



Pharmacology Department
Student Study Guide
2nd year BDS (Year 2026-27)
Module I, II, III

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VISION

To emerge as a distinguished center of excellence in dental care and dental education, encouraging and disseminating research and patient care, recognized for empowering its students and faculty and producing dentists of excellence engaged in providing outstanding dental care and services in Balochistan.

MISSION

To lead Balochistan towards international quality of healthcare standards by educating and inspiring individuals to be exemplary dentists and researchers in dental health, scholars in discovery and adopters of innovative technology to improve the health and well-being of all.

Introduction to Pharmacology

Pharmacology, the subject of basic & clinical & sciences is taught to the medical students in 2nd year BDS. It is an allied subject of surgery and medical specialties and sub specialties.

It deals with classification, preparation, dosages, usage and adverse effects etc. of the drugs for the purpose of diagnosis or prevention or treatment of various ailments. The subject is taught throughout in 2nd academic year and has 220 credit hours, as per curriculum of Pakistan Medical and Dental Council (PMDC) and National University of Medical Sciences (NUMS).

Pharmacology Department

Department of Pharmacology was established in 2024 at QCD Quetta and is fully functional and active. All the academic and extra-curricular activities will be carried out under the guidelines of QDC and NUMS.

List of Faculty

Dr. Komal Mumtaz Malik	Assistant professor
Dr. Javeria	Demonstrator
Dr. Khizer	Demonstrator

List of Technical Staff

Shah Fahd	Computer operator
Sajid	Lab attendant

Facilities and Infrastructure:

Sr. No	Facility	Available	Remarks
1	Pharmacology laboratory	01	Functional
2	Offices	03	Furnished
4	Demonstrator room	01	Furnished
5	Lecture Hall (no.3)	01	Functional with all facilities

3. Teaching and Learning Strategies:

Sr. No	Strategies
1	Large group interactive sessions (Lectures)
2	Small group discussion
3	Practical demonstration
4	Case base learning (CBL)
5	E-teaching (Google classrooms)
6	Presentations
7	Peer assisted learning
8	Self-directed learning (SDL)
9	Group study

Learning Resources:

