understand the basics of Sterilization and disinfection.
CO2	Students will be able to understand the importance of Sterilization and disinfection.
CO3	Students will be able to understand the health care-associated infections.
CO4	Students will be able to understand Urinary tract infections.
CO5	Students will be able to understand Blood borne viral infections.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO						
1	CSSD	 Sterilization and disinfection - classification, principles, methods Central sterile supply department (CSSD) functioning and importance 	8	CO1						
2	Importance of sterilization and disinfection	 Disinfection of instruments used in patient care Disinfection of patient care unit Infection control measures for ICUs 	8	CO2						
3	Health care- associated infections	 Surgical site infections Ventilator associated pneumonia Catheter associated blood stream infections Antibiotic associated diarrhea 	8	CO3						
4	Urinary tract infections1. Anatomy of Urinary System 2. Types of infections 3. Etiology 4. Pathogenesis 5. Laboratory diagnosis - Specimen collection, processing, interpretation									
5	Blood borne viral infections	 Morphology, pathogenesis, clinical features, laboratory diagnosis and prophylaxis of following viral infections Hepatitis B, D and C virus Human immunodeficiency virus 	8	CO5						
	ence Books:									
		R), Textbook of Microbiology, Orient Longman, 10th Edi, 2017.								
		ey Practical Medical Microbiology, Relx India Pvt, 14th Edi, 2018.								
		t of Microbiology, APC, 6th edi, 2021.								
		extbook of Microbiology, All win Publication, 1st Edi, 2019								
	earning Source:									
	ps://youtu.be/a01WF									
	ps://youtu.be/qhiMn									
	ps://youtu.be/-znHC									
4. <u>htt</u>	<u>ps://youtu.be/t2tKyj</u>	<u>1/uSY</u>								

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	-	-	-	-	-	-	-	-	-	1	3	-	1	-	2
CO2	3	3	-	-	-	2	-	-	-	-	-	-	3	3	2	3	3
CO3	2	3	-	-	-	2	-	-	-	-	-	1	3	2	1	3	2
CO4	3	3	-	-	-	-	-	-	-	-	-	-	2	3	2	2	3
CO5	3	3	-	-	-	3	-	1	-	-	-	-	3	3	2	3	3

1-Lov	v Correlatio	n; 2- Moderate Correlation; 3- Substantial Correlation Attributes & SDGs
2	CELL AN	

Course Code	Course Title	Attributes							
DT213		Employability	Entrepreneurship	ip Development Equality & Sustainability Skill Gender Environment Human Professional Ethics					No.
	MICKOBIOLOGY						\checkmark		3,4



Effective from Session	: 2024-25						
Course Code	DT214	Title of the Course	BASICS OF PATIENT CARE	L	Т	Р	C
Year	П	Semester	IV	2	1	0	3
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	This course h	as been formulated to impart	basic aspects of patient care in the intensive care and dialys	sis unit			