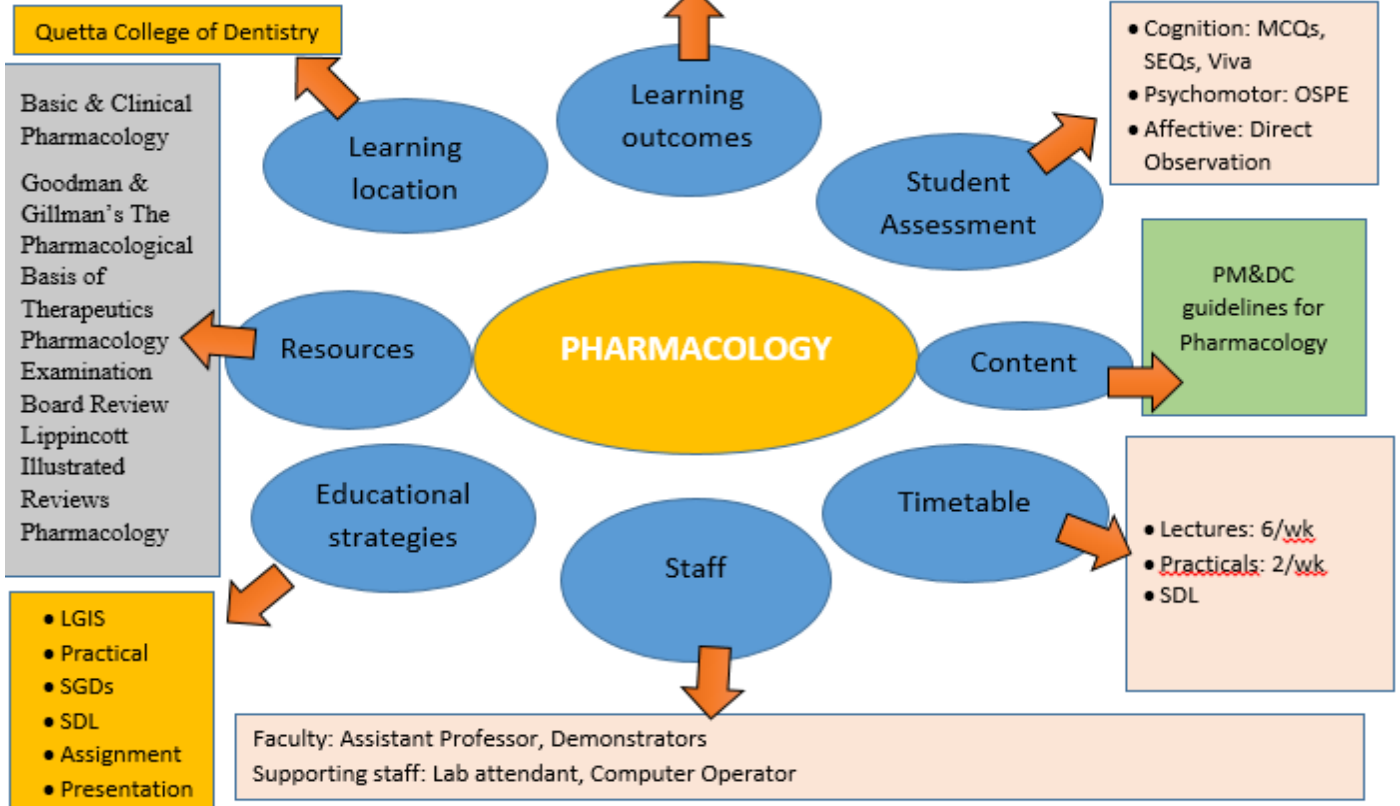
Sr. No	Title of Book	Edition	Author's Name
a. Text and reference books			
1.	Basic & Clinical Pharmacology (LANGE)	15 th	Katzung.G Masters.B Trevor.J
2.	Goodman & Gillman's The Pharmacological Basis of Therapeutics	13 th	Bjorn C. Knollmann Laurence L. Brunton Randa Hilal - Dandan
3.	Pharmacology Examination Board Review	11 th	Trevor.J Katzung.G
4.	Lippincott Illustrated Reviews Pharmacology	6 th	Karen Whalen Richard Finkel Thomas A. Panavelil
b. Practical notebook			
1.	Practical Pharmacology	1 st	Dr. Komal M Malik Dr. Jasia Durrani

a. Audio/ Visual Resources

Sr. No	Title
DVD- 1	Effects of drugs on Rabbit's eye

Curriculum Map

By the end of 2nd year, the student will be able to demonstrate understanding of brief history of pharmacology, principles of pharmacokinetics and pharmacodynamics, the basic & clinical pharmacology of drugs acting on ANS, CNS, CVS, GIT, Endocrinology, Respiratory system, Inflammation and blood, as well as chemotherapeutic agents.



Block – I

Duration: 12 + 01 weeks

Block – I

Topic	Learning outcomes	Learning objectives
Pharmacology: Introduction & Historical overview:	To know about the brief history of pharmacology	<ul style="list-style-type: none"> • Define pharmacology • Describe the role of Muslims scientist in advancement of pharmacology
Pharmacology: Branches/ division of Pharmacology	To know about the various branches of pharmacology and their significance	<ul style="list-style-type: none"> ○ Pharmacokinetics ○ Pharmacodynamics ○ Therapeutics ○ Chemotherapy ○ Toxicology ○ Clinical pharmacology ○ Pharmacy ○ Pharmacognosy ○ Pharmacogenetics ○ Pharmacogenomics ○ Pharmacoepidemiology ○ Comparative pharmacology ○ Animal pharmacology ○ Pharmacoeconomics ○ Posology
Pharmacokinetics	To understand the principles of pharmacokinetics of drugs	<ul style="list-style-type: none"> • To define principles of pharmacokinetics • Explain factors affecting and the clinical significance of: <ul style="list-style-type: none"> ○ Route of administration of drugs ○ Dosage forms ○ Absorption ○ Bioavailability ○ Distribution

		<ul style="list-style-type: none"> ○ Plasma protein binding ○ Excretion and clearance of drugs ○ Half life
Biotransformation of drugs	<ul style="list-style-type: none"> • To understand the principles of bio-transformation of drugs and its clinical significance 	<ul style="list-style-type: none"> • Define biotransformation and enumerate types • Explain the clinical significance and factors affecting biotransformation
Pharmacodynamics	<ul style="list-style-type: none"> • To understand the principle mechanisms of action of drugs • Factors modifying actions & doses of drugs 	<ul style="list-style-type: none"> • Enlist and describe type of receptors (agonist/antagonist), mechanisms, signaling mechanism, and second messenger system • Enlist and describe factors modifying actions & doses of drugs
Drug-drug interactions	<ul style="list-style-type: none"> • To understand principle drug-drug interactions 	<ul style="list-style-type: none"> • Describe pharmacokinetic and pharmacodynamics • Describe drug interactions with their clinical significance
ANS: Introduction	<ul style="list-style-type: none"> • To identify the synthesis, release and transport of adrenergic and cholinergic neurotransmitters 	<ul style="list-style-type: none"> • Describe the synthesis, release and transport of adrenergic and cholinergic neurotransmitters • Enlist the various receptors responsible for adrenergic and cholinergic transmission

Sympathomimetics	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of catecholamines and noncatecholamines 	<ul style="list-style-type: none"> Enlist the receptors, classification, chemistry, metabolism and MOA of: <ul style="list-style-type: none"> ○ Adrenaline ○ Nor-adrenaline ○ Isoprenaline ○ Dopamine ○ Dobutamine ○ Ephedrine ○ Amphetamine ○ Phenylephrine ○ Salbutamol ○ Dexmedetomidine ○ Xylometazoline ○ oxymetazoline
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		Describe pharmacological actions on all organ systems, uses and ADRs of sympathomimetics
Sympatholytics	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of sympatholytic 	<ul style="list-style-type: none"> Enlist the receptors, classification, chemistry, metabolism and MoA of: <ul style="list-style-type: none"> ○ Alpha receptor blockers ○ Beta receptor blockers Describe pharmacological actions on all organ systems, uses and ADRs of symaptholytics
Central Sympathoplegics	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology central sympathoplegics 	<ul style="list-style-type: none"> Enlist the receptors, classification, chemistry, metabolism and MoA of: <ul style="list-style-type: none"> ○ Methyl dopa ○ Clonidine ○ Apraclonidine Describe pharmacological actions on all organ systems, therapeutic uses and ADRs of central sympathoplegics

Cholinergic drugs	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of cholinergic drugs 	<ul style="list-style-type: none"> Enlist the receptors, classification, chemistry, metabolism and MoA of cholinergic drugs Describe pharmacological actions on all organ systems, therapeutic uses and ADRs of cholinergic drugs
Anti- Cholinesterases	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of cholinesterase inhibitors 	<ul style="list-style-type: none"> Enlist the receptors, classification, chemistry, metabolism and MoA of Cholinesterase inhibitors Describe pharmacological actions on all organ systems, therapeutic uses and ADRs of Anti-cholinesterases
Organophosphate poisoning& Oximes	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of organophosphates and oximes 	<ul style="list-style-type: none"> Explain the chemistry, metabolism and MoA of organophosphates and oximes Describe pharmacological Actions, therapeutic uses and ADRs
Cholinergic blockers	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of Cholinergic blockers 	<ul style="list-style-type: none"> Enlist the receptors classification Describe the chemistry, metabolism and MoA of Cholinergic blockers Describe pharmacological actions on all organ systems, therapeutic uses and ADRs of cholinergic blockers
Drugs acting on central nervous system	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of drugs acting on central nervous systems 	<ul style="list-style-type: none"> Enlist the classification Describe chemistry, Metabolism and MoA Describe pharmacological actions, therapeutic uses and ADRs of: <ul style="list-style-type: none"> ○ General anesthetics ○ Local anesthetics ○ Anti-migraine drugs ○ Sedative/hypnotics ○ Anti-epileptics ○ Antidepressants

Skeletal muscle Relaxants	<ul style="list-style-type: none">• To understand the basic and clinical pharmacology of skeletal muscle relaxants	<ul style="list-style-type: none">• Enlist the classification of receptors• Describe chemistry, metabolism and MoAs• Describe pharmacological actions, therapeutic uses and ADRs of Skeletal muscle relaxants
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List of Practicals