	Course Outcomes: After the successful course completion, learners will develop the following attributes:
CO1	The students will understand the fundamentals of patient care.
CO2	The students will understand reporting & recording of patients
CO3	The students will understand the introduction to emergency services.
CO4	The students will understand the principle of mechanical ventilation and injection.
CO5	The students will understand the basics of emergency care and life support skills.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
		1. Fundamentals of Patient Care Concept of health & Illness.		
1	FUNDAMENTALS OF	2. Health Determinants	6	CO1
	PATIENT CARE	3. Concept of Patients & Their Types, Patient Centered Care &		
		4. Fundamentals of Communications.		
		1. Reporting & Recording of Patients		
		2. Rights of Patients		
2	REPORTING &		6	CO2
2	REPORTING & RECORDING OF PATIENTS	4. General Concept, Care & Prevention of Accident, Trauma & Infections	6	02
		1. Introduction to Emergency Services		
2	INTRODUCTION TO	2. Organization of Emergency Department, Guidelines in Emergency	6	000
3	EMERGENCY	3. Clinical Monitoring	6	CO3
	SERVICES	4. Fluid Therapy and Blood Transfusion		
4	PRINCIPLE OF	1. Principal of Mechanical Ventilation	6	CO4
4	MECHANICAL	2. Ventilations including use of bag-valve-masks (BVMs)	6	04
	VENTILATION AND	3. Injection – An Infusion Method		
	INJECTION	4. Acid Base and Electrolyte Imbalance		
5		1. Vital signs and primary assessment	6	CO5
5	BASICS OF	 Basic emergency care – first aid and triage 	Ū	005
	EMERGENCY CARE	3. Airway Management, Cardiopulmonary Resuscitation		
	AND	4. Choking, rescue breathing methods		
	LIFE SUPPORT SKILLS	5. One- and Two-rescuer CPR f. Using an AED (Automated external defibrillator)		
		6. Managing an emergency including moving a patient		
	ence Books:			
	arles Vincent. The Essentials of I			
	lement. Textbook of Nursing For			
		Mechanical Ventilation - For Emergency Physicians. Edition: 1, 2022.		
	ement I. Basic Concepts of Nursi			
6e.	McGraw-Hill Education; 2018.	onent Therapy. In: Butterworth IV JF, Mackey DC, Wasnick JD. eds. Morgan & Mikhail's Accessed October 30, 2024.	Clinical And	esthesiology,
e-Le	earning Source:			
1. http	os://mohfw.gov.in/sites/default/fi	les/Provider%20Course%20Manual%20for%20Paramedics.pdf		
		· AM, AlAboudi AA, Alotaibi AZ, Al-Ghasham YA, Aldamegh MS. Basic life support kno	owledge of h	ealthcare
stu	dents and professionals in the Oa	ssim University Int I Health Sci (Oassim) 2014 Apr:8(2):141-50 doi: 10.12816/0006080		

students and professionals in the Qassim University. Int J Health Sci (Qassim). 2014 Apr;8(2):141-50. doi: 10.12816/0006080.

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	2	-	-	-	1	2	1	-	2	2	1	-	1	-
CO2	1	3	1	3	-	-	-	2	3	-	-	3	3	2	-	2	-
CO3	1	3	1	2	-	-	-	1	2	2	-	2	3	1	-	1	-
CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	-
CO5	1	3	1	2	-	-	-	1	2	1	-	2	2	1	-	1	-
		1-Lo	wCorr	elation	; 2- Moo	derate (Correla	tion; 3-	Substa	ntial Co	rrelation	Attribu	tes & SDO	Gs			
Course	Course Code Course Title SDGs																

Course Code	Course Title			Att	ributes				SDGs
DT214	BASICS OF PATIENTCARE	Employability	Entrepreneursh ip	Skill Developme nt	Gender Equalit y	Environment & Sustainability	Huma n Value	Professional Ethics	No.
		Г	Г	Г	7		Г	Г	3,4



Effective from Session: 2	2018-19						
Course Code	DT215	Title of the Course	MANAGEMENT OF DIALYSIS UNIT	L	Т	Р	C
Year	П	Semester	IV	2	1	0	3
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	The course is inter	ided to provide a knowle	edge about the basic principles of Management and Manage	ment o	f Dialy	sis Uni	ż.

	Course Outcomes					
CO1	To study about the Principles of Management and Planning					
CO2	Studying about Leadership and Teams					
CO3	To study about patient education & health awareness					
CO4	Studying Hospital Structure					
CO5	To study Resource management					

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO			
1	Principles of Management and Planning	 Introduction to management. Strategic Management Foundations of Planning Planning Tools and Techniques 	6	CO1			
2	Leadership and Teams	 Decision Making, conflict and stress management Managing Change and Innovation Understanding Groups and Teams Leadership Time Management 	6	CO2			
3	Patient education & health awareness	 Patient Education Communication Patient communication problems Explanation of examinations Interacting with terminally ill patients Informed Consent Patient counseling on Living with CKD - Life with HD and CAPD - Living with a transplanted kidney. 	6	CO3			
4	Hospital Structure	 Basics of Management of health care organization include administrative aspects of dialysis unit Basics of Intensive care units Hospital administration 	6	CO4			
5	Resource management	 Resource management (personnel, material & finance) Quality management & infection control systems Cost and efficiency 	6	CO5			
1 Kasi	Viseswaran Basics of Renal Di	seases, Fluid, Electrolytes & Acid-Base Balance, CBS Pub, 2 nd Edi, 2020.					
		scases, Find, Electorytes & Acto-Dase Datatee, CDS Fub, 2 nd Edi, 2020.					
	1	pgy, CBS Publications& Distributors pvt.					
		of Clinical Nephrology, CBS Publications pvt.					
5. John T Daugirdas, Hand book of Chronic Kidney Disese management, Wolters, 2nd Edi, 2014							
		y, Handbook of Nephrology, Nephrology Publ, 5th edi, 2013.					
	ier R.W, Diseases of the Kidney	and The Urinary Tract.					

e-Learning Source:

1. https://www.sathyabama.ac.in/sites/default/files/course-material/2020-10/UNIT-I_15.pdf

https://juniperpublishers.com/rapsci/pdf/RAPSCI.MS.ID.555586.pdf https://ourworldindata.org/world-population-growth

2. 3.

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	1	2	-	-	-	1	2	1	-	2	-	1	2	-	3
CO2	2	3	2	2	-	-	-	1	3	1	-	3	-	2	1	-	2
CO3	1	3	1	2	-	-	-	1	2	-	-	2	-	1	2	-	3
CO4	2	3	1	2	-	-	-	1	3	-	-	3	-	2	3	-	3
CO5	1	3	1	2	-	-	-	1	2	1	-	2	-	1	2	-	3

Course Code	Course Title			Att	tributes				SDGs	
DT215	Management of Dialysis	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.	
	Unit	1	1	7	1		ſ	ſ	3,4	1



H	Effective from Sessio	on: 2024-25									
(Course Code	DT216	Title of the Course	CLINICAL BIOCHEMISTRY LAB	L	Т	Р	С			
Ŋ	Year	II	Semester	III	0	0	4	2			
I	Pre-Requisite	Nil	Co-requisite	Nil							
(Course Objectives	This paper gives a brie	his paper gives a brief understanding about various types of function tests, acid base balance and associated disorders.								

	Course Outcomes
CO1	Students will be able to gain knowledge about Bilirubin, SGOT conc, SGPT conc
CO2	Students will be able to gain knowledge about ALP Conc, total and free acidity
CO3	Students will be able to gain knowledge about CPK test, CK-MB test
CO4	Students will be able to gain knowledge about serum sodium Conc, serum potassium conc
CO5	Students will be able to gain knowledge about uric acid conc, phosphorus conc