Sr. No	Topics Name
1	Introduction to pharmacy basic terminologies
2	Apparatus and equipment used in pharmacy
3	Metrology
4	Wrapping and labeling of pharmaceutical preparations
5	Powders
6	Interpret and report the effects of drugs on rabbit's eye
7	Prescription for ANS & CVS
8	P drugs for ANS & CVS
9	Mixtures

Block – II

Duration: 12 + 1 weeks

Block – II

Topic	Learning outcomes	Learning objectives
Chemotherapeutics	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of Chemotherapeutics 	<ul style="list-style-type: none"> Enlist Classification Describe the MoA, mechanism of resistance, regional resistance patterns Describe antibacterial spectrum, clinical uses, adverse effects of chemotherapeutic drugs and their role in dentistry: ➤ <ul style="list-style-type: none"> Penicillins <ul style="list-style-type: none"> ○ Cephalosporins ○ Macrolides ○ Tetracyclines ○ Chloramphenicol ○ Aminoglycosides ○ Quinolones ○ Sulfonamides ○ Disinfectants and antiseptics ○ Antituberculosis drugs ○ Antifungals drugs ○ Antiviral drugs ○ Antimalarial drugs ○ Antiamoebics ○ Antineoplastics Misc
Drugs acting in Cardiovascular system	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of drugs acting in Cardiovascular system 	<ul style="list-style-type: none"> Enlist the classification Describe chemistry, metabolism, MoA Describe pharmacological actions, therapeutic uses and ADRs of drugs used in: <ul style="list-style-type: none"> ○ Heart Failure ○ Arrhythmias

Diuretics	<ul style="list-style-type: none"> • To understand the basic and clinical pharmacology of diuretics 	<ul style="list-style-type: none"> • Enlist Classification • Describe the MoA, pharmacological actions, therapeutic uses and ADRs of: <ul style="list-style-type: none"> ○ Loop diuretics ○ Thiazides ○ K⁺ sparing ○ Osmotic Diuretics ○ ADH antagonists
Drugs acting on Endocrine system	<ul style="list-style-type: none"> • To understand the basic and clinical pharmacology of drugs acting on endocrine system 	<ul style="list-style-type: none"> • Enlist Classification • Describe the MoA, pharmacological actions, uses and ADRs of: <ul style="list-style-type: none"> ➤ Anti-Diabetics ○ Anti-thyroids ○ Adrenal Hormones • Sex hormones and contraceptives

List of Practicals

Sr. No	Topics Name
1	Emulsions
2	Bio statistics - I
3	Bio statistics - II
4	Lotions
5	Prescription for Blood
6	P drug for Blood
7	P drug for CNS
8	Prescription GIT
9	Ointment
10	Solution

Block – III

Duration: 12+1=13 weeks

Block – III

Topic	Learning outcomes	Learning objectives
Opioids	<ul style="list-style-type: none"> To correlate the effects of substances of abuse 	<ul style="list-style-type: none"> Introduction, classification Morphine Semisynthetic/Synthetic
Drugs acting in Inflammation and gout	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of drugs acting in Inflammation and gout 	<ul style="list-style-type: none"> Enlist the classification Describe chemistry, metabolism, MoAs Describe the pharmacological actions, therapeutic uses and ADRs of: <ul style="list-style-type: none"> Non-steroidal anti-inflammatory drugs (NSAIDs) Disease Modifying Anti-Rheumatic Drugs (DMARDs) Anti-gout drugs
Drugs used in the treatment of coagulation disorders	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of drugs used in the treatment of coagulation disorders 	<ul style="list-style-type: none"> Enlist Classification Describe the MoA, pharmacological actions, therapeutic uses and ADRs of parenteral agents: <ul style="list-style-type: none"> Heparin Low molecular weight heparins Heparinoids Warfarin Thrombolytics Antiplatelets
Drugs acting in Gastrointestinal system	<ul style="list-style-type: none"> To understand the basic and clinical pharmacology of drugs used in the treatment of gastrointestinal disorders 	<ul style="list-style-type: none"> Enlist Classification Describe the MoA, pharmacological actions, therapeutic uses and ADRs of: <ul style="list-style-type: none"> Drugs for peptic ulcer Antiemetic drugs