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mappe d CO					
1		1. To determine total, direct and indirect bilirubin		CO1					
2		2. To determine SGOT conc	1	CO1					
3		3. To determine SGPT conc		CO2					
4	LFT, RFT/KFT, CARDIAC	4. To determine ALP Conc		CO2					
5	FUNCTION TEST,	5. To determine total and free acidity.		CO3					
6	GASTRIC	6. To perform CPK test	30	CO3					
7	FUNCTIONTESTS, ACID-	7. To perform CK-MB test.		CO4					
8	BASE BALANCE AND	8. To determine serum sodium conc		CO4					
9	ANALYSIS	9. To determine serum potassium conc.		CO5					
10		10. To determine uric acid conc.		CO5					
11		11. To determine phosphorus conc.		CO5					
Referen	ce Books:								
1. DN	IVasudevan, (2011), Textbook of M	IedicalBiochemistry,6thedition, Jaypee Publishers							
2. MN	NChatterjee&RanaShinde,(2012).	TextbookofMedicalBiochemistry,8thedition,JayppePublications.							
3. Sin	gh &Sahni,(2008),Introductory F	Practical Biochemistry,2ndedition,Alphascience							
	4. Lehninger,(2013),Principles of Biochemistry,6th edition, WH Freeman.								
5. U SatyaNarayan,(2008), Essentials of Biochemistry,2nd edition, Standard Publishers.									
6. Treitz,(2007),Fundamentals of Clinical Chemistry,6thedition,ElsevierPublications									
e-Learning Source:									
1. <u>htt</u>	1. https://www.slideshare.net/peddanasunilkumar/introduction-to-pathology-ppt								
2. <u>htt</u>	2. <u>https://www.ucsfhealth.org/medical-tests/semen-</u>								
ana	llysis#:~:text=Semen%20analysis%	<u>%20is%20one%20of,have%20a%20male%20infertility%20problem.</u>							

3. https://www.youtube.com/watch?v=wZCKrseSIOE

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	1	2	-	-	-	1	2	-	-	2	-	1	-	1	-
CO2	1	3	1	3	-	-	-	1	3	-	-	3	-	2	-	2	-
CO3	1	3	1	2	-	-	-	1	2	-	-	2	-	1	-	1	-
CO4	1	3	1	2	-	-	-	1	3	-	-	3	-	1	-	1	-
CO5	1	3	1	2	-	-	-	1	2	-	-	2	-	1	-	1	-

Course Code	Course Title			Att	tributes				SDGs	
DT216	CLINICAL BIOCHEMISTRY LAB	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.	
	DIOCHEMISTRT LAD	ſ	Г	1	Г		1	ſ	3,4	



Effective from Session: 2024	-25									
Course Code	DT217	Title of the Course	RENAL DIALYSIS TECHNOLOGY-II LAB	L	Т	Р	С			
Year	II	Semester	Ш	0	0	4	2			
Pre-Requisite	Nil	Co-requisite	Nil							
	The course is designed to help the students to develop an understanding of the basic concepts, Principles, equipment, composition and membrane of dialysis, Water treatment and reuses, anticoagulation therapy in dialysis with emphasis on									
	clinical applica	tion to practice.								

	Course Outcomes						
CO1	Students will be able to learn about setting up dialysis machine for dialysis						
CO2	O2 Students will be able to learn about AV Cannulation						
CO3	CO3 Students will be able to learn about packaging and sterilization of dialysis trays						
CO4	Students will be able to learn about initiation of dialysis						
CO5							

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO						
1		1. Setting up dialysis machine for dialysis		CO1						
2		2. AV Cannulation: AV Fistula/AV Graft Cannulation		CO1						
3		3. Initiation of dialysis through central venous catheters		CO2						
4	Setting up dialysis machine	4. Packaging and sterilization of dialysis trays		CO2						
5	Its initiation and closing Manual setting	5. Closing of dialysis	- 30	CO3						
6	Automated setting	6. Preparation of concentrates depending on the situations		CO3						
7	Automateu setung	7. Reuse of dialysis apparatus		CO4						
8		8. Isolated Ultrafiltration		CO4						
9		9. Performance of peritoneal dialysis exchange manually		CO5						
10		10. Setting up automated peritoneal dialysis equipment		CO5						
Refer	ence Books:									
1. H	Handbook of Dialysis by John T. Dug	idas								
2. 0	2. Oxford Handbook of Dialysis									
3. H	3. Handbook of Chronic Kidney Disease by John T. Dugrdas									
4. I	4. Brenner and Rector's The Kidney									
5. I	5. ISPD Guidelines									
6. H	XDIGO Guidelines									

e-Learning Source:

1. https://www.slideshare.net/DJASMINEPRIYA/histopathology-introduction

2. https://www.ijohsjournal.org/article.asp?issn=2231-6027;year=2018;volume=8;issue=2;spage=63;epage=67;aulast=Theresa

3. https://www.slideshare.net/VarugheseGeorge/hematoxylin-and-eosin-staining-67250220

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	2	-	-	-	1	2	1	-	2	-	2	2	1	-
CO2	1	3	1	3	-	-	-	2	3	-	-	3	-	1	1	1	-
CO3	1	3	1	2	-	-	-	1	2	2	-	2	-	1	1	1	-
CO4	1	3	1	2	-	-	-	1	3	-	-	3	-	1	2	1	-
CO5	1	3	1	2	-	-	-	1	2	1	-	2	-	1	1	1	-

Course Code	Course Title		Attributes						SDGs
DT217	Renal Dialysis	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.
	Technology-II Lab	٢	Г	Г	ſ		1	1	3,4



Effective from Session: 202	4-25										
Course Code	DT218	Title of the Course	Clinical Posting	L	Т	Р	С				
Year	П	Semester	IV	0	0	4	2				
Pre-Requisite	Nil Co-requisite Nil										
Course Objectives	The student wi	he student will be taught about different type of Clinical aspects of Dialysis according to respective SOPS.									

	Course Outcomes						
CO1	To learn punctuality and interaction with colleagues and support staff during clinical training.						
CO2	To develop assessment skills.						
CO3	To develop appropriate treatment protocol.						
CO4	To understand the importance of documentation of the case record and case presentation.						
CO5	To develop discipline and improve overall quality of clinical work.						

Name of S	tudent:	Session:	
Enrolmen	t Number:	Date:	
Name of (Course: CLINICAL POSTING	Course Code:	DT218
Topics:			
S. No.	Point to be Considered	Max. Marks	Marks Obtained
1.	Punctuality	4	
2.	Interaction with colleagues and supporting staff	2	
3.	Maintenance of case records	3	
4.	Presentation of case during rounds	2	
5.	Maintained DT records	2	
6.	DT Manners	2	
7.	Report with patients	2	
8.	Assistance during operatives' procedures	3	
9.	Discipline	2	
10.	Overall quality of clinical work	3	
	TOTAL SCORE	25	

CLINICAL POTING ASSESSMENT FORM

(Name and signature of In-charge)

Effective from Section, 2024 26

(Head, Paramedical)

GUIDELINES FOR CLINICAL TRAINING PROGRAM

The students of the Post Graduate BDT program must spend the above-mentioned allotted time period in the hospital based clinical training for specified clinical experiences to meet the objectives of the training program. This period of practical and theoretical experience will enable the students to acquire competency and experience to perform as independent practice and will enable to adjust to the real practical life in different units in the hospital settings.

S.No.	Program Name	Year/Semester	Duration of Training
1.		IInd Year/ IIIrd Semester	4 Months
2.	D Ca. Dickris Tashnalagu	IInd Year/ IVth Semester	4 Months
3.	B.Sc. Dialysis Technology	IIIrd Year/ Vth Semester	4 Months
4.		IIIrd Year/ VIth Semester	4 Months

By the successful completion of this clinical training period, the student is expected to fulfill the objectives of the program and will be examination as given below:

S.No.	Program Name	Year/Semester	Case file	Practical on Case	Voice/Viva	Attendance	
1.		IIrd Year/ IIIrd Semester		10 14		5 Marks	
2.	B.Sc. Dialysis	IIrd Year/ IV th Semester	10 Marks	10 Marks	25 Marks		
3.		IIIrd Year/ Vth Semester	10 Marks	(1 Long Case and 2 Short Case)	25 Marks		
4.	Technology	IIIrd Year/ VIth Semester		Short Case)			

EVALUATION OF CLINICAL POSTING

BDT- Students must prepare 1 long case and 2 short cases during their clinical posting. The evaluation for internal clinical examination of 50 marks will be distributed:

Cases during clinical posting=25 marks.					Viva voce = 20 marks					Attendance=5 marks						
Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO1	PO2	PO3	PO4	PO5	PO6	PO7	POS	POQ	PO10	PO11	PO12	PSO1	DSO2	DSO3	DSO/	PSO5
101	102	105	104	105	100	10/	108	109	1010	1011	1012	1501	1502	1305	1304	1505
2	3	3	2	3	2	3	1	2	1	-	-	3	2	3	3	2
3	3	3	3	2	2	3	2	1	3	-	-	2	2	3	2	3
3	3	3	3	2	2	3	2	1	3	-	-	3	2	2	2	3
3	3	3	3	2	2	3	2	1	3	-	-	2	3	2	2	3
3	3	3	3	2	2	3	2	1	3	-	-	3	2	3	3	2
	PO1 2 3 3 3 3 3				C	Course Ar	Course Articulation	Course Articulation Matr	Course Articulation Matrix: (Maj	Course Articulation Matrix: (Mapping of	Course Articulation Matrix: (Mapping of COs with PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 2 2 2 2 2 2 1 2 1	Course Articulation Matrix: (Mapping of COs with POs and PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 2 3 3 2 3 2 3 1 2 1 - - 3 3 3 2 2 3 2 1 3 - -	Course Articulation Matrix: (Mapping of COs with POs and PSOs) PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PSO1 2 3 3 2 3 2 3 1 2 1 - - 3 3 3 3 2 2 3 2 1 3 - - 2 2 2 2 3 2 2 3 2 1 3 - - 2	Course Articulation Matrix: (Mapping of COs with POs and PSOs) PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PSO1 PSO2 2 3 3 2 3 1 2 1 - - 3 2 3 3 3 2 2 3 2 1 3 - - 2 2 2 2 2 3 2 2 3 2 1 3 - - 2 <t< td=""><td>Course Articulation Matrix: (Mapping of COs with POs and PSOs) PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PSO1 PSO2 PSO3 2 3 3 2 3 1 2 1 - - 3 2 3 3 3 3 2 2 3 2 1 3 - - 2 2 3 2 2 3 2 2 3 2 1 3 - - 2 2 3</td><td>Course Articulation Matrix: (Mapping of COs with POs and PSOs) PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PS01 PS02 PS03 PS04 2 3 3 2 3 1 2 1 - - 3 2 3 3 3 3 3 2 2 3 2 1 3 - - 2 2 3 2 2 3 2 2 1 3 - - 2 2 3 3 2 2 3 2 1 3 - - 2 2 3 2 2 3 2 2 3 2 2 3 2 1 3 - - 2 2 3 2 2 3 2 2 3 2 2 3 2 2 2</td></t<>	Course Articulation Matrix: (Mapping of COs with POs and PSOs) PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PSO1 PSO2 PSO3 2 3 3 2 3 1 2 1 - - 3 2 3 3 3 3 2 2 3 2 1 3 - - 2 2 3 2 2 3 2 2 3 2 1 3 - - 2 2 3	Course Articulation Matrix: (Mapping of COs with POs and PSOs) PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PS01 PS02 PS03 PS04 2 3 3 2 3 1 2 1 - - 3 2 3 3 3 3 3 2 2 3 2 1 3 - - 2 2 3 2 2 3 2 2 1 3 - - 2 2 3 3 2 2 3 2 1 3 - - 2 2 3 2 2 3 2 2 3 2 2 3 2 1 3 - - 2 2 3 2 2 3 2 2 3 2 2 3 2 2 2

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation Attributes & SDGs Course Code **Course Title** Attributes SDGs No. Human Skill Emplo Entrepre Gender Environment & Professional **DT218 Clinical Posting** yability neurship Development Equality Sustainability Value Ethics 3,4,11 $\sqrt{}$