		<ul style="list-style-type: none"> ○ Antidiarrheals • Purgatives/laxatives
Drugs acting in Respiratory system	<ul style="list-style-type: none"> • To understand the basic and clinical pharmacology of drugs used in the treatment of respiratory disorders 	<ul style="list-style-type: none"> • Enlist Classification • Describe the MoA, pharmacological actions, therapeutic uses and ADRs of: <ul style="list-style-type: none"> ○ Bronchial asthma ○ Antihistamines ○ Expectorants ○ Antitussives

List of Practicals

Sr. No	Topics Name
1	Lotion
2	Prescription for chemo
3	Suspension
4	Throat Paint
5	Expectorants
6	P drug for chemo
7	Prescription for Respiratory & Endo
8	P drug for Respiratory & Endo

Assessment Methods:

Formative assessment

- Student/teacher feedback forms (written/verbal feedback)
- Assignments
- Presentation
- In-class activities

Summative assessment

- Written examination
 - Multiple choice questions (MCQs)
 - Short essay questions (SEQs)
- Oral examination / Viva Voice
- Practical examination
 - Objective structured practical examination (OSPE)
- Presentation
- Assignments

Academic calendar



2nd YEAR BDS 1st BATCH (SESSION 2026-2027) ACADEMIC CALENDAR/FORECAST TENTATIVE

ACADEMIC/EXTRA-CURRICULAR ACTIVITIES	FROM	TO
COMMENCEMENT OF NEW SESSION	23 RD FEB	
Orientation week	23 rd – 27 th	Feb, 2026.
World Oral health Day	20 th marc	h,2026 (Fri)
BLOCK I (12 wee ks + 1 exam week)		
Block I (12+1 WEEKS)	23 rd feb,26	15 th May 2026
TENTATIVE EID UL FITAR HOLIDAYS (1 WEEK)	18 th March 26	24 th March 26
LABOUR DAY HOLIDAY	1 ST M	AY,2026
EOB EXAM I (1WEEK)	18 th may, 26	25 th may, 26
Pharmacology	18 th may,2026	Monday
Community and preventive dentistry	19 th may ,2026	Tuesday
Preclinical operative /preclinical prosthodontics	20 th may,26	Wednesday
Pathology	21 st may ,26	Thursday
Science of dental materials	22 nd may,26	Friday
TENTATIVE EID UL AZHA (1 WEEK)	26 th May, 26	31 st May, 26
BLOCK II (12 WEE KS+ 1 WEEK EXAM)		
BLOCK II (12+1 WEEK)	1 ST June,26	21 August,2026
TENTATIVE MUHARRAM HOLIDAYS	24th June 26	25 th June 25
INDEPENDENCE DAY HOLIDAY	14 TH AU	GUST,2026
EOB EXAM II	24 TH Aug, 26	28 th Aug , 26

Pharmacology	24 th Aug,26	Monday
Community and preventive dentistry	25 th Aug ,26	Tuesday
Preclinical operative /preclinical prosthodontics	26 th Aug ,26	Wednesday
Pathology	27 th Aug ,26	Thursday
Science of dental materials	28 th Aug,26	Friday
BLOCK III (12 Weeks+ 3 Exam weeks)		
Block III	31 st Aug,26	20 th Nov,26
prep leaves for pre-annual exam(2wks)	23 rd Nov 26	4 th Dec 26
PRE ANNUAL EXAM(3WKS)	7 th Dec 26	31 st Dec 26
PHARMACOLGY	7 th Dec ,26	Monday
COMMUNITY AND PREVENTIVE DENTISTRY	9 th Dec,26	Wednesday
SCIENCE OF DENTAL MATERIAL	11 th Dec,26	Friday
PATHOLOGY	14 th Dec ,26	Monday
PRE-CLINICAL OPERATIVE/PRECLINICAL PROSTHODONTICS	16 th Dec,26	Wednesday
PRACTICAL'S	18 th Dec,27 (Friday)	24th Dec,26 (Friday)
PREP LEAVES(3WKS)	28 th Dec,26	22 nd Jan, 27
ANNUAL/PROF EXAM DATE BY NUMS	25th JAN 2027	

Weekly Training Program



TENTATIVE TRG DENTISTRY PROGRAMME
2ND YEAR BDS CLASS (1ST BDSCOURSE) 2026
1ST ACADEMIC WEEK

BLOCK 1 (13WEEKS)
TENTATIVE DATE.23RD FEB, 26 TO 27TH FEB, 26

Day/ Time	0830-0920	0920-1010	1010-1100	1100-1115	1115-1205	1205-1255	1255-1310	13:10-14:00	1400-1530		
	LGIS							PRACTICAL/SGD			
Monday	Pathology	Pharmacology	Community Dentistry	BREAK	Dental Materials	Dental material	PRAYER BREAK	Pharma(A,B) Patho (C,D)	Behavioral sciences/Research LGIS		
Tuesday	Dental Materials	Pharmacology	Pharmacology		Community dentistry	Dental material	PRAYER BREAK	Pharma(C,D) Patho(A,B)	Pathology LGIS		
	LGIS				PRACTICAL/SGD 1115-1500					SDL 1500-1530	
Wednesday	Pathology	Pathology	Community Dentistry		Preclinical Operative(phantom head) (A) Prosthodontics (B) Dental material (C) Community Dentistry (D)	Preclinical Operative(phantom head) (B) Prosthodontics (C) Dental Material (D) Community Dentistry (A)	PRAYER BREAK	Preclinical Operative(phantom head) (C) Prosthodontics (D) Dental material (A) Community Dentistry (B)	Preclinical Operative(phantom head) (D) Prosthodontics (A) Dental material (B) Community Dentistry (C)	Pharmacology	
Thursday	Dental Materials	Dental Materials	Pharmacology		Preclinical Operative(phantom head) (A) Prosthodontics (B) Dental material (C) Community Dentistry (D)	Preclinical Operative(phantom head) (B) Prosthodontics (C) Dental Material (D) Community Dentistry (A)		Preclinical Operative (phantom head) (C) Prosthodontics (D) Dental material (A) Community Dentistry (B)	Preclinical Operative(phantom head) (D) Prosthodontics (A) Dental material (B) Community Dentistry (C)	Dental materials(15min)/HEC courses (behavioral sciences/ICT/research)	
	0830-0920	0920-1010	1010-1100		1100-1115	1115-1205	1205-1255	12.55-1320	13:20-1345	1345-1410* 1410-1500	1500-1530
	LGIS					PRACTICAL/SGD					SDL

Friday	Dental material	Pathology	Pharmacology	BREAK	Preclinical Operative(phantom head) (A) Prosthodontics (B) Dental material (C) Community Dentistry (D)	Preclinical Preclinical Operative(phantom head) (B) Prosthodontics (C) Dental Material (D) Community Dentistry (A)	Preclinical Operative (phantom head) (C) Prosthodontics (D) Dental material (A) Community Dentistry (B) *Continue after Friday prayer till 1410hrs	FRIDAY PRAYER	Preclinical Operative(phantom head) (D) Prosthodontics (A) Dental material (B) Community Dentistry (C)	HEC courses (behavioral sciences/ICT/re search
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➤ **COURSE DURATION. 36 WEEKS**

Departments Name	PMDC hours/yr	Teaching hours/LGIS	Practical / SGD/Lab	Total hrs/wk	SDL hrs./yrs. Total hrs./yrs.	Total hrs/yr	Total hrs/yr including SDL/Visit
Dental Materials	300	7*50=350/60=5.8	2.5	8.3	(.25*36)=9	8.3*36=299	299+9=308
Pharmacology	220	5*50=250/60=4.2	1.6	5.8	(.5*36)=18	5.8*36=209	209+18=227
Pathology	220	290/60=4.9	1.6	6.5	-	6.5*36=234	234
Community And Preventive Dentistry	200	3*50=150/60=2.5	2.5	5	Community Visits 3*7hrs=21	5*36=180	180+21=201
Preclinical Operative	80	-	2.5	2.5	-	2.5*36=90	90
Preclinical Prosthodontics	80	-	2.5	2.5	-	2.5*36=90	90
Behavioral Science /ICT/Research Methodology	100	1.5	Online Ict=20	1.5	27	1.5*36=54	54+27+20=101
Total PMDC hrs./yr.	1200						1251

➤ **SELF DIRECTED LEARNING =2.5HRS/WK =2.5*36=90HRS/YR**